Small Sci.

April 13, 1990

MEMORANDUM

TO: MARK LANGE

FROM: CAROLYN CAWLEY

RE: NATIONAL ACADEMY OF SCIENCES

1.) It was in 1983 that Frank Press and POTUS both received honorary doctorates from Ohio State University and Press rode back to D.C. on Air Force Two.

2.)Unknown Scientists:

--During WWII, many advances were made in the fields of:
battlefield medicine
wound and burn treatment
shock and trauma treatment

Experiments and research were being conducted all over the country as part of the war effort and the results were used directly on the battlefields and field hospitals.
After the war, these advances were refined and brought to the general public...and now are commonplace today.

--Paul Chu is a very young scientist who is unknown to the public but is very well known in science circles. He has discovered high temperature super conductivity and is currently working on it. Was elected last year to the Academy.

--Charles Townes is known as the father of the laser..discovered it on his own, and when he was not looking for it. He is currently at UC-Berkeley

February 7, 19991

MEMORANDUM

TO: MARK LANGE

FROM: CAROLYN CAWLEY

RE: REMARKS @ AM. ASSN. FOR THE ADVANCEMENT OF SCIENCE

Date: Friday, February 15

Time: 10:00 a.m.

Place: Sheraton Washington Ballroom

Attendees: Approximately 3500

Intro/
Acknowledgements: See fax from the AAAS

I. INFO ON THE ASSOCIATION

A. Origins and Aims

- The American Association for the Advancement of Science was founded in 1848.

- From it's early, specific aims concerned with communication and cooperation among scientists, the Association's goals now encompass the broader purpose of:

> "...furthering the work of scientists, facilitating cooperation among them, fostering scientific freedom and responsibility, improving the effectiveness of science in the promotion of human welfare, advancing education in the science, and increasing the public understanding and appreciation of the importance of the methods of science in human progress."
>
> ((from its Constitution))

B. Milestones in its history

- o 1840 — The Association of American Geologists, lineal ancestor of the AAAs, was organized on April 2.
- o 1848 — The AAAs became formal, with 461 members in Philadelphia.
- o 1852 — No annual meeting because of the "prevalence of cholera along the approaches to Cleveland from the South."
- o 1861-1863 — Because of the Civil War, no meetings for 5 years; no Presidents elected.
- o 1900 — Science magazine was made the official publication of the organization.
- o 1942-1943 — No meetings were held due to WW II, though a monthly bulletin was issued to keep members informed.
- o 1948 — In September, the assn. celebrated its centenary in Washington, D.C. with the theme "One World of Science". President Truman spoke at the meeting -- the last President to do so.

C. Presidential remarks

President Truman was the last President to address the organization. Before that, it was customary for the US President to make an appearance at the annual meeting when it was held in Washington.

These other Presidential appearances included:

April 1854 -- President Franklin Pierce made remarks at a reception, but they were not documented.

The AAAS History book states:
"...the members were elegantly entertained, on different evenings, by Franklin Pierce, President of the United States; Jefferson Davis, Secretary of war; James Guthrie, Sec. of the Treasury; and William Corcoran, Esq. (founder of the Art Galleery.)

Seldom have the hosts been as distinguished as at that 1854 meeting

December 1902 -- TR also gave remarks at a White House reception, but these also were not documented.

December 1911 -- Taft gave remarks; a copy is being faxed to us.

September 1948 -- See Truman Xerox.

II. Dates in February

-- National Engineers Week, last full week

-- Feb. 11 National Science Youth Day, observed on Edison's birthday as part of National Electrical Week

Feb. 11, 1847 Thomas Alva Edison's birthday

-- Feb. 12, 1915 Cornerstone laid on the Lincoln Memorial

-- Feb. 13, 1633 Galileo arrived in Rome, as ordered by the Inquisition

-- Feb. 14, 1876 Elisha Gray filed for a patent on his telephone a few hours after Alexander Graham Bell did.

-- Feb. 15, 1564 Astronomer Galileo Galilei's birthday

-- Feb. 18, 1930 Planet Pluto discovered by Clyde Tombaugh at Lowell Observatory, Flagstaff, AZ, as predicted by Professor Percival Lowell.

-- Feb. 19, 1878 Edison received patent on phonograph.

Astronomer Copernicus' birthday

-- Feb 20 John Glenn Day, commemorating US astronauts orbiting the earth on this date in 1962

-- Feb 21, 1885 Washington Monument dedicated

-- Feb. 23, 1886 Charles Hall invented electrolytic process for manufacture of aluminum

III. Inventions and Discoveries

Aspirin

Acetylsalicylic acid was produced for the first time in 1899 by German chemists Hoffman and Dreser. In 1905, aspirin was marketed for the first time by Bayer Aspirin and soon became the largest selling OTC, nonprescription drug in the world.

Pop Up Toaster

Charles Strite, an American inventor, patented the first pop up toaster in 1918.

Blender

The blender was invented by Fred Waring, the well known band leader of the thirties and forties, in 1936, and revolutionized food preparation and bartending.

Dishwasher

Invented by Mrs. Cochran, an Indiana housewife in 1879.

Teflon

Roy Plunkett, a Du Pont chemist, discovered polytetrafluoroethylene, or Teflon, by accident in 1938, and the nonstick surface was soon used for cooking utensils as well as industrial wiring.

Telescope

Man's concept of the universe was revolutionized in 1609 when Galileo Galilei, Italian astronomer, built the first refracting telescope.

The Cotton Gin

Eli Whitney -- 27 year old Yale graduate, invented it in 1792 while visiting a plantation in Georgia. He had noticed the difficulty with which seeds were separated from short-staple cotton bolls, and he guilt a simple turning cylinder device with saw teeth made from bird cage wire. The device enabled one slave laborer to clean as much as fifty pounds of cotton a day, as opposed to the one pound before. In the decade after invention, US agriculture changed drastically -- 140,000 pounds in 1792 to 35 million pounds in 1800. ((Applying invention to industry -- US more competitive))

Radar

The first practical radar device was developed by Rudolph Kuhnold, Signals Research Chief of the German Navy, and demonstrated at Kiel Harbor in 1934. He bounced signals from his 700 watt transmitter from a battleship anchored 600 yards away. This and subsequent tests were so successful that the German government appropriated money to develop the device, which has had a dramatic impact on warfare, auto traffic, and even geologic research and other scientific applications.

The Computer

The first known computing device was the abacus, in 6th century China. Used in the Orient even today.

The first complex, modern computer was conceived, designed, and partially built by Charles Babbage, a British mathematician in 1822. It utilized many features and principles of modern computers, like punch cards.

The first electronic computer was built by Dr. Herman Hollerith for the US Census Bureau in 1889 for the 1890 Census. It used punch cards with 80 columns, which became part of the IBM system which still bears his names.

The first digital computer was the Mark I, completed in 1944 by Professor Howard Aiken of Harvard.

The first electronic computer was the Electronic Numerical Integrator and Computer, completed in 1946 at UPenn. It weighed 80 tons. Used by the US Army to solve artillery problems.

The Laser

First built in 1960 by Theodore Maiman of the Hughes Research Lab in Malibu, CA. The term ws first coined by R. Gordon Gould in 1957, but his leftist activities in the 1940's caused his work on lasers to be halted by the Defense Department and research agencies.

The laser, thought of by the public as a 21st century tool, has found a staggering number of applications in holography, surgery, physics, and even astronomy.

Divisibility of the Atom

From the time of Democritus in 330 BC the atom had been considered the smallest particle of matter (the word is Greek for indivisible). In 1897 Joseph John Thompson, a British physicist, discovered that the atom was itself made up of smaller particles -- revolutionized scientific thinking.

Cordless Phone

The Army has long used "cordless phones" in the field, slung over the radio man's shoulder. Look at the abundance and convenience of cordless phones today! They can fit in your shirt pocket. Also: car phones, plane phones.

Flight

One of the most astonishing feats in man's history is the landing of man on the moon sixty six years after the Wright brothers' first flight, and just forty three years after the first fuel-propelled rocket flight.
((Improving on the old))

Small Sci. Sg.

107TH STORY of Level 1 printed in FULL format.

November 17, 1981, Tuesday, AM cycle

SECTION: Domestic News

LENGTH: 415 words

HEADLINE: Personality Spotlight;
Dr. Barbara McClintock: Her Ship Comes in Belatedly

BYLINE: By PATRICIA McCORMACK, UPI Health Editor

DATELINE: NEW YORK

KEYWORD: Macarthur-Perspot

BODY:

Dr. Barbara McClintock, distinguished scientist who 40 years ago made a monumental discovery about genes -- the hereditary material of cells -- at 79 Tuesday found her ship coming in belatedly.

First, there was the announcement of a $60,000 award -- annually for her lifetime -- from the John D. and Catherine T. MacArthur Foundation in Chicago.

Second came the announcement to be made Wednesday that Dr. McClintock is the winner of the Albert Lasker Basic Medical Research Award for 1981. It will be conferred Friday in New York.

Fellow scientists believe her discovery will some day lead to developments making it possible to correct flawed or mutant genes that cause human genetic diseases.

''Her fundamental discovery, made over 40 years ago, regarding certain genetic elements, remained unappreciated until years later by the scientific commmunity,'' said the announcement from the foundation.

''Today she is widely considered America's most distinguished figure in the field of cytogenetics (cell genetics).

Set off A 2

''The monumental implications of her work are reflected in the whole wave of current experiments in genetics, and in our understanding of the natural evolution of DNA, and development of new species.''

Dr. McClintock's earliest theories and her validated experiments had to do with the transposable genetic elements in corn -- discoveries that also apply to all living organisms in nature, whether in plant, animal or human life, authorities said.

Working alone, she was the first to discover and validate that certain genetic elements are not static, as was once beleved, but are transposable -- that is, they can move about from one location to another on DNA, the genetic material of heredity.

These transposable elements, say authorities, serve a fundamental role in gene contro,l, and in genetic recombination based on changes in DNA structure.

The information derived from Dr. McCliintock's discoveries apply to all living organisms -- plant, animal, human.

Colleagues say Dr. McClintock shies from publicity. She was not available for comment. The woman who answered her phone at Cold Springs Harbor Laboratory in Cold Spring Harbor said Dr. McClintock was out of her office and will not be back until Friday.

But Wednesday she will appear at a press conference called to name the Lasker award winners for 1981.

Plans call for an ear of corn to be on each chair in recognition of the medium Dr. McClintock used four decades ago to prove her theories.

GRAPHIC: PICTURE

106TH STORY of Level 1 printed in FULL format.

The Associated Press

November 18, 1981, Wednesday, AM cycle

SECTION: Domestic News

LENGTH: 540 words

HEADLINE: Elderly Woman Wins Two Top Scholar Money Prizes in Two Days

BYLINE: By JERRY SCHWARTZ, Associated Press Writer

DATELINE: NEW YORK

KEYWORD: Lasker Prizes

BODY:

A 79-year-old geneticist who has labored in anonymity, her pioneering work discounted for decades, on Wednesday won her third major scientific prize in two months and her second in two days.

The Albert and Mary Lasker Association said its $15,000 Albert Lasker Basic Medical Research Award went to Barbara McClintock of Cold Spring Harbor, N.Y.

A second Lasker award, this one for clinical research, went to Louis Sokoloff of the National Institute of Mental Health in Bethesda, Md., who developed a new method of measuring brain function. That award also carries a $15,000 prize.

Miss McClintock's career had been cloaked in anonymity, but that cloak has suddenly been removed.

On Tuesday she won the first Prize Fellow Laureate Award of the John D. and Catherine T. MacArthur Foundation, which includes a guaranteed income of $60,000 a year for life. And within the past two months she received a $50,000 award from Israel's Wolf Foundation.

Miss McClintock said she doesn't know what she will do with the windfall.

"I was never good at accumulating things ... Years ago, all I cared about was a pair of glasses and a car. Now all I care about is a pair of glasses," she said.

Her sudden fame, she said, is "devastating. I like to be anonymous, and I'm not now."

She has been experimenting with genetics since the 1920s when she attended Cornell University. Since 1942 she has been a member of the Carnegie Institution of Washington, working at the institution's 120-acre genetic research unit in Cold Spring Harbor.

Using corn in her experiments, she found that genetic elements are not static, as was believed, but move from one location to another on DNA, the genetic material of heredity.

At a news conference Wednesday, she said colleagues did not believe her when she presented her findings at a 1951 symposium and in a 1953 paper. After that, she wrote but did not publish her findings.

It was only recently that scientists have come to agree with her and that she has been given full credit for her discoveries. But she said she was not deterred by her lack of recognition.

"When you really know that you're moving in the right direction ... no one can stop you," she said.

Sokoloff, 60, developed a method in which a form of glucose could be used to examine brain function.

When used in conjunction with a machine called a PETT scanner, Sokoloff's method produces a color photograph of the energy use of different parts of the brain.

The Lasker jury, headed by heart surgeon Dr. Michael DeBakey, said the process may be used to develop chemical treatments for schizophrenia, epilepsy, senility and even drug addiction.

In addition, two young reformed drug addicts who appeared at Wednesday's news conference said they believed pictures of the effect of drugs on the brain would help scare addicts into going straight.

"This is a contribution to people all over the world, to millions and millions of people," said Dr. Fred Plum, chairman of the Department of Neurology at New York Hospital-Cornell Medical Center.

Sokoloff said the award was "kind of anticlimactic. We were so excited by the work, it was so good, that this is just the cream on the top."

105TH STORY of Level 1 printed in FULL format.

The Associated Press

November 23, 1981, Monday, PM cycle

SECTION: Domestic News

LENGTH: 750 words

HEADLINE: TODAY'S TOPIC: Scientist Honored After Decades Of Neglect

BYLINE: By PAUL RAEBURN, AP Science Writer

DATELINE: NEW YORK

KEYWORD: Topic- Genetics Pioneer

BODY:

Working alone in a small laboratory, Barbara McClintock made a discovery 30 years ago that should have revolutionized the science of genetics. Instead, the discovery was misunderstood and largely ignored for more than two decades.

Now, at the age of 79, Miss McClintock is being recognized. Last week she won both the $15,000 Lasker Award _ the most prestigious American prize for medical research _ and an award of $60,000 a year for life from the MacArthur Foundation.

A handful of scientists have been aware of Miss McClintock's work all along. Most of them knew she had made a tremendous accomplishment, but few of them understood it completely.

Alfred Hershey, a Nobel Prize-winning geneticist, didn't understand it at all.

"She was a distinguished scientist who did a lot that people could understand, but her most revolutionary work is what I couldn't understand and still don't," he says.

Miss McClintock has worked since 1941 at Long Island's Cold Spring Harbor Laboratory, a leader in research on cancer and viruses. She has several small rooms to herself where she analyzes samples of maize, or Indian corn.

For many years, she raised corn on a small plot of land on the laboratory grounds. She painstakingly crossed one variety of maize with another, and carefully examined the resulting plants.

The tedious experiments continued for many growing seasons, each new generation of seedlings providing clues that had to be fitted into a complex scheme to explain why some plants had striped leaves, or why others had speckled kernels.

With the Carnegie Institution of Washington supplying the modest financial resources she needed, she persisted, publishing densely written research reports in obscure scientific journals, and carefully cataloguing her findings.

"I worked alone _ I didn't have to sell anything," she said in an interview. "When you work alone, and you are absolutely convinced, you know it's all going to come out in the wash."

Miss McClintock, a small woman, sketched diagrams in the air with her hands as she talked in a steady stream about how she made her revolutionary finding.

In the late 1940s, she noticed that parts of the leaves on some corn seedlings were losing their color, and other parts of the leaves were gaining colors. It was an unexpected finding, and something that another researcher might have overlooked or ignored.

"I figured this was something terribly basic," Miss McClintock said. "I came to the conclusion that one cell had lost something that the other had gained."

By 1947, she had reasoned that the changes were caused when bits of genetic material rearranged themselves in the corn seedlings. That contradicted one of the basic tenets of genetics, that genes were arranged on chromosomes in fixed patterns. Chromosomes were supposed to be permanent blueprints that direct the growth of all plants and animals.

She reported her findings in 1951, and was met with silence. "I wasn't listened to for years," she said.

In the late 1960s, Miss McClintock's vindication came when movable genes were found in bacteria, using the new techniques of molecular biology.

Now scores of biologists are trying to discover the role of these movable genes, called transposons. The movable genes might explain how viruses cause infection, how cancer cells are formed, and how higher animals evolved from their primitive ancestors.

Karen Artzt, a geneticist at Memorial Sloan-Kettering Cancer Center in New York, calls them one of the most exciting findings in modern biology.

"We don't know yet how important they are," she says. "We don't know why they're there, and when you're standing tottering at a new threshold you don't know what you're going to find.

"She (Miss McClintock) had described all this in the 1950s, but it's a new threshold because it's only just been rediscovered."

Miss McClintock has been retired since 1967, but she still works long hours at her research, and was somewhat annoyed at having to come into New York City several times last week to collect her awards.

She still works with only a microscope and samples of corn. She doesn't have a roomful of computers or a staff of graduate students. Her assets are careful observation and a clear, open mind.

"You don't find people that have this remarkable deductive ability," says Donald Brown, director of the embryology department at the Carnegie Institution in Baltimore. "That is definitely the sign of a great scientist."

