abundance of the elements at the end of the periodic table is 10^{10} times smaller than the observed values. Empirically, the abundance-curves run almost horizontally, beginning at the middle of the periodic system which, as it is easy to see, can not correspond to any state of chemical equilibrium.

Discussion centered mainly around the possibility that the heavy elements originated at still higher temperature and density and that their relative proportions were later "frozen up" in the process of expansion. This discussion led to the conclusion that the "freezing up" process could hardly take place since, in the presence of free neutrons, heavy elements would be transformed into light ones (through the "neutron-evaporation"), even at much lower temperatures. It seems, therefore, more plausible that the elements originated in a process of explosive character, which took place at the "beginning of time" and resulted in the present expansion of the universe. Some details of such breaking-up process of the heavy fragments of primary nuclear matter which would finally lead to the ordinary nuclei of the known stable elements were discussed by Teller.

The third day of the conference was devoted to fundamental problems of physical constants and the properties of elementary particles. Teller presented his criticism of Dirac's recent view that the number of elementary particles in the universe and also the value of the gravitational constant are slowly changing with time. He indicated that, assuming Dirac's hypothesis, one would expect large changes in the luminosity of the sun, which is contrary to geological evidence.

Thomas presented his recent attempt to build up a formalism for consistent quantization of the electromagnetic field which would eliminate the difficulties inherent in the infinite self-energy of elementary particles.

Dr. W. Pauli discussed the theory of the "meson" on the assumption of zero-spin and concluded that this assumption is not very satisfactory.

Twenty-six investigators from 15 universities and research organizations took part in the conference. These were: British Central Scientific Office (Greenwich Observatory), R. d'E. Atkinson; Carnegie Institution of Washington, J. A. Fleming; Catholic University of America, K. F. Herzfeld; University of Chicago (Yerkes Observatory), S. Chandrasekhar, G. Randers and M. Schoenberg; Columbia University, W. E. Lamb, A. Nordsieck, F. Perrin and S. Rosenblum; Harvard University, C. L. Critchfield and H. Shapley; Institute for Advanced Study, W. Pauli; the Johns Hopkins University, D. R. Inglis; Ohio State University, L. H. Thomas; Princeton University, S. Rosseland; National Bureau of Standards, G. Chertog; Navy Department, Bureau of Ships, R. Richtmyer; Naval Ordnance Laboratory, T. Page; Naval Research Laboratory, R. Gunn; George Washington University, H. V. Argo, Th. B. Brown, G. Gamow, Miss M. F. Langs, R. J. Seeger and E. Teller. Several leading nuclear physicists and astronomers from various parts of the country who had also accepted invitation to take part in the conference could not do so because of urgent unexpected demands of their national-defense problems.

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REPORTS

THE FIRST ANNUAL REPORT OF THE CHAIRMAN OF THE NATIONAL SCIENCE FUND

LAST year when the Board of Directors[1] of the National Science Fund met to complete the organization of the National Science Fund, our country was still at peace. On December 7, 1941, midway in the first year's development program, it was necessary to stop and reconsider the aims of the fund and to determine whether under war conditions the National Science Fund could and should continue. The Executive Committee concluded that although the National Science Fund may not stand in the full current of military progress, war makes it imperative to put forth our greatest efforts to assure continued adequate support for basic research in science. Even though fundamental research should fail to produce a single discovery applicable to the war, it still would be essential to the future peace. Vice-president Henry A. Wallace has made it clear that he understands how important it is for us to face these realities: "From the practical standpoint of putting first things first, at a time when there are not enough hours in a day and every minute counts, planning for the future

[1] The Board of Directors for the year 1942–43 is composed of the following: *Chairman:* William J. Robbins; *Vice Chairman:* Winthrop W. Aldrich; Roger Adams, James R. Angell, James F. Bell, Albert F. Blakeslee, Isaiah Bowman, Arthur H. Compton, James B. Conant, Edwin G. Conklin, John W. Davis, Luther P. Eisenhart, Homer L. Ferguson, Herbert S. Gasser, Walter S. Gifford, Ross G. Harrison, Carlton J. H. Hayes, Herbert Hoover, Jerome C. Hunsaker (Treasurer), Frank B. Jewett, Ernest O. Lawrence, Frank R. Lillie, Archibald MacLeish, Robert A. Millikan, Harvey S. Mudd, Alfred N. Richards, Elihu Root, Jr., Harlow Shapley, Tom K. Smith, Lewis L. Strauss, Harold H. Swift, George H. Whipple.

