

# A Policy for the Advancement of Science: The Rockefeller Foundation, 1924-29

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SINCE about 1920 both private and public patrons of basic science in the United States have increasingly regarded research as the primary and proper recipient of their support, rather than teaching or the provision of practical services. There is no necessary reason why that should have been so. The diffusion and the application of knowledge are activities no less essential than discovery. Teaching remains a primary task of universities; since the Second World War however the teaching of science has come to depend on the charges for overheads provided by grants for research. The governmental support of research has been more munificent and stable than its financial support for teaching or for universities as institutions. Although governments have made contracts within universities for teaching particular topics in applied science, especially in the agricultural, engineering, medical and social sciences, most of the financial payments which government makes to universities are for scientific research and the grants are intended to be used by particular individuals.<sup>1</sup>

This pattern of patronage was established in the 1920s in the activities of agencies such as the Medical Research Council in Great Britain and the Notgemeinschaft der deutschen Wissenschaft.<sup>2</sup> In the United States the large private foundations, most notably the Rockefeller Foundation, pioneered in establishing the general institutional traditions and the specific administrative techniques for the patronage of individual research on a large scale. Warren Weaver's programme in the natural sciences division of the Rockefeller Foundation in the 1930s is an exemplary case of this new relationship between a promoter of science and academic scientists.<sup>3</sup> Weaver played an active role in selecting areas of

<sup>1</sup> Strickland, Stephen (ed.), *Sponsored Research in American Universities and Colleges* (Washington: American Council on Education, 1967); Orlans, Harold, *The Effects of Federal Programs on Higher Education* (Washington: Brookings Institute, 1962).

<sup>2</sup> Landsborough Thomson, A., *Half a Century of Medical Research*, vol. I: *Origin and Policy of the Medical Research Council*; vol. II: *The Programme of the Medical Research Council* (London: H.M. Stationery Office, 1973 and 1975); Zierold, Kurt, *Forschungsförderung in drei Eopchen: Forschungsgemeinschaft: Geschichte, Arbeitsweise, Kommentare* (Wiesbaden: Franz Steiner, 1968); Richter, Stefan, *Forschungsförderung in Deutschland 1920-1936: Dargestellt an Beispiel der Notgemeinschaft der deutschen Wissenschaft und ihrem Wirken für das Fach Physik* (Düsseldorf: VDI Verlag, 1968); Forman, Paul, "The Financial Support and Political Alignment of Physicists in Weimar Germany", *Minerva*, XII, 1 (January 1974), pp. 40-65.

<sup>3</sup> Kohler, Robert E., "The Management of Science: The Experience of Warren Weaver and the Rockefeller Foundation Programme in Molecular Biology", *Minerva*, XIV, 3 (Autumn 1976), pp. 279-306.

research to be developed, yet he did not intrude on the actual process of research. He developed research grants for individuals and projects and mastered the art of conducting a large programme of relatively modest grants—skills which Foundation leaders doubted could be perfected. The organisation and style of the programmes of the Rockefeller Foundation played a significant role in forming the mode of operation of federal science agencies after the Second World War. The first conception of a national science foundation, by Isaiah Bowman in 1945, was a virtual replica of the Rockefeller Foundation. While Vannevar Bush ignored most of Bowman's plan in drawing up his own design for what became the National Science Foundation, his emphasis on grants rather than on contracts was closer to the practice of the Rockefeller Foundation than it was to the practice of the Office of Scientific Research and Development, of which Bush himself had been the head.<sup>4</sup>

Weaver's success in working out the pattern and his success in applying it were made possible by the decision of the Rockefeller Foundation in 1928 to make the advancement of science its principal goal. It was in some ways a sharp break with traditional policy of foundations. Before the First World War, a movement to create a private endowment for research failed to win the support of the great philanthropists.<sup>5</sup> Andrew Carnegie and John D. Rockefeller, backed by their academic advisers, preferred to create research institutes which would have specific, ultimately practical goals.<sup>6</sup> In 1916 the leaders of the Rockefeller Foundation declined a request by the Committee of 100 of the American Association for the Advancement of Science for a modest \$50,000 for individual research grants.<sup>7</sup> The Foundation's gifts to the National Research Council for postgraduate fellowships supported research only as a part of graduate education.<sup>8</sup>

Apart from the Rockefeller Institute for Medical Research, most of the Rockefeller philanthropies prior to 1928 were devoted either to education or to practical social service. The largest of these agencies, the General Education Board which had been founded in 1903, was devoted to the systematic reform of American colleges. Large sums were given to the general endowments of colleges which met the Board's

<sup>4</sup> Kevles, Daniel J., "The Debate over Postwar Research Policy, 1942-1945: A Political Interpretation of *Science the Endless Frontier*", *Isis*, LXVIII, 241 (March 1977), pp. 5-26.

<sup>5</sup> Plotkin, Howard, "Edward C. Pickering and the Endowment of Scientific Research in America, 1877-1918", *Isis*, LXIX, 246 (March 1978), pp. 44-57; see also McLeod, Roy, "The Support of Victorian Science: The Endowment of Research Movement in Great Britain, 1868-1900", *Minerva*, IX, 2 (April 1971), pp. 197-230.

<sup>6</sup> Corner, George, *A History of the Rockefeller Institute: 1901-1953* (New York: Rockefeller Institute Press, 1964); Miller, Howard S., *Dollars for Research: Science and Its Patrons in Nineteenth-Century America* (Seattle: University of Washington Press, 1970), chap. 9 (on the Carnegie Institution).

<sup>7</sup> Reingold, Nathan, "The Case of the Disappearing Laboratory", *American Quarterly*, XXIX, 1 (Spring 1977), pp. 79-101.

<sup>8</sup> *Ibid.*; and Coben, Stanley, "Foundation Officials and Fellowships: Innovation in the Patronage of Science", *Minerva*, XIV, 2 (Summer 1966), pp. 225-240.

standards of financial, administrative and educational practice. A uniform educational product, a national market, and regional development: these were the ideals of the General Education Board.<sup>9</sup>

The Rockefeller Foundation, founded in 1913, was concerned with rational solutions to social and especially public health problems.<sup>10</sup> It was made up of the International Health Board, formerly the Rockefeller Sanitary Commission, which had organised the campaign against hookworm in the southern United States; the China Medical Board, which operated the Peking Union Medical College<sup>11</sup>; and the Division of Medical Education, devoted to education in medicine, nursing, and public health. The Laura Spelman Rockefeller Memorial—created in 1918—was the most traditional of the Rockefeller philanthropies. It supported charities concerned with the welfare of women and children.

In the early 1920s, there were two new departures in the direction of research. Within the Memorial, Beardsley Ruml initiated programmes in the social sciences and applied social research in politics, economics, and management, thus bringing the Memorial more into line with the Foundation's ideal of "preventive" rather than ameliorative philanthropy. In 1923, the International Education Board was created, and under the direction of Wycliffe Rose devoted large sums to the support of basic research in the physical sciences. Rose's concern with basic research differed from the established Rockefeller interest in education and applied science. But Rose's strategy also differed fundamentally from that of Weaver and his fellow-officers in the 1930s. Rose made grants to preeminent individuals as representatives of institutions; the distinguished individuals decided what research they would do. He himself deliberately avoided the selection of research projects. The International Education Board provided buildings or general support, not grants for specific investigations. Rose always saw research as one aspect of graduate education.

In 1928 these various agencies were consolidated into a single foundation. The policies of the new Rockefeller Foundation were different in three respects from its predecessors. It emphasised research almost exclusively over either teaching or application. It provided for individuals rather than institutions. And it gave grants for specific and agreed schemes of research, rather than for research which was decided on by the recipient of the grant. It was the varied, often conflicting policies of the Rockefeller boards which created a crisis of confidence in the mid-1920s and stimulated the reorganisation of 1928. But in framing the new

<sup>9</sup> Fosdick, Raymond B., *Adventure in Giving: A History of the General Education Board* (New York: Harper, 1962).

<sup>10</sup> Fosdick, Raymond B., *The Story of the Rockefeller Foundation* (New York: Harpers, 1952).

<sup>11</sup> Ferguson, Mary E., *The China Medical Board and Peking Union Medical College* (New York: China Medical Board, 1970).

policies, the leaders of the Foundation were also bound by these earlier practices. Established programmes provided models—good and bad—for the patronage of science. The process of reorganisation and redirection of Foundation policy may in fact be seen as a reshuffling of the various patterns espoused by the different Rockefeller boards. The result was a significant new direction for the patronage of basic scientific research in American universities.

*Success and Crisis: 1920–24*

The leaders of the Rockefeller boards were well aware that the crisis of the mid-1920s was the result of fundamental changes in the educational system. American higher education had expanded enormously in the post-war years, partly as a result of the activity of the General Education Board. The percentage of young Americans at college and university increased from 4.9 per cent. in 1910 to 15.2 per cent. in 1940; the annual awards of Ph.D.s increased from 615 in 1920 to 3,290 in 1940.<sup>12</sup> Universities became what John Servos has called “knowledge corporations”.<sup>13</sup> The growth of the “Ph.D. octopus”,<sup>14</sup> supplying trained scientists to government bureaux, industrial research laboratories, hospitals, and a host of old and new professions, altered the role of the Rockefeller boards in the system.

The most fundamental change was a result of the change in the size of the higher educational system. The increased number of students and teachers, the vastly increased budgets and the flood of gifts from graduates in the 1920s meant that the large foundations could have less direct influence than before. (It was hopeless to attempt to guide the system as a whole, as the General Education Board had been able to do in the 1900s.) By the mid-1920s, the endowment of eight private universities ranged from \$20 million to \$69 million, and this was a sizeable fraction of the Board's endowment. The annual legislative appropriations to the large state universities was equivalent to income from endowments of \$100 to \$200 million.<sup>15</sup> It did not take the Foundation's leaders long to realise that if they were to continue to exercise an influence, they would

<sup>12</sup> Machlup, Fritz, *The Production and Distribution of Knowledge in the United States* (Princeton: Princeton University Press, 1962), pp. 77–78, 91.

<sup>13</sup> Servos, John, “The Knowledge Corporation: A. A. Noyes and Chemistry at Cal-Tech, 1915–1930”, *Ambix*, XXIII, 3 (November 1976), pp. 175–186; Kargon, Robert, “Temple to Science: Cooperative Research and the Birth of the California Institute of Technology”, *Historical Studies in the Physical Sciences*, VIII (Baltimore: Johns Hopkins University Press, 1977), pp. 3–31.

<sup>14</sup> James, William, “The Ph.D. Octopus”, *Memories and Studies* (New York and London: Longmans Green, 1912), pp. 329–347.

<sup>15</sup> Raymond Fosdick to John D. Rockefeller, Jr., 15 February, 1927. RF. 900.17.123. The figures are: Columbia \$69m., Harvard \$65m., Chicago \$54m., Yale \$45m., Johns Hopkins and Stanford, \$30m., Washington University and Princeton, \$20m. Illinois and California received \$17m., and \$9m., equivalent to income from endowments of \$140 and \$180 million.

have to concentrate their resources on particular aspects of higher education. Raymond Fosdick wrote in 1927:

... the amounts of money involved in college and university education are now so enormous that the sums which we have at our disposal are relatively insignificant, and on a quantitative basis could scarcely affect the situation one way or another. Our money can be used, however, to affect the situation on a qualitative basis, and it was this decision that the Buckwood Conference arrived at three years ago [1924] when we agreed to turn our backs on the whole policy of stimulating the quantity of higher education and [to] see whether something could not be done to improve its quality.<sup>16</sup>

Since the quality of teachers and research workers depended on the quality of the facilities and training which had been provided for them when they were graduate students, foundation interest turned to graduate education and research, especially in the natural sciences.

