

Appendix C

The Scientists Who Signed the Russell-Einstein Manifesto and Launched the 1957 Pugwash Conference

Eleven scientists signed the Russell-Einstein Manifesto, and twenty-two scientists attended the 1957 Pugwash Conference. They traveled from eleven countries, spoke different native tongues, and listened from their heart. They came with healthy skepticism and heart-felt hope. After they departed, they continued to forge paths that brought scientific light upon a world tottering between soul-quenching destruction and innovative possibilities that could lead to peaceful coexistence.

What follows is the briefest of introductions to these ground-breaking scientists, physicians, and academicians. I urge you to learn more about them and then forge your own path forward.

Signers of the Russell-Einstein Manifesto



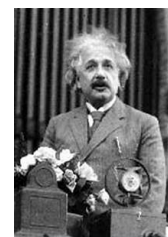
Born



Bridgeman



Joliot
w/ wife Irene



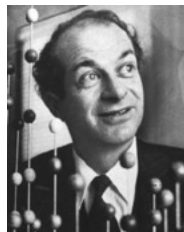
Einstein

Max Born ⁱ Germany (1882-1970)	Nobel Physics Prize winner Born was recognized “for his fundamental research in quantum mechanics, especially for his statistic interpretation of the wavefunction. Jewish, he was dismissed from his German academic post, fled to England and became a citizen in 1953, living in Edinburgh. He collaborated with Einstein.
Percy W. Bridgeman ⁱⁱ USA (1882-1961)	Nobel Physics Prize winner, Bridgeman taught at Harvard University, where he investigated the properties of matter under high pressure. He designed an apparatus that “led to an abundance of new findings, including a study of the compressibility, electric and thermal conductivity, tensile strength and viscosity of more than 100 different compounds.”
Frédéric Joliot ⁱⁱⁱ France (1900-1958)	Jointed awarded the Nobel Chemistry Prize with his wife Irene, Joliot was assistant to Marie Curie and wrote his thesis on the electrochemistry of radio-elements. He extensively researched the structure of the atom with his wife, Irene Joliot-Curie. He discovered radioactivity. Interested in social questions, he joined the socialist party. He went on to work on “chain reactions and the requirements for the successful construction of an atomic pile using uranium and heavy water.”
Albert Einstein ^{iv} UK (1879-1955)	German born Einstein developed the theory of general relativity, instigating a revolution in the study of physics. His 1921 Nobel Prize in Physics was “for his services to theoretical physics, and especially for his discovery of the law of the photoelectric effect,” which led to the quantum theory. He settled in the US, taught at Princeton University, and recommended to President Franklin Roosevelt that the US begin developing an atomic weapon. However, he denounced using nuclear fission as a weapon. During the remainder of his life, he worked incessantly for peace, international understanding, and nuclear disarmament. His final official act was signing the Manifesto, giving it his name and legitimacy,

