The Teller Foundation

11440 West Bernardo Court, Suite 300 • San Diego, CA 92127 • O: (619) 674-6628 Fax: (619) 674-6629

January 28, 1993

DRAFT

Dr. John Raisian
Hoover Institution
Stanford, California 94305

Subject: Study Program Proposal

Dear Dr. Raisian:

The Teller Foundation was established to perpetuate the ideas as well as the ideals of Edward Teller. The charter mission of the Foundation emphasizes the application of technology for the benefit of mankind. At a recent meeting of the Board of Trustees, it was decided that the best vehicle for moving the Foundation forward would be a set of expertly staffed, masterfully executed and carefully presented studies concerning high-impact topics at the interface of science, technology and public policy. It was recognized that the quality of this endeavor will be critically important in establishing the Foundation's intellectual reputation. Therefore, and consistent with the discussion you and I had on December 14th, we propose that this study activity be conducted under your auspices as part of the Hoover Institution agenda.

The proposed arrangement we discussed calls for the Hoover Institution to initiate an in-house 'Teller Program'. With such a relationship in place, the Foundation would have a 'Teller Program' at Hoover, for which it would provide guidance, study participants, scholarly support and limited financial assistance. The Hoover Institution would provide direction and guidance, periodic progress reviews of ongoing studies, selected study participants, and financial support during the first year. Because of the affinity in regard to purpose and philosophy between our organizations, we believe that this arrangement will prove to be most satisfactory.

The reasons for this proposal include the following:

1. As would be expected, the primary strength of the Teller team reflects the charter of the Foundation in regard to technological solutions to global problems. Please see the enclosed listing of distinguished advisors and trustees, persons whose collective credentials cover a wide gamut of accomplished endeavor in science and related strategic affairs.

However, in regard to the implementation of supportive public policy and how to influence policy making activities supportive of technological solutions, Hoover's expertise would be of substantial benefit.

2. Similarly, the agenda of the Hoover Institution stands to benefit from the complementarity of skills brought-to-bear by the Teller team. Scientific constraints and technical implications will then be more fully integrated over a broader range of subjects and rigorous assessments of complex issues will be more readily available.

3. As a scientist and statesman, Edward Teller has inspired three generations of researchers, serving as mentor to many. His legacy is their dedication to using an understanding of science to develop technical solutions that will improve conditions for mankind. It is this legacy that assembled the Teller team. The difficulty is that the team has only recently come together; thus it would benefit greatly from the direction that Hoover can provide.

Listed below are very brief abstracts of ten proposed Foundation study projects. We hope to immediately interest you in undertaking 2-3 of these studies as part of the 'Teller Program' to be initiated at the Hoover Institution. Grant funding of $100k is needed to start the program and up to an additional $150k may be required, depending on the number of studies completed and/or initiated, during the first year:

1. The Future of Nuclear Energy.
Principal Investigator: Professor Yuval Ne'eman

This study project involves the construction of a roadmap, with rationale and prioritized recommendations, regarding the potential uses of nuclear energy in both the commercial and government sectors. This particular study group might very well be able to influence future developments because it is known that these individuals are eminently qualified yet not biased against the industry and that we do not hold or defend any vested interests. Applications ranging from space power and propulsion to manufacturing/medical procedures to industrial power grids will be investigated. Special emphasis will be placed on the safety of underground nuclear generators, along with the experimental proof of such safety and the case to be made for public acceptance of this source of electricity for cities, homes, and industries. Additional safety measures to lessen anxieties will be addressed, such as running reactors at subcritical levels by supplying extra neutrons and the continual selective removal of fission products. The primary beneficiaries would be those nations where the burning of fossil fuels, so damaging to the environment, still dominates. The study will identify technically feasible operations, safety measures and the approximate costs for all applications contained in the roadmap.

2. Science Court Procedure.

Principal Investigator: Dr. Arthur Kantrowitz

This study project involves an experimental application of the adversarial science court procedures developed to handle cases in which technical experts disagree on scientific facts that are relevant to important public decisions. The basic mechanism is to hold a hearing, open to the public, governed by a disinterested referee, in which expert proponents of the opposing scientific positions argue their cases before a panel of scientist/judges. The judges are established experts in areas adjacent to the dispute and will not include anyone with an affiliation or personal bias that would predispose him or her toward one side or the other. After the evidence has been presented, questioned and defended, the panel of judges will prepare a report, noting points on which the advocates agree and reaching judgements on disputed statements of fact. Thus the Science Court, inter alia, stands in opposition to efforts to impose the value systems of scientific advisers on other people.

