

PROFILE

Smithsonian National Portrait Gallery News

Summer 2004





From the DIRECTOR

I think it is fair to say that while scientists have been in the forefront of American achievement from the nineteenth century on, they have not always been in the forefront of American attention. There have always been a few, of course, like Albert Einstein or Jonas Salk, who

are known to a wide range of their fellow citizens. But mostly, except for moments of Nobel Prize recognition, they labor unnoticed and uncelebrated outside of their own fields.

This is a situation the National Portrait Gallery hopes to address—and redress—in this issue of *Profile*, and in future programs and exhibitions. As members of the Smithsonian community, we are aware that our very institutional existence is because of the generosity of James Smithson, a gentleman scientist in the era before professionalization, who saw the promotion of science as at the heart of the goals of the Enlightenment. It was his conviction that America would be center stage for a democratic experiment that would have to include “the increase and diffusion of knowledge,” which led to his extraordinary gift to the American people. Led by our first Secretary, the physicist Joseph Henry, the Smithsonian established a strong commitment to scientific research that has continued to our own day. And the Smithsonian, too, benefited from the collecting associated with the historic Wilkes Expedition to the South Seas (1838–42), initially displayed in NPG’s own Patent Office Building and described in this issue.

The Portrait Gallery’s “problem” with the proper recognition of the contribution of scientists has never been a lack of will but more a lack of vital examples of scientific portraiture. Were it not for the welcome place of photography in our collections, we would be poor indeed in our capacity to even suggest the range of fields and personalities that have made science one of the glories of American culture. It is perhaps not surprising that scientists have been less likely to sit for striking portraits in other genres than, for example, artists and politicians. This has been one of the principal motivations for the Gallery to begin planning a commissioning program, in which great contemporary Americans, selected by our board in consultation with our staff, would be matched with first-rate contemporary portraitists. Our sister organizations in England, Scotland, and Australia have already begun such programs, with great success. These are not inexpensive, but we will find a way.

So consider this issue of *Profile* our statement of commitment to portray the role of science in America. We look at such towering figures as Einstein, of course, and our cover figure, James Watson, but also the equally important Charles Drew, whose research saved countless lives through the establishment of blood banks but who then confronted a preposterous national policy of separating blood by race, and Rosalyn Yalow, whose work proved equally absurd the notion that women should not participate in cutting-edge science. Science comes out of the commitments of American society, revealing its strengths and, on occasion, its limitations. No telling of our nation’s history is complete without it. ✱

Marc Pachter

PROFILE

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*Molecular biologist James
Dewey Watson posed for Francis
Bello with a model of the DNA
molecule for Fortune's June
1954 article, "The Young Scien-
tists." See page 10.*

Gift of Steve Bello ©Estate of
Francis Bello

Correction:

The caption on page 12 of the
spring 2004 issue should read
(left to right): unidentified
man; Mississippi lieutenant
governor Paul Johnson; Chief
U.S. Marshall James McShane;
Justice Department official
John Doar (with face hidden),
and James Meredith.

In the next issue

- *Presidential politics*
- *Recent acquisitions*
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PROFILE



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National Portrait Gallery

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Nobel Prize Winners in Science and Medicine

Anne Collins Goodyear

ASSISTANT CURATOR OF PRINTS
AND DRAWINGS

First awarded in 1901, the Nobel Prize was established by the 1895 will of Alfred Bernhard Nobel. The Swedish inventor of dynamite wished to honor annually “those who, during the preceding year, shall have conferred the greatest benefit upon mankind.” Since 1901, well over 200 Americans have received awards for chemistry, physiology or medicine, and physics. Each of the five scientists featured here transformed his or her area of study. Their portraits offer unique perspectives on these achievements.

ALBERT EINSTEIN

When photographed by Lotte Jacobi for *Life* magazine at his Princeton, New Jersey, home, Albert Einstein (1879–1955) had already lived in the United States for five years, having fled Nazi Germany and joined the Institute for Advanced Study in 1933. He would become an American citizen in 1940. An admirer of the work of Jacobi, who had already photographed the scientist in Germany, Einstein had personally recommended her to *Life*. Ultimately, however, the magazine deemed Jacobi’s portrayal of Einstein too informal to publish.

Einstein attained international prominence in 1919 when observations made during an eclipse confirmed for many the validity of his general theory of relativity, which postulated that gravity was an expression of curvature in the space-time continuum, rather than an independent force. Two years later, Einstein would receive the Nobel Prize for physics. Ironically, however, the award did not recognize his controversial general theory of relativity. It honored instead his work on the photoelectric effect, which established that light, long observed to



Albert Einstein by Lotte Jacobi, 1938

©Lotte Jacobi Archive, Univ. of N.H.

exhibit the properties of a wave, could also be described as consisting of particles (known today as photons).

A year after Jacobi created this portrait, Einstein, a pacifist, encouraged President Franklin D. Roosevelt to pursue the building of an atomic bomb to ensure victory in World War II. After the war, however, Einstein joined other scientists in opposing any future use of this weapon. Unwilling to compromise his convictions, even when they put him at odds with other physicists, Einstein concluded at the end of his life: “What I seek to accomplish is simply to serve with my feeble capacity truth and justice at the risk of pleasing no one.”