Russell-Einstein Manifesto Signers



Infeld

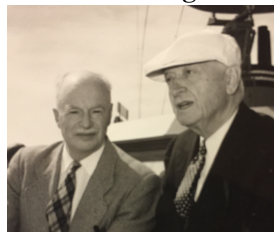


Pauling



Russell

1957 Pugwash Conference Attendees



Chisholm & Eaton



(Pniewski) & Danysz



Doty

<p>Leopold Infeld^v USA (1896-1968)</p>	<p>A Polish born Jewish physicist, Infeld worked with Einstein in Berlin and Princeton. “The two scientist co-formulated the equation describing star movements.” After the bombing of Hiroshima and Nagasaki, he became a peace activist. He left his academic post at the University of Toronto and returned to Poland to help rebuild scientific studies after the devastation of the war. Believed to be a communist sympathizer, he was stripped of his Canadian citizenship, but after his death was granted in Toronto the “posthumous title of professor emeritus.”</p>
<p>Linus Carl Pauling^{vi} USA (1901-1994)</p>	<p>Pauling, recipient of the Chemistry Nobel Prize in 1954 was a pioneer in fields of quantum chemistry & molecular biology. In 1962, he was awarded the Nobel Peace Prize and in 1970 the Lenin Peace Prize for his opposition to weapons of mass destruction. In 1959, he drafted the “Hiroshima Appeal,” issued after the Fifth World Conference against Atomic and Hydrogen Bombs. Always a peace activist, he fought for the cessation of nuclear weapon testing and was a driving force in the Pugwash Conferences.</p>
<p>Bertrand Russell UK (1872-1970)</p>	<p>Nobel Literature Prize winner, Russell was a Welsh philosopher, logician, mathematician, historian and social critique. Anti-war activist, he campaigned against Adolph Hitler, Stalin totalitarianism, the US involvement in Vietnam, and was an outspoken proponent of nuclear disarmament. Outspoken and an active protester, he at times was denied passports and had teaching contracts cancelled. He persevered. Russell was unable to attend but attended subsequent Pugwash Conferences. His recorded message was read at the conference opening.</p>

Four of the Russell-Einstein Manifesto Signers attended the 1957 Pugwash Conference: Paul Hermann Muller, Cecil Powell, Joseph Rotblat, and Hidiki Yukawa.

Participants of the 1957 Pugwash Conference

<p>David Cavers^{vii} USA (1903-1988)</p>	<p>Harvard Law Professor and Associate Dean, Cavers specialized in the process of resolving conflicts between the laws of different jurisdictions.</p>
<p>George Brock Chisholm^{viii} Canada (1896-1971)</p>	<p>Canadian veteran of WWI and psychiatrist, Chisholm focused on psychological effects of soldier training and mental health of children. During World War II, he became Director General of Medical Services for the Canadian Army. As Director-General of the Who Health Organization, he championed the importance of international mental and physical health. He was a pioneer in emphasizing the danger of pollution, overpopulation and the nuclear arms race.</p>
<p>Marian Danysz^{ix} Poland (1909-1983)</p>	<p>Nominated to win Physics Nobel Prize and winner of the Marian Smoluchowski Medal, Danysz with Jerzy Pniewski studied high energy nuclear & elementary particle physics and observed the first hypernucleus, which initiated the field of research in hypernuclear physics. He worked with Cecil Powell before immersing himself with nuclear research in Poland.</p>
<p>Paul Doty USA (1920-2011)</p>	<p>Doty’s research in biochemistry and molecular biology at Harvard University focused on structure and functioning of large molecules related to plastics and nucleic acids. He made 42 trips to the Soviet Union to promote the examination with his Soviet counterparts of ways to avoid nuclear war outside of official channels. He initiated the National Academy of Sciences which oversaw the exchange of Soviet and American scientists for research purpose and organized the 1960 & 1961 Pugwash Conferences.</p>