GRAPHIC: Laserphoto NY7

PROJECTS ★ 50th STS

1	Tara Sophia Bahna-James (17)	La Guardia H.S. of Music and the Arts, New York, NY	The Relationship Between Mathematics and Music: Secondary School Student Perspectives
2	Judson Lawrence Berkey (18) Home: Manassas, VA	Thomas Jefferson H.S. for Science and Technology, Alexandria, VA	The Optimal Launch Angle of a Baseball
3	Wade William Butin (17)	Klein H.S., Spring, TX	Utopian Varnish
4	Kimberly Ann Chapman (18)	Marian H.S., Omaha, NE	The Effects of Benzo[a]pyrene-DNA Adducts on BstE II and Hind III
5	Jim Way Cheung (17) Home: Jackson Heights, NY	Bronx H.S. of Science, New York, NY	Continued Fractions in the Ring of Eisenstein Integers
6	William Ching (17) Home: New York, NY	Riverdale Country School, Bronx, NY	Neurophysiology of GABA Receptors in Optic Nerves
7	Dean Ramsey Chung (16)	Mountain Lakes H.S., Mountain Lakes, NJ	Gracefulness of Configurations
8	Susan Elaine Criss (17)	Fox Chapel Area H.S., Pittsburgh, PA	Betacarotene Analysis
9	Ani Jean-Mee Fleisig (17) Home: Woodhaven, NY	Townsend Harris H.S., Flushing, NY	Chemotaxis and Receptor Sites in D. discoideum
10	Nupur Ghoshal (17)	Ames H.S., Ames, IA	Electrical Propagation of Proteinase Inhibitor II
11	Cameron Rea Haight (17)	Santa Fe H.S., Santa Fe, NM	Experimental Turbulence and the k-Epsilon Transport Equations
12	Petal Pearl Haynes (18)	Stuyvesant H.S., New York, NY	Friendship and Morale Among Nursing Home Residents
13	Yves Jude Jeanty (16) Home: S. Ozone Park, NY	Stuyvesant H.S., New York, NY	Cytoskeletal Protein Distribution in the Leading Edge During Cell-Cell Collisions
14	Linda Tae-Ryung Kang (18) Home: Flushing, NY	Stuyvesant H.S., New York, NY	Catalytic Reactions Between Alkyl Iodides and Copper Surfaces
15	Don H. Kim (18) Home: Cos Cob, CT	Greenwich H.S., Greenwich, CT	A New Method for the Determination of Liquid Viscosity and Physico-Chemical Study of Liquid Viscosity
16	Sunmee Louise Kim (17) Home: Woodside, NY	Stuyvesant H.S., New York, NY	The Effects of Stress on the Eating Behavior of Female High School Students
17	Nuri Mehmet Kodaman (17) Home: Douglaston, NY	Townsend Harris H.S., Flushing, NY	DNA Degradation During Programmed Cell Death
18	Mark Allen Larson (17) Home: Thornton, CO	Horizon Senior H.S., Brighton, CO	The Optical Brain: Design of an Optical Neural Computer
19	Denis Alexandrovich Lazarev (17) Home: Fair Lawn, NJ	Elmwood Park Memorial Junior-Senior H.S., Elmwood Park, NJ	New Advancement in Molecular Biology: Understanding of the Process of the Alternative Splicing of mRNA
20	Irwin Lee (16)	Naperville North H.S., Naperville, IL	Sound Absorption in Electroviscous Fluids
21	Debby Ann Lin (17) Home: Elmhurst, NY	Stuyvesant H.S., New York, NY	Evolutionary Relatedness of the Predicted Gene Product of RNA Segment 2 of the Tick-Borne Dhori Virus and the PB1 Polymerase Genes of Influenza Viruses
22	Michael John Lopez (18) Home: Stony Brook, NY	Ward Melville H.S., Setauket, NY	Reaction Planes in Nuclear Reactions

	Home: Bridgewater, NJ		
24	Mehul Vipul Mankad (17)	Saint Paul's Episcopal School, Mobile, AL	DNA and Protein Synthesis in K562 Erythroleukemia Stem Cells
25	Ciamac Moallemi (15)	Benjamin N. Cardozo H.S., Bayside, NY	Neural Networks in the Computer Analysis of Voided Urine Cell Images for Bladder Cancer
26	Joel Ellis Moore (17) Home: Chevy Chase, MD	St. Albans School, Washington, DC	Computer Simulation of Growth Uniformity in Molecular-Beam Epitaxy
27	Cheryl Lynn Pederson (18)	Byram Hills H.S., Armonk, NY	Play Difference in Preschool Children
28	Rageshree Ramachandran (15) Home: Fair Oaks, CA	Rio Americano H.S., Sacramento, CA	A Chaotic Model for the El Nino--Southern Oscillation
29	Ashley Melia Reiter (17) Home: Charlotte, NC	North Carolina School of Science and Mathematics, Durham, NC	Fractals in Pascal's Triangle
30	Jeremy Randall Riddell (18) Home: Bellbrook, OH	The Miami Valley School, Dayton, OH	Atomic Spectra Phase II: Measurement of the Electron Spin-Orbit Interaction in Sodium
31	Venkataramana K. Sadananda (17) Home: Springfield, VA	Thomas Jefferson H.S. for Science and Technology, Alexandria, VA	Chaotic Cardiac Arrhythmias
32	Tatiana Tamara Schnur (16) Home: Burke, VA	Robinson Secondary School, Fairfax, VA	Lexical Access of Ambiguities During Sentence Comprehension: Exhaustive or Terminating Search?
33	Joseph Izak Seeger (17)	Evanston Township H.S., Evanston, IL	Computer Simulation of Transient Heat Flow
34	Wei-Jen Jerry Shan (17)	John W. North H.S., Riverside, CA	Do Winglets Reduce Drag at Low Reynolds Numbers?
35	Daniel Moshe Skovronsky (17) Home: Vienna, VA	Thomas Jefferson H.S. for Science and Technology, Alexandria, VA	Keto-Enol Tautomerism in Cyclic 1,3-diones
36	Weily Soong (18)	Vestavia Hills H.S., Vestavia Hills, AL	Retroviral Capsid Assembly: Determination of Protein Requirements
37	Lori Ann Stec (18) Home: Troy, MI	Detroit Country Day School, Birmingham, MI	Isolation and Identification of Factors Affecting Cecidogenesis of Three Stem Gall Systems in the Tall Goldenrod
38	Tessa Lorrell Walters (17) Home: San Dimas, CA	San Gabriel H.S., San Gabriel, CA	Novel Inhibitors of Angiotensin I-Converting Enzyme as Antihypertensive Agents
39	Clifford Lee Wang (16)	Vero Beach H.S., Vero Beach, FL	Enhancement of Methane Production From Metals Enriched Seaweed
40	Tien-An Yang (17)	Stuyvesant H.S., New York, NY	The Potassium Channel Distribution in Mammalian Tissues

As part of the requirements of the competition each finalist submitted a written report on an independent research project. However, the work being shown here is not necessarily that on which the STS project report was written.

EXHIBITION OF PROJECTS BY FINALISTS

of the FIFTIETH ANNUAL SCIENCE TALENT SEARCH®

for the WESTINGHOUSE SCIENCE SCHOLARSHIPS

March 2 and 3, 1991 • The Exhibit Hall, Washington Hilton Hotel • Washington, D.C.

The Science Talent Search is conducted by Science Service and sponsored by Westinghouse Electric Corporation

THE OXFORD DICTIONARY OF SAINTS

DAVID HUGH FARMER

CURT :
~~Large~~ :
For humor or for other purposes,

St. Albert = patron saint of scientists,
students of the sciences, etc.

CLARENDON PRESS · OXFORD

ALBAN (3rd century), protomartyr of Britain. Gildas, followed by Bede, dated his martyrdom to *c.* 305 under Diocletian, but modern scholars prefer a date of *c.* 254 under Decius, or even *c.* 209 under Septimius Severus. The first mention of this saint, the only one in England with a continuous cult from Roman times, comes in Constantius of Lyons' Life of *Germanus of Auxerre. This recounts the visit to Alban's tomb at Verulamium by Germanus and Lupus in 429, when they removed some dust from it and gave relics of apostles and martyrs instead.

The legendary Acts of Alban, followed by Bede, say that Alban, when a pagan soldier, sheltered a priest, later called *Amphibalus, during a persecution, and was converted by him. Soldiers were sent to search his house; Alban dressed in the priest's cloak to enable him to escape, was arrested and, after refusing to sacrifice, was condemned to death. After the conversion of one executioner, Alban was beheaded by another, whose eyes dropped out.

A church was built on the site of his martyrdom: the shrine, where the sick were cured, was frequented at least up to the time of Bede. A story that it was lost and recovered by revelation at the time of Offa's supposed foundation of St. Albans monastery (793) is unlikely. The relics were venerated there until the Reformation; but Ely claimed a rival set, due to a supposed translation under Abbot Frederick in the 11th century. St. Albans, however, claimed that these were false relics.

The St. Albans tradition was given fresh impetus by a translation in 1129, the discovery of Amphibalus' relics at Redbourn in 1177, and of Alban's original grave in 1257, both historically dubious. However, the cult prospered, enhanced by the best artistic products of the wealthiest abbey in England. These included the new shrine (part of which survives) and the illustrated Life by Matthew Paris.

Alban's cult extended all over England; some French churches and villages were named after him through the influence of Germanus. Nine ancient English churches were dedicated to him. Feast: 20 June (17 June in B.C.P.); translation, 2 August (15 May at Ely).

AA.SS. Iun. IV (1707), 146–70; Bede, *H.E.*, i. 7, 17–21; Matthew Paris, *Gesta Abbatum* (*R.S.*), i. 12–18, 94; id. *Chronica Majora* (*R.S.*), ii. 306–8; v. 608–10; W. Meyer, 'Die Legende des hl. Albanus, des Protomartyr Angliae in Texten vor Beda' in *Abh.* (Gott.), N.F. viii. Nr. 1 (1904); W. Levison, 'St. Alban and St. Albans', *Antiquity*, xv (1941), 337–59; J. Morris, 'The Date of St. Alban', *Hertfordshire Archaeology*, i (1968), pp. 1–8; see also W. R. L. Lowe and E. F. Jacob, *Illustrations to the Life of St. Albans* (1924) and O. Pacht, C. R. Dodwell, and F. Wormald, *The St. Albans Psalter* (1960); J. E. van der Westhuizen, *Lydgate's Life of St. Alban* (1974).

ALBERIC (d. 1109), abbot of Citeaux. Nothing is known of his early life, but he became a hermit at Collan (near Chatillon-sur-Seine). With his companions he invited *Robert to rule them, and in 1075 they moved to Molesme with Robert as abbot and Alberic as prior. The community grew in numbers, but some of its members were unsuitable; friction developed and there was even a rebellion. After an attempt at peacemaking the former troubles returned; Robert, Alberic, and the Englishman *Stephen Harding with their followers made a fresh start at Citeaux (near Dijon), in 1098.

From these unpromising beginnings developed the Cistercian Order. Robert went back to Molesme, so Alberic became abbot in 1099. It is almost impossible to allocate responsibility between Robert, Alberic, and Stephen for the constitutional innovations, the extended use of lay brothers and the almost puritan attitude to the Rule of St. Benedict and to customary monastic tradition as well as to Romanesque art-forms which characterized the early Cistercians. Each of them took an important part in the development of the Cistercian ideal until *Bernard of Clairvaux became their most important member. In his panegyric of Alberic, his successor, Stephen Harding called him 'a father, a friend, a fellow-soldier and a principal warrior in the Lord's battles . . . who carried us all in his heart with affectionate love'. Alberic died on 26 January, which became his feast.

AA.SS. Ian. III (1863), 368–73; J. B. Dalgairns, *Life of St. Stephen Harding* (1898); *M.O.*, pp. 197–226, 752–3; B.T.A., i. 173–4. See also J. R. Lefèvre, 'Le vrai récit primitif des origines de Citeaux est-il l'Exordium Parvum?', *Le Moyen Âge*, lxi (1955), 79–120 and 329–62.

ALBERT THE GREAT (1206–80), Dominican friar and bishop. A Swabian by birth, Albert joined the Dominicans at Padua in 1223 against the wishes of his noble family. After teaching at Hildesheim, Ratisbon, and Cologne, where *Thomas Aquinas was his student, he became a Master at Paris and organized the house of studies at Cologne in 1248. He was prior provincial for three years (1254–7) and became bishop of Ratisbon in 1260. Unsuccessful as an administrator, he resigned his see in 1262 to devote all his energies to teaching and writing. He took a prominent part in the Council of Lyons (1274) and at Paris in 1277 he staunchly defended the teaching of his disciple Aquinas.

His own pioneer scholastic writing was more diffuse and less systematic, but the two men were at one on the use to be made of Aristotle's philosophy in Christian theology. Albert was also interested in the physical sciences: his treatises, which fill thirty-eight volumes, include some on astronomy, chemistry, geography, and physiology. His main theological works were a *Summa* and a commentary on the *Sentences* of Peter the Lombard. He also wrote against the Averrhoists the treatise *De unitate intellectus.*

Commonly called the Universal Doctor and placed by Dante among the lovers of wisdom, he was beatified in 1622 and canonized as late as 1931, when he was named by Pope Pius XI both a Doctor of the Church and the patron of students of the natural sciences. Feast: 15 November.

P. de Loé, 'De Vita et Scriptis Beati Alberti Magni', *Anal. Boll.*, xix (1900), 257–84, xx (1901), 273–316, xxi (1902), 361–71. Works ed. A. Borgnet (1890–9); critical edition by B. Geyer and others in course of publication (Münster in Westphalia 1955–); H. Laurent and M. J. Congar, 'Essai de bibliographie albertine', *Revue Thomiste*, xxxvi (1931), 422–68; H. Wilms, *Albert the Great* (1933).

ALBURGA (d. *c.* 810), foundress of Wilton nunnery. Half-sister of Egbert, king of Wessex and widow of Wolstan, called Earl of Wiltshire, Alburga is said to have changed her husband's foundation of canons at Wilton into a nunnery, which she entered and where she died. Feast: 25 December.

W. Dugdale, *Monasticon*, ii. 315; Stanton, pp. 607–8.

ALCMUND (1), (Ealhmund) seventh bishop of Hexham, ruled 767–81. He was buried beside *Acca outside the church; during the Danish invasions all trace of his grave was lost, but in 1032, following a supposed revelation, his relics were found and reburied inside the church. In 1154 the relics of all the saints of Hexham were collected into a single shrine; in 1296 they were scattered by the Scots. The date of Alcmund's death was 7 September, but no trace of a feast apart from the general one of the saints of Hexham has been found.

J. Raine (ed.), *The Priory of Hexham* (*S.S.*, 1863), pp. xxxv–vi, 208–10.

ALCMUND (2), martyr of Northumbria, was the son of King Alchred (765–74). He was killed *c.* 800 and King Eardwulf (796–*c.* 805) was held responsible. Miracles were reported at Alcmund's tomb at Lilleshall; his body was later translated to Derby. Several churches were dedicated to him in Derbyshire and Shropshire. Feast: 19 March.

P. Grosjean, 'Codicis Gothani Appendix' (Vita S. Aelkmundi regis) *Anal. Boll.*, lviii (1940), 178–83.

ALDATE (Eldad) (d. 577?), bishop, reputedly a Briton who was killed by the Anglo-Saxons at Deorham. He is mentioned in the Sarum and other martyrologies; his feast occurs in a Gloucester calendar (14th-century addition); churches were dedicated to him at Gloucester and Oxford, as well as a famous Oxford street. But nothing seems to be known of him: it was even suggested (unconvincingly) that his name was a corruption of 'old gate'. Feast: 4 February.

Baring-Gould and Fisher, ii. 426–8; *E.B.K. after 1100*, ii. 40.

ALDHELM (639–709), abbot of Malmesbury, bishop of Sherborne. A member of the Wessex royal family, he became a monk at Malmesbury under its Irish founder Maeldub, but completed his education at Canterbury under *Adrian, companion of *Theodore. In *c.* 675 he became abbot of Malmesbury and combined the skills of administrator and writer. Possibly he introduced the Rule of St. Benedict; certainly he made foundations at Frome and Bradford-on-Avon (whose surviving Anglo-Saxon church incorporates elements from his time). When the Wessex diocese was divided in 705, he became first bishop of its western half, but without ceasing to rule Malmesbury as well. He built churches at Sherborne, Wareham, Langton Matravers, and Corfe. The nearby Dorset headland, commonly called St. Alban's Head, is in reality St. Aldhelm's Head, being presumably part of his Dorset estates.

His Old English verses, which were sung with harp accompaniment to draw people to church, were praised by King Alfred, but have not survived: we can judge this first notable Anglo-Saxon writer only by his Latin works. Their florid Latin style was praised, but not imitated, by Bede; they influenced *Boniface and the writers of later charters. They were read on the Continent as well as in England up to the 11th century. They include treatises on Virginity in prose and verse (summaries of the Lives of biblical and early Christian

EDWARD TELLER

Giant of the Golden Age of Physics

A BIOGRAPHY BY

Stanley A. Blumberg
and Louis G. Panos

Charles Scribner's Sons
New York

Chapter 1

THE SPEECH

Like so many other White House guests that evening of March 23, 1983, Edward Teller did not know why he had been invited. The only hint had come from George A. Keyworth, the president's science adviser.

"How important is it that I be there?" he had asked Keyworth on the telephone.

"It's important, Edward."

"But the board of regents is visiting the laboratory, and I really should be here unless it is urgent."

He was at the Lawrence Livermore National Laboratory, the weapons facility he had helped found near San Francisco more than thirty years earlier. The University of California operated it under contract with the Department of Energy (DOE). As the governing body of the university, the regents made periodic oversight visits to Livermore.

Keyworth could not be more specific without violating security. But he tried to save Teller from what he knew would be lasting disappointment if this invitation from the president went unaccepted.

"Edward," he said, "I can tell you this. It's what you always wanted."[1]

So Teller booked a flight east, as he had done so many times in the last four decades. But this flight was different. In the past, his reason for traveling to Washington was clear. As one of the world's foremost physicists and an expert on nuclear defense, he had frequently testified before congressional committees and had met with Pentagon and security officials and with fellow members of the White House Science Council. Invariably, he had wound up in the middle of controversy.

On one series of visits in the late 1940s and early 1950s, he had helped persuade government officials of the need for thermonuclear weapons, a success that brought him the tag he hated, "father of the H-bomb."

On another trip he testified in 1954 as a key witness in the AEC hearings

on whether J. Robert Oppenheimer, the great scientist who had directed the World War II development of the atomic bomb, should be stripped of his security clearance because of Communist connections. It was a turning point in the lives of both Teller and Oppenheimer.

In 1970, when he was urging Congress to strengthen national defense in the face of a Soviet nuclear arms buildup, students on the University of California campus at Berkeley rose up against him. Accusing him of being a war criminal, they held a mock trial, found him guilty, then marched on his nearby home. When police intercepted them at an intersection a block away, they burned Teller in effigy.