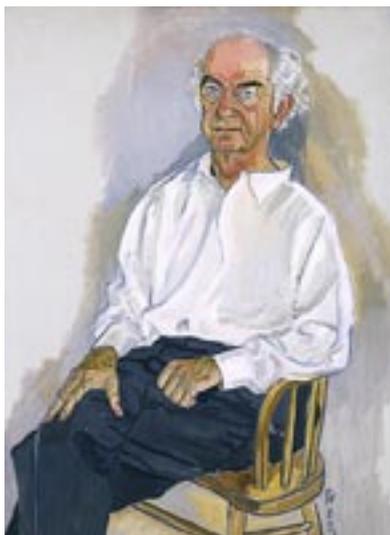


Selman Waksman by Dan Weiner, c. 1950

©Sandra Weiner

SELMAN WAKSMAN

Appropriately seated outdoors in this photographic portrait by Dan Weiner, microbiologist Selman Waksman (1888–1973) studied the behavior of microorganisms in the soil. In 1941, Waksman invented the term “antibiotic” to describe a new class of medications, including penicillin, which relied on one microbe to destroy another. Stimulated by the research of his graduate student, René Dubos, and inspired by the wartime urgency of treating deadly diseases, Waksman investigated the antibiotic potential of microorganisms in the earth. In 1943, in conjunction with another of his graduate students, Albert Schatz, Waksman identified Streptomycin, which proved effective in treating tuberculosis, one of the world’s most lethal illnesses. In 1952, Waksman received the Nobel Prize in physiology or medicine for this discovery. Waksman later praised the power of the organisms he studied: “One can visualize no higher form of life without the existence of the microbes. They are the universal



Linus Pauling by Alice Neel, 1969

©Estate of Alice Neel

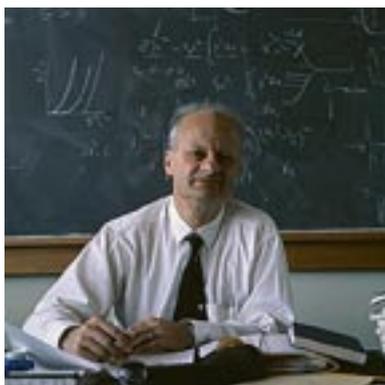
scavengers. They keep in circulation the chemical elements which are essential to the continuation of plant and animal life.”

LINUS PAULING

The only recipient of two unshared Nobel Prizes, for chemistry (1954) and peace (1962), Linus Pauling (1901–1994) distinguished himself with his contributions to science and his sensitivity to its social implications. In the 1930s and 1940s, Pauling’s application of quantum mechanics to chemistry inspired new discoveries about molecular structures and bonds, research recognized by his first Nobel Prize. His insights led him to important observations concerning the chemical structure of blood protein. His work had valuable implications for the field of molecular biology, bringing about an improved understanding of sickle-cell anemia. Pauling would later study the curative powers of vitamin C.

Following World War II, Pauling fought the deployment and testing of atomic bombs, publishing *No More War!* in 1958. His efforts earned him a second Nobel Prize in 1962. The following year the United States, Great Britain, and the Soviet Union implemented the Nuclear Test-Ban Treaty.

Alice Neel’s informal portrait, made in 1969 at Pauling’s home, depicts the scientist outside of the laboratory, demonstrating the breadth of his commitments. As Pauling later explained, “I could have accomplished a lot more science from 1945 to 1965. I decided . . . I ought to get scientists working for world peace. . . . Scientists have an obligation to help fellow citizens make the right decisions.”



Hans Bethe by Philippe Halsman, 1962, gift of Jane Halsman Bello

©Estate of Philippe Halsman

HANS BETHE

Photographed by Philippe Halsman in 1962, Hans Bethe (born 1906) appears at the height of his career, just five years before receiving a Nobel Prize for physics. The award honored his lifetime research into the production of stellar energy, a subject on which he published a groundbreaking 1939 essay. Targeted by the Nazis, Bethe fled his native Germany in 1933 and helped improve armor for Allied ships during World War II. Attaining American citizenship in 1941, Bethe accepted J. Robert Oppenheimer’s invitation to join the Manhattan Project. Bethe headed the Theoretical Physics Division at Los Alamos Laboratories and supervised a group charged with creating a mechanism to

trigger the atomic explosion. Bethe later joined his peers who opposed the use and testing of atomic weapons. Seated at his desk in Halsman’s photograph, with equations on a blackboard in the background, Bethe emanates the satisfaction of one inspired by his work. Still active into his nineties, Bethe reflected recently: “I am a very happy person. I wouldn’t want to change what I did during my life.”

ROSALYN S. YALOW

Arthur Leipzig’s 1987 photograph of Rosalyn Yalow (born 1923) depicts the medical physicist, who had recently been named Solomon A. Berson Distinguished Professor at Large at Mount Sinai School of Medicine, at work in the lab. Leipzig included the portrait in his 1988 book, *Sarah’s Daughters: Jewish Women Around the World*. Yalow pioneered the use of radioactive isotopes to analyze blood and other bodily fluids for the presence of disease or toxic substances. During the 1950s Yalow and Solomon Berson collaborated to invent radioimmunoassay, known as RIA, to study insulin levels in the blood of diabetic patients. The procedure now serves many purposes, including diagnosing viruses and

thyroid disease, identifying the presence of drugs in the body, and testing blood supplies. In 1977 Yalow became the second woman to win the Nobel Prize for physiology or medicine, an award she shared with Andrew V. Schally and Roger Guillemin, for her contribution to the development of RIA. ✨



Rosalyn S. Yalow by Arthur Leipzig, 1987

©Arthur Leipzig

Book Review

Arthur Miller: His Life and Work

by Martin Gottfried (Cambridge, Mass.: Da Capo Press, 2003), 484 pp.



Arthur Miller by Arnold Newman, 1946

Jessica Hoffman

PROGRAM ASSISTANT

Arthur Miller (born 1915) has been described as America's greatest living playwright. Two of his plays—*Death of a Salesman* and *The Crucible*—are an entrenched part of the American literary canon. Miller grew up in Manhattan, living in comfortable circumstances near Central Park until the Great Depression, when his father's financial ruin forced the family to adjust to a decidedly straightened existence in Brooklyn. Willy Loman, the pitiable protagonist of *Death of a Salesman*, was derived from Miller's observation of salesmen who worked in his father's manufacturing plant during the Depression. With the portrayal of Willy's loss and failure, the play's powerful dialogue and potent drama thrust Miller into a place of prominence early in his career.

