

## Comments and Communications

### The Case Against The National Science Foundation

In the pages of *Science* during the last five years a number of articles have appeared in support of a National Science Foundation. There has recently come to the attention of the Executive Committee of the Inter-Society Committee a remarkable pamphlet published by the National Patent Council, a group which purports to represent "smaller manufacturers." This pamphlet seems to us to be a masterpiece of misinterpretation and intemperate vilification. We would like, therefore, to publish for the edification of those scientists who may not have had access to it, a summary of this extraordinary document with representative quotations and a bit of supplementary material designed to make its meaning clear but not to spoil its style.

According to this publication, the National Patent Council feels that the National Science Foundation envisaged by the pending bills would create "an independent Government agency empowered to invade all research and developmental activities of industry and individuals, and to confiscate and pool patents, for purposes of coercion and harassment of industry in perpetuation of political power." The pending bill contains language which "puts in the bill dictatorial fangs with which industry may be torn." In addition, the bill provides "for insidious invasions and penetrations of individual research and developmental operations of private industry—with effective mechanization for coercive acquisition of tangible and intangible property, including patent rights," and does this by "unbudgeted and unaudited bung-hole financing." Not that all these dangers are obvious, they are concealed in "a bill so adroitly drafted as to have fully deceived not only the naive and non-legalistic minds of some of our greatest and most patriotic citizens. For example, Vannevar Bush. . . ."

It appears from this pamphlet that a very substantial number of persons whom we had always considered to be outstanding citizens of the United States either have "naive and nonlegalistic minds" or are "Power Planners" or both. It also appears that most of these citizens are "self seeking proponents hoping to benefit from lavish appropriations made possible by the 'bung-hole' type of Federal financing provided in the bill now pending." Many of them are representatives of institutions "out with a king-sized tin cup to get a heavy handout of Foundation funds" and many are "scientists identified repeatedly as members or affiliates of subversive organizations." In order that you may be fully aware of this situation, there is set forth below a partial list of the individuals concerned.

Harry S. Truman  
Vannevar Bush  
Robert P. Patterson

James V. Forrestal  
Harold G. Bowen  
R. L. Chappell

W. H. P. Blandy  
W. R. Purnell  
H. A. Schade  
Louis De Flores  
Lewis L. Strauss  
Edward L. Bowles  
William A. Borden  
Horace M. Gray  
J. R. Oppenheimer  
H. J. Curtis  
Robert Wilson  
Harold L. Ickes  
H. H. Arnold  
Maury Maverick  
Bruce K. Brown  
J. Hugh O'Donnell  
A. N. Richards  
Francis G. Blake  
John P. Peters  
Cornelius P. Rhoads  
Allan Butler  
Robert P. Fischelis  
Ewan M. MacEwan  
Morris Fishbein  
Homer W. Smith  
Ross T. McIntire  
R. E. Dyer  
Norman T. Kirk  
David D. Rutstein  
Henry B. Richardson  
Lawrence S. Kubie  
L. C. Dunn  
D. W. Bronk  
Edmond W. Sinnott  
L. J. Stadler  
W. M. Stanley  
H. B. Steinbach  
Selman A. Waksman  
Raymond Zirkle  
Robert F. Griggs  
Philip R. White  
Karl T. Compton  
Henry DeW. Smyth  
Harold C. Urey  
Abel Wolman  
Howland H. Sargeant  
Casper W. Ooms  
C. E. MacQuigg  
Thorndike Saville  
Boris A. Bakhmeteff  
A. G. Christie  
F. Malcolm Farmer  
J. H. Rushton  
Robert H. Morris  
Frank D. Kern  
Luther H. Evans

P. V. Cardon  
Isaiah Bowman  
Irving Langmuir  
Harlow Shapley  
Henry A. Wallace  
F. R. Moulton  
Howard A. Meyerhoff  
Harold D. Smith  
J. C. Hunsaker  
Lewis G. Hines  
Russell Smith  
Watson Davis  
R. J. Dearborn  
Orville Freeman  
Harry Malisoff  
Wesley C. Mitchell  
John M. Gaus  
Robert M. Yerkes  
E. G. Nourse  
William F. Ogburn  
John M. Cooper  
Edmund E. Day  
Watson B. Miller  
Paul A. Porter  
Bradley Dewey  
Roger Adams  
L. A. DuBridge  
Lewis Alan Berne  
Edwin H. Land  
Robert K. Lamb  
Leonard Carmichael  
Walter Rautenstrauch  
John Magruder  
J. S. Denslow  
Emanuel Celler  
William A. Higinbotham  
Thomas Parran  
Carroll Wilson  
William C. Foster  
Randolph T. Major  
P. F. Lee  
R. G. Gustavson  
Ralph McDonald  
Douglas E. Scates  
Thomas A. Jenkins  
Wilbur D. Mills  
W. John Kenney  
John F. Victory  
George E. Folk  
E. U. Condon  
James B. Conant  
I. I. Rabi  
Morris L. Cooke  
Harry Grundfest  
Kirtley Mather  
L. D. Leet