Participants of the 1957 Pugwash Conference



Foster



Kuzin



Lacassagne w Ann Eaton



Muller



Ogawa



Oliphant



Chou^x w/ Eaton

<p>John Foster^{xi} Canada (1890-1964)</p>	<p>Nuclear physicist, Foster established nuclear studies in Canada, served in the US army, and participated in experiments on the Stark Effect of strong electrical fields on the helium atom. He developed a fast-scan radar antennae and directed the construction of a 100-MeV cyclotron. He received his Ph.D. at Yale and was chairman of physics dept. at McGill.</p>
<p>Aleksandr Kuzin^{xii} USSR (1906-1999)</p>	<p>Kuzin of the Soviet Academy of Scientists wrote “The Danger of Nuclear Tests for Humanity” at the 1957 Conference and published a book called <i>Radiation Biochemistry</i>, which defined the field as the area lying between pure radiation chemistry and the radiation biology of intact living organisms. He also published on the application of radioisotopes in biology.</p>
<p>Antoine Lacassagne^{xiii} France (1884-1971)</p>	<p>Lacassagne was a pioneer in the field of oncology and radiation research. He initiated the study of radiation both as a cancer creating agent and as a means of fighting cancer as well as the role of hormones in the disease. He established grants for young scientists seeking to conduct cancer research, and he founded a research center in France to continue research on chemical and hormonal cancer generation. He advocated for intellectuals to oppose the Vietnam War.</p>
<p>Herman Muller^{xiv} USA (1890-1967)</p>	<p>Winner of the Nobel Prize in Physiology of Medicine in 1946, he studied gene mutation and investigated inter-relationships of many linked genes, and the analysis of variable, multiple-factor, characters by means of the device of «marker genes». This extended the validity both of chromosomal inheritance and gene stability. He also studied the incidence of damage to people exposed to radiation whose lifespan was shortened. He proposed the theory of the gene as basis of life & evolution.</p>
<p>Iwao Ogawa^{xv} Japan</p>	<p>Ogawa, the only nuclear physicist who observed the explosion of the bomb dropped on Hiroshima attended both the 1957 and 1982 Pugwash Conferences. Nephew of participant, Dr. Yukawa, he measured and studied the effects of radioactive fallout. At the first Pugwash Conference, he shared the contamination data from Japan. Radiation contamination was a grave issue not only because of the atomic bombs dropped on Japan but also because of the Hydrogen bombs testing by the US and USSR.</p>
<p>Marcus Oliphant^{xvi} Australia (1901-2000)</p>	<p>Sir Oliphant, at one time a member of the Manhattan project working on the atomic bomb, developed the centimeter wave radar helping to win the Battle of Britain. He helped construct a cyclotron to study the particle acceleration of uranium atoms. After the dropping of the bombs on Hiroshima and Nagasaki, he devoted the rest of his life to finding peaceful uses of atomic power. He is revered as the founding father of the Australian National University in Canberra and was the Governor of South Australia.</p>
<p>Pei-Yuan Chou^{xvii} China (1902-1993)</p>	<p>Renowned Chinese physicist and educator received his PhD in physics from Cal Institute of Technology and spent a year with Einstein. Chou received international recognition for his work on turbulence theory and relativity theory, which plays a key role in geophysics, astrophysics, and engineering. He mentored prominent scientists. At Peking University, after being professor, dean, and vice president, he became president, playing significant roles in research and policy in science and technology.</p>