The case to be "tried" stems from dramatically different statements published by two groups of scientists following the Earth Summit in Rio de Janeiro last summer. Both groups do express concern for environmental quality and for improvement in the life of people in the third world, but there the resemblance ends. The first statement is called the "Heidelberg Appeal", signed by nearly 2,000 scientists from all parts of the globe, including many Nobelists. The second statement, released last November by the Union of Concerned Scientists, is called a "Warning to Humanity", signed by some 1,500 scientists, and it also includes many Nobelists. The UCS message appears to be a surprising exhibition of what Gore called "environmentalism of the spirit", which largely ignores Bacon's separation of facts and values.

3. Environmental Sensing.

Principal Investigator: Dr. G. A. Keyworth

This study project involves the benefits of distributed remote sensing from space, with the goal being the provision of a more factual basis for effective environmental monitoring and control. Potential benefits include vastly increased agricultural and aquacultural harvests, improved health of all populations, substantially safer transportation of people and cargoes, and environmental safeguards through the identification of pollution sources and damage control measures. The collection, processing, and worldwide dissemination of such critical information on a timely basis is a primary challenge. Several governments, particularly the U. S., invested heavily in sensor technology development over the past ten years. The result is improved resolution from low earth orbit, hardware miniaturization, weight reductions and lowered launch costs. The study will contribute to the remaining development goal of higher data density on-board processing. Further, study findings should facilitate the design of a common, global information network to support acquisition of the data needed to model and understand the Earth's ecosystem, and the drafting of international protocols to share those data globally.

4. Technology Transfer.
Principal Investigator: Dr. John Foster

This study project involves the transfer of technology from the federal laboratories, which over the years have created an enormous technological foundation in a myriad of areas and disciplines that could be used to alleviate many serious problems in society. Now that the federal labs have been recognized and accepted as a major and vital resource to meet these needs, and rather than focusing on identification of the best qualified industrial partners, the central objective would be to identify and propose mechanisms to expeditiously transfer technologies that will have useful and cost effective applications, ie, immediate socioeconomic benefits such as the creation of new enterprises and adding to the thrust of existing small technological enterprises. Government scientists and university professors would work in tandem with the new enterprises. A second study objective would be to define the mechanism for increased collaboration between such enterprises and international businesses and institutions. Further, the study will include the legal structures for patent and proprietary rights, royalty payments to the government, and provisions for profit sharing with key individuals and organizations as an enterprise becomes successful.

5. Campaign for Openness.
Principal Investigator: Dr. Edward Teller

This study project involves a national need to broaden the understanding that 'sharing the best and brightest of ideas' increases economic strength of the participants and promotes active searches for technical solutions to many socioeconomic problems. Stated more forcefully by Niels Bohr "... the proper weapon of a dictatorship is secrecy, while that of a democracy is the weapon of openness". A continuing source of support for the concept of strength through secrecy is the ancient confusion between scientists and magicians. Magic depends on secrecy to create its illusions, while progress in science has always depended on openness for creative inputs from unexpected sources and for the process of trial and elimination of error. However, we recognize that following a policy of complete openness would be as impractical as attempting to keep secrets in democratic societies for extended periods.

The primary objective of this study is to address three major facets of this complex issue: first will be an examination of secrecy as an obstacle that inhibits meaningful transfer of technology among government, industry, and academia; second will be an examination of examples of the power of openness as a source of military strength when in competition with secrecy, to build the case for modification of current procedures and restrictions; and third will be an examination of private enterprise where secrecy is limited to protecting only details, though important details, and where the approach to handling secrecy has been much more practical than has been our government in working out the details of a policy of openness. The necessary guidelines (and timelines) for 'open vs. secret' for a number of sample scenarios will be established, summarized, and the justification for government sponsored adoption on a national scale will be provided.