peace must of necessity be a part of our all-out war program." To preserve and advance our democratic civilization after the war is over will demand full use of basic discoveries made by research scientists during these war years. It is not putting the matter too strongly to say that the basis for any lasting peace when this war is over may well be founded on some discovery made by research in fundamental science.

The National Science Fund's major aim is to cooperate in making it possible for this research to go on. By securing the understanding and enlisting the support of the public, new private funds can be put to work to supplement the research budgets of university and other privately endowed laboratories, where the crippling blows of shrinking investment income and reduced tuition have compelled curtailment or cessation of important researches. War brings home to the American people the importance of applications of science. Many now understand that mathematicians apply modern theory of probability to the strategy and tactics of aerial fighting and to improving the accuracy of gunfire; that psychologists and botanists contribute to camouflage; that physiologists study war-time diet and drugs. Pearl Harbor has already shown us what the sulfonamide drugs can do to reduce the toll of war injuries. A physiologist tells us that his research indicates that the successful solution of several problems in aviation medicine may contribute materially to the outcome of the war.

These applications of science are understandable to most people, but too many fail to realize that we can not make American science fully productive unless we can maintain fundamental research, and enable those scientists who stand outside the direct scope of the government's war research program to carry on their important work. In the National Science Fund, a potentially powerful means of advancing human welfare through science is already in existence. It is truly dedicated to the service of all humanity and all science, and not to the individual interests of any one sector or to any individual institution. It is prepared to receive and administer funds for the advancement of science under an organization which guarantees so far as is humanly possible that any money entrusted to it will be safeguarded as to principal and income and invested to the greatest advantage in science. It is further prepared to act as a clearinghouse for questions from prospective donors on the support of science or from scientists who need financial assistance for their researches. The National Science Fund offers the possibility of serving donors who have funds they wish devoted to science, of serving science by increasing its support and of serving all humanity through the advancement of science.

The chief concern of the National Science Fund in its first year's activity has been to contribute toward a greater general understanding of the value of fundamental science, the necessity for its support and the fact that the National Science Fund has a unique machinery for this financing. A public relations program was first directed to scientists and scientific workers because it was felt that their wholehearted understanding and support was essential for the long-term successful development of such a fund. An 8-page brochure entitled "Philanthropy in Science" was widely distributed. Through the cooperation of Dr. Langmuir, president of the American Association for the Advancement of Science, the fund was presented to each of the 15 sections and to the 179 societies affiliated with the association. Representatives described the fund before many of the major scientific meeting and notes, articles or editorials appeared in numerous periodicals read by scientists. A series of four radio programs was presented over a national network. Effort is now being directed to professional groups of laymen and to the general public.

In anticipation of enlisting public interest and support two surveys were made with the help of leading scientists to determine current critical areas of scientific research. The results of these surveys, which are of considerable interest, will be published. In addition a partial review of the grants-in-aid made by the National Academy of Sciences over the past twenty years from its trust funds was made. Under the auspices of the National Science Fund a detailed and documented study of the relation of fundamental research to practical applications has been initiated by a student of the history of science which will illustrate the vital interest the general public has in fundamental science—and in its adequate support.

Although the National Science Fund during its first year of operation has had no funds for direct appropriation more than 50 requests for financing research have been received. These have been carefully reviewed and where circumstances warranted the applicant was put in touch with potential sources of funds. In several instances assistance was made available. The National Science Fund has also acted as a consultant on several projects which bear directly or indirectly on the war effort. In thus acting as a clearinghouse the fund appears to be performing a function not otherwise adequately met. It is hoped that as time passes there will be more prospective donors who will ask the National Science Fund to locate qualified scientists whose research they could support or to point out areas for research where money could be wisely used for the public good.