Participants of the 1957 Pugwash Conference



Powell



Rabinowitch



Rotblat w Adams



Selove



Skobel'syn



Szilard



Shin'ichirō

<p>Cecil F. Powell^{xviii} GB (1903-1969)</p>	<p>Nobel Prize Physicist Powell engineered the photographic method of studying nuclear processes and discovered the pion, a heavy subatomic particle. He helped establish the nature of the ions in common gasses. Rotblat said that “Cecil Powell has been the backbone of the Pugwash Movement. He gave it coherence, endurance, and viability.” He attended Pugwash meetings until 1968.</p>
<p>Eugene Rabinowitch USSR/USA (1901-1973)</p>	<p>Russian-born American biophysicist, Rabinowitch^{six} worked in a Manhattan project lab when he wrote the Franck Report which recommended nuclear energy be supervised by civilian enterprises instead of military ones and that the bomb be tested on barren islands. His social and ethical concerns transferred to founding the <i>Bulletin of Atomic Scientists</i> whose purpose “was to awaken the public to full understanding of the horrendous reality of nuclear weapons and their far-reaching implications for the future of mankind; to warn of the inevitability of other nations acquiring nuclear weapons.”</p>
<p>Joseph Rotblat^{xx} Poland/GB (1908-2005)</p>	<p>Sir Rotblat was a Polish-born and British naturalized physicist who resigned from the Manhattan Project and devoted his life to working toward nuclear disarmament. In 1995, he was awarded the Nobel Peace Prize jointly with the Pugwash Conferences on Science and World Affairs. See chapter in this book to learn more about Rotblat and the legacy of the Pugwash Conferences. Read more on chapter on Rotblat.</p>
<p>Walter Selove^{xxi} USA (?-2010)</p>	<p>After working at the MIT Radiation Lab and the National Labs at Argonne and Livermore, Selove taught physics at Penn State. He built the first “fast-chopper” neutron spectrometer, which measures neutron cross-sections for separated isotopes. He helped discovered the initial evidence of the Regge-pole behavior of nucleons, developed the two-dimensional particle calorimeter, has patents on aspects of radar, and observed hadron jets from quark-quark scattering. Selove was a Guggenheim Fellow.</p>
<p>Dmitry Skobel'syn^{xxii} USSR (1892-?)</p>	<p>Skobel'syn “was the first physicist to put a Wilson cloud chamber in a magnetic field and to show that cosmic rays are high energy particles. He observed the multiple particle generation by a cosmic particle for the first time. He initiated the cosmic ray research in Leningrad and Moscow.” The founding of Soviet cosmic ray investigations is attributed to him. He served as director of the Institute of Physics of the Academy of Sciences of the USSR and director of the Scientific Research Institute of Nuclear Physics of Moscow State University.</p>
<p>Leo Szilard^{xxiii} Hungary (1898-1964)</p>	<p>Jewish born Szilard, a molecular biologist and physicist, was a student at Budapest Technical University before entering the Austro-Hungarian Army. Discharged due to illness, he collaborated with Hermann Mark in Berlin on x-ray diffraction experiments. In 1926, he began a 7-year collaboration with Einstein on inductions pumps. He taught quantum theory and invented the electron microscope. Fleeing German persecution, he moved to England and then moved to the US. He advised colleagues on nuclear reactor design. With Einstein, he founded the Emergency Committee of Atomic Scientists. Then, he switched his career to biology. After turning his attention to lessening tensions with USSR, he publicly opposed dev of hydrogen bomb. He patented a nuclear reactor. He founded Council to Abolish War.</p>
<p>Tomonaga Shin'ichirō Japan (1906-1979)</p>	<p>Shin'ichirō, close friend to Dr. Hideki Yukawa, worked in the field of theoretical physics and quantum electrodynamics in Tokyo and in the field of nuclear physics and the quantum field theory in Leipzig, Germany. Back at Tokyo University, he focused on developing a theory of microwave systems. “He solved the motion of electron in the magnetron and also developed a unified theory of the systems consisting of wave guides and cavity resonators.” He was pivotal in establishing the Institute for Nuclear Study and was appointed President of the Tokyo University of Education. He was awarded the Nobel Prize in Physics in 1965 w Julian Schwinger & Richard Feynman.</p>

Participants of the 1957 Pugwash Conference



Thirring



Topchiev



Yukawa



Adams with Chou



Royan with Rotblat & Eaton



Hosts Cyrus Eaton & Anne

<p>Hans Thirring^{xxiv} Austria-Hungary (1888-1976)</p>	<p>Thirring was a theoretical physicist and eventually served as the head of the institute for theoretical physics at the University of Vienna. He is known for “the prediction of the Lense-Thirring frame dragging effect of general relativity.” Always a pacifist, he was forced to retire when Nazi Germany annexed parts of Austria, but he was reinstated and became dean of the philosophical faculty. He was active in the socialist Party of Austria.</p>
<p>A.V. Topchiev^{xxv} USSR (1907-1962)</p>	<p>A.V. Topchiev was a Soviet organic chemist and Academician of the Academy of Sciences of the USSR. He was a professor at the Moscow Technological Institute of the Food Industry and directed the Moscow Petroleum Institute. Later he became deputy minister of higher education and director of the academy’s Institute of Petrochemical Synthesis. His research dealt with nitration, halogenation, polymerization, and alkylation of various hydrocarbons. He helped shape the scientific direction of the Joint Institute for Nuclear Research which was established when the European Organization for Nuclear Research was established that advocated broad cooperation and peaceful use of atomic energy. Identified as working for the KGB, Vladimir Pavlichenko attended as Topchiev’s secretary & interpreter.</p>
<p>Hideki Yukawa^{xxvi} Japan (1907-1981)</p>	<p>Physics Nobel Prize winner in 1949, Yukawa spent his life investigating theoretical physics, focusing on the theory of elementary particles. He was an eminent professor of Theoretical Physics at Kyoto University. He proposed a new field theory of nuclear forces and predicted the existence of the meson which includes the nuclear forces as well as gravitation and electromagnetic forces. He was also awarded with the Imperial Prize of the Japan Academy and Decoration of Cultural Merit.</p>