In 1953 Miller etched himself onto the national political scene with the production of *The Crucible*, which dramatized the Salem witch trials of

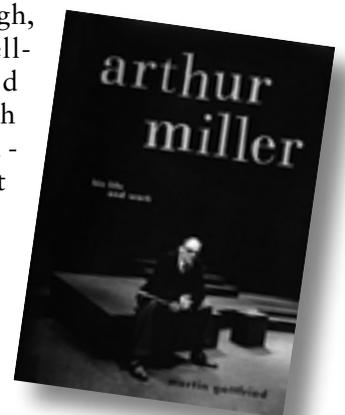
1692. But the story—centered on community hysteria and mob mentality—also carried a more contemporary critique: that of the House Committee on Un-American Activities. In Miller's view, the committee's search for Communist infiltration throughout the United States nurtured a "witch hunt" atmosphere mirroring that of colonial Salem. The committee's proceedings, which in turn led to Hollywood blacklisting, and the testimony of his friend, director Elia Kazan—in which Kazan "named names"—led to a rift between Miller and Kazan, who had been artistic collaborators and close friends. It was a falling-out that underscored the divisiveness of the McCarthy era and brought into sharp relief Miller's lifetime commitment to liberal political causes, which eventually led to his being called to testify before the committee.

Miller's plays are time and again transparently based on his family, friends, and experiences—sometimes disturbingly so. *After the Fall* (1964) tells the story of Maggie, an obvious stand-in for Marilyn Monroe, whom Miller married in 1956. Written less than two years after the film icon's tragic death, the play was so stark in its portrayal of Maggie's emotional volatility, as well as her struggle with drug and alcohol abuse, that Miller was harshly criticized for it.

Miller has struggled with both critics and the Broadway establishment, laboring under the familiar artistic burden of trying to follow his early critical and commercial successes. Although he has written sixteen new plays since the late sixties, which have been lauded by audiences abroad, all of them have been generally

panned by the critics and ignored by the theatergoing public in the United States. Still, *Death of a Salesman* and *The Crucible* continue to be two of the most studied plays in this country, and Miller's screenplay for the 1995 film version of *The Crucible* earned him an Academy Award nomination. His reputation as an important twentieth-century playwright seems certain.

Martin Gottfried's biography views Miller through his plays. Gottfried, a drama critic and the author of several books on Broadway theater and its personalities, interviewed Miller on various occasions. But when Gottfried informed Miller that his personal life would be included in this biography, Miller broke off contact. Gottfried instead constructs his portrait of Miller's private life from family and friends. He describes Miller's personal struggles in tandem with a meticulous examination of his plays, recounting Miller's every work—even numerous unpublished drafts and multiple incarnations—from his student days at the University of Michigan in the late 1930s through 2000. Faced with the challenge of describing an art form that must really be experienced, Gottfried somewhat belabors his description of the playwright with these detailed accounts. Certainly, though, it is a well-researched and thorough examination of that for which Miller will be remembered—his work. ✨



Book Review

Theodore Roosevelt: Champion of the American Spirit
by Betsy Harvey Kraft (New York: Clarion Books, 2003), 180 pp.



Theodore Roosevelt as a Rough Rider by Pach Brothers Studio, c. 1898, gift of Joanna Sturm

James G. Barber

HISTORIAN

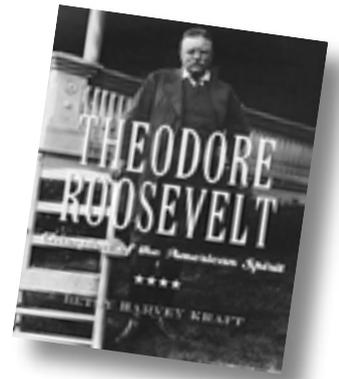
Betsy Harvey Kraft's new book for young readers (ages nine and up), *Theodore Roosevelt: Champion of the American Spirit*, is a good introduction for school-age children curious to learn about the life of the twenty-sixth President. Written in a style that will also engage older audiences looking for a condensed and illustrated biography, her story is a vivid telling of a remarkable life; the fictional character Harry Potter scarcely had more exciting adventures or more fun than the real-life TR. Consider, for instance, Teedie (TR's nickname in the family) at age fourteen. That year, in 1872, the Roosevelt family took a two-month-long cruise up the Nile River. Teedie spent much of his time shooting exotic birds with a double-barrel gun his wealthy father had given him recently for his birthday. It was no magic wand, but in the hands of the indefatigable Teedie this stick had powers of its own. "I have had great enjoyment from the shooting here," he told his aunt in a letter, "as I have procured

between one and two hundred skins." The young Roosevelt had a passion for preserving birds and wild animals, and did so at every opportunity, using his own special potions. During that same trip, only now in Germany, he complained about his German hosts. "My scientific pursuits cause the family a good deal of consternation," he said in a letter home. "My arsenic was confiscated and my mice thrown (with the tongs) out of the window." He illustrated this letter with a sketch of the incident, which Kraft has reproduced.

In the concise space of 180 pages, Kraft fleshes out a seamless and balanced profile of a man who, with his boundless energy and supreme willpower, managed to squeeze several active lives into one sixty-year lifespan. Theodore Roosevelt died in his sleep on January 6, 1919, not from excessive years but, one might say, from excessive mileage; he simply wore himself out in a glorious celebration of living life at full throttle, nearly every waking hour. Kraft narrates this frenetic life with evenly paced text, and mingles photographs and illustrations of Roosevelt at various ages on almost every other page. More than being just fun to look at, these images—of TR as a child, cowboy, Rough Rider, New York City police commissioner, President, and African big-game hunter—reinforce many of Kraft's anecdotes. The story of the teddy bear is of course one of the better known stories. Yet students will relate to a cartoon of Roosevelt, with a six-shooter in each hand, shooting holes in a large dictionary that stands in front of him. An indifferent speller, TR proposed a new system of spelling words phonetically, such as "thru" for "through."