A second force pushing the foundations towards graduate education and research was the altered attitude towards higher education in American society and its acceptance as a qualification for entry into important professions. In so far as higher education was becoming a path to higher remuneration and higher status in society, there appeared to be less need for it to be supported by the private foundations. They conceived their task to be, not the promotion of economic mobility, which was a proper public and political goal, but rather the nurture of the intellectual basis of rational and disinterested leadership. The advancement of knowledge thus became a more attractive object for the private foundations than the extension of opportunity for the social ascent of individuals. This new division of labour was promulgated by Trevor Arnett in 1926:

... to a large extent higher education is now sought because of its economic value. ... Education consists of two principal divisions, dissemination of knowledge, and the advancement of learning. ... In seeking to limit the field of the GEB [General Education Board] the recipient and the state may be counted upon to provide for the dissemination of knowledge, but philanthropy for the most part must needs take care of the advancement of learning. The Board's main activities would then seem to fall in that category.<sup>17</sup>

Led by Abraham and Simon Flexner,<sup>18</sup> the chiefs of the Rockefeller boards deplored the routine character of graduate training, and favoured the policy of creating a few schools for pure research and graduate

<sup>16</sup> *Ibid.*

<sup>17</sup> Arnett, Trevor, "The GEB, Comments on its Objects, Work, and Organization", December 1926. RF. 918.1.3.

<sup>18</sup> Flexner, Abraham, "Foundations—Ours and Others", read to conference Gedney Farms, 18–19 January, 1924, pp. 10–11. RF.900.22.165. Simon Flexner to G. Vincent, 27 January, 1925. RF. 900.21.159 "We have not in the United States one complete medical school in the sense that the German University medical school is complete. ... I would like to see one medical school fairly completed for itself and as a model towards which other medical schools might fairly strive." Vincent concurred. See George Vincent to Raymond Fosdick, 5 January, 1926. RF.900.17.121.

training, free of undergraduate teaching. They were not opposed to university education for the many or to the opening of opportunities to individuals to rise in social status and income, but they did not see these as possible or appropriate tasks for the Foundation.

The leaders of the Rockefeller boards were also concerned about the diminishing ability of the foundations to attract and hold the most able men. Abraham Flexner was again the leading critic:

There are in the City of New York today eight or ten so-called Foundations. As I run over their personnel . . . it strikes me that they contain very few men of really pregnant intelligence, very few scholars and students, in the genuine, not the academic meaning of the term. . . . In the absence of ideas within the Foundation, money is apt to be a source of embarrassment rather than otherwise.<sup>19</sup>

Virtually every meeting of the boards was an occasion for similar complaints. The failure of policy was seen as a failure of leadership. In 1927 Fosdick wrote to John D. Rockefeller, Jr.:

This is a situation that confronts all foundations, the large ones and the small ones alike: that is, the danger is lack of ideas, lack of new blood. The Russell Sage people have just published a directory showing that there are a hundred and fifty-eight foundations in the U.S. . . . They are all of them struggling for worthy things to do, and there is, of course, quite a bit of overlapping and competition. With all these foundations in the field, the idea of systematic philanthropy is no longer a novelty, and men are not as easily attracted as they were, perhaps, a dozen years ago. Consequently, the Carnegie Foundation has to appoint a Fred Keppel as president, and other foundations are wobbling along under even more mediocre leadership.<sup>20</sup>

Although there was a great increase in the number of new foundations in the 1920s,<sup>21</sup> there is no evidence that the major ones suffered from competition, or that the reputation of foundations in general suffered in the 1920s. Quite the contrary. More likely, grounds for the worries about the quality of leadership were increasing competition from the universities for superior administrators, and the uneasiness of the leaders of the older foundations about the new responsibilities they were undertaking.

By the middle of the 1920s the first generation of the leadership of the Rockefeller boards—Frederick Gates, Wallace Buttrick, Wycliff Rose, Abraham Flexner, George Vincent—were all less than a decade away from retirement. They were a generation of self-made men in large-scale philanthropy. Rose had been a professor of philosophy, Flexner of Greek. They were not specialised administrators but men of broad culture and interests, reformers of the late-nineteenth-century stamp. By

<sup>19</sup> Flexner, A., "Foundations," p. 4.

<sup>20</sup> Raymond B. Fosdick to John D. Rockefeller, Jr., 6 October, 1927. RF.900.17.123.

<sup>21</sup> Lindeman, Edward C., *Wealth and Culture* (New York: Harcourt, Brace, 1936); Clark, Evans (ed.), *American Foundations and their Fields* (New York: Twentieth Century Fund, 1931, 1932, 1934, etc.).

the early 1920s, they were faced with the problems of managing large and intricate enterprises, which required more specialised talents in administration. Their broad vision and powers of initiative, which had served well before the First World War, were swamped by routine administrative and technical decisions which they were not equipped to make. The large foundations were in fact going through the same processes which business corporations had passed through after 1900 when the entrepreneurs gave way to the managers.<sup>22</sup> Rose and Flexner saw their successors as lacking their own broad culture and high ideals. Abraham Flexner wrote in 1924:

Now with our defective training we are called to deal with problems, and always harder problems, the right solution of which requires study. . . . What happens? Instead of having time to read and think and grow, we are overwhelmed with engagements, interviews, telephone calls—all that hodge-podge of feverish and indiscriminate activity, which under the alluring title of executive work, tends to injure the better American minds. Work once highly stimulating, becomes a routine. . . . The older men in our Foundation will in the long run tend to become increasingly stabilized and “executive”, the younger men will not grow up at all, unless some systematic provision is made for growth.<sup>23</sup>

In part, the crisis of leadership was the crisis of a generation of great amateurs in a society in which the major institutions were run by specialists, who had concentrated their energies on the tasks of management.

The crisis was not entirely in the minds of the old guard. The Rockefeller boards were indeed losing their most able officers, mostly to the universities. In 1927 Fosdick warned John D. Rockefeller, Jr., that the boards were in danger of “dying from the neck up”: Edwin F. Gay, professor of economic history at Harvard, rejected an invitation to direct the Spelman Memorial, and Edmund Day was lured only by a salary of \$18,000. Augustus Trowbridge was leaving the International Education Board to become dean of graduate studies at Princeton. Dean Ford left the Memorial after one year to turn to university work. Henry Houghton and Wilson Smillie left the Rockefeller Foundation to become dean at the medical school at the University of Iowa and assistant dean of the medical school at Harvard—both with substantial increases in salary. Arnett’s chief assistant left for Columbia Teachers’ College and a higher salary.

More and more we are getting into competition with universities, and less and less are we able to hold our own. In some cases the universities outbid us in salary; in other cases they outbid us in living conditions. . . . The universities provide a community atmosphere and intellectual companionship of a kind we cannot easily create here in New York.<sup>24</sup>

<sup>22</sup> Chandler, Alfred D., Jr., *Strategy and Structure: Chapters in the History of the American Industrial Enterprise* (Cambridge, Mass.: MIT Press, 1962).

<sup>23</sup> Flexner, A., “Foundations,” pp. 14–15.

<sup>24</sup> R. B. Fosdick to J. D. Rockefeller, Jr., 6 October, 1927. RF. 900.17.123.

The competitive advantage of the universities was in part a result of the internal troubles of the Rockefeller boards, but more importantly of greatly expanded opportunities for administrators in the universities.

The expansion of the universities was characterised by a rapid growth in administrative posts. The creation of graduate and professional schools required additional deans and offered attractive opportunities for administrative initiative. The growth of organised research in the universities was accompanied by the appearance of new institutional forms to administer research on a large scale. Research committees and semi-autonomous institutes, especially in the social sciences, were organised to receive and handle large grants from the foundations—the Laura Spelman Rockefeller Memorial especially encouraged such organisations.<sup>25</sup> Foundation interest in applied or interdisciplinary research encouraged the creation of new administrative schemes, such as the establishment of four major divisions at the University of Chicago, each grouping together social sciences, the physical sciences, the biological sciences, and the humanities.<sup>26</sup> In contrast with the universities, the administration of the foundations, which were floundering to discover a new role in a new situation, seemed less attractive.

The irony is that the transformation of universities was in part brought about by the earlier activities of the Rockefeller and Carnegie Foundations. They had insisted that colleges and universities have high and uniform standards. They made it a condition of gifts that universities be administered by the same procedures as were used in well-administered business organisations.<sup>27</sup> They insisted that special administrative arrangements be made to ensure that grants be efficiently managed. The foundations participated in the creation of effective administrators in higher education.

#### *New Initiatives in Science: The General Education Board and the International Education Board*

Between 1922 and 1929 the support of science by the Rockefeller Foundation was dwarfed by the programmes of the General Education Board and International Education Board, and of the Laura Spelman Rockefeller Memorial. These new programmes were the result not of co-ordinated planning but of the personal initiative of Ruml and Rose. When Rose was called from the directorship of the Rockefeller Sanitary Commission to direct the General Education Board in 1923—over the heads of both Arnett and Flexner—he was virtually given *carte blanche*. The Rockefellers created the International Education Board

<sup>25</sup> See Ogg, Frederick A., *Research in the Humanistic and Social Sciences* (New York: Century, 1928); Jones, Alan H., *Philanthropic Foundations and the University of Michigan 1922–1965* (Ann Arbor: University of Michigan School of Education, 1972).

<sup>26</sup> See *Annual Reports* of the President, University of Chicago, 1930–39.

<sup>27</sup> General Education Board, *Annual Reports*, 1903–16.



with gifts totalling \$28 million, at Rose's insistence, to expand the activity of the General Education Board internationally.<sup>28</sup> Rose enjoyed the personal support of the Rockefellers, the prestige of success, and absolute self-confidence. Since it was clear that the General Education Board could no longer afford to endow higher education systematically, he had a free hand to initiate a new policy. In 1923, to everyone's surprise, Rose was converted to an almost evangelical enthusiasm for the physical sciences, and these became the centre of the programmes of the General Education Board and the International Education Board.<sup>29</sup> Abraham Flexner acidly observed that "... the International Education Board is not an education board—it is mainly a scientific research board."<sup>30</sup>

The social sciences became the focus of support by the Memorial in a somewhat different fashion. Before Beardsley Ruml became director in 1923, the Memorial had been devoted exclusively to philanthropy in the field of social welfare. Ruml redirected it from purely practical social work to basic research on social problems by political scientists, economists, and sociologists. Edwin Embree, a disenchanted but admiring colleague, later wrote:

Ruml got under way partly because he had so much nerve and was so young as not to know better, and partly because Raymond Fosdick and Arthur Woods, who had recently come in as personal advisors to Mr. Rockefeller and as his representatives on all the Rockefeller Boards, were terribly fed up with the existing formality and welcomed any new activity. At any rate, with detonations constantly growing louder, Ruml started his program and succeeded in giving away \$25,000,000 before he could be stopped.<sup>31</sup>

Ruml tended to concentrate his resources in a limited number of universities, where subsidiary institutions for social research were created to conduct organised research on a large scale.<sup>32</sup> Grants were relatively few and tended to be substantial.

Rose pursued a similar strategy in the General Education Board and International Education Board. His policy was to "make the peaks higher", to aid the strongest individuals or groups, rather than to build up the weaker parts of the system. Rose sought out eminent individuals, but he always saw them as representatives of institutions. He sup-

<sup>28</sup> Fosdick, R. B., *op. cit.*, 1962, pp. 226–228. Rose succeeded Buttrick, whose health was failing.

<sup>29</sup> *Ibid.*, 229 ff. Fosdick quotes Rose: "This is an age of science... The nations that do not cultivate the sciences cannot hope to hold their own... they must take an increasingly subordinate place... and in the end be dominated by the more progressive states. Science... affects the entire system of education and carries with it the remaking of a civilization."

<sup>30</sup> A. Flexner to Charles Howland, 13 April, 1927. RF.900.17.123.

<sup>31</sup> Embree, Edwin, untitled MS, c. 1930. Embree papers, RF archives. AC9, box 1.