6. Practical Uses of Reactor Waste.
Principal Investigator: Professor C. N. Yang

This study project involves the potentially economical, safe and practical uses of reactor waste products. There are at least three applications to be developed: (1) the preservation (life extension) of foods by irradiation, such as fish irradiation, which would be quickly accepted in many areas of the world where refrigeration is either not available or not affordable; (2) the clean-up of environmental pollution caused by sludge buildup, especially in rivers, lakes and other bodies of water, which would cause dramatic improvements in health by the removal of widespread and dangerous biological contaminates; and (3) the use of reactor and other sources of waste heat for thermoelectrical generation in remote locations. The study will identify candidate nations and approximate costs for all three applications, and will develop an advocacy plan for the implementation of preservation processes for critical food supplies in those areas where hunger and starvation exist.

7. Space and Cryoelectronics.
Principal Investigator: Dr. William Graham

This study project involves the opportunity to use cryoelectronic technology to assure pre-eminence in space during the 21st century. Cryoelectronics offers the potential to revolutionize present day satellite electronic systems through major increases in capability and significant reductions in cost. Future satellite-based communications, computation, and environmental sensing/collection will require vastly increased amounts of data acquisition, processing and retransmission under very stringent power, weight, size and cost constraints. Cryoelectronics can relieve the burden of these four constraints by higher sensitivity, less weight, faster processing, and lower power requirements. For example, it should be feasible with cryoelectronics to implement Cray performance-level computation in future spacecraft within a decade. The primary study objective will be to assess the present status, future prospects, timing and cost of space-based cryoelectronics. At least one conference will be held with the leading scientists in the U. S. and abroad engaged in cryoelectronics research and future spacecraft design (platforms and payloads). A technology development plan, needed to assure success in the global competition for cryoelectronics, will be drafted and published. The plan will highlight the major investments required, key development and schedule milestones, and the necessary industrial commitment to advanced manufacturing processes.

8. Mariculture: Fish Farming.
Principal Investigator: Dr. Dixy Lee Ray

This study project involves the steadily decreasing supply of marine life as a food source and the development of salt water fish-farming to reverse the trend. The only research work of special note in this regard has been in Israel. Considering topology, climatology and population needs, the optimal areas for implementation would include: the Indian Ocean (Thailand and Bangladesh in particular); China, a country

that also needs to augment its food supply, where the population readily consumes this type of food and where there are several natural existing areas for fish culture; and Egypt, whose northern delta region is actually a better (less expensive development) location than Israel through the Gaza. The study will identify the conditions and processes for aquacultural production and will accomplish an economic analysis to compare the cost of this source with other alternatives.

9. Malaria, Biotechnology and Economics.
Principal Investigator: Dr. Frederick Seitz

This study project involves the need to expand the use of biotechnologies on behalf of mankind. It will examine the question of why pestilence suppression has not yet become a large-scale economic activity, given the rapid advance of enabling biotechnologies during the past quarter century. Because economic incentives, particularly those offered by markets to private individuals and organizations, are often highly effective in motivating behavior, this study will explore ways to encourage the leveraging of recent advances in technology to help free mankind from widespread disease. Effective eradication of malaria will be used as a case study in prospect, and the recent extinction of smallpox and the ongoing extirpation of wild poliovirus will be reviewed as case studies in retrospect. Mechanisms by which both government action and private capital can be attracted to pestilence suppression will be constructed and the associated technological opportunities for high rate-of-return modes of intervention will be identified. Analogies to the progress of the Green Revolution and the suppression of large-scale famine will be quantitatively reviewed. The primary study objective is to determine what could be done in the world community and then develop strategies, based on government and market participation, that would cause more active biotechnology applications programs.

10. Global Trends and Opportunities.
Principal Investigator: Amb. Jeane Kirkpatrick

This study project involves the charter statement of the Foundation ". . . concentrate on problems that transcend borders and affect large population segments. . . especially those in need". Assessments of population needs/problems will be accomplished to (1) provide the underpinning vital to formulating and prioritizing the efforts of the Foundation, and (2) serve as a catalyst for the identification of technological solutions. The study findings will be updated at least every six months because of the myriad of dynamic factors that shape such assessments. For example, a primary economic factor in the world situation was devaluation of the dollar in 1985, which led to an impressive boost in our exports but caused wide currency fluctuations; one result was a major slump in raw material and food prices, which helped much of Europe and the Pacific Rim but caused difficulty in Latin America. Another factor is the recent acceleration in transnationalism, as evidenced by trading zones in Western Europe, the Pacific and one proposed for North America, along with business shifts from multi-national to transnational and country-to-country dialogues involving medical and ecological endeavors. Worldwide security concerns such as nuclear disarmament,