But Teller had also collected many honors through the years both as a scientist recognized for his contributions to theoretical and applied physics and as a citizen promoting defense to prevent war.

An indication of the contrasting opinions he was capable of generating, even among normally objective observers, came from two distinguished colleagues, both longtime acquaintances, both Nobel Prize–winning physicists. Eugene P. Wigner, one of them, said, "He is the most imaginative person I have ever met, and this means a great deal when you consider that I knew Einstein." The other, I. I. Rabi, saw Teller differently. "He is a danger to all that is important," he told us. "I do really feel it would have been a better world without Teller . . . I think he is an enemy of humanity."*

Against that background, what could transpire during this White House visit to justify Keyworth's assurance "It's what you always wanted"?

The answer came shortly after the White House limousine dropped Teller off at the southwest gate. It was 6:10 P.M., and the mid-forty-degree mildness of the afternoon had given way to a slight chill. Teller, limping slightly on the prosthesis replacing the right foot he had lost in an accident fifty-five years earlier, followed an escort up the grand staircase to the Blue Room. About three-dozen seats had been set up, and many of them were already filled or about to be filled with those still being greeted by Keyworth and John Poindexter, President Reagan's deputy national security adviser.

Teller spotted Defense Secretary Caspar W. Weinberger, Secretary of State George Shultz, and a host of prominent scientists. Among them were physicists Harold Agnew, former director of the Los Alamos laboratory where the first atomic bomb was built; John Foster, former director of the Livermore laboratory; and Victor Weisskopf, another member of the nuclear weapons pioneering team at Los Alamos, who had once joined

* Both assessments were offered to us in 1975 interviews; Rabi repeated his when we asked him again in 1981.

Teller and the great Itali
atomic particles called n

But curiously enough
blocked out recognition
widely recognized and hi
Teller's oldest personal
that had brought them t

That issue, as Poinde
they had settled down, w
be announced by the p
change would replace th
buildup of nuclear arms
iation would discourag
attacking each other—th

In its place, the Wh
propose a policy empha
capable of intercepting
they reached their target
and his rugged features
influence U.S. policy s

Forty-three years earl
from another president,
planned to attend the n
Pan American Scientif
retical scientist, he felt
its makeup. Even thou
shadow of anti-Semitis
hoped he could pursu
considerations.

Earlier that day, just
troops had invaded the
move since his swift i
triggered a declaration
Now, with this westwar
French soil, the war
expected to discuss this
decided to attend.

Roosevelt began the

* Keyworth related this t
program originally broadca

Teller and the great Italian physicist Enrico Fermi in writing a paper on atomic particles called mesotrons.

But curiously enough, Teller either did not notice or subconsciously blocked out recognition of Hans Bethe. Bethe was not only one of the most widely recognized and highly acclaimed scientists in the room but was also Teller's oldest personal friend and strongest public opponent of the issue that had brought them to the White House that evening.

That issue, as Poindexter and Keyworth explained to the guests when they had settled down, was a historic change in national defense policy to be announced by the president in a televised address at 8:00 P.M. The change would replace the policy of pinning hopes for peace mainly on a buildup of nuclear arms in the belief that only fear of catastrophic retaliation would discourage the United States and the Soviet Union from attacking each other—the policy of mutual assured destruction, or MAD.

In its place, the White House guests were told, the president would propose a policy emphasizing a defense built on modern technology, one capable of intercepting and destroying long-range nuclear missiles before they reached their targets. Teller's heavy black eyebrows arched in surprise, and his rugged features broke into a grin.* His role as a scientist trying to influence U.S. policy seemed to have come full cycle.[2]

Forty-three years earlier, on May 10, 1940, he had heard a call for help from another president, Franklin Delano Roosevelt. Teller had not even planned to attend the meeting being addressed by Roosevelt, the Eighth Pan American Scientific Conference in Washington. As a young theoretical scientist, he felt committed to pure investigation of the world and its makeup. Even though he had come to the United States to escape the shadow of anti-Semitism cast over his native Hungary by Adolf Hitler, he hoped he could pursue a career free of distortion or taint by political considerations.

Earlier that day, just after dawn came to western Europe, Hitler's Nazi troops had invaded the Lowlands of Europe. It was Hitler's most violent move since his swift invasion of Poland, on September 1, 1939, had triggered a declaration of war on Germany by Great Britain and France. Now, with this westward thrust positioning Hitler for strikes at British and French soil, the war had taken on a new dimension. Roosevelt was expected to discuss this, and possible U.S. reaction, in his speech. Teller decided to attend.

Roosevelt began the address by deploring the invasion of Holland,

* Keyworth related this to us in a 1986 interview. Bethe described it on a PBS television program originally broadcast on April 22, 1986.

Belgium, and Luxembourg. He pointed out that a free meeting of the type he was addressing could no longer take place in a large part of the world. Until the assault on the Lowlands, he said, because a great ocean separated their country from Europe, too many Americans believed themselves safe from "the impact of attacks on civilization." But this should convince them otherwise, he suggested.

Roosevelt then turned to the role of the scientists in world affairs and made this appeal: "You . . . may have been told that you are partly responsible for the debacle of today because of the processes of invention for the annihilation of time and space, but . . . the great achievements of science . . . are only instruments by which men try to do the things they most want to do. If death is desired, science can do that. If a full, rich, and useful life is sought, science can do that also. . . . I am a pacifist. You, my fellow citizens of twenty-one American republics, are pacifists, too. But I believe that by overwhelming majorities in all the Americas you and I, in the long run if it be necessary, will act together to protect and defend, by every means at our command, our science, our culture, our American freedom and our civilization."

Teller, then thirty-two, was profoundly stirred by Roosevelt's message. As he interpreted it, the president was not merely suggesting something that scientists might do. "He was talking about something that was our duty and that we must do—to work out the military problems, because without the work of the scientists the war and the world would be lost," Teller told us in recalling that moment in an interview nearly half a century later.

"I had the strange impression that he was talking to me. My mind was made up, and it has not changed since."[3]

That speech changed Teller's life. It moved him from the world of pure, politically uninvolved physics into an arena in which science responds directly to the immediate problems of society and government. It was an arena in which he was to know painful, lonely defeat. There he was also to feel the satisfaction of knowing that he had helped shape the course of history at three critical points: One involved production, during World War II, of the atomic bomb, which he helped develop but which he did not want used against the Japanese without prior demonstration in an unpopulated area. Another came in 1952, when his design of a hydrogen bomb was successfully tested. The third was the policy being announced by President Reagan on this March evening of 1983.

Teller was anxious to hear the details of Reagan's plan and to see how it would be received. Teller, who had zigzagged in and out of defense developments since the day of that Roosevelt speech in 1940, had worked on the concept of SDI for many years. He believed in its technical feasibility

PUBLIC PAPERS OF THE PRESIDENTS

OF THE UNITED STATES

Harry S. Truman

Containing the Public Messages, Speeches, and Statements of the President

JANUARY 1 TO DECEMBER 31, 1948

1948

UNITED STATES GOVERNMENT PRINTING OFFICE

WASHINGTON : 1964

104 Remarks in Philadelphia in the Girard College Chapel. *May 20, 1948*

Mr. President, distinguished guests, and members of this great school:

It is a pleasure for me to be here today on the 198th anniversary of the birth of Stephen Girard, one of the country's great. It is also a pleasure to me to be here for the centennial celebration of this great school.

I was also a very great admirer of Stephen Girard. He has the typical American story. The vicissitudes of Stephen Girard are an example to every American boy. Born in Bordeaux—cabin boy—shipmaster—trader—merchant—financier, a wizard at finance. I don't think there's a greater one in the history of the country. And what makes him doubly great is the fact that he set up this school with that immense fortune which he made in his career as financier and merchant and trader. It is remarkable. It is estimated that his fortune was worth six million dollars when he died. Well, that is an immense fortune in this day. It was fabulous in his day. And just think what it has done!

I am told that there are 15,000 young men who have been graduated from this school, and that some 12,000 of them are still alive, and among them are leading citizens of this great Nation. Think what a monument that is! Just think what Stephen Girard did! He was a man who believed in public service. He was willing to give his life when the yellow fever epidemic was on here in Philadelphia, and he gave the ingredients for the curing of yellow fever: he said cleanliness and good food, and plenty of open air. He didn't know anything about the mosquitoes that were causing the transfer of the yellow fever from one person to another, but he had the fundamentals of what it has taken to eliminate the yellow fever from all this part of the world, and of the Caribbean. Just think of that, what a remarkable man he really was! And he set up this school. He showed that his heart was exactly right; and when he encouraged boys and young men to thirst for an education, he was doing something really great for the country at that time.

You know, in his day it was difficult even for the well-to-do to get an education, let alone people of small means, and he set up this school for the purpose of giving the people of small means a chance—the same sort of a chance that the rich man's son had in his day.

Now you young men and boys are exceedingly lucky, for you have now an advantage even over the schools of the present day. You have individual attention from your teachers. In the present day our public schools are so overcrowded that there are plenty of instances where the teachers are not able to call their pupils by name because they have so many of them, they don't have a chance to learn who they are.

And the financial situation of our public school system is something disgraceful—in the richest country in the world. Underpaid teachers—not enough room for the children to get an education that they ought to have. You can't live in this day and age without an education. This is the mechanical age, and you must be an expert in some line if you are going to make a success in this great day—the greatest age in history, I call it.

Now we call it the machine age. They have even got to the point where they milk the cows with machines. They bottle the milk with machines. They deliver it to your door—in a machine. These lights are made by machines. The heat comes from a machine.

I. If the lightbulb was invented now, I would do a report on the dangers of electricity...

Harry S. Truman, 1948 May 20 [104]

Now when I was a young man—a boy your age—I had to milk a cow night and morning, carry the milk to the house, and put it in a cooler so I could have milk for breakfast. You just go out on the back porch and pick up a bottle, you don't know where it comes from. When I was a boy, we didn't have any mechanical dishwashers. I had to wash the dishes, and wash the lamp chimneys, so that we could have clean dishes for the next meal, and for light. If we didn't have clean lamps, we didn't have any light. I had to split wood and carry it and put it in the woodbox behind the stove, so I could get up in the morning and start a fire so that we could have breakfast. Now all you do is turn on a gadget and have everything ready. It really is the machine age. That is true of heat. All you do is turn on a gadget and you have the heat. These lazy people of the modern day can lie in bed, turn on the heat in the house and finish out their nap while the house gets warm. I couldn't do that, I had to start the fire, light the lamp, and get things ready so mother could get the breakfast.

It is an interesting age in which we live. It is an age, in my opinion, that can be the greatest age in our history. It is an age of opportunity. Don't any of you young men let anybody convince you that there are no opportunities in the present day. There is more opportunity in the present day than there ever has been in the history of the world, but you must prepare yourselves to grasp that opportunity when it comes along.

I can tell you a story or two that will be interesting. Sounds as if people in the 1840's were not much different from the people today. There was once a British cabinet officer, and he made the statement that he was most happy he was retiring from the British cabinet because the British Empire was coming to its end, and it was certainly going to break up before 1850 came along. And after that, Disraeli made Queen Victoria Empress of India, and Britain's greatest age was just then opening up.

Another time, a Commissioner of Patents made a report to the President of the United States, and this is what he said, I will read it to you, it is very interesting. Now this was in 1843, more than one hundred years ago. He says, "The advancement of the arts from year to year taxes our credulity and seems to presage the arrival of that period when human improvement must end." And this same Commissioner of Patents went down to the Senate Appropriations Committee and said he thought they ought to begin to liquidate the Patent Office because there was nothing else to be invented. That was in 1843. And what great inventions of the world have come about since that age!

good anecdote

Now we live in the atomic age, the age

ART ↑

peace in the world.

You boys and young men can consummate that effort, if you will just carry on when the opportunity knocks for you. Don't let anyone tell you that you are going out into the world where there is no opportunity. It is there—greater and better than ever. This

THE PRESIDENT. That is outside. I think Secretary Marshall commented on that very fully yesterday.

Q. He did. I didn't quite get what he meant. [*Laughter*]

[9.] Q. Mr. President, getting back to the campaign and subsequent trips, are you going to Troy, Schenectady, and several other upstate New York——

THE PRESIDENT. They are under consideration. I can't give you anything definite on that until we have made a decision on it. I will let you know in plenty of time.

Q. How about Albany, N.Y., Mr. President? [*Laughter*]

THE PRESIDENT. Well, I will let you know about that when we get that trip definitely worked out.

Q. You are not going there on this trip?

THE PRESIDENT. Oh no, no.

Q. Do you plan to stop in Texas on your current trip?

THE PRESIDENT. I will let you know about that. I have gone as far as I can on that with a definite statement. Trying to get the thing arranged so that it will be satisfactory and so you won't lose too much sleep.

Q. Mr. President, can you guess how many speeches you will make a day on this western——

THE PRESIDENT. I cannot guess. I thought Labor Day was a pretty good sample. [*Laughter*]

Q. There was one report that you might make 500 appearances between Labor Day and Election Day?

THE PRESIDENT. Well, as Mark Twain said about his death, I think that is rather exaggerated. [*More laughter*]

[10.] Q. Mr. President, will recognition of the Government of Israel have to wait until after the election in Israel?

THE PRESIDENT. I have that matter under consideration now. I cannot give you a definite answer on it now.

[11.] Q. Mr. President, I think there may be some confusion about Mr. Marshall's statement yesterday regarding the Italian colonies. He said that the policy was bipartisan. Does that mean that Mr. Dewey has been consulted——

THE PRESIDENT. General Marshall's statement will have to stand on just what he said.

Reporter: Thank you, Mr. President.

THE PRESIDENT. You are entirely welcome.

NOTE: President Truman's one hundred and fifty-sixth news conference was held in his office at the White House at 10:30 a.m. on Thursday, September 9, 1948.

186 Address Before the American Association for the Advancement of Science. *September 13, 1948*

Mr. President, members of the American Association for the Advancement of Science, ladies and gentlemen:

I am deeply honored in being with you tonight on the 100th anniversary of the founding of the American Association for the Advancement of Science. As President of the United States, I welcome you to Washington.

In the 100 years since this association was organized, science has helped transform the United States into the most productive nation in the world. I know that in your meetings this week you will be looking back over the progress of American science in the past century. I also know that you are much more interested in looking into the future.

You are looking forward, I know, because

POTUS is the first president to address the Assn. since Truman. This is what he said →

[Other previous Presidential remarks to come.]

FYI: Founded by Edison, whose birthday is Feb. 11. (4 days before POTUS speaks.)

Feb. 11 = Nat'l Science Youth Day

Maybe we could this speech & 1948 & the Assn. Centennial as a starting point. Then talk about the great developments since 1948, in particular those military inventions now in civilian use.

we stand at this moment at the threshold of revolutionary developments. Scientific research daily becomes more important to our agriculture, our industry, and our health. The members of this association know better than I what developments to expect in the years ahead in physics, in chemistry, in biology, and the other sciences, but I am certain of this—that science will change our lives in the century ahead even more than it has changed them in the hundred years just past.

I hope you will also be thinking about the relationship between science and our national policy.

Two years ago, I appointed a Scientific Research Board. Its report, entitled "Science and Public Policy," was submitted last fall. The report stressed the importance of science to our national welfare, and it contained a number of important recommendations.

The most important were these:

First, we should double our total public and private allocations of funds to the sciences. We are now devoting, through Federal and private expenditure, little more than $1 billion for research and development per year. With a national income of more than $200 billion annually, the Board felt that we should devote at least $2 billion to scientific research and development each year.

Second, greater emphasis should be placed on basic research and on medical research.

Third, a National Science Foundation should be established.

Fourth, more aid should be granted to the universities, both for student scholarships and for research facilities.

Fifth, the work of the research agencies of the Federal Government should be better financed and coordinated.

I hope that you have been weighing these recommendations carefully, and that if you agree with me that they are sound, you will consider how they can be made effective national policies.

I know that you are also deeply concerned with the relationship of science to our national defense and security. Three years ago, when the fighting stopped, all of us were eager to return to our peacetime pursuits. The first thought of a great many of us was how to translate our wartime advances in scientific knowledge into better standards of living.

! AHA!

It is an unfortunate fact, however, that the peace we hoped for has not come quickly. We are still living in hazardous times. We are required to give unremitting thought to the defense of the United States at a period when defense has become incredibly more difficult. American scientists must, like all the rest of our citizens, devote a part of their strength and skill to keeping the Nation strong. At a time when we hoped our scientific efforts could be directed almost exclusively to improving the well-being of our people, we must, instead, make unprecedented peacetime efforts to maintain our military strength. For we have learned—we have learned the hard and bitter way—that we cannot hope for lasting peace with justice if we do not remain strong in the cause of peace.

If we are to maintain the leadership in science that is essential to national strength, we must vigorously press ahead in research. There is one simple axiom on which this thought is based. The secrets of nature are not our monopoly. Any nation that is willing and able to make the effort can learn the secrets that we have learned. Such a nation may, indeed, discover new facts of nature we have not yet discovered.

Our problem, therefore, is not a static one of preserving what we have. Our problem is to continue to engage in pure—or fundamental—research in all scientific fields.

Such research alone leads to striking developments that mean leadership. Yet it is precisely in this area that we, as a nation, have been weakest. We have been strong in applied science and in technology, but in the past we have relied largely on Europe for basic knowledge.

Pure research is arduous, demanding, and difficult. It requires unusual intellectual powers. It requires extensive and specialized training. It requires intense concentration, possible only when all the faculties of the scientist are brought to bear on a problem, with no disturbances or distractions.

Some of the fundamental research necessary to our national interest is being undertaken by the Federal Government. The Government has, I believe, two obligations in connection with this research if we are to obtain the results we hope for. First, it must provide truly adequate funds and facilities. Second, it must provide the working atmosphere in which research progress is possible.