<sup>32</sup> See Ogg, F. A., *op. cit.*; *Annual Reports of the Laura Spelman Rockefeller Memorial, 1920–28.*

ported institutes or departments by means of grants for buildings, equipment and general endowment for research programmes, but never for the performance of specific pieces of research. Whereas Ruml thought in terms of research on particular problems, Rose conceived of research as an integral part of a scheme of which graduate training was the other major part. Rose's policies represent a transitional form between the comprehensive systematic educational programmes of the General Education Board prior to 1920 and the focus on projects and research of the reorganised Rockefeller Foundation. Under Wallace Buttrick the General Education Board had selected one institution over another. Rose intervened within particular universities, selecting one department over another. The officers of the Rockefeller Foundation in the 1930s selected individual projects within certain fields of research. Rose deplored the new policies of 1928 as interference with scientific genius; his policies in their turn were deplored by his lieutenant, Abraham Flexner, as interference with general education.

Unlike Rose, who came out of the campaign against hookworm, Flexner had devoted his whole career to education. His aim was to promote education through an integrated system of secondary, college, and graduate levels, with research as a part of professional training. He regarded Rose's emphasis on research in the natural sciences as the introduction of a dangerous imbalance into the system:

... a university administrator must view this institution as a whole. To set up within a General Education Board a separate division of science, while in the university science is part and parcel of the faculty of art and sciences, tends to disrupt things that should be viewed together.<sup>33</sup>

Research for Flexner was a part of education, and the genuine educational reformer had to think of the system of education as a unified whole:

... if you are going to deal broadly with education, you must have contact with, knowledge of, and influence over, institutions and systems. The fostering of important individuals—the main and I suspect the essential preoccupation of the IEB—may be tremendously effective in the long run, but it is only a part of education. ...<sup>34</sup>

Flexner objected in vain to Rose's establishment of a separate division for the sciences. Rose put Flexner in charge of a division of studies to give scope to his talent for systematic surveys, but he refused to let Flexner pursue his real interests in the development of legal education

<sup>33</sup> Flexner, A., "Memorandum regarding the GEB", 4 January, 1927, pp. 4-5. RF.918.13.

<sup>34</sup> A. Flexner to Charles Howland, 13 April, 1927. RF.900.17.123.

and the training of teachers.<sup>35</sup> Edwin Embree's not unbiased account describes the tensions between Flexner and Rose:

Flexner found no one in authority who was really interested in his programs—either general education or of medicine. The result was that these programs, one by one, petered out with acute distress to Flexner and general apathy on the part of all others concerned.<sup>36</sup>

Through Rose and Ruml's programmes, unprecedentedly large sums of money went to scientific research in the mid-1920s. They grew very rapidly owing to the very large gifts by Rockefeller in the early 1920s, and virtually pre-empted their respective fields.

### *New Initiatives in the Foundation*

Within the Rockefeller Foundation, attempts to develop programmes in scientific research took a rather different form. The goals of the Foundation were neither the transmission nor the advancement of knowledge, but rather the application of knowledge to specific social problems, especially in public health. The International Health Board exemplified this mode. A similar programme of research in industrial relations had been planned, but became a casualty of the violence connected with the strike at the Colorado Fuel and Iron Company, in which the Rockefellers had a financial interest, and the resulting investigation of the Foundation by the United States Commission on Industrial Relations in 1913.<sup>37</sup> After that, the Rockefeller Foundation shied away from economic and social research. Proposed programmes in mental hygiene and questions of heredity and vice were scrapped, as well as a plan for a commission on economic problems.<sup>38</sup> Nevertheless, this concern with the application and use of science rather than fundamental academic research remained a strong tradition in the Foundation. As late as 1920, it was still concentrated almost exclusively on medical education and public health.

In the early 1920s, before the work of Rose and Ruml got underway, steps were taken to increase the activity of the Foundation in scientific research. The proposal for a research institute in the physical sciences was an attempt to do for the natural sciences what the Rockefeller In-

<sup>35</sup> A. Flexner, "Memorandum regarding the GEB", 4 January, 1927, pp. 4-5. RF.918.1.3. The humanities were included in Flexner's mandate only at his insistence. *Ibid.*, pp. 3-4. The four divisions of the General Education Board under Rose were: public education; college and university science; studies, medicine, humanities; agricultural education.

<sup>36</sup> Embree, E., *op. cit.*, p. 11.

<sup>37</sup> Fosdick, R. B., *op. cit.*, 1962, ch. 5, pp. 3-6. See also Graham Adam, Jr.'s, biased account in *Age of Industrial Violence 1910-1915* (New York: Columbia University Press, 1966), ch. 7.

<sup>38</sup> Fosdick, R. B., *op. cit.*, 1962, p. 26; Salmon, Thomas W., "Mental Hygiene as an Area for Continued Foundation Support", in "Memorandum of Conference of Officers, 17-18 January, 1920", RF.900.22.165; Mechanick, Judith, "The Rockefeller Foundation Programs in Mental Hygiene and Psychiatry, 1913-1941", unpublished honours thesis, University of Pennsylvania, 1978.

stitute had done for the medical sciences.<sup>39</sup> In 1920 and 1923 grants were made for the publication of journals of biological abstracts, and in January 1922 a half million dollars was appropriated to the Marine Biological Institute at Woods Hole. In April 1922 the trustees agreed that the China Medical Board should develop the basic sciences at the Peking Union Medical College, and in May 1922 they resolved to make science education in general a basic part of the Rockefeller Foundation's programme.<sup>40</sup> Rose's successor in the International Health Board, Major Frederick F. Russell, created a central laboratory for public health research in New York City, and a group of research laboratories in the field.<sup>41</sup> In 1925, Richard Pearce initiated a programme of grants to European institutions for neurological and psychiatric research, which linked the Foundation's earlier interests in mental hygiene and Alan Gregg's later programme in psychobiology.<sup>42</sup> Meanwhile, a division of studies was established in 1924 under Edwin Embree to develop human biology. But despite these early steps in the patronage of science, the Rockefeller Foundation failed to follow the initiative taken by Rose, and its programmes were confused and uncertain. It became increasingly difficult to stake out an area which Rose and Ruml had not already occupied.

The difficulty of finding a rationale for the support of scientific research which was consistent with the interests of the Rockefeller Foundation was accentuated by the fragmented administrative structure of the Foundation. Unlike the General Education Board and the International Education Board, which had relatively simple goals and strong central direction, the Rockefeller Foundation was a mosaic consisting of its various organisations in medicine and public health, thrown together without thought of integration and without central control.<sup>43</sup> Both the International Health Board and the China Medical Board had separate governing bodies, virtually independent of the trustees of the Foundation, although formally they were parts of the Foundation. The division of medical education and the division of studies were controlled by the board of the Foundation. But relations between the various boards and divisions were unclear, and the authority of the president, George Vincent, was uncertain. Although the office of the president was designed to control the boards, in reality the boards acted as free agents,<sup>44</sup> competing rather than cooperating with each other.<sup>45</sup> The Foundation was little more than a holding company, disbursing lump sums to the Inter-

<sup>39</sup> Reingold, N., *op. cit.*

<sup>40</sup> Edwin Embree to Fosdick, 12 June, 1926, pp. 3-4. RF.900.17.122.

<sup>41</sup> Fosdick, R. B., *op. cit.*, 1962, pp. 45-46.

<sup>42</sup> *Ibid.*, pp. 123-124, 128-130; Mechanick, J., *op. cit.*

<sup>43</sup> Fosdick, R. B., "Report of the Committee on Reorganization," 5 November, 1926. RF.900.19.136.

<sup>44</sup> *Ibid.*; Vincent, George, "Statement to the Trustees", 7 November, 1924. RF.900.22.165.

<sup>45</sup> *Ibid.*

national Health Board and the China Medical Board, often without any real knowledge of how the money was being spent.<sup>46</sup> Vincent tried to control expenditures and to act as mediator between independent, self-protective, and uncooperative interests:

With the growth of Boards and Divisions, the President has been looked upon in many quarters as merely an arbitrator between the heads of his departments—a person whose duty it was to straighten out difficulties when they arose and as far as he could, keep the Boards and Divisions working smoothly and harmoniously. . . . Divisional identity has been emphasized to the point of isolation. . . . The function of general oversight, of general planning, of thinking in world-terms from the standpoint of the Rockefeller Foundation as a whole, has been too largely neglected.<sup>47</sup>

Vincent's character did not make his position easier. He was by nature a mediator of interests; he was not single-minded like Ruml and Rose. He did not have strong personal preferences and was indecisive in deciding between competing interests. Since the groups within the Foundation had no reason to cooperate, Vincent's preference for consensus made matters worse. Embree's reflections on his superior make this point:

. . . . after the war work [relief work during the First World War] the central administration found itself with practically no responsibilities and with the other departments thoroughly organized and entrenched. The remaining eleven years of Vincent's administration were devoted to futile and half-hearted attempts to get some control over existing departments of the organisation and equally half-hearted projects for the development of new lines of activity, each of which was abandoned at the first opposition . . . Vincent's worst traits appeared here, for he was unwilling to make decisions which would put an end to the expenditures [of the International Health Board and the China Medical Board] and yet he continued to grumble about procedures for which at the time he was solely responsible.<sup>48</sup>

Vincent was not solely to blame. The office of the president had been created to exercise a mediating role. Its legal powers were ill-defined and it lacked the achieved authority of the constituent boards. Alan Gregg, Pearce's lieutenant in Paris, saw how the structure of the Foundation shaped Vincent's role:

The President of the Foundation, in the task of coordinating and controlling the activities of able, experienced and eager Division chiefs, has let the study of new opportunities, the selection of programmes, the determination of policy and the assignment of responsibility to be taken away from his office—to become the cause of uncertainty, contention and irritation among the chiefs of Boards and Divisions. . . . If the President is to continue largely as a moderator between different Divisions, I can suggest no reorganization

<sup>46</sup> Richard Pearce to Fosdick, 16 April, 1926. RF.900.12.121.

<sup>47</sup> Fosdick, R. B., "Report of the Committee on Reorganization", 5 November, 1926. RF.900.19.136.

<sup>48</sup> Embree, Edwin, *op. cit.*, pp. 3, 5. Concern over rising and unjustified budgets was stimulated by the first deficit shown by the Foundation in 1924. Vincent, G., "Statement", 7 November, 1924. RF.900.22.165.

which would serve any better than the present arrangement to stave off suspicion and stalemate.<sup>49</sup>

As the most powerful body within the Rockefeller Foundation, the International Health Board constituted the greatest problem for Vincent and Pearce. Under Wycliffe Rose, it had won an international reputation in public health. But by 1923 it was an ageing institution, tending simply to repeat its early successes with hookworm with other diseases. Rose's departure should have been the occasion for new initiatives:

Instead, an army officer, F. F. Russell, succeeded Rose and apparently regarded it as a duty to see to it that nothing interfered with policies as originally laid down by the Great God Rose. The result has been the continuation of the status quo and this carried on without the statesmanship and imagination which saved the original program. Nothing has been contributed by the IHB for a decade except money.<sup>50</sup>

A rigid and imperious person, Russell was unwilling to entertain new ideas or to cooperate with the other divisions. His able lieutenant in Paris, Selskar Gunn, was chagrined by Russell's opposition to his programme for the control of tuberculosis in France. He wrote to Fosdick: "I do not believe that the public health work in the Foundation would suffer if the IHB should be disbanded."<sup>51</sup> Russell sequestered sums of money in his budgets for future public health projects, despite objections by Fosdick and others, and refused to cooperate with Vincent and Pearce. At Fosdick's request, Simon Flexner tried to break the ice:

In his explanation and in part in justification of his habit of not talking over his affairs in advance with President Vincent, he [Russell] stated that at the outset he did go to Mr. V. to talk projects over. He got no help from Mr. V., who would call Embree and Pearce into conference to consider R's proposals. This was not a useful or satisfactory procedure from Russell's point of view, and hence he gave up going to Vincent in advance.