John Studebaker  
 Lewis H. Weed  
 Fred J. Kelly  
 R. E. Gillmor  
 George Zook  
 Ewing Cockrell  
 Bernard M. Baruch  
 Henry Allen Moe  
 John Milton Potter  
 Ralph W. Tyler  
 Mortimer Graves  
 William Charles White  
 Clifford Grobstein  
 Lawrence R. Hafstad  
 C. F. Kettering

All of the persons named appeared and testified before various Congressional committees in support of National Science Foundation legislation. There was considerable testimony of like character submitted in writing by persons described by the National Patent Council as "so-called scientists committed to subversive ideologies, and often affiliated with Communistic organizations . . . believed not to have dared to appear in person and submit to questioning by members of the committee as to their subversive affiliations." A partial list of these persons is set forth below and again we should state that these persons have enjoyed rather high reputations.

W. C. Coffey  
 R. M. Tuttle  
 R. Morton Adams  
 James E. Jagger  
 Luther H. Evans  
 Oscar L. Chapman  
 R. R. Renne  
 O. H. Steiner  
 Ancel Keys  
 A. Sidney Harris  
 Chauncey D. Leake  
 Lawrason Riggs  
 Irving Michelson  
 R. B. Marston  
 Louis Knott Koontz  
 Donald Armstrong  
 I. M. Kolthoff  
 Albert S. Goss  
 James E. Webb  
 N. E. Dodd  
 John W. Snyder  
 David E. Lillienthal  
 Charles E. Bohlen (for Secretary of State)  
 Mrs. Jack Fahy  
 C. G. Suits  
 Frank W. Hubbard (for American Educational Research Association)  
 F. M. Dawson  
 Richard M. Noyes  
 Harlan T. Stetson  
 Robert C. Clothier

H. P. Hammond  
 J. A. Reyniers  
 Charles Sawyer  
 Hugh Wolfe  
 John T. Cox, Jr.  
 P. J. Federico  
 Harry P. Hammond  
 Myron Francis Hill  
 Lawrence C. Kingsland  
 John H. Teeter  
 M. H. Trytten  
 James E. Van Zandt  
 Charles E. Waring  
 Frank MacIntosh  
 W. T. Sanger  
 Carl M. Anderson (for Merck & Co., Inc.)  
 Virgil M. Hancher (for National Association of States Universities)  
 Stewart E. Hazlet  
 Ruth M. Leverton  
 Dean Acheson  
 Robert G. Sproul  
 F. G. Brickwedde (for Washington Academy of Sciences)  
 P. G. Worcester  
 Linus Pauling  
 Sid Robinson  
 Alfred C. Nelson  
 Robert E. Lutz  
 R. K. Summerbell  
 Laurence B. Heilprin  
 S. M. Cantor (for Chicago Chemists' Club)  
 D. R. Hoagland  
 Hardy L. Shirley  
 George S. Avery, Jr.  
 William Voight, Jr. (for Izaak Walton League of America)  
 Frederick George Smith  
 Robert Chambers (for Union of American Biological Societies)  
 B. H. Willier (for Amer-

ican Society of Zoologists)  
 Theodore G. Klumpp (for American Pharmaceutical Manufacturers Association)  
 James L. Orr (for TIES Association of Miami)  
 H. B. Wilcox (for New York Academy of Medicine)  
 Stanley Dorst (for Medical Research Workers at the University of Cincinnati)  
 Torald Sollimann (for American Medical Association)  
 C. E. Earle  
 H. H. Dukes  
 Thomas Francis  
 Henry S. Simms  
 Frank C. Mann  
 Ward Darley (for University of Colorado, School of Medicine Faculty)  
 James B. Hickman  
 Herbert F. Lowe  
 Phillip N. Powers  
 George B. Cressey  
 E. C. Koerper  
 D. L. Blackstone, Jr.  
 Clarence M. Fisher (for American Patent Law Association)  
 Albert F. Blakeslee  
 Harry Sobotka  
 Richard Courant

Now it appears from this pamphlet that among other things a National Science Foundation is quite unnecessary, for the National Academy of Sciences is adequate to perform all of the functions for the accomplishment of which the Foundation is proposed. You will be interested to know that the National Academy of Sciences is non-political and that it includes "more than three hundred of the top scientists of the country, with rare and now-identified exceptions, men of unquestioned loyalty." These "exceptions" are not named but are presumably the many members of the National Academy who have supported the National Science Foundation.

In discussing the merits of the issue, the pamphlet utilizes a variation of the Socratic method of exposition. It makes an assertion as to what is claimed by "proponents of this bill" followed by a statement labeled "The Contrary Truth." We think that all three arguments presented in this manner should be presented to you.

1. "Proponents claim the Foundation will integrate and coordinate the numerous research activities now being conducted by more than thirty governmental agencies and departments.

"*The Contrary Truth:* The bill . . . provides . . . for insidious invasions and penetrations of individual research and developmental operations of private industry—with effective mechanization for coercive acquisition of tangible and intangible property, including patent rights. . . .

2. "Proponents of the Science Foundation bill say there is need in this country for basic research for which we have heretofore relied upon Europe.