As to the first point, the Government is developing impressive programs in many scientific fields. Fundamental research is being carried on for the National Military Establishment in the laboratories of the Armed Forces, of industry, and of our universities. The Atomic Energy Commission has been pushing its extensive research. The National Advisory Committee for Aeronautics has expanded its many aeronautical developments. The Federal Security Agency has engaged in extensive medical studies, in its own laboratories like the National Institutes of Health, and through grants to colleges and universities. Other Federal agencies, such as the Departments of Commerce, of Agriculture, and of the Interior, have pursued vigorous programs. The Interdepartmental Committee on Scientific Research and Development, appointed by me last March, aids in coordinating the Government's many research programs. I sincerely hope that these programs will be further developed and coordinated by the early passage of a National Science Foundation bill.

The second obligation of the Federal Government in connection with basic research is to provide working conditions under which scientists will be encouraged to work for the Government. Scientists do not want to work in ivory towers, but they do want to work in an atmosphere free from suspicion, personal insult, or politically motivated attacks. It is highly unfortunate that we have not been able to maintain the proper conditions for best scientific work. This failure has grave implications for our national security and welfare.

There are some politicians who are under the impression that scientific knowledge belongs only to them. They seem to feel that it is dangerous to let scientists know anything about scientific developments in this country.

This situation has been of increasing concern to me. It was highlighted by a telegram I received last week from eight distinguished scientists. These men expressed their alarm at the deterioration of relations between scientists and the Government because of the frequent attacks which have been made on scientists in the ostensible name of security. The telegram points out that the actions of certain groups are "creating an atmosphere that makes men shun Government work," and that the Federal Government is losing the services of excellent scientists because they have been looked upon from certain quarters as "men not to be trusted." The telegram points out that scientists fully appreciate the need for sensible security measures. But scientists very

understandably are reluctant to work where they are subject "to the possibility of smears that may ruin them professionally for life."

That telegram was a balanced and sober presentation of a vital problem that concerns every American.

Continuous research by our best scientists is the key to American scientific leadership and true national security. This indispensable work may be made impossible by the creation of an atmosphere in which no man feels safe against the public airing of unfounded rumors, gossip, and vilification. Such an atmosphere is un-American. It is the climate of a totalitarian country in which scientists are expected to change their theories to match changes in the police state's propaganda line.

I hardly need remind this association that it is primarily to scientists that we owe the existence of our atomic energy enterprise.

It was the scientists who first saw the possibility of an atomic bomb. It was the scientists who proved the possibility. It was the scientists who first saw the need of security measures, and who on their own initiative clamped down a tight lid of secrecy on all experiments. It must not be forgotten for a moment, and certainly it must not be obscured by any smear campaign, that but for the scientists we would have no atomic energy program.

We are only in the beginnings of the atomic age. The knowledge that we now have is but a fraction of the knowledge we must get, whether for peaceful uses or for national defense. We must depend on intensive research to acquire the further knowledge we need. We cannot drive scientists into our laboratories, but, if we tolerate reckless or unfair attacks, we can certainly drive them out.

These are truths that every scientist knows. They are truths that the American people need to understand.

Science has no political affiliation. Concern for our national security is nonpartisan. Sober recognition of scientific research as the basis of our future national security should certainly be nonpartisan. All Americans have a solemn obligation to avoid those methods and procedures which are impeding scientific research—whether adopted mistakenly with good intent, or advocated in the name of security by men with other axes to grind.

My emphasis tonight has been on the physical and biological sciences. These are obviously in the forefront in terms of our industry and technology. But the social sciences and related fields are at least as important in the present stage of human affairs.

The physical sciences offer us tangible goods; the biological sciences, tangible cures. The social sciences offer us better ways of organizing our lives. I have high hopes, as our knowledge in these fields increases, that the social sciences will enable us to escape from those habits and thoughts which have resulted in so much strife and tragedy.

Now and in the years ahead, we need more than anything else the honest and uncompromising commonsense of science. Science means a method of thought. That method is characterized by open-mindedness, honesty, perseverance, and above all, by an unflinching passion for knowledge and truth. When more of the peoples of the world have learned the ways of thought of the scientist, we shall have better reason to expect lasting peace and a fuller life for all.

NOTE: The President spoke at 8:45 p.m. in Constitution Hall in Washington. His opening words "Mr. President" referred to Edmund W. Sinnott, President of the American Association for the Advancement of Science. The address was carried on a nationwide radio broadcast.

26-679—64——34

WINNER STS 1965

See attached Reader's Digest article re current work

627

PERSONAL DATA BLANK

To be filled in by Students, Teachers and Principal

Annual Science Talent Search

Conducted by Science Clubs of America, administered by Science Service, for the

WESTINGHOUSE SCIENCE SCHOLARSHIPS AND AWARDS

Full Legal Name: (PRINT IN CAPITAL LETTERS) Kurzweil (last name), Raymond (first name), C. (middle name)

Address: 221-28 Hartland Ave. (street and number), Jamaica 27 (city), New York (state) 11427 (zip code)

Name of School: Martin Van Buren High Sc. Address of School Queens Village, New York (city, state, zip code)

Age at Last Birthday: 16 Date of Birth: Feb. (month), 12 (day), 1948 (year) Sex: Male (male or female)

Place of Birth: New York City (city), New York (state or foreign country)

Title of Project Report: The Simulation of the Creative Process and Its Function in Thought Production by Statistical Computer Circuitry

entered in 1965

The PERSONAL DATA BLANK has been designed to show, for each participant in the Annual Science Talent Search, the evidences of those traits, characteristics, attitudes, and habits which are an important part of becoming a creative scientist. Because these evidences are important, both the **student** and his **teacher** must be sure that the information requested is given fully and completely.

The Personal Data Blank should be completed as soon as possible after it is received by the high school.

The PERSONAL DATA BLANK has four parts. **Part I** must be filled out by the STUDENT himself. This should be done as soon as possible after the blanks have been received, and should be reviewed by the teacher to see that the information is complete.

Part II will be filled out by the STUDENT, and then reviewed by the TEACHER who will add any further information which may be pertinent. Directions must be followed carefully, giving full information.

Part III will be filled out entirely by the teacher immediately after the student has completed Parts I and II.

Part IV is to be filled out by the High School Principal.

TEACHERS and STUDENTS must follow the instructions for each Part, so that the information given will be maximally useful in selecting those who are to be awarded honors, and so that no one will be dropped from further consideration because of lack of required information.

EX. OF A FORMER WINNER WHO'S GONE ON TO DEVELOP AIDS FOR THE BLIND.

Points of light + Science? ((See Jefferson QUOTE:

"The ~~ets~~ main objects of all science are the freedom & happiness of man."

The Magic Machines of Ray Kurzweil

New "intelligent" devices that make life easier for the blind are just the beginning, says this modern-day sorcerer

BY EDWARD ZIEGLER

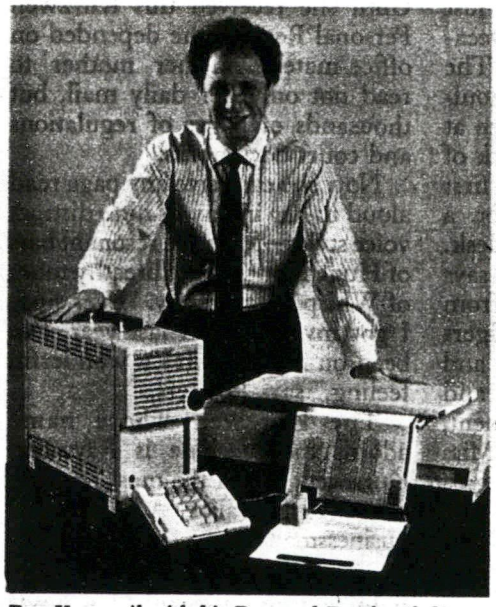
LAWYER MELEA RODGERS has just arrived for work at the Decatur, Ala., City Hall. The petite young woman with shoulder-length blond hair sits down at her desk and picks up her stack of morning mail. She opens the first letter and presses a switch on a briefcase-size machine on her desk.

"Hello, this is Perfect Paul," says a resonant male voice coming from the device. "I am ready." Rodgers picks up a palm-size scanner and slowly begins to slide it back and forth on the letter. In a moment, Perfect Paul continues. "Dear Miss Rodgers," he says, as he begins reading the entire letter.

Melea Rodgers went blind as a result of diabetes several years ago. Until she received this Kurzweil Personal Reader, she depended on office-mates and her mother to read not only her daily mail, but thousands of pages of regulations and court documents.

Now she can have any page read aloud to her in any of nine distinct voice styles—from the resonant bass of Huge Harry to the breathy tones of Whispering Wendy. "Ever since I got my Kurzweil last year, I've been on my own. It's a wonderful feeling," says Rodgers.

The Kurzweil whose name adorns the machine is Raymond Kurzweil, one of the most remarkable inventors alive. A soft-spoken businessman-scientist in Waltham, Mass., Kurzweil has repeatedly astonished colleagues and competitors with his "smart machines" that are



Ray Kurzweil with his Personal Reader (left) and an optional book scanner (right)

transforming the lives of millions.

• Paul Scher, rehabilitation-services consultant for Sears in Chicago, can now enjoy his evenings instead of using them to keep up with office paper work. "I used to depend on a device that converts written material into a tactile pattern," says Scher. "It took forever. The Kurzweil is a fantastic breakthrough."

• In Ann Arbor, Mich., Phillip Jones, a 78-year-old widower, delights in his Personal Reader's ability to inject excitement into its intonation when it sees an exclamation point. He also likes how it can read a page of German or Italian with a pronounced American accent. "It's easy for me to understand because the machine reads those languages the same way I would read them."

• Judge Craig Alston of Bay City, Mich., suffers from a degenerative eye disease. Now legally blind, Alston often addresses students and community groups on the dangers of drinking and driving. To add dramatic impact, he sometimes brings along his Personal Reader and has Perfect Paul read from medical, scientific and accident reports.

Few things give Ray Kurzweil more of a sense of fulfillment than hearing such stories. "I've received hundreds of letters from blind people who say they couldn't have gotten their college degree or couldn't hold their current job if it hadn't been for the Reader. It's a great feeling."

As a small boy growing up in Queens, N.Y., Kurzweil was an accomplished magician. Then in 1960, at age 12, he discovered the computer. Within three years he had written a program that saved so much time in doing statistical analyses that IBM later distributed it to customers throughout the country.

"I was already interested in how we recognize things—how we pick up patterns. That, to me, is the key to intelligence. And I began dreaming of making pattern recognition the area where I would concentrate," says Kurzweil.

Later Kurzweil enrolled at Massachusetts Institute of Technology, where he was known as The Phantom for constantly disappearing to work on his own projects. "One semester I started a company built around a system I had developed for matching high-school students with colleges," he says. "On the basis of answers to a 300-item questionnaire, a student would get a list of 15 colleges that he might want to look into."

In his book *Cybernetics,* former M.I.T. mathematician and computer scientist Norbert Wiener helped define the path that Ray Kurzweil has followed. One thing a truly "intelligent" computer should be able to do, Wiener said, is distinguish letters of the alphabet no matter what style they are printed in. "It was an interesting challenge to take on," Kurzweil says.

After graduation from M.I.T. in 1970, Kurzweil started his own software-development company. Then in 1974, with financing from family and friends, he created another company, Kurzweil Computer Products. Within two years, he succeeded in making a computer read printed material with an optical scanner and speak the words through a voice-synthesizing unit. But the computer had a hard time with the thousands of look-alike words that don't sound alike (*doll* and *roll,* for example).

At one point, finances were so precarious that Kurzweil sold his car and pawned his tape recorders. During this period a dog tore his pants as he walked into a store. The dog's distraught owner settled with Kurzweil on the spot for $50. "It was applied right away to my company's overdue phone bill," Kurzweil recalls.

On a freezing January morning in 1976, the young inventor staged a demonstration for the press that caused a sensation. That evening the robot-like voice of his prototype reading machine delivered Walter Cronkite's sign-off on the "CBS Evening News."

The following day, blind singer Stevie Wonder heard Kurzweil demonstrating his reader on the "Today Show" and traveled to Cambridge to meet the inventor. "He wanted one right away," Kurzweil recalls. "That first machine weighed about 350 pounds and cost $50,000, but we loaded it right into his car." Wonder stayed up all that night reading. In the years since, the Kurzweil machine has been "a brother and a friend," he says.

Today's Personal Reader weighs less than 20 pounds, costs $8000 and, unlike its very deliberate ancestor, can rattle off as many as 350 words a minute. Ultimately, Kurzweil envisions a book-size $1000 Readman, even more portable than the Personal Reader.

In 1980 Kurzweil sold his business to Xerox, which, with the American Foundation for the Blind and the Bank of Boston, pro-

vides low-interest loans to visually impaired people who need a Personal Reader.

"We set up the machine the first day we got it, and within an hour it was working!" says Greg Adams, a 39-year-old record dealer in West Hartford, Conn., who benefited from the loan program. "I've always been frustrated that only a small percentage of books are put into Braille or onto tape. Now I can go to the library, get anything I want off a shelf and read it."

The Personal Reader is also used in schools to aid students with reading disabilities. Researchers have discovered that these students can sometimes overcome their handicap if they scan a page of a book, then follow along with Perfect Paul as he pronounces each word, like an infinitely patient teacher.

Ray Kurzweil is now devoting much of his time to new and different machines. The Kurzweil music synthesizer has become the standard for such stars as Stevie Wonder, Kenny Rogers and Neil Diamond. Kurzweil has also created a voice-recognition mechanism that permits a busy doctor to speak into a hand-held device after completing an examination and receive a typed report in minutes.

At Community Hospital in Syracuse, N.Y., the radiology department used to have a chronic backlog of unfinished reports. "With the Kurzweil Voice Report, we can now complete 90 percent of patient reports within 24 hours of examination," says department chairman Dr. David Cheris.

Kurzweil voice-recognition technology is helping in the development of voice-controlled robotic aids for quadriplegics. Children's Hospital in Boston is experimenting with this technology to translate the indistinct speech of cerebral-palsy patients into readable print.

Among his future plans, Kurzweil envisions an aid for the deaf. "Imagine," he says, "a small screen in your eyeglasses or a hand-held device that lets you see what someone is saying to you, much like the subtitles in a foreign film."

Meanwhile Kurzweil has not forgotten his roots. "When I was a boy," he says, "I loved to perform magic tricks, and I loved the look of delight on people's faces when they saw something impossible happen. As I grew older, I simply discovered a more powerful form of magic: the computer."

Muddled Meaning. Having worked as a dental hygienist for many years, I had undoubtedly mentioned some of the medical and dental terms at home in discussing my job. I realized this when I overheard my little daughter telling a friend, "Oh, that's Fred Astaire. He's the one that used to dance with Ginger Vitis."

—Contributed by Sandy McLeod

THE Jeffersonian Cyclopedia

A COMPREHENSIVE COLLECTION OF THE VIEWS OF

THOMAS JEFFERSON

Classified and Arranged in Alphabetical Order
Under Nine Thousand Titles

RELATING TO GOVERNMENT, POLITICS, LAW, EDUCATION, POLITICAL ECONOMY, FINANCE, SCIENCE, ART, LITERATURE, RELIGIOUS FREEDOM, MORALS, ETC.

EDITED BY
JOHN P. FOLEY

WITH AN INTRODUCTION BY
JULIAN P. BOYD

VOLUME TWO

"I have sworn upon the altar of God eternal hostility against every form of tyranny over the mind of man."—*Thomas Jefferson*

NEW YORK / RUSSELL & RUSSELL

which the French have so much cultivated and improved, have now adopted the latter; and that they have also given up the fluxionary, for the differential calculus. To confine a school, therefore, to the obsolete work of Cavallo, is to shut out all advances in the physical sciences which have been so great in latter times.—To PATRICK K. RODGERS. vii, 327. (M., 1824.)

7733. SCIENCE, Encouragement of.—I am for the encouraging the progress of science in all its branches: and not for raising a hue and cry against the sacred name of philosophy: for awing the human mind by stories of raw-head and bloody bones to a distrust of its own vision, and to repose implicitly on that of others; to go backward instead of forward to look for improvement; to believe that government, religion, morality, and every other science were in the highest perfection in the ages of the darkest ignorance, and that nothing can ever be devised more perfect than what was established by our forefathers.—To ELBRIDGE GERRY. iv, 269. FORD ED., vii, 328. (Pa., 1799.)

7734. SCIENCE, Mother of freedom.—Freedom, the first-born daughter of science.—To M. D'IVERNOIS. iv, 113. FORD ED., vii, 3. (M., Feb. 1795.)

7735. SCIENCE, Objects of.—The main objects of all science are the freedom and happiness of man.—To GENERAL KOSCIUSKO. v, 501. (M., 1810.)

Polish American freedom Fighter

7736. SCIENCE, Pursuit of.—On the revival of letters, learning became the universal favorite [pursuit]. And with reason, because there was not enough of it existing to manage the affairs of a nation to the best advantage, nor to advance its individuals to the happiness of which they were susceptible, by improvements in their minds, their morals, their health, and in those conveniences which contribute to the comfort and embellishment of life. All the efforts of the society, therefore, were directed to the increase of learning, and the inducements of respect, ease, and profit were held up for its encouragement. Even the charities of the nation forgot that misery was their object, and spent themselves in founding schools to transfer to science the hardy sons of the plow. To these incitements were added the powerful fascinations of great cities. These circumstances have long since produced an overcharge in the class of competitors for learned occupation, and great distress among the supernumerary candidates; and the more, as their habits of life have disqualified them for reentering into the laborious class. The evil cannot be suddenly, nor perhaps ever entirely cured: nor should I presume to say by what means it may be cured. Doubtless there are many engines which the nation might bring to bear on this object. Public opinion, and public encouragement are among these.—To DAVID WILLIAMS. iv, 513. (W., 1803.)

Polish General who fought in the Rev. War here

7737. SCIENCE, Republican government and.—Science is more important in a republican than in any other government.—To —— ——. vii, 221. (M., 1821.)

7738. —— ——. Science is important to the preservation of our republican government and it is also essential to its protection against foreign power.—To —— ——. vii, 222. (M., 1821.)