Russell maintains that there is no personal ill-feeling on his part toward V. He can, he thinks, work with any reasonable person. He admits the friction in recent times between Pearce and himself, severely censuring himself for losing once or twice his temper in the budget or executive committee meetings.<sup>52</sup>

As head of the division of medical education, Richard Pearce was most frequently in conflict with Russell over programmes in the field of health. Pearce was the most able officer in the Foundation in the 1920s; both Embree<sup>53</sup> and Vincent<sup>54</sup> testified to his statesmanlike ability to see the

<sup>49</sup> Alan Gregg to Vincent, "Memorandum on Reorganization", 24 July, 1926. RF.900.17.122.

<sup>50</sup> Embree, E., *op. cit.*, p. 10. As always, Embree's views must not be taken at face value. But they do catch the troubled times better than any official account.

<sup>51</sup> Selskar Gunn to Fosdick, 6 October, 1926. RF.900.17.122.

<sup>52</sup> S. Flexner to Fosdick, 19 June, 1926. RF.900.17.122.

<sup>53</sup> Embree, H., *op. cit.*, p. 5: "by all odds the ablest new man brought in during the presidency of Vincent."

<sup>54</sup> Vincent, G., Memorandum to Special Committee, 19 May, 1926. RF.900.17.121: "He has a clear, analytical mind, wide and accurate knowledge, and looks at the work of the Foundation as a coordinated whole."

policy of the Foundation as a whole. Throughout the reorganisation Pearce's advice was consistently free of any personal or divisional interest. Yet Pearce was constantly balked by the International Health Board in his efforts to widen the range of the Foundation's activities. In 1920 the Foundation initiated projects in graduate education and research in public health at Johns Hopkins and Harvard, but in 1921 transferred these, at Rose's suggestion, to the International Health Board, along with large appropriations to establish similar schools of public health in European universities.<sup>55</sup> It was not Russell alone who hindered Pearce.<sup>56</sup> Subsequently Pearce tried to develop hygiene as a medical discipline through the division of medical education.<sup>57</sup> The trustees declined; but a year later, when Rose made a similar proposal, the trustees agreed. Pearce was bitter:

Several years ago as a result of experience in many surveys, I was impressed by the difficulty in many places of aiding medical education without at the same time doing something in a fundamental way for the sciences (physics, chemistry and biology) on which medicine is based and suggested (informally at a luncheon) to the trustees that these three sciences be aided by the Rockefeller Foundation and a special division be created for that purpose. The suggestion was met by the remark that the trustees assumed our program in public health and medical education was such that it would absorb all funds and efforts for the next ten years at least. Later, and I think unfortunately, the sciences mentioned above were included in the newly established International Education Board.<sup>58</sup>

By 1923, Vincent was desperate for new programmes to balance the powerful vested interests of the International Health Board and the China Medical Board. Without equally large and urgent alternatives to propose, he could do little but appropriate funds for existing programmes.<sup>59</sup> Vincent invited new ideas, but few of his officers or advisers were able to see beyond their own already established interests. A conference was held in March 1924 to consider new fields for support by the Foundation.<sup>60</sup> Raymond Pearl, a trustee and beneficiary of the Foundation, suggested eugenics and human biology—his own fields; Ruml suggested the social sciences. Russell argued that "malaria control . . . might well use tremendous sums", and Roger Grene, who was head of the Peking Union Medical College, warned of the dangers of hunting new things at the expense of existing programmes.<sup>61</sup> Abraham Flexner suggested that the General Education Board initiate a programme in the

<sup>55</sup> E. Embree to R. B. Fosdick, 12 June, 1926. RF.900.17.122. Vincent, Memorandum to Committee on Reorganization, 19 May, 1926. RF.900.17.121.

<sup>56</sup> Embree, E., *op. cit.*, p. 11.

<sup>57</sup> R. Pearce to R. B. Fosdick, 16 April, 1926, RF.900.17.121.

<sup>58</sup> Richard Pearce to R. B. Fosdick, 16 April, 1926, p. 7. RF.900.17.121.

<sup>59</sup> Vincent, G., "Statement to the Trustees", 11 November, 1924, pp. 9-10. RF.900.22.165.

<sup>60</sup> E. Embree to R. B. Fosdick, 7 February, 1924. RF.900.22.159.

<sup>61</sup> Memorandum of Conference at Gedney Farms, 18-19 January, 1924, pp. 1-2. RF.900.22.165.

humanities to balance its programmes in the sciences.<sup>62</sup> Embree too said that there were opportunities in the humanities and he privately urged Vincent to take the initiative: "I am loath to see leadership here—as in elementary education, agriculture and general science—go to another Board."<sup>63</sup> Pearce pleaded that no new boards be brought into existence.<sup>64</sup> He had his hands full with the division of medical education. There was a great deal of rivalry among the bodies within the Foundation and little thought on Foundation programmes as a whole.

The most significant result of the meeting of January 1924 was the creation of a division of studies, headed by Vincent's protégé, Edwin Embree. The division was intended to develop new programmes outside medical education and public health. Embree's main effort was devoted to designing a programme in "human biology", a cluster of diverse sciences including physiology, psychology and psychiatry, and anthropology.<sup>65</sup> "Human biology" was intended to rival the programmes of the General Education Board and International Education Board. Embree's conception was also a deliberate return to the pre-war model of science applied to solving social problems. In this respect Embree's programme differed markedly from Rose's. Embree plunged into the most controversial social issues of the day:

. . . problems of race relations are pressing as never before. The crowding of population is no longer a national matter but a world issue, and questions are being raised with respect to quality as well as to numbers of population groups. The complexity of modern industrial civilization is accentuating mental and nervous disorders. . . . Attempts, often at present based on insufficient data, to grapple with practical problems of human biology are seen in current restrictive immigration, in laws for the segregation or sterilization of the unfit, and in revision of methods of correction and treatment of the delinquent and the dependent. The problem is to develop an adequate basis of well demonstrated fact upon which such new procedures may rest.<sup>66</sup>

In February 1925, Embree presented his plans to the trustees. Racial mixing in the Pacific, sexuality and human development, human heredity and experimental evolution, anthropometry of ethnic groups, brain

<sup>62</sup> Flexner, A., "Foundations", p. 18. Flexner explicitly stated his desire to have another staff officer in the General Education Board in humanities.

<sup>63</sup> Embree, E., "Expansion of Programs of Rockefeller Boards", 18–19 January, 1924, pp. 4–6. RF.900.22.165. Embree to Vincent, 4 February, 1924. RF.900.22.159.

<sup>64</sup> Memorandum of Conference, 18–19 January, 1924, p. 3. RF.900.22.165.

<sup>65</sup> Rockefeller Foundation, *Annual Report, 1924*, pp. 350–351. The division of studies also consolidated scattered projects in nursing education and aid to dispensaries. See also *Annual Report: 1925*, pp. 49–52.

<sup>66</sup> Embree E., "Studies in Human Biology", presented to the trustees, 23–24 February, 1925. RF.900.22.165. On "the myth of the feeble-minded" see Haller, Mark H., *Eugenics* (New Brunswick: Rutgers University Press, 1963). On earlier ideas of "American Nervousness", see Rosenberg, Charles, *No Other Gods* (Baltimore: Johns Hopkins Press, 1976), ch. 5. On the psychological fads of the 1920s, see Burnham, John C., "The New Psychology: From Narcissism to Social Control", in Braeman, John, *et al.* (eds.), *Change and Continuity in Twentieth Century America: The 1920s* (Columbus: Ohio State University Press, 1968), pp. 351–398.



physiology and mental hygiene—all were elaborately presented with exhibits, appendices, and reports of surveys. This was Embree's answer to Russell and Rose; it was a comprehensive programme in the basic sciences, which was also relevant to the Foundation's tradition of concern with public health and its ideals of social utility.<sup>67</sup> Embree saw himself as a successor to Rose, Buttrick, and Flexner. He imitated their mannerisms, and displayed an effusive admiration of his mentors, without ever quite managing to fit the role.<sup>68</sup> A remark to Fosdick captures Embree's idealism: "I realize that it is going to be harder to take bad ideas out of people than it has been to extract hookworms; harder to give them good inheritance than good surgery. While a more complicated undertaking, it is also one even more worth investment and speculation."<sup>69</sup> Embree's idea was more appropriate to the older Foundation ideal of science applied to social service and reform. But by the 1920s this kind of reform was no longer the order of the day.<sup>70</sup> In aiding the development of basic research and graduate training in universities, Rose had accurately defined a more fitting role for the Foundation.

The trustees were markedly less enthusiastic than Embree about solving controversial social problems. Fosdick wondered where it would all go and what it would cost.<sup>71</sup> Simon Flexner was cool to Embree<sup>72</sup> and openly sceptical to Vincent: "I have not succeeded in visualizing clearly just what is intended . . . The elements embraced in the tentative plan are of such unequal value . . . that I have not been able to put them together."<sup>73</sup> The trustees approved Embree's continuing exploration of opportunities, but explicitly declined to commit the Foundation to a large programme in human biology.<sup>74</sup> Embree continued his surveys, making a seven-month tour of ethnological and biological institutions in Japan, Australia, and the Pacific Islands.<sup>75</sup> The few projects which the division of studies managed to do before it was terminated fell far short of Embree's larger ambitions. Grants were made to Raymond Pearl for work on the life-span of mammals, to Robert Yerkes for his work on apes, and to some neurological projects. Capital grants were made to the

<sup>67</sup> Minutes of Conference of Officers and Trustees, Princeton, 23–24 February, 1925. RF.900.22.165.

<sup>68</sup> See, e.g., E. Embree to G. Vincent, 29 May, 1922, Vincent to Embree, 21 July, 1922. RF.100.4.35. Embree, E., *op. cit.*

<sup>69</sup> E. Embree to R. B. Fosdick, 26 August, 1925. RF.915.4.33.

<sup>70</sup> For a general discussion of the change in progressive reform ideals, see Link, Arthur S., "What Happened to the Progressive Movement in the 1920's?" in Kennedy, David M. (ed.), *Progressivism: the Critical Issues* (Boston: Little, Brown, 1971), pp. 147–163. See also Church, Robert L., "Economists as Experts: The Rise of an Academic Profession in the U.S., 1870–1920", in Stone, Lawrence (ed.), *The University in Society*, vol. II (Princeton: Princeton University Press, 1974), pp. 571–609.

<sup>71</sup> Minutes of Conference, 23–24 February, 1925.

<sup>72</sup> S. Flexner to E. Embree, 20 February, 1924. RF.915.4.33.

<sup>73</sup> S. Flexner to G. Vincent, 27 January, 1924. RF.915.4.33.

<sup>74</sup> Rockefeller Foundation, *Annual Report: 1925*, p. 416.

<sup>75</sup> See correspondence and reports in RF.609D.1.1: "Human Biology" and in RF.915.4.33.

Woods Hole and Pacific Grove biological stations, and a grant for fellowships in psychiatry to the National Research Council.<sup>76</sup> The division of studies remained a motley of miscellaneous projects, and it was an early casualty of the reorganisation of 1928.

### *Reorganisation of the Foundation: 1925–26*

Steps were taken at the meeting of the trustees in February 1925 to centralise the administration of the Foundation. A budget committee was created to review the budgets of the division and boards.<sup>77</sup> A “Monday lunch” group, including representatives of the various boards of the Rockefeller Foundation, the General Education Board, the International Education Board, and the Institute began to meet, in the hope that regular and informal discussions would foster cooperation and a more rational division of labour. By the end of 1925, it was clear that these informal methods had failed. The budget committee lacked the time and the technical knowledge to assess the budgets. The “Monday lunch” meetings suffered from what Vincent called “parliamentary inefficiency”; it was simply a forum for competing interests, not one body with one mind.<sup>78</sup> Vincent had reached the end of his patience and was determined to attack the vested interests directly. In February 1926, he asked the trustees for an authoritative interpretation of the legal powers of the president and the heads of the divisions and boards.<sup>79</sup> The trustees appointed a committee, consisting of Raymond Fosdick, John G. Agar, and Simon Flexner, to study the structure and policies of the Foundation.<sup>80</sup> Appeals for cooperation had failed; a change in the structure of the Foundation was clearly in order.