Reform of one kind or another was a defining thread that ran throughout Roosevelt's life. As President, for example, he enacted big business reforms, conservation measures, and pure food and drug laws. Kraft, however, shows Roosevelt at his courageous best in a chapter about his efforts as police commissioner of New York City, from 1895–97. Her discussion of how he tried to stop the corruption in a large and entrenched bureaucratic system, wrestling with difficult problems—sometimes with fortitude and sometimes with wit—is especially instructive for all would-be civic leaders.

For young scholars doing research projects, the author includes selected source notes, a bibliography, a chronology of TR's life, and a list of places associated with this extraordinary American that those of all ages will enjoy visiting. ✨



Cartoon of Roosevelt as a naturalist by Oscar E. Cesare, c. 1916, gift of Valentine Cesare

CURATOR'S CHOICE Thomas Edison

Color woodcut poster engraved by Alfred S. Seer, c. 1878

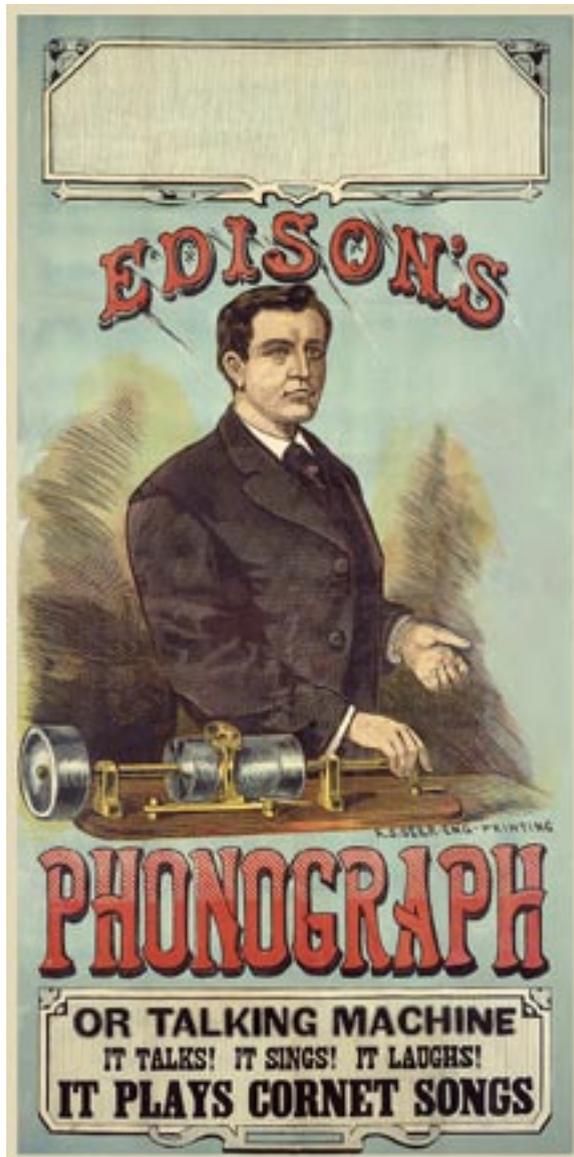
Wendy Wick Reaves

CURATOR OF PRINTS
AND DRAWINGS

“It Talks! It Sings! It Laughs! It Plays Cornet Songs.” Thus was Thomas Edison’s early design for a phonograph introduced in this nearly seven-foot-tall poster. The exaggerated size and tone reminds us of the intense excitement that greeted the first announcements of Edison’s “talking machine” in the fall of 1877. By December, Edison had filed for a patent, and a description had appeared in *Scientific American*. His life would never be quite the same again, as hundreds, perhaps thousands, of the curious traveled to Menlo Park, New Jersey, to see him demonstrate his sensational invention. Among the skeptics was Bishop John Vincent, who suspected ventriloquist tricks. He was finally satisfied after shouting an unrepeatable recitation of Old Testament names into the machine

and hearing it played back to him. Newspaper stories incited speculation and rumors, as well as official invitations from Washington. So, on April 18, 1878, Thomas Edison arrived in the nation’s capital, where he visited Joseph Henry, Secretary of the Smithsonian. Demonstrations to congressmen, senators, and the President followed in quick succession, and to cap off his newfound fame, Edison also sat—with his machine—for a photograph at Mathew Brady’s studio. Later that day his recorded voice announced to an assembled audience that “the speaking phonograph has the honor of presenting itself before the American Academy of Sciences.”

Within months, a number of Edison’s “talking machines” had been manufactured for exhibition



around the country under the auspices of James Redpath, the founder of a popular lyceum bureau or lecture-booking agency. This wood-engraved portrait is, in essence, a show poster advertising the demonstrations of Edison’s phonograph. The blank space left purposefully at the top provided exhibitors the opportunity to fill in the particulars of time and place.

Edison did not accompany his machines on the circuit, but he appears prominently in the poster: the Brady image of inventor and invention are blown up to great size. At the bottom, circus poster rhetoric informs the viewer of the extraordinary machine’s accomplishments. At the time, this image and the man it represents would have been seen within the context of both the lyceum and the circus: a conflation of notions about education, entertainment, and nationalistic pride in the ingenuity of American invention.