7739. SCIENCES, Distribution of the.—I have received the copy of your System of Universal Science. * * * It will be a monument of the learning of the author and of the analyzing powers of his mind. * * * These analytical views indeed must always be ramified according to their object. Yours is on the great scale of a methodical encyclopedia of all human sciences, taking for the basis of their distribution, matter, mind, and the union of both. Lord Bacon founded his first great division on the faculties of the mind which have cognizance of these sciences. It does not seem to have been observed by any one that the origination of this division was not with him. It had been proposed by Charron, more than twenty years before, in his book de la Sagesse. B. 1, c. 14, and an imperfect ascription of the sciences to these respective faculties was there attempted. This excellent moral work was published in 1600. Lord Bacon is said not to have entered on his great work until his retirement from public office in 1621. Where sciences are to be arranged in accommodation to the schools of an university, they will be grouped to coincide with the kindred qualifications of professors in ordinary. For a library, which was my object, their divisions and subdivisions will be made such as to throw convenient masses of books under each separate head. Thus, in the library of a physician, the books of that science, of which he has many, will be subdivided under many heads; and those of law, of which he has few, will be placed under a single one. The lawyer, again, will distribute his law books under many subdivisions, his medical under a single one. Your idea of making the subject matter of the sciences the basis of their distribution, is certainly more reasonable than that of the faculties to which they are addressed. * * * Were I to re-compose my tabular view of the sciences, I should certainly transpose a certain branch. The naturalists, you know, distribute the history of nature into three kingdoms or departments: zoology, botany, mineralogy. Ideology, or mind, however, occupies so much space in the field of science, that we might perhaps erect it into a fourth kingdom or department. But, inasmuch as it makes a part of the animal construction only, it would be more proper to subdivide zoology into physical and moral. The latter including ideology, ethics, and mental science generally, in my catalogue, considering ethics, as well as religion, as supplements to law in the government of man, I had them in that sequence. But certainly the faculty of thought belongs to animal history, is an important portion of it, and should there find its place.—To MR. WOODWARD. vii, 338. (M., 1824.)

— **SCIENTIFIC SOCIETIES.**—See SOCIETIES, SCIENTIFIC.

— **SCIPIO.**—See ORATORY.

— **SCREW PROPELLER.**—See INVENTIONS.

7740. SCULPTURE, Style.—As to the style or costume [for a statue of General Washington], I am sure the artist, and every person of taste in Europe, would be for the Roman. * * * Our boots and regimentals have a very puny effect.—To NATHANIEL MACON. vi, 535. (M., 1816.)

7741. SEAMEN, American.—The seamen which our navigation raises had better be of our own. It is neither our wish nor our interest ever to employ [those of England].—To WILLIAM SHORT. vi, 128. (M., June 1813.)

7742. SEAMEN, Distressed.—Another circumstance which claims attention, as directly affecting the very source of our navigation, s

(Lange/Cawley)
February 13, 1991
11:15 A.M.
[AAAS.DOC]

PRESIDENTIAL REMARKS: AMERICAN ASSOCIATION FOR
THE ADVANCEMENT OF SCIENCE
ROOM 450
10:00
FRIDAY, FEBRUARY 15, 1991

[[Thank you, Dr. Atkinson. Dr. Langenberg, Dr. Lederman ["LETTERMAN"]; Dr. Rowland; Dr. Bromley; distinguished friends of science.]] It's an honor to be here. Since its founding nearly a century and a half ago, your association has watched over the most far-reaching and breathtaking transformation that human society has ever known. Science and technology have brought unprecedented prosperity, mobility, health, and security to millions, around the world.

Today, the spirit of innovation is alive and well in America. [[Of course, times have changed. Some say that if Edison had invented the lightbulb today, we'd have scores of studies citing the dangers of electricity -- and the newspapers would headline the story, "Candle Industry Threatened."]]

Anyone who's been near a television in recent weeks has seen dramatic evidence of how technology is changing the face of war. Modern weapons are making it possible to face down aggression without the degree of widespread destruction and loss of civilian life of wars past. That's why I'll be visiting the workers who make the Patriot missile, later today.

Our investment in defense research and development over the past decade is now saving the lives of Americans -- of our allies

-- and even of our adversaries. I am certain that this struggle will end decisively. Let us all pray that it ends quickly. \\\

Here at home, science and technology are also a crucial key to our economic strength. If the past is prologue, our economic future is going to be very bright indeed. Over half of the economic growth we've enjoyed since the 1930's has been the result of new knowledge, including science and technology. And beyond advances in prosperity and security, work on the frontiers of knowledge is one of humanity's greatest adventures.

For all of these reasons, the budget that I sent to Capitol Hill last week included a 13 percent increase for research and development. That increase is one of the largest in the budget -- and it's proof of our determination to make the investments needed to ensure this country's continued leadership. We intend to help scientists spend less time searching for funding, and more time making breakthroughs. \\\

One of our highest priorities is basic research -- especially by the individual scientist or smaller team. To support their work, our budget calls for a billion dollar increase in basic research. Funding at the National Science Foundation would go up 18 percent, which would put the NSF budget back on the track toward the doubling that I've long sought -- and increases in basic research at the N.I.H., Department of Energy, NASA, and the Department of Agriculture will add to the base of knowledge on which the future is being built.

At the same time, this budget makes a strong commitment to the facilities that many individual scientists will need to reach the future frontiers of their fields. That means nuclear accelerators in physics, telescopes in astronomy, a strong space science program at NASA, and the human genome project in biology -- all projects that will have a profound impact on humanity.

Over the next year, the United States will spend over a billion dollars on the U.S. Global Change Program. Part of our efforts take the form of a Mission to Planet Earth, where satellites will monitor the Earth from space. And our Mission from Planet Earth will extend human curiosity to frontiers beyond our own planet, to the Moon, to the planets, and beyond.

But along with record investment in federal R & D, totalling $76 billion, we are committed to working with American industry to make it easier for companies to capitalize on the discoveries of basic science -- and to develop new products and processes. That's why I am again calling on the Congress to make the research and experimentation tax credit permanent -- to make a long-term commitment to our technological future.

We face a crucial challenge in developing the generic technologies important to both the public and private sectors. That's why the budget supports work in high performance computing and communications, in energy research and development, in aeronautics, and in biotechnology -- the basis for some of the most promising industries of the 21st century.

Technology may be the key to the future, but people are the key to technology. The National Education Goals we established with the nation's governors explicitly recognize this link. One of our most ambitious goals is for American students to be first in the world in science and math achievement by the year 2000.

Our budget includes substantial funding increases for math and science education. But those math and science goals will never be achieved if they're seen as goals for government alone. All sectors of society must recognize the importance of scientific literacy and strive to achieve it.

And that's where the AAAS comes in. Your Project 2061 is working where all lasting change must occur -- at the local level -- to transform the teaching of mathematics and science.

Last fall, we had 200 of the best mathematics and science teachers in the country to the White House -- and more than a few of those teachers pointed out that kids are natural-born scientists. They delight in the sheer pleasure of learning new things, making something work, understanding the world.

This delight is something most scientists never lose. The Nobel-prize-winning geneticist Barbara McClintock once said of her work, "I did it because it was fun. I couldn't wait to get up in the morning. I never thought of it as science."

The sheer adventure of science is one of the main reasons for holding this meeting -- and for the continued vitality of the "Triple-A, S." Sharing science's sense of adventure through education and outreach has never been more important than now.

Your work is vitally important. Of all humanity's concerns, the power of knowing is the greatest pursuit -- the surest promise of a brighter future -- the greatest covenant we keep with future generations.

So let us pursue the adventure of science as a sacred trust. And let us keep the fire of the American mind burning brightly, for the sake of the future our children deserve.

Thank you all. May God bless the United States of America.

# # #

February 20, 1991

MEMORANDUM

TO: CURT SMITH

FROM: CAROLYN CAWLEY cc

RE: WESTINGHOUSE ACKNOWLEDGMENTS

POTUS introduced by: * Paul E. Lego [leggo]
CEO - Westinghouse Corporation

Acknowledgements: * Dr. Glenn T. Seaborg
Chairman, Science Service
((company that administers the program))

* E.G. Sherman, Jr.
President, Science Service

* Carol Luszcz [loosh]
Program Director, Science Service

* Monsignor W. Louis Quinn
St. Matthew's

* M.C.: Ira Flatow

* the Science Talent Search Judges
((there are 7 of them))

The winners will be announced at the end of the banquet, after the President leaves. The format is just like the Oscars, in which the head judge says "the envelope, please!". Anticipation, excitement, and nervousness will no doubt pervade the room -- maybe POTUS could make note of this.

February 15, 1991

MEMORANDUM

TO: CURT SMITH

FROM: CAROLYN CAWLEY

RE: WESTINGHOUSE SCIENCE AWARDS

---

o The endeavors of scientists and researchers over the past century have improved our lives in all areas -- health, communications, transportation, national defense, to name a few.

Here are some famous scientists who you may want to mention -- they opened the path for the Industrial Revolution:

-- Thomas Edison
-- Alexander Graham Bell
-- Samuel Morse
-- the Wright Brothers
-- Marie Curie
-- Louis Pasteur
-- George Washington Carver
-- George Westinghouse
-- Guglielmo Marconi

o Where would we be without the inquiring minds of scientists, with their lofty dreams and intense dedication to making the world a better place in which to live?

"The main objects of all science are the freedom and happiness of man."
-- Thomas Jefferson, to General Kosciusko, Polish soldier who fought with us in the Rev. War

((See Readers Digest Xerox on Raymond Kurzweil, a former winner who has gone on to develop "smart machines" that are transforming the lives of millions.))

EXAMPLES OF THE CURRENT COMPETITORS PROJECTS

These high school students have reached astounding levels of sophistication in their research projects -- experts claim that they are working at the graduate student level, if not beyond. It is also to their credit that they must present detailed written reports, documenting all of their findings -- good training for the real world of science. They also go through rigorous personal interviews, explaining and defending their projects before a panel of experts in each field.

Note also that these students are extremely active in their schools and communities -- debate team members, baseball players, an award winning musician, skiers, cheerleaders, a literary critic....

Many projects may go on to achieve significant advances in physics, health, education, etc. Here is a cross section sampling of some:

- **The Environment**
  Clifford Wang -- Age 16. Vero Beach, Florida.

  Clifford proposed that seaweed could be grown in the ocean to remove pollutants while at the same time producing energy. Interesting proposition for oceanography and environmental clean ups!

- **Sports**
  Judson Berkey -- Age 17. Manassas, Virginia.

  Judson chose a project on the physics of baseball -- modeling the flight of a baseball with the principles of fluid dynamics, and finding that the launch angle does not change.

- **Learning/Education**

  Tara Bahna-James -- Age 17. New York City.

  Tara explored the relationship between math and music to see if musically talented students have an intrinsic understanding of mathematics. She found that music students consistently underestimated their abilities in math -- perhaps because math is non-creative and remote to them. She concludes that teaching the relationship of music to math might make learning more enjoyable.

- **Industry/Sailing**

  Wade Butin -- Age 17. Spring, Texas.

  Wade chose chemistry as his project -- to develop a high-quality, high-performance varnish that could withstand the rigors of weather exposure, salt water, etc. He created a varnish that would be "slippery" when in contact with water to reduce the drag on boats. What are the possibilities for boating -- the America's Cup? the President's Cigarette boat? -- what about in home exteriors?

- **Health**

  Susan Criss -- Age 17. Pittsburgh.

  Susan completed a two-year research project that dealt with betacarotene (found in leafy greens) reducing the risk of cancer.

- When the Westinghouse Science Award program was started, in 1942: of the 25,000 US high schools, fewer than 1,000 had trained science teachers or even rudimentary courses. In many places, teaching "science" was the responsibility of the athletic coach.

  ((This is where you can write about the Education Goals from the summit with Governors + the emphasis on math and science education in the new budget. Also, new Dept of Energy and Dept of Education programs to have experts teach in schools, to have students visit federal labs, etc. -- no longer the athletic coach.))

- Because this is the 50th Anniversary of the Award, Westinghouse is inviting all of the former award winners.

  Five have won the Nobel Prize. Scores have been elected to the National Academy of Sciences, the highest elective honor for scientists; the National Academy of Engineering; the MacArthur Fellowship.....

  Talk about an eminent crowd and out of the ordinary cocktail conversation!

- HUMOR?:
  Don't forget that Sununu is an engineer.

- Possible humor:
  Most Presidents of the US have personally greeted the 40 winners over the years at the White House. One year, the exuberant group decided to include President Lincoln on this list. Thus, late one evening, several chosen representatives endeavored to climb on his lap at the Lincoln Memorial. The Park Police quickly put a stop to this spirited initiative

Embargoed until delivered -- February 19, 1991, 1:30 p.m. EST

PREPARED TEXT OF REMARKS BY THE VICE PRESIDENT

NATIONAL JEWISH COMMUNITY RELATIONS ADVISORY COUNCIL
CHAIRMAN'S LUNCHEON

MIAMI, FLORIDA

The National Jewish Community Relations Advisory Council is a unique organization. You are a partnership of local and national Jewish organizations throughout the country that deals with the diverse interests of the American Jewish community: Human rights, social justice, the fate of world Jewry and the security of Israel. Though there are many domestic and international issues of great concern to you, my remarks today, for obvious reasons, will concentrate on the Middle East.

Let me begin, on behalf of the President, with a hearty thank you for your steadfast support of our efforts to get Iraq out of Kuwait. Together, we've shown an understanding of the lessons of history: appeasement never works; aggression must be resisted; and the rule of law must prevail over the rule of the jungle.

In looking to the past for guidance to the future in international relations, we are reminded of the temptation of isolationism. In the 1930's, there was sentiment in this country for an isolationist foreign policy. Some asked, why should we concern ourselves with the problems of Europe? And why, in the face of Hitler's aggression, should we rally to the defense of

Great Britain and Europe?

But the American Jewish community, along with President Roosevelt and the vast majority of American people, firmly rejected such arguments. You understood, back then, that our fate as a nation was intimately connected with the security of Europe, and that Hitler posed a clear and present danger to the entire world.

In the aftermath of Iraq's invasion of Kuwait, many of the same old arguments made by the isolationists in the 1930's were dusted off and trotted out all over again. Why, it was asked, should we come to the defense of Kuwait and Saudi Arabia? Why don't we just sit back and enjoy the post-cold war 'peace-dividend'?

Once again, however, the American Jewish community, along with President Bush and the overwhelming majority of American people, wisely rejected such arguments. You recognize that Saddam's ambitions have not been confined to Kuwait. Rather, his goal has been to dominate the Persian Gulf region. Saddam desires to use the area's vast wealth to represent himself as the greatest Arab hero of modern times, the leader of a new Arab superpower.

We have witnessed Saddam Hussein's quest for power. He launched two wars of aggression, against Iran and against Kuwait, at a cost of some one million casualties--thus far. He built the fourth largest army in the world with some of the most modern weapons. He acquired a sizeable stockpile of ballistic missiles,

chemical weapons and biological weapons. He used chemical agents against Iran and against his own people -- Iraqi Kurds -- in the 1980's. And he launched an intensive program to acquire nuclear weapons.

I am sure that you know, we did not want war. But war was forced upon us, and after a month of this war, our aims are exactly what they were at its outset. We seek to expel Saddam's forces from Kuwait; to restore the legitimate government of Kuwait; and to ensure the stability and security of this critical region. Iraq must withdraw without conditions. There must be full implementation of all twelve security council resolutions. And let me emphasize -- there will be no linkage to other problems in the area.

Last week, Iraq's Revolutionary Command Council issued a statement that claimed to accept U.N. Security Council resolution 660, which calls for the immediate and unconditional withdrawal of Iraqi forces from Kuwait. Unfortunately, as the President said, this proved to be a cruel hoax. Not only was the "offer" full of unacceptable old conditions, but it contained several unacceptable new ones, as well.

The fact is that Saddam knows full well how to stop this war. He knew how to invade Kuwait -- he knows how to withdraw. Saddam knows he cannot win this war militarily. His military strategy is really a political strategy. It is a strategy for a political victory for Saddam through propaganda, through falsehood -- and through sheer survival.

Saddam's recent propaganda alleging that we had deliberately bombed a civilian shelter, followed by his false gesture for peace, illustrates the point. Like the ancient Babylonian King who was weighed in the balance and found wanting, Saddam Hussein can see the handwriting on the wall; he sees that a military success for the coalition is inevitable. He therefore is looking to bring about a cease-fire, before he is forced to comply with the U.N. Resolutions. His terror campaign, including his Scud missile attacks against civilian targets and his deliberate oil spills, also reveals his political strategy -- his hope that he can split the coalition and break its will to fight. Saddam may think his ace in the hole is his ability to manipulate the mass media -- thereby producing global sympathy for Iraq and undermining global support for the coalition.

Saddam is quite willing to encourage Western journalists to visit Iraq and allow censored pictures to be broadcast to the world. Unfortunately, the pictures are more powerful than the occasional small print saying "cleared by Iraqi censors." But in viewing the pictures that Saddam wants us to see, we should never forget the pictures Saddam doesn't want us to see: pictures of the brutality and murder in Kuwait since august 2nd. Pictures of the premature babies in Kuwait who have been removed from their incubators and left to die. Pictures of the Kuwaitis who have been killed for simply loving their country, and displaying its flag. Most recently, President Bush said he had been told by the Emir of Kuwait about an incident in Kuwait in which 200 young

people, 15-20 years of age, had been mutilated and killed by Iraqi forces. But while their pictures have never been seen by the American public, their suffering has not gone unnoticed -- and their sacrifice will not be forgotten.

The United States has not been surprised by Saddam Hussein's behavior during this war. And let me say this: His political strategy, like his military strategy, is doomed to failure. The coalition is strong; American public opinion is not deceived by his propaganda; and the Iraqi people increasingly see through his lies, and clearly yearn for peace.

So, once again, Saddam Hussein has miscalculated. He will not succeed in his aggression either through military or political means.