Fosdick canvassed the officers for their views on Foundation policy. Wilbur Sawyer of the International Health Board referred to the advantages of existing arrangements.<sup>81</sup> Vincent, Pearce, and Embree provided ideas about how the policies of the Foundation could be brought more into line with the needs of education, research, and social welfare.

Vincent was not concerned with general principles. He wished to

<sup>76</sup> Rockefeller Foundation, *Annual Report: 1925*, pp. 417–421.

<sup>77</sup> Vincent, George, “The Rockefeller Foundation: A Statement by the President”, 24 February, 1926, pp. 1–2. RF.900.17.121.

<sup>78</sup> *Ibid.*, pp. 2, 3. See also G. Vincent to R. B. Fosdick, 5 January, 1926, RF.900.17.121. “The discussions at the Monday luncheons are not too encouraging. They suggest parliamentary inefficiency. I wonder whether, after all, we do not need a benevolent despot.”

<sup>79</sup> Vincent, George, “The Organization of the Foundation”, 19 May, 1926, exhibit A and correspondence with Foundation counsel, Thomas V. Debevoise. RF.900.17.121.

<sup>80</sup> R. B. Fosdick to G. Vincent, 24 March, 1926. RF.900.22.121. *Ad hoc* committees had already been set up by the Monday luncheon group to study problems of organisation and administration. Vincent, G., “Statement”, 24 February, 1926, pp. 3–4.

<sup>81</sup> Wilbur Sawyer to R. B. Fosdick, 14 April, 1926. Roger Greene to Fosdick, 14 April, 1926: “The fear has been expressed that the organization may get into a rut. Are there not advantages as well as disadvantages in a rut? . . . If the rut is smooth and properly laid out . . . it may serve to expedite progress.” See also S. Flexner to Fosdick 19 June, 1926, and other correspondence regarding Russell. RF.900.17.121.

establish the power of the presidency, and he proposed that the existing boards be reorganised as divisions responsible to the president.<sup>82</sup> He was clearly aware of the inconsistencies in the existing programmes. Training for nursing was supported by all four divisions; hygiene was split between the International Health Board and the division of medical education. The China Medical Board was based on a geographical criterion, and the division of studies, or a division of biology, was based on subject matter.<sup>83</sup> Vincent's plan contained nothing outside medicine except for a tentative suggestion for a division of biology. His one aim was to bring the various interests in the Rockefeller Foundation under control; he did not reconsider the structure and policies of the Foundation and other boards as a whole.

Richard Pearce agreed that the most important measure was to "give the president a real job".<sup>84</sup> But Pearce also recognised that the fundamental problem was that the organisation of the Rockefeller boards and divisions reflected historical and personal contingencies, not the actual activities of the institutions they served. Pearce recommended that the programmes of the Rockefeller Foundation be reorganised along functional lines: (1) a new division of education, replacing the division of medical education and including medical education, nursing, and public health; (2) a division of health demonstration, replacing the International Health Board; (3) a division of biology, taking human biology from the division of studies, general biology from Rose's International Education Board, and social biology from the Laura Spelman Rockefeller Memorial.<sup>85</sup>

Pearce seems to have deliberately identified his first and second groups with the diffusion and application of knowledge. He did not explicitly associate the third with the advancement of knowledge, however; his division of biology was based on a subject, not a general function. Since Fosdick's plan of reorganisation in 1928 was based on these three functions of science, Pearce's adumbration of this scheme in 1926 is of some interest. Why did Pearce not develop his idea fully? The most probable answer is that his experience with the International Health Board had left him with a strong prejudice against creating new divisions with new aims. Research as such was just such a new function for the Foundation. The great advantage of his plan, Pearce asserted, was that it could be effected by simply reshuffling existing programmes.<sup>86</sup> Pearce's vision, like Vincent's, was limited by his own situation.

Embree's suggestions were more parochial. His main concern was to get basic biology away from the International Education Board, and

<sup>82</sup> G. Vincent to R. B. Fosdick, 19 May, 1926, pp. 1-3. RF.900.17.121.

<sup>83</sup> *Ibid.*, pp. 4-5.

<sup>84</sup> R. Pearce to R. B. Fosdick, 16 April, 1926, pp. 1-2. RF.900.17.121.

<sup>85</sup> *Ibid.*, pp. 2-3.

<sup>86</sup> *Ibid.*, p. 4.

perhaps the other fundamental sciences as well.<sup>87</sup> Embree envisaged a division of labour between the General Education Board in education, and the Rockefeller Foundation in the basic sciences:

My own ideas as to the division of labor between boards would be to have the Education Boards take up their original and proper functions of general education. The RF might properly devote itself to the biological sciences and to their application in medicine and hygiene. It might, in fact, include with biology the other natural sciences, though I think the emphasis should . . . be on the biological group.<sup>88</sup>

In contrast to Pearce, Embree was concerned less with medical education than with research and application in the biomedical sciences. He had no objection, for example, to Flexner's keeping medical education in the General Education Board.<sup>89</sup> His idea of separating general education and science presaged Fosdick's scheme. But as with Vincent and Pearce, Embree's personal experience and interests prevented him from foreseeing a really new organisation and new goals for the Foundation. The pieces of the puzzle were all there, but as yet no clear and consistent pattern.

Although Fosdick felt that "a pretty definite surgical operation" was needed,<sup>90</sup> the reforms suggested by his committee were mainly administrative. One reform was to disband the China Medical Board and divide its functions between the division of medical education and a separately incorporated Peking Union Medical College. Another was to reconstitute the International Health Board as a division of the Rockefeller Foundation, limiting it to field operations. Others were to place all teaching and research in medicine, nursing, and public health in the division of medical education; to abolish the division of studies and assign its activities temporarily to Pearce in the division of medical education; to strengthen the president's office by the addition of three vice-presidents, and to create standing committees of the trustees to oversee the various divisions.<sup>91</sup> These reforms were carried out. The main beneficiaries of these reforms were Vincent and Pearce. The most notable casualty was Embree's division of studies; it was not succeeded by a division of biology or science.

The demise of the division of studies and "human biology" was crucial for future programmes of the Rockefeller Foundation. It left the way open for programmes not linked to medicine and social problems but to the basic sciences in general. The reasons for the demise of the division of studies and human biology are complex. Despite his concern

<sup>87</sup> E. Embree to R. B. Fosdick, 12 June, 1926, RF.900.17.122.

<sup>88</sup> E. Embree to G. Vincent, 16 July, 1926. See also Embree to Fosdick, 12 June, 1926, RF.900.17.122.

<sup>89</sup> E. Embree to R. B. Fosdick, 12 June, 1926, RF.900.17.122.

<sup>90</sup> R. B. Fosdick to S. Flexner, 26 October, 1926, RF.900.17.121.

<sup>91</sup> Fosdick, R. B., "Report of the Committee on Reorganization", pp. 6-8. 5 November, 1926. RF.900.19.136.

for social problems,<sup>92</sup> Fosdick was not impressed by Embree's programme.<sup>93</sup> Pearce was anxious to develop biology, not as an applied biomedical science, but as a basic science, in part for strategic reasons:

There is every reason why Biology . . . should be developed by the Foundation in relation to public health and medical education, but if this is to be a Foundation program, the effort should not be Human Biology only, but all biology in its broadest aspects—which means taking General Biology away from the IEB.<sup>94</sup>

Pearce and Simon Flexner both advised Fosdick against human biology,<sup>95</sup> and their counsel was probably crucial. Eugenics and mental hygiene were declining in prestige while the prestige of academic genetics and biology was rising.<sup>96</sup> In basing his programme on the pre-war combination of applied science and social reform, Embree made a tactical error.

The second reason for the demise of the division of studies was Embree himself. Embree was a man of rather poor judgement and administrative capacity. It did not help that he presented himself as a successor to the Flexners and Rose, with a mixture of deference and collegiality which obviously irritated them. Human biology went down with its architect. Fosdick wrote in October 1926:

After talking the situation over with Vincent and others, I believe that Embree could not possibly be the Vice-President of the Home Office. Nor do I think he could act in any general administrative capacity. Consequently, I have come to the conclusion that the only thing to do with the biological aspects of Embree's department will be to transfer them temporarily to Pearce's Division, with the understanding that they are to be terminated as soon as possible. I find that they do not amount to anything anyway. This rather leaves Embree out on a limb and I do not know exactly what we can do with him. . . . Pearce will be very glad to take Embree into his department as a sort of assistant for the time being, although I am confident this is not a position which Embree will accept.<sup>97</sup>

Embree himself later gave his superiors a remarkably candid assessment of his nagging lack of self-assurance and sense of inferiority which inhibited him from seizing the initiative or making independent judgements:

If I had that job today I think I could build up a program that would be not only brilliant but would command support even from the conservative. But for three years I sweat blood on the job in New York. On the whole I think the results were those that would be expected from a very immature person. The things I got done were not bad, but I did not get the philosophy

<sup>92</sup> Fosdick, Raymond B., *Chronicle of a Generation* (New York: Harper, 1958). Embree was under the impression that Fosdick supported eugenics and mental hygiene. Embree to Fosdick, 26 August, 1925. RF.915.4.33.

<sup>93</sup> R. B. Fosdick to S. Flexner, 28 October, 1926. RF.900.17.122.

<sup>94</sup> R. Pearce to R. B. Fosdick, 16 April, 1926. RF.900.17.121.

<sup>95</sup> Flexner to R. B. Fosdick, 4 May, 1926. RF.900.17.121.

<sup>96</sup> For a detailed discussion of this change in RF interests, see Mechanick, J., *op. cit.*

<sup>97</sup> R. B. Fosdick to S. Flexner, 28 October, 1926. RF.900.17.122.

of the thing for years and years and was therefore unable to formulate a really statesmanlike program.<sup>98</sup>

In December, Embree was sent on a European tour to survey the training of nurses and to prepare for an administrative post in Europe.<sup>99</sup> He was told not to promote biology. But, full of enthusiasm, Embree struck out on his own, in the style of the great Foundation officers like Rose and Flexner. In December Fosdick wrote to Vincent:

Are you sure that Embree is not getting into that biological situation in Europe? He writes Beardsley Ruml as follows: "Dr. Herrick is a grand fellow scout. I think we'll dig up a few bones before we get through. England, however, is no easy scratching. We've had some good sessions with Malinowski, Beveridge, Yinton, Elliot-Smith, A. V. Hill, Dawson, and the psychiatric crowd at King's Square." I confess I do not quite understand what he is doing over there. I thought it had to do with nursing education.<sup>100</sup>

Vincent hoped Embree had not been indiscreet;<sup>101</sup> but he too was alarmed by Embree's foray.<sup>102</sup> Embree was doing precisely what the International Health Board's leaders had done: taking the bit in his teeth, lining up clients and promoting his own programme with no thought for the general policy of the Foundation. By the end of 1926, Fosdick had decided that the biology programme should be dropped,<sup>103</sup> and a year later, as Fosdick had expected, Embree resigned, embittered by the Foundation's lack of "courageous scientific adventuring."<sup>104</sup> The question of a biology programme had by then become part of the larger problem of reorganising all the Rockefeller boards.

By 1927, it was clear that medicine would be only a small part of the new programme of the Rockefeller Foundation. Embree's conception of human biology was designed to fit the style and situation of the old Rockefeller Foundation. In 1924, human biology had strategic appeal to Vincent in his battle with the boards. By 1927 the boards had been brought under control and the International Education Board was about to be absorbed. It was clear that the new programmes of the Rockefeller Foundation would lean to the pure sciences.

<sup>98</sup> Embree, Edwin, "Rockefeller Foundation" (undated typescript). RF Accession 9, box 1.

<sup>99</sup> G. Vincent to R. B. Fosdick, 23 December, 1926. RF.100.4.35.

<sup>100</sup> R. B. Fosdick to G. Vincent, 21 December, 1926. RF.100.4.35.