From our own perspective, this piece tells us more about the man than the phonograph, which was substantially redesigned before it became commercially viable a decade later. The poster reminds us that Edison, far from being that lone genius of American fantasy, was very much a public figure. His ability, clearly demonstrated here, to keep his name, face, and reputation in the public eye contributed in no small measure to his success.✱

Further reading: Paul Israel, *Edison: A Life of Invention* (New York: John Wiley, 1998); Neil Baldwin, *Edison: Inventing the Century* (New York: Hyperion, 1995).

Titian Ramsay Peale

and the Great U.S. South Seas Exploring Expedition



Titian Ramsay Peale II self-portrait (possibly aided by Rembrandt Peale), c. 1845, gift of Edgar L. Smith Jr.

Sidney Hart

SENIOR HISTORIAN AND EDITOR OF THE
PEALE FAMILY PAPERS

On the sunny, breezy morning of August 18, 1838, the six sailing vessels of the South Seas Exploring Expedition, or Ex. Ex. as it was called, were under way from the naval port of Hampton Roads, Virginia. On board the ships, in addition to all manner of navigational and scientific instruments and stores, were 346 men, including nine scientists and artists.

One of the scientists on the nation's most ambitious expedition of exploration, was Titian Ramsay Peale (1799–1885), named after the famous Venetian artist by his father, Charles Willson Peale, the celebrated portrait painter and museum proprietor. Titian's birth in the Hall of the American Philosophical Society, the family's living quarters and home of his father's world-famous Philadelphia Museum, destined him for achievement in both art and science. He benefited from extraordinary on-the-job training as he worked alongside his father in the

museum, undoubtedly the best location in America at that time to study natural history. In 1833, Titian was elected to the American Philosophical Society, indicative of his stature in American scientific circles, and became acting manager of the Philadelphia Museum. Although lacking in academic credentials, he was regarded by his peers as a top field naturalist, an expert taxidermist and illustrator, and a superb marksman. Titian had also participated in several exploring expeditions, the most significant being the Long, or Yellowstone, Expedition to the American West in 1819. It was therefore not unexpected when Peale was selected as a naturalist on the South Seas Expedition.

The Ex. Ex. was a huge and ambitious undertaking for a republic little more than fifty years old. European naval explorations of this era typically consisted of one or two ships and were meant to serve the cause of both science and empire. With the Ex. Ex., the United States was eager to show the flag in one of the last uncharted regions of the world, the icy regions of the Antarctic Circle. But commerce, not empire (which America already had in its unexplored western territories), was the expedition's major goal.

The vast crisscrossing track of the Ex. Ex. still takes one's breath away: first south to Cape Horn, with a side trip from there to the Antarctic, to the west coast of South America, then to Tahiti and the Fiji Islands and Australia, and from there a more extended exploration of Antarctica. The expedition then backtracked to Australia and New Zealand, to the Fiji and Hawaiian Islands, and from there to another of its prime objectives, the Pacific Northwest, in order to explore that coast and strengthen American claims to the Oregon Territory and the San Francisco Bay. Next, the ships sailed to Manila, Singapore, around Cape Town, and to New York, concluding the last all-sail circumnavigation of the world.

By any objective criteria the Ex. Ex. achieved its goals. The officers produced 241 highly accurate and precise navigational charts for the nation's merchant and whaling vessels that would sail the Pacific Ocean. For the first time, 1,500 miles of the Antarctic coast was charted, giving the expedition's commander, Charles Wilkes, rightful claim as the discoverer of that continent, the coast of which still bears his name. The collections of exotic,

Continued on page 11

Titian Ramsay Peale's drawings of Aprosmitcus splendens and Aprosmitcus personatus, from Mammalogy and Ornithology by John Cassin, 1858. Smithsonian Institution Libraries

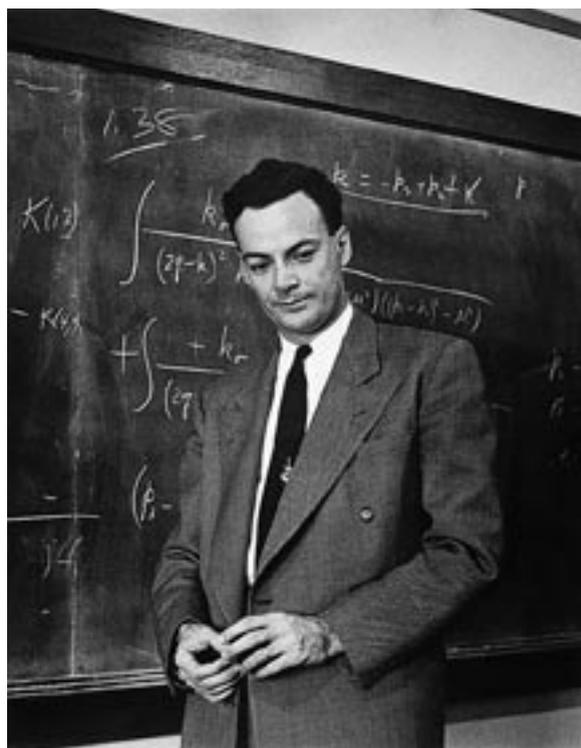


A Moment in American Science



©Estate of Francis Bello

Joshua Lederberg by Francis Bello, 1954, gift of Steve Bello



©Estate of Francis Bello

Richard Feynman by Francis Bello, 1954, gift of Steve Bello

Ann M. Shumard

CURATOR OF PHOTOGRAPHS

“What kind of man becomes an outstanding scientist? Is there a widening gulf between him and the rest of society?” These were some of the questions posed by *Fortune* magazine’s award-winning science editor Francis Bello in an article entitled “The Young Scientists.” Published fifty years ago, in *Fortune*’s June 1954 issue, the article appeared in the wake of the controversy in which the Atomic Energy Commission revoked J. Robert Oppenheimer’s security clearance and terminated his contract as a government adviser, due largely to questions about his political associations and his opposition to the development of the hydrogen bomb. For many Americans, Oppenheimer’s professed naiveté of politics, popular culture, and world affairs raised questions about the degree to which scientists were divorced from the contemporary scene. Within

the scientific community, the Oppenheimer investigation was viewed by some as evidence of a rising tide of anti-intellectualism, while others saw it as a harbinger of enforced conformity that threatened the independence essential to their work.