Additional Key Participants Hosting and Working Behind the Scenes

<p>Ruth Adams USA (1923-2005)</p>	<p>Having helped plan 1957 Pugwash Conference, Adams attended the conference as a professional staff member. Eventually becoming editor, she initially assisted Rabinowitch on the <i>Bulletin of the Atomic Scientists</i>. She worked with Szilard to found the Council for a Livable World and helped establish funding programs in Peace and International Cooperation at the MacArthur Foundation. Read more in Sandra Butcher’s chapter on Anne Eaton and Ruth Adams.</p>
<p>Eric Burhop (UK)</p>	<p>Leader in the World Federation of Scientific Workers, Burhop was vocal communist and not listed on participant list.</p>
<p>Betty Royan USA (1913-2001)</p>	<p>Royan, executive assistant of Eaton and Secretariat of Pugwash Conferences, oversaw the secretaries and assembled the findings of many conferences: some of the Pugwash Conferences on Science and World Affairs as well as the Pugwash conferences on education, the Middle East, India, and China. See more in chapter about Royan.</p>
<p>Cyrus Eaton CA/USA (1883-1979)</p>	<p>Industrialist and philanthropist, Eaton hosted and funded the 1957 Pugwash Conference. Recipient of the Lenin Peace Prize and Canada World Federalist Peace Award, he was nominated 22 times for the Nobel Peace Prize by 13 different people between 1960 and 1964 for his contribution with organizing the Pugwash Conference. See chapter in this book to learn additional information about Cyrus Eaton.</p>
<p>Anne Jones Eaton USA (1922-1992)</p>	<p>Peace activist and women’s rights advocator, Anne Jones, helped Cyrus host the conference. Her charm, perceptivity, and humor played a significant role in helping participants relax and begin the process of trusting one another. They married in 1957. With Cyrus, she received the Canada World Federalist Peace Award in 1979. See chapter in this book on Anne Eaton and Ruth Adams by Sandra Butcher.</p>

On the twenty-fifth anniversary of the 1957 Pugwash Conference, Joseph Rotblat published and edited the Conference Papers: Sadly, these issues are still significant today and must continue to be addressed. The entire contents can be accessed on thinkerslodgехistories.com

[Part One](#)

- July 7 - 12, 1957: Published in 1982 on 25th anniversary and edited by Joseph Rotblat
- Preface by Joseph Rotblat (p. iii)
- Invitation to the Conference
- Letter from Cyrus Eaton (p. 2) and Letter from Bertrand Russell to Joseph Rotblat (pp. 5 - 8)
- Draft Letter to Attendees (p. 9-10)
- The Participants (pp. 11-13) and The Venue (p. 19)
- The Programme (pp. 21-22) and Draft Agenda (pp. 23-25)
- 1957 Pre-conference Session - July 6th afternoon
 - Historical account of 1945 and decision to use atom bomb on Japanese cities
 - Szilard describes his WW II experiences
 - Szilard proposes questions to be answered during conference
- Conference Papers from Committee One - Part One
 - Nuclear Energy Hazards in War and Peace by Joseph Rotblat (p. 66)
 - Somatic Hazards from Medical & Other Uses of Radiation by A.M.B. Lacassagne (p. 78)
 - Potential Hazards of Radiation by H. J. Muller (p. 82)
- Conference Papers from Committee One - Part Two
 - Cont. Mueller's Paper on Hazards of Radiation
 - The Danger of Nuclear Tests for Humanity by A. M Kuzin (p. 88)
 - Discussion of Radiation Hazards by the Advisory Panel to the US Congressional Committee on Atomic Energy by W. Selove (p. 95)
 - Radiation Studies in Japan by S. Tomonaga (p. 105)
- Conference Papers from Committee Two
 - About Disarmament by E. Rabinowitch (p. 108)
 - Some Remarks on Nuclear Weapons by M. L. E. Oliphant (p. 118)
 - Steps to Disarmament by D. V. Skobeltzyn (p. 122)
 - The Psychological Background by G. Brock Chisholm (p. 125)
 - Comment on Bomb Tests by J. S. Foster (p. 133)
- Conference Papers from Committee Three
 - The Significance of Our Times and the Social Responsibility of Scientists by C. F. Powell (p. 137)
 - Proposals Submitted to the Pugwash Conference by E. Rabinowitch (p. 147)
 - Proposal for the Establishment of an International Centre of Scientists Concerned with the Impact of Science on Public Affairs (p. 147)
 - Draft Statement of Principles (p. 149)
 - Draft of an Appeal (p. 152)
 - Points for a Short document on the Responsibilities of Scientists and the Public (p. 154) drafted by J. Bronwski
 - The Responsibilities of Scientists by Chou Pei-Yuan (p. 156)
 - The Responsibility of Scientists by H. Thirring (p. 159)