<sup>101</sup> G. Vincent to R. B. Fosdick, 23 December, 1926. RF.100.4.35.

<sup>102</sup> G. Vincent to E. Embree, 19 December, 1926. "The idea of a comprehensive survey surprises me a little. I am sure you will be careful not to arouse expectations, or to cross wires." See also E. Embree to G. Vincent, 24 December, 1926. RF.100.4.35.

<sup>103</sup> R. B. Fosdick to A. Flexner, 12 January, 1927. RF.100.4.35. Fosdick remarked: "Embree in this whole business is going to be a little difficult to control." He was right. In July 1927 Embree wrote to the Stanford president, Raymond Lyman Wilbur, urging the development of race biology and assuring him that the Rockefeller Foundation's moratorium on biology was temporary. E. Embree to R. L. Wilbur, 11 July, 1927. R. L. Wilbur to G. Vincent, 21 May, 1926. RF.915.4.33.

<sup>104</sup> E. Embree to S. Vincent, 1 December 1927. RF.100.4.35. See also E. Embree to R. L. Wilbur, *ibid.*, and Embree, E., *op. cit.*, *passim*.

*Reorganisation of the Rockefeller Boards: 1926–28*

The reorganisation of the Rockefeller Foundation in November 1926 eliminated the worst administrative problems, but it was clear to Fosdick that it was only a stop-gap; the real problem was to devise a more orderly and efficient division of labour among all the Rockefeller boards.<sup>105</sup> Each board had been established by entrepreneurs who seized promising opportunities and pursued separate policies.<sup>106</sup> This had been a suitable policy when opportunities were numerous and resources ample. It was not suitable, however, for organisations with stable or shrinking resources and limited areas for expansion. Inefficiency and lack of co-ordination dogged the Foundation's leaders. Medical education was split between the General Education Board which dealt with the domestic situation and the Rockefeller Foundation which dealt with foreign countries. The General Education Board, the International Education Board and the Rockefeller Foundation all had programmes in the natural sciences; the social sciences—while concentrated in the Laura Spelman Rockefeller Memorial—were also relevant to the General Education Board. Mental hygiene and public health came into the plans of both the Memorial and the Foundation.<sup>107</sup> This confusion of separate agencies led to absurd situations such as the one described by Embree:

In 1926, I was at Cambridge University discussing . . . the biological sciences. During this same summer Shepardson of the IEB was discussing medical developments and Trowbridge, representing Rose, was discussing a general program in the natural sciences. Ruml . . . had a representative on the Cambridge staff who was concerned with his programs in the social sciences.<sup>108</sup>

Commitments made by one Rockefeller group were mistaken by clients for commitments by another, to everyone's embarrassment. It was clear that a reorganisation of all the boards was in order.

At the same meeting that they approved Fosdick's reorganisation of the Foundation, the trustees appointed similar committees to investigate the other boards.<sup>109</sup> In January 1927, Vincent set forth the general aims of reorganisation: a rational division of labour between the boards, more statesmenlike officers, better co-ordination.<sup>110</sup> An "interboard committee on reorganisation" was appointed under Fosdick's chairmanship, to devise a new structure and new policies and programmes.<sup>111</sup>

<sup>105</sup> Fosdick, R. B., "Report of Committee on Reorganization", p. 4: "We believe that the time has come to take a broad view of the programs of the Foundation and to regroup them in such a way as will make for clearer differentiation of function and a plan of organization that will be less complex and diffuse."

<sup>106</sup> Vincent, G., "Memorandum on Policies", 29 January, 1927. RF.900.19.138.

<sup>107</sup> Fosdick, R. B., "Report of Interboard Committee on Reorganization of the Rockefeller Boards", 22 May, 1928. RF.900.19.139.

<sup>108</sup> Embree, E., *op. cit.*, p. 13.

<sup>109</sup> Fosdick, R. B., Memorandum, 5 November, 1926. RF.900.17.122.

<sup>110</sup> Vincent, G., "Memorandum on Policy and Organisation."

<sup>111</sup> The other members of the Committee were Anson Phelps Stokes and Charles Howland.

The hardest problem for the "interboard committee" was to define basic principles or categories of organisation: should it be levels of education, subject matter, or function? Questions of principle were complicated by the fact that they were tied up with problems of administrative control: how to keep officers responsive to Foundation policy and how to prevent them from creating ponderous bureaucracies? Useful advice was offered together with confusing bits of the advisers' special interests. The most important opinions were those of Vincent, Rose, Fosdick, Abraham Flexner, and possibly—at a critical point—Embree and Ruml. Fosdick's new conception of Foundation policy in November 1927 can best be seen as a reshuffling of these partly overlapping, partly conflicting views.

Wycliffe Rose saw the "advancement of human knowledge" as the most appropriate task of the Foundation, to which all other activities should be subordinated.<sup>112</sup> Rose also maintained, however, that the new Rockefeller Foundation should be simply a holding company or purse for the operating agencies such as the International Health Board and General Education Board.<sup>113</sup> Rose was supported by Simon Flexner, who went so far as to suggest that the division of medical education be transferred to the General Education Board.<sup>114</sup> Rose's programme in the International Education Board was the most successful of all the boards, and his policy of a broad Foundation programme in scientific research was a very attractive one. But it was embedded in an administrative plan in which Fosdick and Vincent could see all the worst features of the independent and competitive boards.

Abraham Flexner was concerned to preserve the programmes of the General Education Board, separate from professional education and scientific research. He proposed that the General Education Board and International Education Board should be separated, hoping thereby to realise his frustrated ambitions.<sup>115</sup> In contrast to Rose, Flexner always thought in terms of the hierarchical structure of the educational system: primary, secondary, undergraduate, and postgraduate. He opposed the creation of divisions of physical science, social science, and humanities in the General Education Board on the grounds that no one person could deal with a subject on all levels: "lines between divisions must be horizontal, not vertical."<sup>116</sup> Flexner had no objection to the Rockefeller Foundation taking over the International Education Board's programmes. But he admitted no possibility that the sciences could be developed in

<sup>112</sup> Anson Phelps Stokes to R. B. Fosdick, 29 January, 1927. RF.900.17.123.

<sup>113</sup> Fosdick, R. B., "Memorandum of a Meeting, 5 May", to Charles Howland, 13 May, 1927. RF.900.17.123.

<sup>114</sup> *Ibid.*

<sup>115</sup> A. Flexner to C. Howland, 13 April, 1927. RF.900.17.123.

<sup>116</sup> Flexner, A., "Memorandum Regarding the GEB," 4 January, 1927, pp. 13-14.



the planned and comprehensive way in which education could be developed:

... if you wish to develop physics, chemistry, biology, mathematics, etc., on a world-wide basis . . . you must practically disregard systems and select institutes or persons. Hence in my judgment, from the standpoint of foundation organization, it would be correct procedure to create an additional division in the RF to carry on the work now done by the IEB. Of course, these subjects would thus be assisted on their own merits and not merely as subsidiaries to either medicine or public health.<sup>117</sup>

The strengths and weaknesses of Flexner's view are clear. Once the Rockefeller Foundation cut loose from education, his acute institutional sense simply failed. Ultimately the General Education Board did remain a separate board, but without Flexner, and as an adjunct to Rockefeller Foundation programmes in the natural, medical and social sciences.

In contrast to Flexner, Vincent favoured a single unified Foundation, consisting of four divisions: (1) graduate education and research in the physical and social sciences and humanities; (2) general secondary and college education and teacher-training; (3) professional education in medicine, public health, law, engineering, agriculture and business; (4) applied social and economic science, government administration, city management, and crime.<sup>118</sup> Like all Vincent's policies this one was a compromise, squeezing Rose's programmes in research into Flexner's educational categories. Vincent continued his role of mediator: "Does not the proposed combination offer at least a slender bridge between the 'promotion of science' idea and the 'co-operate with the educational system' theory?"<sup>119</sup> The result was a confusion of two distinct sets of principles, each of which might have provided a clear rationale for reorganisation. This conflation of mutually exclusive categories troubled Fosdick.

By May 1927 Fosdick was at work to put these various plans together. He rejected Rose's idea of the Rockefeller Foundation as a paper organisation, but saw Vincent's idea of one foundation with all four boards crammed into it as an administrative nightmare. Agricultural and medical education, and basic science, could be accommodated in the Rockefeller Foundation. But the other boards could not be included without altering the traditional concern of the Foundation with medicine. The task was to devise a division of labour between the Rockefeller Foundation and the General Education Board.<sup>120</sup> But the two general principles which guided Fosdick's thinking contradicted each other:

<sup>117</sup> *Ibid.*, p. 17. Outside of education, Flexner had little interest in questions of policy; he had a strong Germanophilic belief in scientific individualism.

<sup>118</sup> Vincent, G., "Memorandum on Policy and Organization", pp. 4-6.

<sup>119</sup> *Ibid.*, p. 6. Earlier Vincent had favoured two separate foundations for education and for medicine, science, and public health. Vincent, G., "Memorandum on the organization of the GEB", 3 January, 1927. RF.918.1.3.

<sup>120</sup> Fosdick, R. B., "Memorandum on the Reorganization of the Boards", 13 May, 1927. RF.900.17.123.

It is impossible to put all education on one board; that is, to load up the GEB with the responsibility for secondary education, college education, medical education, legal education, education in the fundamental sciences, the humanities, etc., is to create an unwieldy organization. The suggestion that the RF should concern itself with everything in education and research above the college line, leaving primary and secondary and college education to the GEB, is untenable. No such crosscutting would work because it would cut the situation off in the middle.<sup>121</sup>

Fosdick implicitly accepted Flexner's horizontal educational categories. He saw the sciences, medicine and agriculture as part of graduate and professional education, as Vincent also had. Given these categories, there was no way of dividing responsibility between the Rockefeller Foundation and General Education Board which did not seem to contradict fundamental principles. He laid out the dilemma to Howland in May 1927:

From my rough notes you will see that my plan is very sketchy. It is sort of a compromise between what Rose wanted and what Flexner wanted, with more of a leaning to the Rose side. It leaves in the General Education Board responsibility for general education . . . also the social sciences, the humanities and, perhaps, the fundamental sciences, but on this point I am not clear. Probably, the fundamental sciences ought to go with medicine in the RF. This idea would place in the RF responsibility for medical education, public health, agriculture, legal education (if it is ever undertaken), and probably the fundamental sciences.

The objection is that the education field will have to be divided, because I am convinced that no one board can possibly handle the whole situation . . . I realize the difficulty of separating the fundamental sciences from general education, and I confess this difficulty gives me some pause. I am confident, however, that some dividing line will have to be drawn, if possible, in a way that will not divorce subjects that are too intimately connected.<sup>122</sup>

Between May and October 1927, Fosdick made no further progress in resolving this dilemma:

As far as our reorganization plans are concerned, things are at a stand-still, pending the selection of a successor for Rose. It is more or less of a vicious circle. We cannot very well go ahead with our plans until we know who is going to succeed Rose, and we cannot easily pick a successor to Rose without knowing something about what the organization is to be.<sup>123</sup>

The problem was not a personal one. John D. Rockefeller, Jr. wrote to Fosdick that if Rose could not be reconciled, the committee's plans could be executed after Rose retired.<sup>124</sup> The problem lay in the formulation of the plan.

<sup>121</sup> *Ibid.*, p. 2. Principles 1 and 2 were: "no holding company; no geographical separation of activities, as with the IEB and GEB."

<sup>122</sup> R. B. Fosdick to C. Howland, 13 May, 1927. RF.900.17.123.

<sup>123</sup> R. B. Fosdick to J. D. Rockefeller, Jr., 6 October, 1927. RF.900.17.123.

<sup>124</sup> John D. Rockefeller, Jr., to R. B. Fosdick, 13 October, 1927. R. B. Fosdick to J. D. Rockefeller, Jr., 17 October, 1927. RF.900.17.123. It is unclear from the record just how active Rose's opposition was at this time. Fosdick's hesitation arose more from deference to Rose.