It was against this backdrop that Francis Bello set out to better understand the characteristics that defined those attracted to the rigorous demands of scientific inquiry. Through interviews with twenty promising scientists under the age of forty—ten from American universities and ten from U.S. industry—and surveys completed by nearly one hundred of their peers, Bello created a fascinating collective profile of the new generation of American scientists at the very moment when they were conducting the research that would secure their place in history.

To illustrate his text, Bello photographed the twenty young scientists highlighted in the

Fortune article, including the boyish-looking molecular biologist James Dewey Watson (see cover). At twenty-six, Watson was the youngest scientist to be featured in the picture portfolio. He posed appropriately with a three-dimensional model of the DNA (deoxyribonucleic acid) molecule whose double-helix structure he had divined one year earlier while working in partnership with British biologist Francis Crick. Aptly described by Watson as “the secret of life,” this discovery, which revealed the physical and chemical basis of heredity, was one of the most important scientific advances ever made. It opened the way to all manner of research and brought Watson and his colleagues Crick and Maurice Wilkins the Nobel Prize in physiology or medicine in 1962 for “their discoveries concerning the molecular structure of nucleic acids and its significance for information transfer in living material.”

When Bello photographed Joshua Lederberg at his microscope, the twenty-nine-year-old professor of genetics at the University of Wisconsin had already made several important breakthroughs. As a graduate student under Edward L. Tatum at Yale, Lederberg demonstrated for the first time that bacteria can reproduce sexually by conjugation to yield offspring that possess traits from each parent organism. This revolutionary finding overturned the prevailing view, which held that only asexual reproduction was possible in bacteria. After accepting a post at Wisconsin in 1947, Lederberg pioneered a method for isolating mutations of a bacteria species and succeeded in proving that genetic mutations occur spontaneously. With his discovery in 1952 of transduction in bacteria—the phenomenon in which the transfer of chromosomal fragments from one cell to another alters the genetic code of the recipient cell—Lederberg laid the foundation for the field of genetic engineering. Cited for “his discoveries concerning genetic recombination and the organization of the genetic material of bacteria” Lederberg shared the Nobel Prize for physiology or medicine in 1958.

At the time of *Fortune*'s survey, theoretical physicist Richard Feynman was thirty-six years old and a recent recipient of the coveted Albert Einstein Award. Trained at MIT and Princeton, he played a critical role in the development of the atomic bomb during World War II, and was described by Manhattan Project director J. Robert Oppenheimer as “by all odds the most brilliant young physicist [at Los Alamos].” After the war, Feynman focused his energies on problems in quantum theory, first at Cornell and then at Caltech. Within four years he had completed the work in quantum electrodynamics that would earn him a shared Nobel Prize in physics in 1965. Credited with providing the means to explain



Cover of *Fortune*, June 1954.
Smithsonian Institution Libraries

much that was new in modern physics, Feynman had a talent for making physics principles accessible to a broad audience. This was apparent when, as a member of the commission investigating the *Challenger* space shuttle accident in 1986, Feynman plunged a piece of O-ring material into of a glass of ice water to demonstrate that the resilience of the rubbery substance was compromised at freezing temperatures.

In his *Fortune* article Francis Bello quoted an eminent senior scientist as saying, “None of us is wise enough to know who may be doing the research that will be considered of first magnitude ten or fifteen years from now.” In light of that observation, it is remarkable to realize that in a little more than a decade, fully one-quarter of the twenty young scientists featured in Bello’s article had secured a Nobel Prize. ✨

Further reading: Francis Bello, “The Young Scientists,” *Fortune*, June 1954; to learn more about the J. Robert Oppenheimer controversy, see United States Atomic Energy Commission, *in the Matter of J. Robert Oppenheimer: Transcript of Hearing before Personnel Security Board and Texts of Principal Documents and Letters*, with a foreword by Philip Stern (Cambridge: MIT Press, 1970), and Gregg Herken, *Brotherhood of the Bomb: The Tangled Lives and Loyalties of Robert Oppenheimer, Ernest Lawrence, and Edward Teller* (New York: Henry Holt, 2002).

Continued from page 9
Titian Ramsay Peale

previously unknown specimens, ethnographic objects, fossils, plants, insects, birds, and mammals brought back by the scientists overwhelmed the young nation’s inadequate museum storage capacity, and as a result, helped promote the creation of a new national museum, the Smithsonian Institution.

As an interim measure before the Smithsonian Building was completed, the vast collections were initially stored in the Patent Office Building (now home of the National Portrait Gallery), where they drew huge crowds. Although Titian was later to have difficulty in publishing his account of the voyage, his contributions as a naturalist were prodigious: 2,150 birds, 134 mammals, and 588 species of fish. A multitude of exquisite drawings and paintings also bear his name. ✨

Further reading: Nathaniel Philbrick, *Sea of Glory, America’s Voyage of Discovery: The U.S. Exploring Expedition, 1838–1842* (New York: Viking, 2003); Jessie Poesch, ed., *Titian Ramsay Peale and His Journals of the Wilkes Expedition* (Philadelphia: American Philosophical Society, 1961); see also the website of the Museum of Natural History, <http://www.sil.si.edu/digitalcollections/ussexex>.

The NPG’s Peale Family Papers will publish a selection of Titian Peale’s images from the Ex. Ex. in volume 6 of *The Selected Papers of Charles Willson Peale* (forthcoming).