In particular, Saddam Hussein has tried to weaken the coalition arrayed against him by trying to involve Israel in the war. But to Israel's immense credit, she declined to play into Saddam's hands. Israel has chosen to absorb Saddam's missile strikes and to defer its clear right of retaliation. President Bush has praised Israel for its restraint. He said that Prime Minister Shamir and his government "have shown great understanding for the interests of the united states and the interests of others involved in this coalition". Israel has proven itself a true friend -- a trustworthy friend.

Throughout this crisis, we have been -- and we remain -- in close contact with Israel at the highest levels of government. Despite occasional glitches, this contact has been fruitful and

positive, and we have devoted special efforts to destroy Iraq's Scuds and their launchers in western Iraq. And we have sent Israel batteries of Patriot missiles -- some with American crews -- to help her defend against Scud attacks.

Although Operation Desert Storm is not over, it's not too early to begin learning some of its lessons. Perhaps the most important lesson has to do with the centrality of human rights. The United States has long maintained that our concern for human rights is not just an after-thought to our overall foreign policy. Rather, it is the basic foundation of our foreign policy. For we know that tyrants who abuse the rights of their own people will also seek to abuse the rights of others. Terror at home will be exported abroad.

Let us not forget how Saddam came to power. He came to power through conspiracy, terror and violence. He maintains power through repression and terror. Saddam's foreign policy -- his repeated acts of aggression against his neighbors -- is a logical extension of his domestic policy. To deter future Saddams, we had better stand up against human rights violators whoever and wherever they are.

You know, it sometimes seems to me that there's a kind of network linking advocates of repression the world over. That's why neo-nazi groups have reportedly offered their services to Saddam. That's why Saddam and the former dictator of Romania, Nicolae Ceausescu, were such close friends. And that is why Soviet reactionaries are trying to persuade Mr. Gorbachev to

change his Gulf policy in Iraq's favor. They all recognize that when one repressive regime is endangered, all are at risk. And we must recognize that the struggle for human rights goes on -- in Eastern Europe, in the Soviet Union, in the Baltics, and in the Middle East. We must truly become our brother's keeper -- not simply for our brother's sake, but for our own.

A second lesson of this war is the special and enduring character of our friendship with Israel. The American people support Israel because Israel is a democracy, a nation whose values and ideals are so very similar to ours. We support Israel because we admire Israel's courage and valor. Israel is a strong and reliable American ally -- a force for stability and restraint in a violent and dangerous region. The bonds that bind the American and Israeli people are genuine and come from the heart.

Far from harming or undermining our ties with the people of Israel, Saddam Hussein's savage and criminal missile attacks have only strengthened them. Make no mistake about it: strengthening American-Israeli friendship is the only achievement that will survive Saddam's sure and certain defeat.

Forty three years ago, the United States supported the creation of the state of Israel for moral and humanitarian reasons. We believed that after the unspeakable horrors committed by the Nazis, Jews needed a land they could call their own. They needed a land in which they could live without fear, in peace and harmony with their neighbors.

That is why we are committed, and will always remain

committed, to the security of the state of Israel. We are committed to helping Israel protect itself against any combination of aggressors. We will always make clear to the world, through moral and material support, that we are a permanent and unshakable ally of the state of Israel.

We are a steadfast partner in the search for peace. Once the current war is over, we will resume the search for a just peace, and a real reconciliation, between Israel, the Arab States and Palestinians. Such a peace, if it is to endure, must emerge through negotiations between the parties themselves. It cannot--it will not--be imposed from without.

Yet another lesson of the current war is that those of us who have advocated the development of defenses against missile attack have been vindicated by what israelis call "hapatriotim" -- the Patriots. I know the issue of missile defense has been a contentious one in American politics, but perhaps in the wake of this war we can form a new consensus on the desirability of moving ahead with our program of missile defense.

The Patriot was originally designed to shoot down large, slow-moving airplanes. It was upgraded to have modest capability against large, slow-moving ballistic missiles -- but it didn't even have that much capability until last year. Yet many in Congress, particularly in the House, tried to kill even this limited Patriot upgrade program several times.

They opposed it not because of its cost or its capability, but because it defends against missiles. The argument of our

critics has been that you are safer without defenses against ballistic missiles than with them. They have argued that deploying missile defenses only provokes the aggressor to become more aggressive -- that missile defense is destabilizing.

They're wrong -- and here is why: Think about what the world will look like in the 21st century -- long after the allied victory over Saddam Hussein. Are there more or fewer countries that will have ballistic missiles? Will these missiles be more or less modern than the Scuds we are facing today? And will the weapons they carry be more or less destructive than the ones carried by Scuds? Everyone here knows the answers to these questions.

But let me be a bit more specific about my own concerns. Soon, many Third World countries will have, not liquid fueled missiles like the Scud, but solid fueled missiles like our Minuteman or the Soviets' SS-24 and SS-25. That means that they can be on alert, ready to fly on a moment's notice -- in seconds, not minutes or hours, like the liquid fueled Scuds.

As time goes on, modernization will mean that more countries will have more missiles that are bigger, faster, more accurate and much more difficult to intercept. They will be well beyond the capabilities of current day Patriots.

The question of what we should do about these developments is a difficult one. But one thing seems clear: in the future we will need more than a "quick fix" to the vulnerability of a 25 year old air defense system like the Patriot. We will need to be

able to defend an entire theater of operation against a variety of missile threats; to protect ourselves against an enemy's longer range capabilities; and to protect our allies who might be affected by hostilities.

In short, we will need President Bush's version of the Strategic Defense Initiative, just as we will need Israel's Arrow defense system. Defending our nation and its allies against ballistic missile attack threatens no one. Moving ahead on the SDI is technologically feasible, strategically necessary and morally imperative.

This brings me to yet another lesson of the current crisis: The need for the United States, now and in the future, to be strong enough to defend itself, and to help defend our allies. Keeping our nation strong is not a liberal issue, and it's not a conservative issue; it's not a Democratic issue and it's not a Republican issue. It's an American issue. And like Operation Desert Storm, it's an issue that fully deserves bipartisan support.

There is one further lesson of the current war that I would like to touch on this afternoon: The need for the United States to remain involved and engaged on behalf of its ideals and its interests. Despite the amazing progress of freedom and democracy around the world, despite the encouraging prospects for even greater progress tomorrow, our nation is still the indispensable beacon for peace and liberty around the world.

Let us therefore exercise our leadership role with wisdom

and with patience. And let us all -- liberals and conservatives alike -- try to see things as they are, and not as we might wish them to be. Where there is a genuine will to peace, let us find ways to encourage it. Where there is hatred and malice, let us not fear to confront it. And where democracy stands embattled and besieged, let us never hesitate to support it.

Thank you, God bless you, and God bless our brave servicemen and women in the Gulf.

###

(Smith/Cawley)
February 19, 1991
2 P.M.
WEST

PRESIDENTIAL REMARKS: WESTINGHOUSE ADDRESS
WASHINGTON HILTON HOTEL
__, MARCH __, 1991
7:00 P.M.

Secretary Sullivan, Dr. Bromley, Members of the Westinghouse Science Foundation, current and past Westinghouse Award recipients, distinguished friends of science.

Thank you, __, for that introduction, and for your warm reception. And let me welcome to Washington the trustees of our posterity. ~~Boys and girls~~ -- the best and the brightest -- who act for Nation and neighbor: Caring, dreaming, helping learning ~~lead the way.~~ // It is a pleasure to be at the Super Bowl of Science. //

We meet ~~here~~ tonight on the fiftieth anniversary of the Westinghouse Science Talent Search. Think of how science and ~~technology has made~~ that time an era of extraordinary exploration. // Not to date myself, but when I was growing up, PAC-MAN was a hiker, not a video game. Who ~~can~~ even guess how future will make ours a better, more decent world? //

((Now, I'll admit. ~~No one has~~ ever called me a virtuoso in science. // It's pretty hard for me to claim I'm adept at high tehc when my grandkids keep beating me at "Nintendo.") //

((This problem goes back a long way. One day my science teacher took me aside and said, "Whatever you do in life I hope you'll hold the torch on high -- as long as it isn't a bunsen

burner. // Despite this proficiency, I did try an experiment a couple years ago that I'm proud of. I connected a VCR to a microwave oven and watched "Gone With the Wind" in 12 1/2 minutes.)) //

Think, for a moment, of scientists and researchers who -- thankfully -- have not followed my lead. Opening doors into an age whre mankind not only moved into the future -- but re-invented it. // Think of Edison and Morse and Madame Curie and George Westinghouse. All knew, as Thomas Jefferson wrote to a Polish general in the Revolutionary War, "The main objects of all science are the freedom and happiness of man." //

Think, too, of how for half a century Westinghouse recipients have become an instrument of liberty and the symbol of the information age. // From the first man to win the top prize in the Science Talent Search -- Paul Teschan, aiding kidney research -- to Raymond Kurzweil, whose reading devices make life easier for the blind -- all have **reached** for the stars -- so that future generations of Americans might someday **stand** on them. //

Recall, with me, this history. Five Westinghouse recipients have won the Nobel Prize. Eight have received the MacArthur Fellowship — the National Academy of Engineering. // Governor Sununu wrote that line. // Twenty-six have been elected to the National Academy of Sciences, your profession's highest elective honor. If excellence were a painting, this talent search would be the Rembrandt of its time. //

Yet learning is always a continuance, never a consummation. So this year builds on those beginnings. Look at these competitors -- 40 in all, culled from more than __ entries. Many belong to their school debate team, their baseball club, their newspaper, their church groups and bands. All have used knowledge and self-discipline to create research projects of advancement to education -- and the well-being of humanity. //

Consider Clifford Wang of Vero Beach. He proposed that seaweed be grown in the ocean to kill pollutants while also producing energy. / Or Susan Criss of Pittsburgh, recently completing a 2-year project that showed how becacarature can reduce cancer. / In spring, Texas, Wade Butin developed varnish to withstand the effect of weather and salt water. / And in New York City, Tara Baltin James explored the relationship between math aptitude and music talent. //

These and other dreams will make possible even greater dreams -- Americans inspired by the belief that the trailblazers of today will be the heroes of tomorrow. // This Nation has no natural resouces like intellectual resources. So we must, and are, assisting the education that is our most enduring legacy -- vital to everything we are and can become. //

I have announced a goal that U.S. students will be Number One by the year 2000. We can achieve it. We will. // We will achieve it through our National Educational Excellence that I again urge Congress to pass. Let me especially salute new Initiative of National Science Scholars, which gives America's

youth a special incentive to excel in science, mathematics, and engineering. //

We will ~~make -- and keep~~ -- America No. 1, too, through research and development in all areas of science, technology, and engineering. Let me take a moment to describe the emphasis on science and math in our new budget for Fiscal Year 1992. // Think of a record high of $76 billion for basic research and R & D. -- and basic science research up $13 billion. / ~~Imagine~~: A framework which will double the National Science Foundation Budget if Congress will cooperate. // Help me achieve ~~it~~. A budget which will devote over $16 billion for outer space activities -- up 15 per cent over last year. A ~~budget which~~ will devote more money than ever to the small science research -- research for individuals -- embodied by the Westinghouse Talent Search. //

America is <u>can-do</u> because America, historically, is <u>know-how</u>. // If you have any doubt, look at the Persian Gulf, where achievements in science are responsible for the high tech equipment which has served our military so well. If the cause of peace is to continue being served by American <u>military</u> power, it must continue being advanced by American <u>brain</u> power. //

Ask our troops in the Gulf. Yes, the <u>finest soldiers, sailors, Marines, airmen, and Coast Guardsmen</u> any Nation has ever had. They know the value of learning. Each day it brings closer freedom's victory. // Ask those other great heroes -- our teachers. Each day they give perhaps the greatest gift of

sharing their knowledge with others. // Ask, finally, America's parents. And the students embodied so brilliantly by these 40 recipients. All know, as Albert Einstein said, that "everything that is really great and inspiring is created by individuals who labor in freedom." //

Learning, of course, is a very practical thing. ((I'm reminded of a writer who was asked what he would take if his home were on fire and he could remove only one thing. // "I would take the fire," he replied.)) Yet learning is also one of mankind's most noble things. It can move minds, shape events, and presage a new Goldan Age where creativity flows -- more than ever -- from the human heart and mind. //

What a magnificent legacy for the Westinghouse Science Talent Search. What a magnificent metaphor for the dream that is America. Thank you for tonight. Please pray for our sons and daughters in the Persian Gulf. And let me leave you with three of the most beautiful words in our or any language. God bless America.

# # # #

March 4, 1990, Sunday, Late Edition - Final

SECTION: Section 12NJ; Page 1, Column 1; New Jersey Weekly Desk

LENGTH: 1435 words

HEADLINE: Students in Science Contest Aim At the 'Frontiers of Technology'

BYLINE: By JAY ROMANO

BODY:

AT first, Roopak Shah and Jared Muroff appear to be ordinary high school seniors.

Both are popular in school and active in student government. Each is looking forward to graduation and one last carefree summer before starting college in the fall. And, like most of their classmates, neither has officially got a date for the prom.

But something sets the two New Jerseyans apart from their contemporaries. Last month, Mr. Shah and Mr. Muroff were named among the 40 finalists in the 49th annual Westinghouse Science Talent Search, a prestigious competition aimed at identifying the best and the brightest among the nation's senior high school science students.

Tomorrow evening, after a dinner in Washington that will be attended by the finalists and more than 500 representatives of government, industry and the scientific community, the first-place winner of this year's competition will be announced. Mr. Shah and Mr. Muroff are in good company. ''Among past finalists,'' a Westinghouse spokeswoman, Eileen Milling, said, ''5 have gone on to win the Nobel Prize, 26 have been elected to the National Academy of Science, 2 were awarded the Albert Lasker Basic Medical Research Award and 8 have received MacArthur fellowships.'' This is not a typical science fair. There are no ant farms, plant graftings or giant turnips in this competition. Irradiated fruit flies are a thing of the past, and dissected earthworms are formaldehyde-scented memories.

The Westinghouse Science Talent Search of 1990 is science cut to the quick. It is the big leagues.

''You probably wouldn't understand it,'' Mr. Muroff, 17 years old, said when asked to explain his 40-page entry. But he tried anyway.

''I use the isoperimetric property of the equilateral triangle to prove triangle inequalities,'' he said. That means that Mr. Muroff has found a new way to measure and compare different triangles. And might that have some practical application? ''Well, it can't be used to build bridges,'' he said, ''but it's an interesting geometric quality.''

Jim Farrell, principal of Hightstown High School, which Mr. Muroff attends, said, ''I'm not sure I understand what he's doing.'' Mr. Muroff is a member of the school's math club and participates in a student-sponsored television news

program.

''It's been a while since I've been involved with math,'' Mr. Farrell said, admitting that he had just a little difficulty getting through Mr. Muroff's paper. ''But the kids today seem to focus on higher levels of thinking.''

Dr. Marlyn McGrath Lewis, director of admissions for Harvard and Radcliffe Colleges, said, ''It has been our impression that the papers written by the Westinghouse finalists are of graduate-level, professional quality.''

Harvard-Radcliffe, Dr. Lewis said, is a popular choice among contest finalists. Those who have applied for admission, she said, would have their papers evaluated by appropriate faculty members, depending upon the subject.

But in Mr. Shah's case, that will not be necessary. The 17-year-old straight-A student applied for early admission and was accepted before the results of the competition.

That, perhaps, is a relief for Dr. Lewis, since she would have had to find a faculty member familiar with the Milton-Bradley game Connect Four to evaluate Mr. Shah's paper.

''I applied Darwin's theory of evolution to create a computer program that plays the game and learns from its experience,'' said Mr. Shah, who attends Holmdel High School.

Although Connect Four is a relatively simple game, there are millions of possible combinations of moves. The program he wrote, he said, ''learns'' the better combinations each time it plays a game, then keeps the good ones and discards the rest.

Although computer learning programs have been around for some time, he said, his project is unusual in that it uses evolutionary techniques to increase the program's ability to learn.

''It's a pretty good feeling to be doing something that's original,'' Mr. Shah said. ''Most of the things we do at school are things that most people have already done, like dissecting a pig or something. Everybody knows what that looks like.''

Influenced by Father's Work

Mr. Shah's interest in science may be related to his father's work; Dr. Jagdeep Shah is a research physicist at Bell Laboratories in Holmdel.

''I think his general interest in science may have been stimulated by what I do,'' Dr. Shah said, ''but I have always told him that he should do what interests him the most and makes him the happiest.'' That, for now, is an abiding interest in computer learning. ''I guess all the basic stuff has already been done,'' Mr. Shah said.

''Now we're going off onto the frontiers of the technology; most of this stuff is pretty obscure. Mine included.''

But what is obscure today may be the science of tomorrow, said Dr. Richard J. Gott, professor of astrophysics at Princeton University and chairman of the competition's panel of judges.

Dr. Gott, who won the second-place prize in the Westinghouse competition in 1965, wrote his winning paper on the structure of a sponge. As obscure as that may have seemed at the time, the work paid off recently when Dr. Gott was trying to define the possible configurations of the universe.

Encouragement to Young

Dr. Gott, a Harvard graduate, realized that there was no reason why the universe could not have taken shape in much the same manner as his sponge did, except on an infinitely larger scale.

That example, he said, underscores the value of the Westinghouse Science Talent Search: it encourages young people to go beyond what they learn in the classroom.

''You have people doing experiments, splicing things with DNA, that were just unheard of years before,'' he said.

Although the basic abilities of the students have not changed appreciably over the years, the projects they tackle and the tools at their disposal have become increasingly sophisticated.

''It's sort of like the Olympics,'' Dr. Gott said. ''The runners of today can beat Jesse Owens's record.'' But if Jesse Owens were alive now, he said, and took advantage of the advances in training and nutrition, he would probably beat his own record as well.

The competition was started in 1942 by the Westinghouse Electric Corporation to encourage young people to pursue careers in science and math. It is now administered by Science Service of Washington, a nonprofit institution that promotes public understanding of science.

Winners Earn Scholarships

This year 1,431 high school seniors from schools across the country entered the competition with projects ranging from psychology to biology, from genetic engineering to solar astronomy. Of the original number, 300 semifinalists were chosen, and then the 40 finalists were picked to take their projects to Washington for public demonstration and interviews with a panel of eight of the nation's most respected scientists.