weapons proliferation, and the passing of weapons from relatively stable hands to unstable ones will also be considered. The initial study/assessment effort will focus on three areas of interest: the former Soviet Union, where the turmoil (and future evolution) affects world trade as well as armaments, pollution and nuclear power; Latin America, where there is movement toward privatization and a growing U. S. realization that 'geography is our destiny'; and Africa, currently a disaster area with civil wars, declining productions and serious health problems.

In summary, the Teller Foundation proposes that we undertake 2-3 of the above studies as part of the 'Teller Program' to be initiated at the Hoover Institution. Grant funding of $100k is needed to start the program and up to an additional $150k may be required for a one year effort. The Foundation is excited about the many possibilities of such an affiliation with Hoover. We are very confident that the relationship will be mutually rewarding and we look forward to a favorable reply. Thank you for your support.

Sincerely,

THE TELLER FOUNDATION

Dr. C. Neil Beer
Chairman

Enclosure

BIOGRAPHIES
ADVISORS and TRUSTEES

David C. Acheson, Esq.

Vice Chairman, The Atlantic Council; Consultant, Technology Policy; Board Member, Sundstrand Corporation. Former positions include: Senior Consultant to the Center for Strategic and Internnal Studies; co-author of the CSIS report, *A More Effective Civil Space Program;* member of the Presidential Commission on the Space Shuttle Challenger Accident; U.S. Attorney for the District of Columbia; Special Assistant to the Secretary of the Treasury; Attorney, U. S. Atomic Energy Commission; Senior Vice President and General Counsel, Communications Satellite Corporation; presidential appointments in the U.S. Justice and Treasury departments; law practice with several Washington firms. B.A., Yale University; LL.B. Harvard Law School. Highly respected international counsellor, frequent author and editor.

Dr. Martin Anderson

Senior Fellow, Hoover Institution, Stanford University. Member: Committee on the Present Danger; President's Economic Policy Advisory Board; President's General Advisory Committee on Arms Control; and Trustee, Ronald Reagan Presidential Foundation. Former positions include: Assistant to the Dean, Thayer School of Engineering, Dartmouth College; Research Fellow, Joint Center for Urban Studies, MIT and Harvard University; Associate Professor of Finance, Graduate School of Business, Columbia University; Special Assistant to the President of the United States; Special Consultant to the President for Systems Analysis; Assistant to the President for Policy Development; Director of Research, Nixon presidential campaign; and Senior Policy Advisor, Reagan presidential campaign. A.B., summa cum laude, Dartmouth College; M.S., Thayer School of Engineering and Amos Tuck School of Business Administration; Ph.D., M.I.T. Noted author on political and economic reform.

Dr. John S. Foster, Jr.

Chairman, Defense Science Board; Director and Consultant, TRW Incorporated; and Chairman of the Board, Swedlow, Inc. Member: Logistics Management Institute and Draper Labs; AIAA, ADPA, NSIA; and the Committee on the Present Danger. Former positions include: President's Foreign Intelligence Advisory Board; Vice President, Science and Technology, TRW Inc.; Director, Defense Research and Engineering for DOD; Air Force Scientific Advisory Board; and Director, Lawrence Livermore National Laboratory; and Associate Director, Lawrence Berkeley Laboratory. B.S., McGill University; Ph.D., University of California at Berkeley. Honors include: Founders Award (NAE); Distinguished Public Service Medal (DOD); Order of Merit of the Federal Republic of Germany; Commander, Legion of Honor, Republic of France; the James Forrestal Memorial Award; an honorary doctorate and election to the National Academy of Engineering. Renowned expert in experimental physics, developmental engineering, and information systems.