Sometime in the third or fourth week of October 1927, Fosdick hit upon a new plan,<sup>125</sup> which he sent to Rockefeller and the committee in November.<sup>126</sup> This was based not on a division between educational levels but between the functions of research, application and training:

The plan is the result of a long process of elimination, and, while I do not claim, of course, that it represents perfection, I do think it points the way to the most promising rearrangements of *function* which we have thus far considered.

It is based on two principles: (1) The boards should not be operating agencies in any sense and functions like fellowships, international health, etc., should be handled by outside agencies. (2) The RF, while keeping the elasticity which the phrase, "the well-being of mankind around the world" gives it, should be looked upon as a board for the advancement of knowledge. . . . The following set-up, therefore, appears:

The Rockefeller Foundation (A Board for the Advancement of Knowledge):  
1. The Physical Sciences (transferred from the GEB and the IEB); 2. The Social Sciences (transferred from the Memorial); 3. The Humanities (transferred from the GEB) and 4. The Arts.

The applications of this knowledge: 1. Medicine; 2. Law; 3. Agriculture, including Forestry; 4. Engineering.<sup>127</sup>

The General Education Board in Fosdick's plan dealt with primary, secondary, adult, vocational and Negro education, and teacher-training:

roughly speaking, the RF would handle the content of human knowledge, while the GEB would be concerned with method and technique. In other words, the GEB would be what it started out to be when Mr. Gates first conceived it.<sup>128</sup>

Fosdick's division of labour between the diffusion of knowledge on the one side and the advancement and application of knowledge on the other was almost the same as that he had rejected in May. What made it work in October was that Fosdick was no longer thinking in terms of education but rather in terms of the whole system of knowledge of which education was only one function. A division between education and research or application no longer seemed to be an artificial split between part of the educational system but a natural division between complementary aspects of a larger whole.

The germ of Fosdick's new idea may have come from an unexpected source. On 17 October 1927, Fosdick met with Ruml, Embree, and Shepardson—Rose's lieutenant for agriculture—to hear their views on reorganisation.<sup>129</sup> These three constituted a minority group in eclipse.

<sup>125</sup> R. B. Fosdick to Thomas M. Debevoise, 21 December, 1927. RF.900.17.123.

<sup>126</sup> R. B. Fosdick to S. Flexner, 1 November, 1927. Copies to C. Howland, 3 November, J. D. Rockefeller, Jr., 10 November, A. Flexner, 28 December, 1927. RF.900.17.123.

<sup>127</sup> *Ibid.*, pp. 1, 3. Fosdick had mentioned the plan to Flexner several days previously.

<sup>128</sup> *Ibid.*

<sup>129</sup> Fosdick, R. B., "Memorandum of a Meeting at the Century Club", 17 October, 1927, enclosed in a letter to Vincent, 24 October, 1927. RF.900.17.123.

Embree had been demoted; the Laura Spelman Rockefeller Memorial was to be sub-divided; and agriculture had no strong support. They also shared an interest in applied or professional science. Although Fosdick was unsympathetic with many details of the elaborate scheme he heard, the plan of Embree, Ruml and Shepardson, as Fosdick summarised it, bears a striking resemblance to Fosdick's own plan. The Rockefeller Foundation was seen by Embree *et al.*, as "a board for the advancement of knowledge," with four divisions in the humanities, physical sciences, and social sciences, plus "professional groups" in law, agriculture, and medicine.<sup>130</sup> The General Education Board they saw as devoted to elementary, secondary adult and vocational education, and a third foundation "dealing with the application of knowledge" to mental hygiene, social welfare and so on. Their plan embodied the basic principles of Fosdick's innovation, especially the division by functions rather than by educational levels. This resemblance and the conjunction of the meeting of 17 October and Fosdick's first intimation of a new plan strongly suggest a causal link.<sup>131</sup>

Fosdick did not at first appreciate the significance of the plan put forward by Embree, Shepardson, and Ruml. He did not like the idea of three separate foundations. And he did not believe it possible to get rid of the International Health Board altogether and cut the Rockefeller Foundation free from its traditional medical and health concerns, of which Embree, Ruml, and Shepardson had made a great point. Their idea of making the International Health Board into an independent agency seemed unrealistic to Fosdick.<sup>132</sup> Fosdick probably felt that segregating the independent boards simply meant perpetuating them—as Rose's notion of a "holding company" was meant to do. Incorporation into the Rockefeller Foundation and central control seemed the only practicable strategy. On the same day as the meeting with Ruml, Embree and Shepardson, Fosdick dictated a plan which was virtually identical with his plan of May for two foundations: the Rockefeller Foundation for medical education, public health, physical sciences, agriculture, law

<sup>130</sup> *Ibid.*, p. 3.

<sup>131</sup> Anson P. Stokes had previously suggested a similar scheme, with the Foundation devoted to "research and high university work", the General Education Board to public education, and a third foundation to philanthropy and social welfare. Fosdick may have had this plan in mind when he rejected splitting the educational levels. Although Stokes was a member of the inter-board committee, there is no sign that he played any role in Fosdick's change in October 1927. See Anson Phelps Stokes to R. B. Fosdick, 29 January, 1927. RF.900.17.123.

<sup>132</sup> Fosdick, R. B., "Memorandum of a Meeting", p. 1: "The elimination of operating functions seems to these three gentlemen the key to the whole reorganization." Fosdick commented to Vincent: "This point is well worth considering, although the difficulty of transforming the IHB into an independent agency, with its own Board of Trustees, seems almost insurmountable." R. B. Fosdick to G. Vincent, 24 October, 1927. RF.900.17.123.

and child welfare; the General Education Board for the humanities, social sciences, and education.<sup>133</sup>

Sometime between 17 October and 1 November Fosdick's eyes were opened to the novelty and value of the scheme put forward by Ruml, Embree, and Shepardson. The key was the International Health Board. Fosdick realised that segregating the International Health Board was not necessarily a way to perpetuate it, but could also be the means of killing it.<sup>134</sup> The presence of the International Health Board had complicated every attempt to rethink the goals of the Foundation. Removal of the impediment opened the way to a shift of the Rockefeller Foundation away from public health. The idea of a programme in the advancement of knowledge no longer seemed problematic. Indeed, it occurred to Fosdick that a programme in research might offer protection against bureaucratic traps like the International Health Board.<sup>135</sup> Administrative necessities and long-term policy coalesced. Fosdick had only to combine two of the three foundations proposed by Ruml, Embree, and Shepardson to arrive at the scheme he proposed to Vincent in early November. Medicine was thus re-introduced as applied knowledge, along with agriculture. The social sciences, which had previously seemed problematic, now had a place. The guiding principle had emerged: it was the advancement and application of knowledge.

#### *Dispositions: 1927-29*

Once this principle was clear in his mind, Fosdick moved quickly. With Vincent and Rose, he worked out the detailed plan.<sup>136</sup> The strategy of creating separate or self-liquidating agencies was exercised in a wholesale manner. The International Health Board was recreated as a purely operating agency without endowment, removed physically from the headquarters of the Foundation, and gradually brought to an end.<sup>137</sup> The China Medical Board would become a separate corporation with an endowment of \$10 million from the International Education Board. The rest of the endowment of the International Education Board—amounting to \$16 million—would be transferred to the Rockefeller Foundation: A renamed Spelman Fund was left with \$10 million to expend on Southern charities, which had been the Memorial's original purpose.

<sup>133</sup> Fosdick, R. B., Memorandum, 17 October, 1927. RF.900.17.123. A significant change is the inclusion of child welfare in the Foundation—an alternative to a third board.

<sup>134</sup> Fosdick, R. B., Memorandum, 1 November, 1927, p. 1. RF.900.17.123.

<sup>135</sup> Fosdick, R. B., "Reorganization of the Rockefeller Boards: Preliminary Outline as a Basis of Discussion", undated c. January, 1928, p. 5. The idea is in the form of a query to the committee: "Will insistence upon the advancement of knowledge, whether this be fundamental or applied, be a protection against being drawn into the field of operations?" RF.900.19.138.

<sup>136</sup> Fosdick to T. M. Debevoise, 21 December, 1927. Fosdick suggested bringing Rose into the discussion in a letter to J. D. Rockefeller, Jr., 2 November, 1927. RF.900.17.123.

<sup>137</sup> Vincent, G., "Reorganization of the Rockefeller Boards: An Outline for Discussion", 15 December, 1927. RF.900.19.138.

Ruml's programmes in the social sciences, and the \$63 million he had not given away went to the Rockefeller Foundation. Finally the medical education programmes of the General Education Board and their \$19 million were transferred to the Rockefeller Foundation. The General Education Board was left as a subsidiary of the Rockefeller Foundation and was to liquidate its remaining \$39.5 million as endowments—preferably large—in support of programmes in the sciences. The Rockefeller Foundation became a foundation for the advancement of knowledge, unencumbered by old responsibilities, with an endowment of \$225 million and an income of \$8 million a year.<sup>138</sup>

These decisions were not made without some qualms and conflicts. Fosdick himself was uneasy about dropping education as a whole.<sup>139</sup> Vincent was fearful that Fosdick's strategy of separating the International Health Board and the China Medical Board from the Foundation would revive the problems of the early 1920s.<sup>140</sup> His fears were not allayed by Rose's insistence on his "holding company" scheme to perpetuate the old boards.

Rose too mistook Fosdick's idea of creating separate boards for his own idea of a "holding company". When he realised that it was intended not to preserve the International Education Board but to bring it to an end, Rose balked. But his magic touch was gone. His skillful debating style, once irresistible, was no longer taken seriously. Fosdick wrote:

I had a hearty laugh over the *reductio ad absurdum* which [Ruml] made of Rose's phraseology. I believe we make a serious mistake when we speak of the RF as a "holding company" . . . I have never liked that description of the machinery we have in mind, and when Rose makes a premise out of it, it enables him by the sheer force of his irresistible logic to reach conclusions that from the standpoint of good organisation will not work. . . . We have had experience enough in the RF with subsidiary boards to know that they can easily become a tail that wags the dog.<sup>141</sup>

Rose then appealed directly to John D. Rockefeller, Jr.; however when Rockefeller realised that Rose only wanted to delay the reforms which Rose had himself proposed, he urged Fosdick to proceed.<sup>142</sup> Rose accepted defeat; two days later he left on a trip to California, after asking

<sup>138</sup> *Ibid.* R. B. Fosdick to T. M. Debevoise, 21 December, 1927, p. 3-4. RF.900.19.138. Fosdick, R. B., "Memorandum on Reorganization", 18 January, 1928, and "Memorandum of Meeting, 19 January, 1928," of Fosdick, Rockefeller, Jr., Vincent, Debevoise, and Rose. RF.900.17.124. G. Vincent to R. B. Fosdick, 22 October, 1928. RF.900.17.125. The General Education Board did continue special educational projects in the South and on youth problems. See Fosdick, R. B., *op. cit.*, 1962.

<sup>139</sup> Fosdick, R. B., "Memorandum of Meeting", 19 January, 1928, p. 4. This qualm was linked to the educational interests of Hopkins, who was heir to the presidency of the Foundation. RF.900.17.124.

<sup>140</sup> G. Vincent to R. B. Fosdick, 27 February, 1928. RF.900.17.124.

<sup>141</sup> R. B. Fosdick to G. Vincent, 7 March, 1928. RF.900.17.124.

<sup>142</sup> Wycliffe Rose to R. B. Fosdick, 10 February, 1928 and 1 March, 1928. RF.900.17.124. R. B. Fosdick to G. Vincent, 7 March, 1928. J. D. Rockefeller, Jr. to R. B. Fosdick, 19 March, 1928. RF.900.17.124. Fosdick did not realise at first that Rose was opposed.

Fosdick if he would arrange the reorganisation of the General Education Board and International Education Board with the trustees.<sup>143</sup> By March 1928 all major impediments to reorganisation were removed; the rest was legal detail.