The top 10 winners will receive four-year scholarships, from $7,500 to the top prize of $20,000. The remaining 30 will receive $1,000 each. All will get a valuable addition to their college applications.

''We have found,'' said Carol Luszcz, program director of the competition for Science Service, ''that becoming a Westinghouse honors winner is almost automatic assurance that the student will be admitted to the college of their choice.''

That is not surprising, said Dr. Glenn T. Seaborg, a judge of this year's competition. Many of the students, he said, have developed their projects in university laboratories and libraries, working with graduate students and doctoral candidates and using the most advanced equipment available.

''I'm impressed,'' Dr. Seaborg said. ''In many cases the students are involved in original research that yields meaningful results, results that are being obtained for the first time.''

Since project topics cover various fields, those fields must be adequately represented on the panel of judges.

''There's always a coterie of mathematical papers, usually quite advanced,'' he said. ''Fortunately we have experts among the judges who can handle them.''

Indeed, Dr. Seaborg himself might not feel comfortable with those math papers since his area of expertise is chemistry. But then again, he is a professor of chemistry at the University of California. He was chairman of the Atomic Energy Commission from 1961 to 1970, and he won the Nobel Prize in Chemistry with Edwin M. McMillan in 1951.

But, as Dr. Seaborg said recently as he prepared to make the trip to Washington to meet this year's finalists, ''You can't know everything.''

GRAPHIC: Photo; Jared Muroff was named a Westinghouse Science Talent Search finalist for entry on equilateral triangles (pg. 1), and for his entry in the Westinghouse Science Talent Search contest, Roopak Shah created a computer program that plays a board game and learns from the experience (pg. 6); (NYT/Frank C. Dougherty)

SUBJECT: Terms not available

Newsday

March 4, 1990, Sunday, CITY EDITION

SECTION: NEWS; Pg. 8
Other Edition: Nassau and Suffolk; Pg. 26

LENGTH: 1193 words

HEADLINE: NY Is Tops at H.S. Science Contest

BYLINE: By Nick Chiles. Newsday Staff Correspondent

DATELINE: Washington

KEYWORD: HIGH SCHOOLS; STUDENT; ACHIEVEMENT; AWARDS; SCIENCE; SCHOLARSHIP; WESTINGHOUSE 1990 SCIENCE TALENT SEARCH

BODY:

Esther Chen of Elmhurst, Queens, admitted that when she first began talking to the other finalists in the Westinghouse Science Talent Search, they seemed somewhat overwhelmed by the fact that 14 of the 40 finalists are from New York City.

"They said, 'Gee, you New Yorkers know so much.' They saw us as intimidating," said Chen, 17, the valedictorian of this year's graduating class at Manhattan's Stuyvesant High School. "But then, they saw we were normal people."

Or at least as normal as some of the nation's most brilliant 17-year-olds can possibly be.

The 40 teenagers who gathered in Washington Thursday have spent the past three days doing some of the things that teenagers might be expected to do when they get together; late-night movie parties, shopping, exploring the subway system. But mixed in with these ordinary teen pursuits are discussions of the genetics of nitrogen fixation and cyano bacteria, conversations about the first-ever use of fractal geometry to characterize sunspot perimeters and lingering questions about the characterizations of DNA binding.

Today and yesterday, their projects were on public display at the National Academy of Science. Numerous scientists and scholars from government and the private sector will flock to the academy over these two days to get a glimpse at the future of science. Since 1942, Science Search winners have gone on to win five Nobel Prizes and eight MacArthur Foundation Fellowships.

The students also have survived several wide-ranging - and intense - interviews before panels of some of the leading doctors and scientists in the country. Trying to delve beyond the projects that got the students here, these judges are searching for ways to assess the teenagers' scientific creativity and potential so that they can pick the top 10 award -winners.

In a ceremony with a great deal of the tension of the Academy Awards, the top 10 will be revealed tomorrow night. The top prize is a $ 20,000

scholarship; second and third place winners receive $ 15,000; the next three places win $ 10,000 and the last four $ 7,500. The other 30 finalists receive $ 1,000 scholarships.

The 40 finalists were selected from among 300 semifinalists. There were 1,431 total entries this year from across the country. Thirteen states are represented among the finalists.

Just minutes after he had met with one of the panels, S. Kareem Anderson, 17, of Staten Island, said the interviews were intimidating because the questions "come out of nowhere" and cover a wide range of scientific topics.

"I was told not to study - just to be myself," said Anderson, a senior at Brooklyn Technical High School whose project looked at whether unrealistic athletic aspirations have a negative impact on black males. "They want to keep you on your toes, but it seems like they pull questions out of a hat. And a lot of times they're just staring at you and you are forced to think of things very quickly."

Chen said she "almost broke down" during one of her interviews because she was so nervous.

"I was really calm at first, but I had to wait for other people to finish. When I saw the deathly pale faces come out, I just lost it," said Chen, who investigated a process by which an insulin-like growth factor receptor gene on the surface of mammalian cells in tissue culture can be turned on to produce cell multiplication or transformation. "They asked the strangest, weirdest questions. I came prepared to answer questions about my project, but they asked about physics, math, chemistry, logic, statistics. I almost broke down. They were unlike any questions I've ever been up against. They were so profound."

Were her answers also profound?

"Not quite," Chen said laughing. "But I think I did all right."

Dr. Brigid Leventhal, director of clinical research at the Johns Hopkins Oncology Center and a Science Search judge for the past 15 years, said the judges aren't purposely intimidating. They don't need to be because the situation is intimidating enough already.

"We're trying to find out how they approach a problem and how solid their knowledge base is for any problem they might encounter," said Leventhal.

According to Leventhal, it is important that the same judges be used every year so they can more easily put the students' achievements in perspective.

"These kids are so incredible that it takes some getting used to to be able to compare them to anything at all," she said. "At first a judge may be overwhelmed by what somebody can achieve at that age. Some of these projects could blow your mind for high school kids. With many of them, the kids are functioning at a first-year graduate student level. It's quite amazing."

Every year, New York's success in this prestigious competition leaves the doctors, scientists and scholars who throng here shaking their heads in wonder. "You do have several specialized schools - Bronx Science and Stuyvesant -

which are very strong in science and math," said Glenn T. Seaborg, a professor of chemistry at the University of California at Berkeley and chairman of the Science Service for the past 25 years. "Also, they have established a tradition, so teachers are highly motivated and take pride in sending students. There is even a kind of friendly competition between the two schools. There is nothing like that in California. I wish there were. I would like to get that started, but we don't know how to do it."

For the record, the competition between Stuyvesant and Bronx Science this year resulted in a tie, with both claiming five finalists. Brooklyn Technical High School had two, while Martin Van Buren High School in Queens and Midwood High School in Brooklyn both had one.

Long Island high schools boasted four finalists, two from Paul D. Schreiber High School in Port Washington and two from Ward Melville in Setauket.

Most of the students created and developed their projects working long, hard hours with mentors and research labs. But you might say Peter Davis Asnis, 17, of Port Washington came upon his project by accident.

After he badly injured his left knee playing lacrosse for Schreiber High School, Asnis had to embark on a slow, painful rehabilitation. He was told by therapists that riding a stationary bicycle was the best form of rehabilitation but he had a long wait because after the operation he couldn't bend his knee very much. Asnis came upon the idea of altering the crank of the bike so that the pedal could be closer or farther away from the seat. He wrote a computer program to determine how the crank should be altered based on an injured person's measurements. Through his work, about 100 people at several New York hospitals are now able to begin bicycle riding earlier in their rehabilitation process using the bike designed by Asnis. Asnis, who will be attending Harvard in the fall, plans to go into sports medicine.

After the competition is over, many of the finalists will be seeing each other again in a few months - probably at Harvard. According to Science Search officials - and the students - placing in the top 40 virtually guarantees them admission to the college of their choice.

GRAPHIC: AP Photos-1) Finalists S. Kareem Anderson, left, 2) and Tsz Wang Ng. Both attend Brooklyn high schools. 3) AP Photo- Science Talent Finalists. In Washington, D.C., this weekend vying for Westinghouse 1990 Science Talent Search honors are: from left, Elissa Blum and Peter Asnis, Port Washington; Jed Mowshowitz, Larchmont (Westchester County); David Ben-Zvi, Setauket; and Shinpei Kuga, Stony Brook. They are among 40 teens from 13 states competing for $ 140,000 in scholarship money. The top 10 projects will be revealed tomorrow (P 26 NS)

4TH STORY of Level 1 printed in FULL format.

March 6, 1990, Tuesday, CITY EDITION

SECTION: NEWS; Pg. 8

LENGTH: 687 words

HEADLINE: Chicago Student Gets Science Prize

BYLINE: By Nick Chiles

DATELINE: Washington

KEYWORD: WESTINGHOUSE SCIENCE TALENT SEARCH; SCHOLARSHIP; HIGH SCHOOLS; STUDENT; ACHIEVEMENT; SCIENCE

BODY:

For his groundbreaking discovery in the field of molecular genetics, a 17-year-old Chicago youth last night was presented with the nation's top high school science award.

Matthew Peter Headrick, the son of two doctors, won the $ 20,000 first-place medal at the Westinghouse Science Talent Search awards banquet before a crowd of more than 500, including the Secretary of Health and Human Services Dr. Louis Sullivan and other leaders in science, government, education and business.

The highest New York City award -winner was Soojin Ryu, 18, of the Bronx, who placed fourth for her project in molecular immunology, winning a $ 10,000 scholarship. The senior at the Bronx High School of Science may have brought researchers an important step closer to understanding the activation of the cells which help generate the body's immune responses.

Two other students from New York placed in the top 10: Laura Andrea Ascenzi, 17, of Sunnyside, Queens, and also a student at the Bronx High School of Science, came in seventh place, winning $ 7,500; Bianca Denise Santomasso, 17, of Manhattan and a student at Stuyvesant High School, came in 10th, also winning $ 7,500.

From among 1,431 total entries, Headrick emerged as the top teen scientist in the nation - an honor for which he will receive, in addition to the $ 20,000 scholarship, even more adulation than he has already received here over the last five days as one of the top 40 finalists.

David Ruchien Liu, 16, of Riverside, California, and David Michael Shull, 17, of Tacoma, Washington, the secondand third-place winners, each will receive $ 15,000 scholarships.

Each of the other 30 finalists receive $ 1,000 scholarships.

For the 40 finalists, last night's awards banquet was the culmination of five exhausting days of interviews, lectures, forging new friendships and displaying their brilliance to the world.

Being selected a finalist in the Westinghouse Science Talent Search is widely regarded as the most prestigious honor a high school senior in this country can achieve.

The top 10 winners were selected by eight of the nation's top doctors and scientists, who interviewed each of the 40 finalists on Thursday and Friday. The judges sought to assess each student's scientific potential and creativity.

Dr. Brigid Leventhal, director of clinical research at Johns Hopkins Oncology Center in Baltimore, said in her 15 years judging the Science Talent Search, this year's finalists were one of the most outstanding groups she has seen.

"It makes you feel like there are good new generations coming along in science," Leventhal said. "I learn something every year. And I continue to be amazed at what the kids can do."

In past years, the 40 finalists have included five eventual Nobel Prize winners and eight MacArthur Foundation Fellows, so Leventhal's words are high praise indeed.

In fact, the level of talent has been so high that none of the five future Nobel Prize winners were even among the top 10 scholarship winners, according to Glenn T. Seaborg, chairman of the board of the Science Service, which runs the competition.

The popularity of the Westinghouse Science Talent Search was in evidence on Saturday and Sunday, when the finalists displayed their projects to the public at the National Academy of Sciences. More than 1,100 people filed into the Great Hall over those two days to look around at the projects of these high school seniors. There were parents with their children, teachers with their students, scientists, academicians and many journalists.

"You explain your project to a little kid and watch them light up," said Jennifer Ryder, 17, of Fresno, Calif., who designed and built an improved tool for DNA separations. Ryder was named first alternate to the top ten winners. "You're turning them on to science, and that's a really cool feeling."

On Sunday, some of the students were still talking about the visit the day before of Vice President Dan Quayle.

"I was hoping he would be a little more interested," said Esther Chen, 17, of Elmhurst, Queens, this year's valedictorian at Manhattan's Stuyvesant High School.

talking about not only the international implications but how that will fit into the overall drug plan. So, bon voyage, and have a good trip. And my respects to the Presidents you'll be meeting with and the various ministers you'll be seeing.

Note: The President spoke at 12:12 p.m. in the Oval Office at the White House. In his remarks, he referred to William J. Bennett, Director-designate of National Drug Control Policy; Attorney General Richard L. Thornburgh; Secretary of State James A. Baker III; C. Boyden Gray, Counsel to the President; and Brent Scowcroft, Assistant to the President for National Security Affairs.

Remarks to the Winners of the Westinghouse Science Talent Search

March 3, 1989

Thank you, Mr. Marous, and all of what you at Westinghouse do for this outstanding concept. Doctor Press—last time I saw Frank Press—maybe it wasn't the last time, but he'd just received an honorary degree at a graduation ceremony where there were 50,000 people present, at Ohio State University—well-deserved honor, that he well deserved, as a matter of fact, for prestige he's given to science in this country. And when he salutes a group like this, why, it makes a big impression on me as well.

I want to thank you all, Dr. Seaborg, whose reputation is well-known to everybody here, and John as well, for explaining some of the exhibits to me. [*Laughter*] I had done a lot in the field of the viability of MVM Parvo Virus. [*Laughter*] And then at night I like to curl up with a book on mapping mutants. [*Laughter*] And every once in a while, when I have some spare time, Barbara and I read aloud about the behavior of the inhibitions of sialidases. [*Laughter*] So, we have a lot in common with these researchers here. [*Laughter*] But I'll tell you, I'm glad there's no quiz. [*Laughter*] And I am so impressed, and I expect everybody here has had a chance to look at these studies. And I'll tell you, it just reaffirms your basic faith in the young people of this country and, I'd say also, in the academic process. Yesterday we saluted some teachers over at the White House, and boy, I wish I'd seen this before I'd been over there to pay my respects to the teachers who help these young minds.

But really, what all of you have accomplished is really something to be proud of. Not only is it a great achievement but you really earned these honors. Thomas Edison said that genius is 1 percent inspiration and 99 percent perspiration. Well, each of you, with your academic diligence and your intellect and a lot of hard work, have won the oldest and largest national high school competition in the entire country. And past winners of the Westinghouse Talent Search have distinguished themselves in every field of science and mathematics. And your predecessors have received every major honor and award in their fields, including the Nobel Prize and the National Medal of Science. And what you've done is important for America. Scientific and technological advancement have always been at the very heart of our nation's pioneer spirit, pushing the boundaries of our knowledge, creating economic opportunity, and certainly increasing our standard of living and making this a healthier and safer world in which to live.

It is scientific advancements that made us aware of the damage to our Earth's protective ozone layer and the need to reduce CFC's [chlorofluorocarbons] that deplete our precious upper atmospheric resources. As a result of these advances, the United States and other nations have led the way, through the Montreal protocol, toward reductions of CFC's. And that protocol will reduce CFC's to 50 percent of 1986 levels by the year 1998. But recent studies indicate that this 50-percent reduction may not be enough. And I thought some of you interested in that field might like to know that I today asked Bill Reilly, our new EPA Administrator, to join with other nations this weekend as he goes abroad in supporting the call for the elimination of CFC's by the year 2000, provided, you know, that safe substitutes are available. And of course, such a phaseout must be guided by the scientific, economic, and technological assessments under the protocol.

As a nation, we have no natural resource more precious than our intellectual re-

This speech hit CFC's/atmosphere + science education.

I think our remarks should highlight the new budget: science got a Big boost, esp. for basic research + small team efforts. Also new $ for Math & Science Education.

see Lange's science speech of Friday, 3/15.

sources. In fact, it's only thanks to human knowledge and ingenuity that crude oil became a valuable fuel and that fields of grain become methanol or that grains of sand become silicon chips. Scientific knowledge must be renewed and expanded in each generation. Many of the miracles that we take for granted in everyday life originated in defense and space research. This investment in new technologies and new plant and equipment helps expand our competitive edge as a nation, and thereby assuring future opportunities for America's next generation in science, engineering, and manufacturing. But for our country to maintain its technological and scientific excellence, no investment in machines or laboratories, as vital as that may be, will by itself be sufficient. There have to be the people who have the knowledge and the commitment, and that will be men and women like yourselves who will lead America into the next century.

You know, by one estimate, it takes 10,000 high school students expressing an interest in a science or engineering major to assure us of 20 men and women who will go on to receive doctorate degrees. And I hope that each student in this room gets a doctorate or pursues a career of one kind or another in science and technology and that some of you consider returning to the classroom as teachers to inspire a new generation of scientists for the future. The fruits of investing in science and scientists are evident. Human intelligence has explored the vastness of outer space and the inner frontiers of the particles of the atom. Diseases have been cured. Knowledge has been harnessed. And energy—I was going to say that energy has been created, but then I remembered the laws of thermodynamics. So, let's just call it a wash—[*laughter*]—and say that energy has neither been created nor destroyed. [*Laughter*] And please don't debate me on that, Glenn. [*Laughter*]

But we truly have seen the scientific knowledge developed in the United States vastly improve the lives of our citizens and of people around the world. And today international scientists and science students are coming here to America to do research, to study, to teach. And this is something that our country greatly benefits from. Yet, still, as a nation, let's face it, we've got to do better. We're not producing enough scientists and mathematicians and engineers. American universities confer only about 77,000 engineering degrees a year at the undergraduate level. And that's about the same number that Japan produces with a total population of only half our size.

Initiatives from Washington are important, but they're not enough. Students and parents and teachers will determine the direction our young people take and, ultimately, what direction, therefore, that our country takes. And there's only one goal that is worthy of us as Americans, and that is to be the very best in the world, to be number one. That's our history, but it is also, I believe, our destiny. Our national qualities of intellectual curiosity and innovation, our frontier spirit and our habit of problem-solving, all uniquely equip America for the great technological age that is dawning. To help us move in that direction, the Federal budget I propose would, as Frank said, increase funding for—maybe he didn't cover this point—but for NASA [National Aeronautics and Space Administration] by 22 percent, would also advance us toward our goal of doubling the budget for the National Science Foundation by 1993. I also proposed full funding for the superconducting super collider—and even though I'm from Texas, people seem to understand—[*laughter*]—and as an incentive for private industry, a permanent research and experimentation tax credit.