General Andrew J. Goodpaster

Chairman, The Atlantic Council of the United States. Member: Council on Foreign Relations; National Academy of Public Administration; and the Advisory Council to FEMA. Former positions include: President, the Institute for Defense Analyses; Superintendent, U.S. Military Academy at West Point; Professor, Government and International Studies, The Citadel; Fellow, Woodrow Wilson International Center for Scholars; Supreme Allied Commander, Europe; Commandant, National War College; Assistant to Chairman, Joint Chiefs of Staff; Staff Secretary to the President of the United States. B.S., U.S. Military Academy at West Point; MSE, MA and Ph.D., Princeton University. Numerous awards include the Medal of Freedom, Distinguished Public Service Medal, White Burkett Miller and the Princeton James Madison Awards. A recognized authority on regional security and foreign policy matters.

Dr. William R. Graham

Chairman of the Board and CEO, Xsirius; Chairman of the Board of Xsirius Superconductivity, Inc. and Advanced Photonix, Inc.; Director, Watkins-Johnson Corporation and C-COR, Inc.; Consultant to the Office of the Secretary of Defense; and Chairman, SDI Advisory Committee. Member: Defense Science Board and Defense Policy Board. Former positions include: Science Advisor to the President and Director, Office of Science and Technology Policy; Chairman, WH Coordinating Council on Science, Engineering and Technology; Deputy Administrator, NASA; Chairman, President's Advisory Committee on Arms Control and Disarmament; Founder and Senior Executive, R&D Associates; Physicist, RAND Corporation; and USAF Officer, directing experimental and theoretical research on military systems and the physical phenomena produced by nuclear explosions. B.S., with honors, CalTech; M.S. and Ph.D., Stanford University. Leading expert in cryoelectronics.

Ambassador Chic Hecht

United States Ambassador to the Commonwealth of The Bahamas; member of the board of directors for the National Military Intelligence Association. Former positions include: United States Senator from Nevada, member of the Energy and Natural Resources Committee, the Select Committee on Intelligence, and the Banking, Housing and Urban Affairs Committee; Nevada State Senator for over ten years; Chamber of Commerce director; deputy director of the Nevada Reagan for President Committee; and President of the National Counter-Intelligence Corps. Businessman in banking and retailing for almost three decades. B.S., Washington University. Honors include selection to the Army Intelligence Hall of Fame. Expert on issues related to international banking and finance, third world debt recovery programs, and the potential uses of reactor waste products.

Professor Arthur R. Kantrowitz

Professor of Engineering and Senior Lecturer in Engineering Sciences, Dartmouth College; Director, Hertz Foundation and National Space Society; Inventor, holder of twenty one patents; Advisor, National Energy Resources Organization, MHD Industrial Forum, and television's "Nova" Program. Member: Editorial Advisory Board for Industrial Research and Laser Applications; International Academy of Astronautics; and American Institute of Physics. Fellow: American Academy of Arts and Sciences; AIAA; APS, Emeritus; AAAS; and American Astronautical Society. Former positions include: Founder and CEO, Avco Everett Research Laboratory; Professor, Cornell University; Advisor, White House, NASA, Department of Commerce, GAO, and the National Science Foundation. B.S., M.A., and Ph.D., Columbia University. Honors include: Guggenheim & Fulbright Fellowships; Roosevelt Medal of Honor in Science; elected member, National Academy of Sciences and National Academy of Engineering; and honorary life member of the Board of Governors of The Technion. Conceived scientific adversary procedures known as the "Science Court".

Dr. G. A. Keyworth, II

Distinguished Fellow, Hudson Institute; Chairman of The Keyworth Company; Chairman, Council on Superconductivity for American Competitiveness; Trustee, The Center for Excellence in Education; Director, The Hewlett Packard Company and Martin Marietta Corporation; Trustee, Santa Fe Institute; and Director, North Texas Research Institute. Member: the DCI Science and Technology Advisory Panel; and Chairman, NSC Committee on Continuity of Government. Former positions include: White House Science Advisor to the President; Director of the Los Alamos National Laboratory diagnostic program for underground nuclear tests and satellite programs for verification of compliance with test treaties; and member of the President's Commission on Industrial Competitiveness. B.S., Yale University; Ph.D., Duke University. Honors include three doctorates and many scientific achievement awards. Noted advocate of science and technology to improve U.S. industrial competitiveness.