"*The Contrary Truth:* . . . the Foundation is implemented for invasions of the field of applied research in every phase of science.

3. "Proponents of the bill say that it is needed to set up a register of scientific personnel available in the United States.

"*The Contrary Truth:* This register has been compiled comprehensively long since by the National Academy of Sciences. . . ."

The pamphlet closes with a long list of the types of people who are for the bill and the types who are opposed

to it. We have already named most of the individuals who have testified or submitted statements in favor of the bill and described some of their characteristics as seen by the National Patent Council. In addition, according to this Council, some or all of them are also "predatory politicians," "members of Government bureaus, commissions and agencies seeking constantly to increase the scope of governmental controls of industry and of the lives of all citizens," "'rubber stamps,' misguided members of Congress" and "people who are greatly impressed by preambles and grandiose statements of purpose but have not the disposition, and perhaps not the ability, to anticipate the legal and economic consequences of the legislation." We are not sure into which of these categories the National Patent Council fits Senators Thomas (Utah), Kilgore, Fulbright, Magnuson, Smith (New Jersey), Cordon, and Saltonstall, who sponsored the Senate bill (S. 247), or Representatives Priest, Mills, Van Zandt, Wolverton, Harris, and Celler, who introduced bills in the House.

The Council states that the bill is opposed by (1) "a vast majority of the many thousands of usually inarticulate smaller manufacturers. . . ." (2) "[the late] Dr. Frank B. Jewett. . . ." (3) "Various outstanding scientists more closely identified with the scientific realities of industry. . . ." (4) "members of Congress fearful of the power of the proposed Science Foundation to invade social, economic and political realms heretofore regarded as necessary to reserve to the citizen in perpetuation of the principles of incentive economy under constitutional government. . . ." (5) "Congressmen fearful of any centralized organization empowered . . . 'to foster the interchange of scientific information among scientists in the United States and foreign countries.' . . ." (6) ". . . members of the House who understand that the establishment of such a Foundation would substantially destroy the high utility of the National Academy of Sciences—and may in fact have that destruction as one of its purposes. . . ." (7) ". . . members of the House who feel they have reason to fear that the establishment of the Foundation would result in a systematic breaking down . . . of public resistance to a disastrous repetition in America of the British capitulation . . . to such demoralizing and economically degenerating indulgences in political bribery and loot as is present in socialized medicine, socialized industry and other symptoms of economic cannibalism and social disintegration in such painful evidence in Britain." (8) "Congressmen who fear that . . . the Foundation could be made perhaps a decisive influence towards submission of voters to political bribery in the form of tax-supported handouts made in the name of social justice." (9) ". . . members of Congress who have become weary and frightened because of mounting pressures for bunghole type financing. . . ." (10) "Con-

gressmen who . . . understand that organizations and individuals seeking new handouts by Government have no fury like that of those seeking to retain, and increase the rate of, handouts once begun. . . ." (11) "Congressmen who fear that to place in the hands of one man, called Director of the Foundation, such power (Sec. 5, H. R. 4846) as could make committees and other agencies of the Foundation largely advisory window dressing, is not in the public interest." (12) ". . . members of Congress who fear that provisions for the pooling of patents by the foundation (Sec. 12, H. R. 4846) soon would enable the Foundation to build patent pools capable of bludgeoning American Industry into acquiescence in arbitrary and confiscatory activities of the Foundation. . . ."

We were electrified by the interpretation placed on H. R. 4846 and its predecessors by the National Patent Council and we cannot help but wonder whether the proprietor of the National Patent Council has read any of those bills through. In any event, we suggest that anyone interested might do well to read H. R. 4846 in the light of the National Patent Council pamphlet and communicate his opinion to his Congressman.

EXECUTIVE COMMITTEE  
INTER-SOCIETY COMMITTEE

Washington, D. C.

### Nucleotide Content of Bacteriophage Genetic Units

Inactivation and recombination experiments (Luria, S. E. and Dulbecco, R. *Genetics*, 1949, 34, 93) with T2 bacteriophage indicate that there are approximately 25 essential genetic units analogous to genes in this virus. These are generally assumed to be nucleoprotein in nature, although it has been pointed out (Zahler, S. A. Essay submitted to the Department of Bacteriology and Parasitology, University of Chicago, 1949) that at least some of them may consist of nucleic acid only, without associated proteins. Since the bulk of the evidence indicates that almost all of the phosphorus in the bacteriophage is contained in the nucleic acid, we may readily calculate the number of nucleotides in the genetic units.

Various analyses of T2 have shown that approximately 4.5% of the  $2.5 \times 10^{-10}$ -g mass of the bacteriophage is phosphorus. This is equivalent to some 200,000 phosphorus atoms, and, therefore, about this number of nucleotides is present. If we accept 25 as the number of genes, then some of the genes, at least, contain not more than 8,000 nucleotides. This corresponds to a molecular weight, for the nucleic acid portion of the genes, of less than three million.

STANLEY A. ZAHLER

1547 35th Avenue North  
St. Petersburg, Florida