[Appendix](#)

- Proclamation of the Russell-Einstein Manifesto Peace Conference by Earl Russell July 9th, 1955 (p. 163)

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- ⁱ The Nobel Prize in Physics 1954, Nobelprize.org; Max Born, German Physicist , *Encyclopedia Britannica*, *Silvan Schweber*
- ⁱⁱ Percy Williams Bridgman 1882-1961, *Biographical Memoirs of Fellows of the Royal Society*, D. M. Newitt, 1962
- ⁱⁱⁱ Frédéric Joliot-Biographical, Nobelprize.org, 1935
- ^{iv} Albert Einstein, Scientist and Pacifist, *Nuclear Age Peace Foundation*, John Scales Avery, June 15, 2015
- ^v Leopold Infeld: Biography, *FamPeople.com*
- ^{vi} Linus Pauling, Nobelprize.org, 1962
- ^{vii} David F. Cavers Dies; Legal Scholar Was 86, *The New York Times*, 1988
- ^{viii} George Brock Chisholm, *Historic Canada*
- ^{ix} “How European Physics Reached Across the Wall,” *Cern Courier*, Nov 1, 2002
- ^x Photographs courtesy of Western Reserve Historical Society: Cyrus Eaton Collection and Nobel Prize Website
- ^{xi} Dr. John Stuart Foster, 74, Dies, *New York Times*, September 11, 1964; *John Stuart Foster*, *Revolv*
- ^{xii} Radiation Biochemistry Book Review, *Science*, May 28, 1965
- ^{xiii} Prof. Antoine Lacassagne, Cancer Researcher, Dead, *New York Times*, Dec 16, 1971
- ^{xiv} Hermann J. Muller – Biographical; Nobelprize.org, 1946
- ^{xv} “Dawn of the Peace Movement ii” , Yoshifumi Fukushima, *History of Hiroshima, 1945-1995; Part 17, Article 2*
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- ^{xvii} Obituaries: Pei-Yuan Chou, *Physics Today*, May 1994
- ^{xviii} Cecil Powell – Biographical, Nobelprize.org, 1950
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- ^{xx} *Keeper of the Nuclear Conscious: The Life and Works of Joseph Rotblat*, Andrew Brown, Oxford Uni Press, 2012
- ^{xxi} Dr. Walter Selove, Penn State Faculty and Obituaries 2010
- ^{xxii} “Skobeltsyn and the Early Years of Cosmic Particle Physics in the Soviet Union, G.A. Bazilevskaya, *Astroparticle Physics*, Jan 2014
- ^{xxiii} Leo Szilard – A Biographical Chronology, *Leo Szilard Online*, *Gene Dannen*
- ^{xxiv} Hans Thirring, *Revolv*
- ^{xxv} Topchiev, Aleksandr Vasilevich, *The Great Soviet Encyclopedia*, 1979
- ^{xxvi} “Meson Theory in its Development: Nobel Lecture, Dec 12, 1949; Hideki Yukawa Biography