Science in Our Lives

American Research Pioneers

Carol Wyrick

EDUCATION PROGRAM DIRECTOR

From the race against polio in the 1950s to more recent concerns about environmental pollution and the global threat of HIV/AIDS, a diverse cadre of American scientists has emerged over the years to take on these and other challenges endemic to the modern age. The pioneering work of Charles Drew, Jonas Salk, Rachel Carson, and David Ho illustrates how scientists approach problems and engineer solutions, while often serving as catalysts for applied research by others. The contributions of these four pathfinders, assessed collectively, have inexorably altered and improved many aspects of the way we live our lives today.

CHARLES DREW

In 1940, with German bombers dropping their deadly cargoes daily on its cities, England stood in desperate need of blood for its thousands of wounded civilians. To fill this shortage, the British turned to the African American doctor Charles Drew (1904–1950), a pioneer in the field of the preservation and storage of blood. While in the process of completing a Rockefeller Foundation Research Fellowship at Columbia University (1938–40), Drew had written his dissertation on a technique for the preservation of blood plasma. By separating the plasma from the whole blood and then refrigerating both parts separately, he found they could be combined up to a week later for a transfusion. Drew also discovered that everyone has the same type of plasma, so in cases where a whole blood transfusion was not necessary, a plasma transfusion could safely be administered, regardless of the patient's blood type. In early 1941,

Drew became medical director of a three-month American Red Cross pilot project responsible for the mass production of dried plasma. It was largely thanks to his expertise that this enterprise was able to save so many lives during World War II. Shortly after the United States entered the war in December 1941, the American Red Cross ordered that the national blood program store all African American blood separately. Drew—who had returned to Howard University in April to resume work in the resident training program in surgery—expressed his strong opposition to this policy, noting that it had no medical or scientific basis.

A noted teacher, Drew had had a part in training more than half of the certified African American surgeons in this country by the time of his death in an automobile accident.

JONAS SALK

President Franklin D. Roosevelt, a polio survivor himself, established the National Foundation for Infantile Paralysis in January 1938. The foundation, a unique partnership of professional scientists and volunteers, funded research to develop a vaccine for eradicating poliomyelitis, the crippling disease that infected as many as 50,000 people in the United States each year. Dr. Jonas Salk (1914–1995), one of many researchers who received foundation funding, developed the first vaccine to be approved for nationwide testing. Statistics showed that this experimental killed-virus vaccine was 80 to 90 percent effective in preventing polio in more than one million school children who participated in the 1954 field trials. The vaccine was approved by the government in 1955, and 450 million doses were administered over the next four years. A live-virus vaccine—administered orally and offering longer immunity, indefinite storage in deep-freeze units, and inexpensive production techniques—was later

developed by Dr. Albert Sabin and licensed for use in 1962, eventually supplanting the Salk vaccine. The widespread use of the vaccine has virtually eliminated this disease; the World Health Organization expects the world to be polio-free by 2005.



Jonas Salk by Arnold Newman, 1975, gift of Arnold Newman

©Arnold Newman



Charles Drew by Betsy Graves Reyneau, c. 1953, gift of the Harmon Foundation



David Ho by Gregory Heisler, 1996, gift of Time magazine

DAVID HO

Although public awareness of AIDS increased greatly after the death of Rock Hudson in 1985, the race to identify the disease's cause, develop methods of prevention, and discover cures for those already infected had begun years earlier. Dr. David Ho, one of the early pioneers in HIV/AIDS research, first began treating people infected with HIV as chief medical resident at Cedars-Sinai Medical Center in 1981, even before the disease had a name. He and other physicians at the hospital had begun to treat previously healthy homosexual men for infections that normally do not manifest themselves in people with intact immune systems. "It became clear that this was a growing epidemic," Ho later recalled. He was the first researcher to determine that the virus grows in long-lived immune cells called macrophages and that the disease cannot be spread by kissing, since saliva does not carry enough of the active virus. As the scientific director and CEO of the Aaron Diamond AIDS Research Center in New York City since 1990, Ho has continued to advance research in the field, resulting most recently in the trials of new experimental vaccines to prevent the onset of AIDS. Today, there are currently more than twenty different AIDS vaccines in various stages of development and testing across the globe, providing hope that current projections of as many as sixty-eight million deaths from AIDS infection between 2000 and 2020 can be significantly reduced.✴

RACHEL CARSON

"I can remember no time when I wasn't interested in . . . the whole world of nature," biologist Rachel Carson (1907–1964) once noted, and her long career dedicated to studying the environment provides testimony to the truth of that statement. But Carson was not just a scientist; she was a writer, and her often-lyrical books on nature were valued for both their scientific and literary merits. The publication of *The Sea Around Us* in 1951 first drew public attention to her ability to translate the complexities of biological science into clear and beautiful language. Carson's most important book, however, is probably *The Silent Spring*, first published in 1962. Both a description of nature's wonders and a warning about the danger of chemical pesticides such as DDT to plants, animals, and humans, *The Silent Spring*, while raising a great deal of controversy, also created a new public consciousness of the environment's fragil-



Rachel Carson by Una Hanbury, 1965

ity and helped to turn concern for ecology into a mass movement. The Rachel Carson Trust for the Living Environment (now the Rachel Carson Council) extends the work of this environmental pioneer through the continuous compilation and dissemination of information on chemical pesticides and alternative methods of pest control.