Ambassador Jeane Kirkpatrick

Leavey Professor, Georgetown University; Senior Fellow for Public Policy Research, American Enterprise Institute; Author, syndicated column on world affairs and articles on American political issues and foreign policy in Commentary, Foreign Affairs, and The National Interest. Member: American and International Political Science Associations; Advisory Board for academic, public affairs, and public service organizations. Former positions include: U. S. Permanent Representative to the United Nations; Member, the White House National Security Council; Lecturer, U. S. Information Agency and the Department of State. B.A., Stephens College and Barnard College; M.A. and Ph.D., Columbia University. Honors include: United States Freedom Medal; French Prize Politique for political courage; Hubert H. Humphrey Award of APSA; Christian A. Herter Award, Boston World Affairs Association; Harry S. Truman Good Neighbor Award; Morganthau Award, American Council on Foreign Policy; Distinguished Public Service Medal (DOD); and twelve honorary doctorates.

Dr. Hans Mark

Chancellor, The University of Texas System. Former positions include: Deputy Administrator of NASA; Undersecretary and Secretary of the U.S. Air Force; Director, the NASA-Ames Research Center; and appointments as a professor and lecturer in both physics and engineering at Boston University, The University of California at Berkeley, M.I.T., Stanford University, and The University of Texas at Austin. Numerous contributions to nuclear and atomic physics and led the engineering development of several spacecraft and experimental aircraft. A.B., University of California at Berkeley; Ph.D., M.I.T. Honors include: the Distinguished Public Service Medal (DOD); the Distinguished Service Medal (NASA); fellow status in the American Physical Society, American Institute of Aeronautics and Astronautics, and the American Association for the Advancement of Science; two honorary doctorates and elected member of the National Academy of Engineering. Author of over one hundred-fifty scholarly articles and books.

Professor Yuval Ne'eman

Wolfson Distinguished Chair in Theoretical Physics and Director of the Sackler Institute for Advanced Studies, Tel Aviv University; and Director, Israel Space Agency. Member: the U.S. National Academy of Sciences; Foundations of Physics Letters; Einstein Archives Advisory Board; International Task Force for the Prevention of Nuclear Terrorism. Former positions include: Director, Center for Particle Theory at the University of Texas; President, Tel Aviv University and founder of the Department of Physics and Astronomy; Research Fellow and Visiting Professor of Theoretical Physics, CalTech; Senior Guest Scientist, Brookhaven National Laboratory; Member, Israel Atomic Energy Commission; Member, Israeli Parliament; Chief of the Planning Division of the Israeli Defense Forces; Deputy Director General for Intelligence; and Defense Attaché in London. B.S., The Technion; D.I.C., Imperial College of Science and Technology; Ph.D., London University. Honors include: the Albert Einstein Medal; the Wigner Medal; College de France Medal; Fellow, APS; and several honorary doctorates. Author of over three hundred scientific papers and books.

Dr. Dixy Lee Ray

Senior Scholar, Environmental Health and Safety, University of Maryland; Board Member, Washington Institute for Policy Studies; Consultant, Lawrence Livermore National Laboratory. Former positions include: Governor, State of Washington; Associate Professor, University of Washington; Assistant Secretary of State, Bureau of Oceans, International Environmental and Scientific Affairs, U.S. Department of State; Chairman, Atomic Energy Commission; Director, Pacific Science Center, Seattle, Washington; U.S. Representative to Organization for Economic Cooperation and Development for Science. B.A. and M.A., Mills College; Ph.D., Stanford University. Numerous awards include the United Nations Peace Medal, IEEE Centennial Medal, American Academy of Achievement Golden Plate Award, Harper's Top Ten Most Influential Women in the Nation, and the American Nuclear Society Walter H. Zinn Award. Highly regarded expert on the global environment.

Dr. Frederick Seitz

President emeritus, The Rockefeller University; Trustee, American Museum of Natural History and the Institute for International Education. Member: Council on Foreign Relations; Advisory Board for APS; AAAS; SDI; the American Philosophical Society; American Society for Metals; Washington Academy of Science and a number of European scientific academies. Former positions include: President, National Academy of Sciences; Vice Chairman, the Memorial Sloan-Kettering Cancer Center; President, The Rockefeller University; Chairman, U.S. delegation to the U.N. on Science and Technology Development; Board Chairman, the Woodrow Wilson National Fellowship and Guggenheim Foundations; Science Advisor to NATO, ONR, ICAF, Bureau of Near Eastern and South Asian Affairs, several Defense Science Boards and the National Cancer Board. A.B., Stanford University; Ph.D., Princeton University. Honors include: the National Medal of Science; the Fourth Vannevar Bush Award; R. Loveland Memorial Award, College of Physicians; two Distinguished Public Service Medals; and thirty-two honorary degrees.