But one of the most important investments that I want us to make is in science education. So, I have proposed a National Science Scholars Program that would provide 570 scholarships a year. And these would be for up to $10,000 a year, for 4 years. And this program would be based on merit, and it would draw at least one young scientist from every congressional district—435 across the entire United States—providing local inspiration and national leadership for the study of science. And I think no one proves better than all of you just how much our students are capable of and how important it is to provide the encouragement and resources that you need. And when you couple this modest Federal effort with what Westinghouse and others are doing in this area across the country, we do have some-

ducing enough scien-
cians and engineers.
confer only about
egrees a year at the
And that's about the
pan produces with a
half our size.
shington are impor-
nough. Students and
ill determine the di-
ople take and, ulti-
, therefore, that our
ere's only one goal
Americans, and that
in the world, to be
ur history, but it is
estiny. Our national
curiosity and innova-
t and our habit of
iquely equip Amer-
ological age that is
ve in that direction,
propose would, as
ding for—maybe he
-but for NASA [Na-
Space Administra-
uld also advance us
ling the budget for
ndation by 1993. I
g for the supercon-
-and even though
e seem to under-
as an incentive for
anent research and
it.
important invest-
make is in science
oposed a National
n that would pro-
year. And these
000 a year, for 4
would be based on
at least one young
ressional district—
ed States—provid-
ational leadership
nd I think no one
ou just how much
f and how impor-
couragement and
And when you
l effort with what
are doing in this
e do have some-

thing significant and, I'd say, unique in our country.

So, I came over here to congratulate the sponsors, to congratulate the scientists who have given their blessing to this innovative program, and especially to congratulate all of you achievers. I think all of you are destined for great things. And if you've got any skeptics out in the audience, go next door and take a look, and you'll see exactly what I mean.

Thank you, and God bless all of you.

Note: The President spoke at 2:20 p.m. at the National Academy of Sciences Building. In his opening remarks, he referred to John C. Morous, Jr., chairman and chief executive officer of Westinghouse Corp.; Frank Press, president of the National Academy of Sciences; and Glenn Theodore Seaborg, chemist and Nobel Prize winner.

Statement on the Eastern Airlines International Association of Machinists and Aerospace Workers Labor Dispute

March 3, 1989

The National Mediation Board has recommended that I appoint an emergency board before March 4, pursuant to section 10 of the Railway Labor Act, as amended, to investigate the dispute between Eastern Airlines and the International Association of Machinists and Aerospace Workers. I have decided not to accept this recommendation.

The National Mediation Board has for many months attempted unsuccessfully to bring the parties to an agreement, and I have no reason to believe that an additional investigation or the 60-day delay that would be entailed would produce such an agreement. In light of the well-publicized threats of a strike and related activities, the Department of Transportation will monitor the situation and will, in addition, take whatever steps are needed to protect the safety of the traveling public.

I urge responsible labor officials not to try to influence resolution of this dispute by disrupting the Nation's transportation systems through secondary boycotts against uninvolved parties. Such boycotts would unfairly burden millions of citizens, not only preventing necessary travel but also affecting shipment of consumer goods and the ability of many workers to earn a living. For these reasons, secondary boycotts are not permitted in any other sector of the economy.

Accordingly, if secondary boycotts threaten to disrupt essential transportation services, I will submit, and urge that Congress promptly enact, legislation making it unlawful to use secondary picketing and boycotts against neutral carriers. We cannot allow an isolated labor-management dispute to disrupt the Nation's entire transportation system.

Digest of Other White House Announcements

The following list includes the President's public schedule and other items of general interest announced by the Office of the Press Secretary and not included elsewhere in this issue.

February 22

In the morning, the President and Mrs. Bush departed the White House for a visit to the Far East.

February 23

In the afternoon, the President and Mrs. Bush arrived at Haneda Airport, Tokyo, Japan, where they were greeted by Japanese and American officials. The President and Mrs. Bush then went to the U.S. Ambassador's residence, where President Bush and senior staff members attended a working luncheon with President François Mitterrand of France. Following the luncheon, President Bush met with Prime Minister Noboru Takeshita of Japan in the Asahi-No-Ma Room at Akasaka Palace and then proceeded to the Hotel Okura, his residence during his stay in Japan.

In the evening, President Bush returned to the U.S. Ambassador's residence and met individually with President Mário Alberto Soares of Portugal, President Mohammed Hosni Mubarak of Egypt, Prime Minister

2ND STORY of Level 1 printed in FULL format.

June 29, 1990, Friday, Final Edition

CURT: FYI

SECTION: STYLE; PAGE B3; PERSONALITIES

LENGTH: 508 words

SERIES: Occasional

BYLINE: Chuck Conconi, Washington Post Staff Writer

BODY:

While Republican National Committee Chairman Lee Atwater battles his brain tumor, he and his family also face mounting medical expenses, some not covered by insurance. To help defray these costs, a group of friends and some members of the select group of wealthy Republican donors known as " Team 100, " which raised some $ 10 million for the Bush campaign, have donated money to the Lee Atwater Trust for Medical Expenses. At least one prominent Republican money source has written a check for $ 10,000, the amount that had been recommended to team members.

Mary Matalin, RNC chief of staff, said yesterday that the fund is not associated with the RNC, nor are RNC members being solicited. "The money is coming from friends and colleagues who have worked with Lee over his many years in politics," she said. "And we are all most grateful for the help. Lee is sincerely overwhelmed with the generosity and support of his friends."

Out and About

Romantic ballad singer Jack Jones showed he was part of the "show must go on" tradition Wednesday night at Anton's 1201 Club, where he is performing this week. At the end of a second encore, Jones was singing the haunting "Music of the Night" from "The Phantom of the Opera," when he slipped and fell from the stage onto a table and was knocked unconscious. A few moments later, he arose, shook himself off and completed the song ...

Adm. William Narva, the former attending physician to Congress who is recovering from heart bypass surgery, stopped by the White House yesterday for a private ceremony in which President Bush presented him with the Distinguished Service Medal. Narva, who has been a popular personality on Capitol Hill, will end a 34-year Navy career when he retires from active duty Aug. 1 ...

Royal Watch: It had to happen. Prince Charles was hurt yesterday playing polo when he fell from his horse and broke his right arm. His wife, Diana, has expressed concern in the past about the 41-year-old heir to the throne playing polo, which is considered second only to auto racing as the most dangerous sport. Charles was reportedly making a shot when he lost his balance and fell during a match while playing for his team, Windsor Park ...

Fifty years after legendary director Frank Capra sent "Mr. Smith" to Washington, he and Smith, actor Jimmy Stewart, are to have a congressional gold medal struck in their honor. The House Banking, Finance and Urban Affairs Committee's coinage subcommittee decided Wednesday to strike the medals for the two major film world figures and for director Fred Zinnemann, the master of

UNCLASSIFIED
NSC/S PROFILE

RECORD ID: 9101091
RECEIVED: 12 FEB 91 14

TO: WINSTON, C

FROM: SCOWCROFT

DOC DATE: 12 FEB 91
SOURCE REF:

KEYWORDS: DESERT STORM
KUWAIT
WH REFERRAL
IRAQ
SAUDI ARABIA

PERSONS:

SUBJECT: PRES REMARKS FOR RAYTHEON MISSILE SYSTEMS PLANT IN MASSACHUSETTS

ACTION: SCOWCROFT SGD WH REFERRAL DUE DATE: 13 FEB 91 STATUS: C

STAFF OFFICER: HAYDEN LOGREF:

FILES: WH NSCP: CODES:

D O C U M E N T D I S T R I B U T I O N

FOR ACTION

FOR CONCURRENCE

FOR INFO
GANTT
HAYDEN
NSC CHRON

COMMENTS: _____

DISPATCHED BY _____ DATE _____ BY HAND W/ATTCH

OPENED BY: NSJEB CLOSED BY: NSJEB DOC 2 OF 2

UNCLASSIFIED

Document No. 212314SS

WHITE HOUSE STAFFING MEMORANDUM

DATE: 2/12/91 ACTION/CONCURRENCE/COMMENT DUE BY WEDNESDAY 2/13 2:00 p.m.

SUBJECT: PRESIDENTIAL REMARKS: RAYTHEON MISSILE SYSTEMS PLANT - ANDOVER, MA

	ACTION	FYI		ACTION	FYI
VICE PRESIDENT	☐	✓	MCCLURE	✓	☐
SUNUNU	☐	☐	NEWMAN	☐	☐
SCOWCROFT	✓	☐	PORTER	✓	☐
DARMAN	✓	☐	ROGICH	✓	☐
BRADY	☐	✓	UNTERMEYER	☐	☐
CARD	☐	✓	ROGERS	☐	✓
DEMAREST	✓	☐	WINSTON	☐	✓
FITZWATER	☐	✓	TREERY	✓	☐
GRAY	✓	☐	_____	☐	☐
HOLIDAY	✓	☐	_____	☐	☐

REMARKS:

Please forward your comments directly to Chriss Winston, Rm. 122, x2930, no later than 2:00, Wednesday, February 13, with a copy to this office. Thank you.

February 13, 1991

RESPONSE: The National Security Council staff has reviewed the excellent draft speech for the President at Raytheon and forwards the attached comments.

Brent Scowcroft

cc: Phillip Brady

PHILLIP D. BRADY
Assistant to the President
and Staff Secretary
Ext. 2702

91 FEB 12 PM 1:54

McGroarty/Grossman
February 12, 1991
2:30 pm
[PATRIOT]

PRESIDENTIAL REMARKS: RAYTHEON MISSILE SYSTEMS PLANT
ANDOVER, MASSACHUSETTS
FEBRUARY 15, 1991
2:00 pm

Thank you, Bill [Gov. Weld]. [Introductory acknowledgements.] It is an honor to be here today -- to come to Raytheon, the home of the men and women who build the Scudbusters. //

I've just completed my tour of this marvelous facility -- sat at the command post of a Patriot Fire Unit -- heard about the years of painstaking work that produced the split second accuracy of the Patriot Missile System. // Let me tell you: I'm impressed with the technology -- but I'm even more impressed with the people behind the machines. //

Just days after Saddam Hussein rolled into Kuwait, Raytheon went into overdrive. Since mid-August, it's been an around-the-clock effort. Three shifts a day, seven days a week -- and I know many of you gave up your own Thanksgiving and Christmas to be right here -- to keep the lines moving. //

Well, in the last month, the world has learned why. Patriot works -- and not just because of the high-tech wizardry. It's because of all the hours -- all the attention to detail -- all the pride and all the professionalism that every one of you

important reason why we are on course and on schedule. We will continue to fight this war on our terms, on our timetable -- and until our objectives are met. Kuwait will be liberated, make NO mistake 2 about it

brings to the job. Patriot works // because of Patriots like you. //

As I was touring the plant a few minutes ago, I saw one sign that said: "Patriot -- a Revolution in Air Defense." We are witnessing a revolution in modern warfare -- a revolution that will shape the way we defend ourselves for decades to come. //

For years, we've heard that anti-missile defenses won't work. That shooting down a ballistic missile is impossible -- like trying to "hit a bullet with a bullet." Some people called it impossible -- you called it your job. //

[[PATRIOT SCORECARD.]]

No -- Patriot's not perfect. No system is -- no system ever will be. But Patriot is proof positive that missile defense can work. ~~And if missile defense is technologically possible -- it is morally imperative.~~ // Example used

And I've said many times that missile defense threatens no one -- that there is no purer defensive weapon than one that targets missiles launched against us, // our friends and allies.

We know this is a dangerous world. Today, our Cold War concern about a large-scale nuclear exchange is more remote than at any point in the post-war era. // At the same time, the number of nations acquiring the capability to build and deliver missiles of mass destruction -- chemical and ~~perhaps~~ even nuclear weapons -- is on the increase. Between now and the year 2000 -- in spite of our best efforts to control their spread -- ~~as many as 15~~ additional nations may acquire this deadly technology. And as we've

been taught by Saddam Hussein, all it takes is one renegade regime -- one ruler without regard for human decency. //

In the past, we've often depended more for our protection on theories of deterrence than technologies of defense. Some critics of missile defense have even said that we and our adversaries would be better off defenseless, open to attack -- and therefore equally vulnerable. [~~That's a theory called Mutual Assured Destruction -- and it's a theory that's done as much to impede our progress towards effective anti-missile defense as any problem of physics.~~] //

~~Well, Patriot's shot that theory right out of the sky. //~~

Well, we know now that some of the adversaries we face today are more rash than rational -- less impressed by theories than by a nation with the means and will to defend itself.

Thank God that when the Scuds came -- the people of Israel and Saudi Arabia had more to protect them than some abstract theory of deterrence. // Thank God for the Patriot missile. //

The people who build Patriot have reason to be proud. Because of you, a tyrant's threat to rain terror from the skies has been blunted -- cut short. //

Because of you, [~~thousands of~~] innocent civilians -- [countless] human lives -- have been spared. //

[~~Because of you, our Armed Forces have proved to the world that Iraqi Scuds are no match for American Patriots. ///~~]

When we think of war, we think first of the soldiers in the field -- the brave men and women serving now half a world away.

But Woodrow Wilson once said that in war, there are "a thousand forms of duty." In this room today stand a thousand reasons why our cause shall succeed. //

Once again, thank you all for this warm welcome -- for the invaluable contribution you have made to the defense of America and its allies -- and may God bless the United States of America.

# # #

You, and people like you all over the country, have given our brave men and women in the Army the edge they need to win decisively and save precious lives.

(important to expand this to all other areas)

NATIONAL SECURITY COUNCIL
EXECUTIVE SECRETARIAT STAFFING DOCUMENT

TIME STAMP

SYSTEM LOG NUMBER: 1091

ACTION OFFICER: HAYDEN DUE: 11:00AM, 13 FEB

- ☐ Prepare Memo For Scowcroft/Gates
- ☐ Prepare Memo For Cicconi
- ☒ Prepare Memo SCOWCROFT to WINSTON W/ INFO BRADY
- ☐ Appropriate Action
- ☐ Prepare Memo for Sittmann

URGENT

CONCURRENCES/COMMENTS* *PHONE* to action officer at ext. _____

Concur	FYI		Concur	FYI		Concur	FYI	
☒	☐	Barth Concur	☐	☐	Hutchings	☐	☐	Poneman
☐	☐	Basora	☐	☐	Jackson	☐	☒	Popadiuk
☐	☐	Beers	☐	☐	Johnson	☐	☐	Pryce
☐	☐	Broome	☐	☐	Kanter	☐	☐	Rademaker
☐	☐	Burns	☐	☐	Kitchen	☐	☐	Rice
☐	☐	Canas	☐	☐	Kushne	☒	☐	Rostow Concur
☐	☐	Charles	☐	☐	Lampley	☐	☐	Tilley
☐	☐	Coulson	☐	☐	Lundsager	☐	☐	Tobey
☐	☐	Davis	☐	☐	Melby	☐	☐	Van Eron
☐	☐	Deal	☐	☐	Menan	☐	☐	Watson
☒	☐	Dorminey Concur	☐	☐	Merchant	☐	☐	Welch
☐	☐	Dyke	☐	☐	Miller	☐	☐	Whitley
☐	☐	Frasure	☐	☐	Needles	☐	☐	Wilson
☐	☐	Fry	☐	☐	O'Leary	☐	☐	Working
☐	☐	Gordon	☐	☐	Peal	☐	☐	Zelikow
☐	☐	Gompert	☐	☐	Pascalli	☐	☐	_____
☒	☐	Haass Concur	☐	☐	Pavitt	☐	☐	_____
☐	☐	Hayden	☐	☐	Pilling	☐	☐	_____

INFORMATION
- ☒ Sittmann
- ☐ Scowcroft (advance)
- ☒ Hill
- ☒ Gates (advance)
- ☒ Exec Sec Desk
- ☐ Secretariat

COMMENTS

Logged By _____

Return to Secretariat
379 OEOB

City/State: Washington, DC

Event: Westing House Science Talent Search

Date: 2/22/91

DOE: 3/4/91

OFFICE OF PRESIDENTIAL ADVANCE

CONTACT SHEET

Name	Office	Phone Number
Presidential Advance Office		202/456-7565
Presidential Advance Fax Number		202/456-2820
Craig Kay Kelley Gannon, Patty Conrad	WH Advance	202.456.7565
Lisa Bathaglia,	Public Liaison	456-7845
Debra Winston-S	Westinghouse	(412) 642-4941
Marsha Powell	Westinghouse	(412) ~~[illegible]~~ 797.4839
Jim Callahan	Washington Hilton	(202) 797-5778
C.W. Bullock	Secret Service	202 395-6340
M. ELIZABETH KILKENNY	Westinghouse	(412) ~~[illegible]~~ 797.4839 (Pgh)
Don Harless	SCIENCE SERVICE	(202) 785-2255
Carol Luszcz	Science Service	202/785-3749 or 2255
Michelle Lemmey	Washington Hilton	202 7975773
TONY ZANGARA	SECRET SERVICE/TSD	202-395-4005
JIM KYNDELL	" " PPD	202-395-4011
Don White	" " WFO	202-634-5100
RON LEAVERS	Dir Ser. Hilton	202-797-5800
JEFF SWEENEY	Audio Visual WDC	(202) 745-0239
JOHN Hubler	" "	" "
JOHN TAYLOR	WHCA TO	" 395-4077
TOM WILSON	" "	" 395-4200
DAVE BLACK	WHCA AV	202 395-4220
JOHN KEPHART	" AV DIRECTOR	202-395-4220
Lawrence H. Welch	WHCA OPNS	202 395 4040
Frank S. Marriott	Westinghouse/Wash	202 835-2329
Carolyn Cawley	WH Speechwriting	202-456-7150