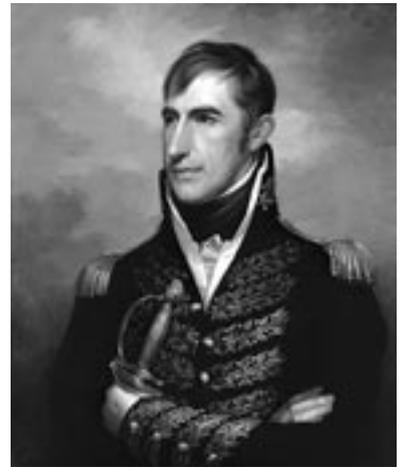
NPG on the Road

Most of the National Portrait Gallery's traveling shows have concluded their tours or are approaching their final venues. However, the Gallery will maintain its visibility with the exhibitions "Gilbert Stuart" and "Retratos: 2,000 Years of Latin American Portraits." "Gilbert Stuart" highlights one of the most celebrated portraitists of America's early national period, and is co-organized with the Metropolitan Museum of Art. This exhibition includes more than ninety of Stuart's extraordinary works, with a focus on his portraits of George Washington, including NPG's renowned "Lansdowne" painting. "Retratos," organized jointly with the San Antonio Museum of Art and El Museo del Barrio, provides the first compelling survey of Latin American portraiture from North, Central, and South America, as well as the Caribbean. It contains more than one hundred works in a variety of media. Both exhibitions will have venues in Washington, D.C.

The National Portrait Gallery's painting of renowned educator and innovator of agricultural sciences George Washington Carver by Betsy Graves Reyneau, along with its portrait of William Henry Harrison by Rembrandt Peale, will be on loan to the Arkansas Arts Center for the exhibition "Art and the Oval Office," from November 17, 2004, through January 23, 2005. The exhibition, consisting of forty-five objects that were lent to the White House from the Kennedy through the Clinton administrations, will coincide with the opening of the William Jefferson Clinton Presidential Library in Little Rock.



George Washington Carver by Betsy Graves Reyneau, 1942; gift of the George Washington Carver Memorial Committee to the Smithsonian Institution, 1944



William Henry Harrison by Rembrandt Peale, c. 1815; gift of Mrs. Herbert Lee Pratt, Jr.

 **Lansdowne
Tour**
Little Rock, Arkansas,
Arkansas Arts Center

Featuring the famous "Lansdowne" full-length portrait of George Washington by Gilbert Stuart, "George Washington: A National Treasure" is currently at its final tour venue—the Arkansas Arts Center—through August 22.

The National Portrait Gallery was able to purchase this major icon of the nation's first President through the generosity of the Donald W. Reynolds Foundation, which also provided funding for its tour to museums across the country.



Portrait of a Nation: Tour Itinerary

Portrait of a Nation encompasses a series of exhibitions organized by the National Portrait Gallery while the Patent Office Building is closed for renovation. For further information, contact the Department of Exhibitions and Collections Management:
phone: (202) 275-1777
fax: (202) 275-1897
e-mail: NPGExhibitions@si.edu

Women of Our Time: Twentieth-Century Photographs

North Carolina Museum of
History, Raleigh
May 28–August 1, 2004

Final venue: George Bush
Presidential Library &
Museum, College Station, Texas
October 8, 2004–January 2,
2005

American Women: A Selection from the National Portrait Gallery

Naples Museum of Art, Florida
January 7–April 3, 2005

Final venue: Columbia
Museum of Art, South Carolina
April 30–July 10, 2005

NPG at Home

Norman Foster and Partners to Design POB Atrium Enclosure



*Visualization of
aerial view of the
POB courtyard
roof at night
by Foster and
Partners*

Following an international competition, renowned architect Norman Foster of Foster and Partners was selected to design the Patent Office Building's courtyard enclosure. A hallmark of the historic building's renovation, the glass covering over the 28,000-square-foot courtyard will transform the setting into a year-round event space for the National Portrait Gallery and the Smithsonian American Art Museum. The new atrium will be flexible to accommodate a variety of functions, such as performances, receptions, art installations, and special events. During the day, it will also serve as seating for the museums' café. The dynamic space will be one of the largest event spaces in Washington, D.C.

"It was important to us that the renovation include a contemporary addition to this nineteenth-century landmark building," said NPG Director Marc Pachter. "The covered courtyard is the Smithsonian's twenty-first-century contribution to the building's exuberance."

The final design for the atrium is expected this summer; all construction will be completed by early 2006. The total cost of the enclosure is estimated at \$35 million and is being raised from private contributors.

Foster and Partners has worked on projects with many museums, both in the United States and abroad, including the award-winning Great Court at the British Museum in London. Foster's first U.S. museum commission was at the Joslyn Art Museum in Omaha, Nebraska, in 1994. Currently, the firm is working on several other cultural projects, such as the master plan for the Museum of Fine Arts, Boston, and Avery Fisher Hall at Lincoln Center in New York City. ✨



*Top: sectional
model view
through
courtyard
enclosure by
Nigel Young/
Foster and
Partners*



*Bottom:
longitudinal
section through
courtyard
enclosure by
Foster and
Partners*

Useful Contacts

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Portrait PuZzlers

1.



“And awaaaay we go” was the trademark line of this early television star.

2.



Known for both his classical and popular music, this half of a talented team of brothers wrote “Porgy and Bess.”

3.



A last-place graduate of West Point, this general died at the Battle of Little Big Horn.

4.



© Michael Katakis

Her design garnered only a B in her Yale architecture class but won the commission for Vietnam Veterans Memorial in Washington.

Answers: 1. Jackie Gleason (1916-1987) by Russell Hoban. Casein on Masonite, 1961, gift of *Time* magazine. 2. George Gershwin (1898-1937) by Arthur Kauffman. Oil on canvas, 1936. 3. George Armstrong Custer (1839-1876) by an unidentified artist. Ambrotype, c. 1859. 4. Maya Lin (born 1959) by Michael Katakis. Gelatin silver print, 1988, gift of Michael Katakis in memory of his father, George Katakis. All images are details.

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