Professor Chen Ning Yang

Albert Einstein Professor of Physics and Director of the Institute of Theoretical Physics, State University of New York at Stony Brook; Honorary and Distinguished Professor at eight universities. Member: Council of Scholars, Library of Congress; Governing Council, Courant Institute of Mathematical Science; Board of Trustees, Ben Gurion University and the Stony Brook Foundation; and member of the U.S. and five other nations' Academies of Science. Former positions include: Professor, Institute for Advanced Study, Princeton; Lorentz Professor, Leiden; Fermi lecturer in Pisa and Oppenheimer Memorial Lecturer at Los Alamos; designated lecturer at three universities and the State Department; Board of Trustees, The Rockefeller University, Salk Institute, and Woods Hole Oceanographic Institute; Board of Directors, AAAS, Neuroscience Institute, and Scientific American, Inc. Ph.D., University of Chicago. Honors and awards include: the Einstein Commemorative Award; the Nobel Prize; Rumford Prize; National Medal of Science and Liberty Award; and honorary doctorates from eight universities.

Dr. Antonino Zichichi

President, World Laboratory, Interdisciplinary Centre for Scientific Culture; President, World Federation of Scientists; President, Science for Peace International Committee; Senior Physicist at CERN, European Nuclear Research Organization; President, Italian Commission on Nuclear Risk; Professor of Advanced Physics, University of Bologna; Editor, Progress in Scientific Culture; and Vice Director, Italian Physical Society. Member: Council of the 'Fondation Jean Monnet pour l'Europe'; and the Scientific Council, Institute of Italian Encyclopaedia. Former positions include: Founder of the Gran Sasso Laboratory, the most powerful underground laboratory for nuclear matter stability studies, cosmic neutrino and other underground physics and astrophysics research; President, European Physical Society; Director, Postgraduate School of Physics and the National Institute for Nuclear Physics, University of Bologna. Honors and awards include: Simba Prize for Solidarity in Science between Europe and the Third World; La Madonnina International Prize for Science; Knight of the Great Cross of the Order of St. Sylvester Pope; Sileno Prize for the Environment. Author of over two hundred-fifty scientific papers.

Admiral E. R. Zumwalt

President, Admiral Zumwalt and Consultants; member of the board of directors for twelve U.S. corporations and advisor for several non-profit organizations; co-author of the weekly newspaper column, Zumwalt's Report. Former positions include: Chief of Naval Operations (the youngest four-star admiral in U.S. history; his famous Z-grams revitalized the Navy and increased the combat capability of the U.S. fleet during a period of shrinking resources); Commander, U.S. Naval Forces in Vietnam; Democratic candidate for the United States Senate in Virginia in 1976; Governor, American Stock Exchange; Director, Esmark, Inc., the Gifford-Hill and Company, and Transway International. B.S., cum laude, U.S. Naval Academy. Recipient of several honorary degrees and a frequent guest lecturer at leading colleges and universities.

Selected Staff Biographies

Dr. Robert B. Abel

President, New Jersey Marine Sciences Consortium; Director, Cooperative Marine Technology Program for the Middle East. Member: Marine Technology Society; Board of Directors, Center for Ocean Policy and Law; Editorial Board, Ocean Management; and New York Academy of Sciences. Former positions include: President, Marine Technology Society; Assistant Vice President, Texas A&M University; Director, National Sea Grant Program (NOAA); Executive Secretary, Interagency Committee on Oceanography; Assistant Director, U.S. Naval Hydrographic Office; and Chemical Oceanographer, Woods Hole Oceanographic Institution. B.S., Brown University; M.E.A., The George Washington University; Ph.D., American University. Honors include: National Sea Grant Association Man of the Year; Gold Medal Award, U.S. Department of Commerce; Distinguished Service-COMPASS Award, Marine Technology Society; and Distinguished Achievement Award, Egyptian Institute of Fisheries. Author of over eighty articles for technical and trade journals on marine sciences.

Dr. C. Neil Beer

Chairman of the Board, The Teller Foundation; President, Channel Research Corporation; Consultant and member of the Board of Directors for a number of companies and government agencies. Former positions include: President and CEO, Thermo Electron Technologies Corporation; President, Western Research Corporation; Deputy for Military Applications, Livermore National Laboratory; Major General, USAF, space plans and programs; Executive Assistant to the Secretary of Defense; Associate Professor of Mathematics, USAF Academy; combat pilot. B.S., magna cum laude, M.S. and Ph.D., University of Oklahoma. Honors include: Outstanding Educator in America; distinguished graduate of ICAF; the NSIA Hartinger Medal for outstanding achievement in the U.S. military space mission. Author and speaker on mathematical optimization techniques and national security strategies.

Edgar A. Edelsack

Professional Lecturer, The George Washington University; Chairman, Scientific Advisory Board of HYPRES, Inc.; Editor, Low Temperature Electronics Section, Cryogenics; Editorial Board, Journal of Superconductivity; Consultant to twelve organizations including E.I. du Pont Nemours, IDA, the National Research Council, E. M. Warburg, Pincus & Co., and the Physics Division of ONR. Member: American Physical Society; IEEE; American Association for the Advancement of Science; and the National Press Club. Former positions include: Chairman, Applied Superconductivity Conference; International Coordinator, Low Temperature Electronics Conference; Coordinator, Superconducting Digital Circuits and Systems Conference; ONR Senior Scientific Program Officer in Washington and Scientific Officer in London. B.S., New York University; M.S., University of Southern California. Noted authority and author of over fifty journal articles on cryogenics and cryoelectronics.

Dr. Edward Teller

Senior Research Fellow, Hoover Institution, Stanford University; Director Emeritus and Consultant, Livermore National Laboratory; Honorary Chairman, The Teller Foundation; Professor Emeritus, University of California. Member: Advisory Board, FEMA; Scientific Advisory Board, USAF; Advisory Board, U.S. Space Program; Advisory Board, Technology in Society; Board of Directors, Hertz Foundation; NAS; APS; SES; AGU; International Academy of Quantum Molecular Science; and Board of Governors, American Academy of Achievement. Former positions include: Member, WH Science Council, National Commission on Superconductivity, and President's Foreign Intelligence Advisory Board; Professor of Physics, George Washington University, University of Chicago, Columbia University, and the University of California; Physicist, Manhattan Project; Advisor, Atomic Energy Commission; Chairman of the first Nuclear Reactor Safeguard Committee; and Director of numerous U.S. corporations. B.S., University of Munich; Ph.D., University of Leipzig. Honors include: the Enrico Fermi Medal, Albert Einstein Award, Joseph Priestly Award, the Harvey Prize, the National Medal of Science; the Presidential Citizens Medal; and twenty-two honorary doctorates.

The Teller Foundation

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January 28, 1993

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Adm. Zumwalt

The enclosed proposal to the Hoover Institution is on a short timeline. Would you please review and send your corrections and comments to me by fax? Thanks. Also we need a review of the enclosed bios -- if yours is missing please fax a copy to us ASAP.

We are drafting a brochure to support a $25M fund raising campaign. In that regard we need two things from you: a short quote on why you are involved with the Foundation and what your hopes/expectations are for its future; and second, a color photograph or color negative (bust profile).

We deeply appreciate your participation and support.

Respectfully,

Neil B.

E. R. ZUMWALT, JR.
ADMIRAL, U. S. NAVY (RET.)

February 1, 1993

Dr. Neil Beer
President
The Teller Foundation
11440 West Bernardo Court, Suite 300
San Diego, CA 92127

Dear Dr Beer:

Pursuant to your letter of January 28, I submit the following:

1. "Short Quote"--My involvement with the Teller Foundation is for the purpose of providing motivation toward the application and technology for the benefit of mankind--a cause to which my friend, Dr. Teller, has dedicated many years. My hopes are that the Foundation will come to have the same reputation for integrity and intellectual honesty as that of Dr. Teller.

2. I attach a color photograph.

All best wishes.

Sincerely,

E. R. Zumwalt, Jr.

1500 Wilson Boulevard
Arlington, Virginia 22209

(703) 351-8297

Enclosure