As Fosdick's scheme was slowly translated into specific programmes, a conflict developed between abstract ideals and the demands of the traditional interests of the Foundation. The medical and biological sciences presented a special problem. In Fosdick's original plan medicine was joined with agriculture and engineering under the category of applications of science.<sup>144</sup> It soon became clear, however, that medicine and biology had special claims.

Practically, the question was to what extent should principle be qualified in order to allow the Foundation to continue its work in these fields in which it was already strong. Should the application of knowledge be included in the basic science divisions? Fosdick's neat categories began to blur: "Can the line be definitely drawn between the advancement of knowledge and its application? Would the situation be clarified or made more complex by creating another board to deal with the applications of knowledge?"<sup>145</sup> The idea of separate divisions for applied sciences was soon set aside, and Fosdick began to try other ways of integrating basic research and its applications. In December 1927, Fosdick proposed a "theoretical scheme, ignoring [the] actual situation, but possibly feasible later", which integrated the basic sciences and the professions which depended on them. He envisioned four divisions: (1) the physical sciences and engineering; (2) biology, agriculture and medicine; (3) the social sciences, law and social work; (4) humanities and arts. A compromise plan, "which recognizes existing obligations [in] . . . Medical Sciences and Medical Education", put biology and agriculture in a division of natural sciences, while the medical sciences and medical education were given independent status in a separate division.<sup>146</sup> A week later Fosdick suggested a third variant, in which agriculture and forestry were separated from the natural sciences as a fifth division.<sup>147</sup> When Fosdick proposed this last scheme to the trustees, in May 1928,<sup>148</sup> the issue was still unresolved: should biology be treated for its own sake, or as the basis of medicine and agriculture?

David Edsall, dean of the Harvard Medical School, advised against a division of agriculture and forestry: "the fundamentals upon which

<sup>143</sup> R. B. Fosdick to J. D. Rockefeller, Jr., 19 March, 1928. RF.900.17.124.

<sup>144</sup> Fosdick to Simon Flexner, 1 November, 1927. RF.900.17.123.

<sup>145</sup> Fosdick, R. B., "Reorganization of the Rockefeller Boards", preliminary outline undated, c., January, 1928, p. 5. RF.900.19.138.

<sup>146</sup> Fosdick, R. B., "Reorganization of the Rockefeller Boards: An Outline Discussion", 15 December, 1927, p. 2. RF.900.19.138.

<sup>147</sup> R. B. Fosdick to T. M. Debevoise, 21 December, 1927. RF.900.17.123.

<sup>148</sup> Fosdick, R. B. "Report of the Interboard Committee on Reorganization", 22 May, 1928. RF.900.19.139.

their progress must depend lie within the bounds of the . . . natural sciences, and it seems an unnatural divorce to separate them out.”<sup>149</sup> Edsall was an active trustee and a man whose judgement Fosdick trusted. A division of agriculture did not materialise.<sup>150</sup> Though a separate division of biology—including agriculture and medicine—continued to be discussed, biology ended up as part of the division of natural sciences, with medical sciences and medical education in two separate divisions. Biology was developed as a “pure” science rather than for medical or agricultural applications. Engineering was quietly dropped, and in the 1930s, chemistry and physics were developed only as they could be applied in “molecular biology”.<sup>151</sup> This was perhaps a compromise between Rose’s preference for the physical sciences and the stronger interest of the Foundation in biology. The final disposition of the social sciences was also strongly influenced by Ruml’s programme in social research. No one disagreed that the social sciences belonged in the new Rockefeller Foundation, but leaders of the Foundation looked upon them as intrinsically practical sciences, in which application was equivalent to laboratory experiment in the natural sciences.<sup>152</sup> Fosdick was loath to concentrate exclusively on pure research.<sup>153</sup> In the end, social work as such was left to the Spelman Fund, while in the Rockefeller Foundation the social sciences were given a broad scope which included social research and application:

To increase the body of knowledge which, in the hands of competent technicians, may be expected in time to result in substantial control. To enlarge the general stock of ideas which should be in possession of all intelligent members of civilized society. To spread appreciation of the appropriateness and value of scientific methods in the solution of modern social problems.<sup>154</sup>

This was Ruml’s style.

The net result of all these final decisions was to dismantle the intellectual scaffolding of Fosdick’s grand scheme. It was essential in guiding and justifying radical innovations in structure and policy, but the final shape of the new Foundation was determined as much by the continuing traditions of the old boards as by abstract principle. The one principle which did remain was Fosdick’s belief that the new Foundation could

<sup>149</sup> David Edsall to R. B. Fosdick, 19 October, 1928. RF.900.19.141. G. Vincent to David Edsall, 14 June, 1928. RF.900.17.125.

<sup>150</sup> In a conference on 19 October, 1928, it was decided not to appoint an officer in agriculture. See “summary of minutes”, no date (c. 1933). RF.900.19.141. The idea was revived in 1930–31 when the botanist Herman Spoehr was head of the natural sciences division.

<sup>151</sup> “Summary”, *ibid.* Kohler, R. E., *op. cit.*, pp. 279–306.

<sup>152</sup> R. B. Fosdick to Selskar Gunn, 2 February, 1928. RF.900.17.124.

<sup>153</sup> Fosdick, R. B., “Memorandum of Meeting”, 19 January, 1928, pp. 4–5. R. B. Fosdick to G. Vincent, 7 March and to J. D. Rockefeller, Jr., 19 March, 1928. T. M. Debevoise to R. B. Fosdick, 14 March, 1928. RF.900.17.124.

<sup>154</sup> Board Minute 29039, 3 January, 1929. Ref., “Summary of Actions Taken,” undated, RF.900.19.141.



best serve the "welfare of mankind" by promoting the advancement of knowledge.

It was one thing to decide that the Rockefeller Foundation would support the research of individuals but another to make it work in practice. In 1913, Jerome Greene rejected the idea of research grants for fear that the Rockefeller Foundation would be unable to exercise sufficient influence over the individual scientists who received the grants. But it was also necessary to prevent the officers of the Rockefeller Foundation from dictating the choice of research problems to scientists. Fosdick's plan took for granted that a satisfactory relationship could be worked out between the officers of the Foundation and the scientists. Neither would claim complete autonomy. The role of the divisional officers in selecting and finding research projects could only be worked out in practice; success would depend to a great extent on the personal qualities and the initiative of the officers themselves.

The issue was especially troubling to Fosdick and others because of their experience with the International Health Board. Spending several million dollars a year on small research projects was bound to require a large administrative staff. It was important to prevent an expert professional staff from establishing vested interests. It was hoped that the policy of concentration on the few best scientists and institutions would limit the power of Foundation officers to plan and direct research. The role of the officers was seen at first as merely efficient conveyors of funds.

Vincent was the strongest advocate of limiting the officers' ambitions and powers. He was obsessed by the problem. Vincent had Rose in mind when he urged that the Rockefeller Foundation eschew grandiose ideals, such as "the promotion of science internationally"—the motto of the International Education Board—which he felt was simply a fancy phrase for assisting the small number of persons who were able to manage large research schemes.<sup>155</sup> Rose's practice of giving general research funds to a few exceptional scientists, Vincent felt, would leave the management of the grants where it belonged—in the hands of the recipients and not in those of the officers.<sup>156</sup> At the last minute, Vincent, Pearce, and David Edsall convinced the trustees not to create formal divisions at all, but to appoint officers in the various sciences: ". . . the very name ["division"] suggests a kind of autonomy from which we have suffered a good deal in the past."<sup>157</sup> The trustees also agreed that decisions as to policy remain firmly in the hands of the president and trustees, so that the programmes of each officer would be consistent with the aims of the

<sup>155</sup> Vincent, G., "Memorandum on the Reorganization of the Boards", 20 January, 1927. RF.900.19.138.

<sup>156</sup> *Ibid.*, pp. 4–5. See also, "Agenda for Conference, 19 October 1928." RF.900.21.159; and Minute of Board Meeting No. 29042, 3 January, 1929.

<sup>157</sup> G. Vincent to R. B. Fosdick, 14 June, 1928. G. Vincent to S. Gunn, 24 May, 1928. RF.900.17.125. This measure was never effected; divisions were in fact formed.

Foundation as a whole.<sup>158</sup> The administrative structure should encourage the officers to be selectively alert to opportunities, not to try to reshape whole disciplines.<sup>159</sup>

The officers of the new divisions thus inherited a burden of mistrust which made it more difficult than it might have been to formulate programmes and to take an active managerial role. Yet the need to select entailed the power to control. The selection of "the best men" seemed not to be an intrusion into the internal judgements of scientific communities; but of course it was. As the new Rockefeller Foundation moved into less developed fields, such as psychiatry, biochemistry, or social science, the power to select and foster some fields of research over others was the power to participate in setting the direction of research. In October 1928, the trustees enjoined the officers to avoid "grandiose, comprehensive plans for world-wide propaganda", but at the same time they urged them to "take the initiative in proposing certain developments of research".<sup>160</sup> In short, to exercise a judicious but active role. This they soon learned to do.<sup>161</sup>

### *Conclusion*

Given the enthusiasm for research in American universities and the prestige of Ruml's and Rose's programmes, we may ask why it took so long for Fosdick to settle upon the support of research as a central activity of the Foundation. We may wonder why there was so little explicit consideration of external conditions; no survey of the needs of universities, of the aims of other foundations, or of competing patrons of science, such as the federal government. There is no mention of the National Research Fund, although several trustees of the Rockefeller Foundation were involved in it.<sup>162</sup>

Yet the decisions of the leaders of the Rockefeller Foundation can and must be seen as attempts to define the role of the private foundation in an increasingly complex system of institutions. The failure to consider seriously chemistry, physics, and engineering rested on the assumption of large-scale industrial support for the physical sciences in industrial laboratories, and through consulting contracts, graduate fellowships, institutes such as the Mellon or Carnegie Institutes, and grants

<sup>158</sup> G. Vincent to Jerome Greene, 28 May, 1928. RF.900.17.125.

<sup>159</sup> D. Edsall to R. B. Fosdick, 29 May, 1928. R. B. Fosdick to D. Edsall, 29 May, 1928. RF.900.17.125.

<sup>160</sup> Agenda for conference, 19 October, 1928. RF.900.21.159.

<sup>161</sup> Kohler, R. E., *op. cit.*

<sup>162</sup> Tobey, Ronald C., *The American Ideology of National Science, 1919-1930* (Pittsburgh: University of Pittsburgh Press, 1971), pp. 199-225; Davis, Lance and Kevles, Daniel J., "The National Research Fund: A Case Study in the Industrial Support of Academic Science", *Minerva*, XII, 2 (April 1974), pp. 207-220.

for research.<sup>163</sup> The slight consideration given to agriculture and forestry was an acknowledgement of the vast support provided by the United States Department of Agriculture and the many well-functioning state agricultural experimental stations.<sup>164</sup> Similarly, public health was less appealing to the Rockefeller Foundation because that field was regarded as a responsibility of government.

The decision to concentrate the resources of the Foundation on individual research rested on the recognition that there were no major alternative sources of support. The scientific leadership of the National Academy of Sciences and the National Research Council had failed in the 1920s to discover an institutional means of providing public funds for scientific research in the universities.<sup>165</sup> Fosdick and Vincent did not say this explicitly, but their decisions and actions showed their awareness that they were operating in an important domain for which no other institution had taken responsibility.

The Foundation had proceeded in that manner in the past. Before the First World War, quasi-public institutions such as the Rockefeller Foundation were often one step ahead of government in promoting the public organisation or regulation of public health, mental health, agricultural demonstration, rural education, undergraduate educational reform, industrial relations, medical reform, and so on. Begun by foundations or other voluntary agencies, most of these functions became activities of government. The development of scientific research in universities as a public resource is another instance of this pattern. The dominance of the foundations in this quasi-public role lasted an unusually long time—nearly 20 years. It took the shock of scientific warfare and atomic energy to make the idea of “research a national resource” acceptable as a basis for government to assume the role of patron of basic scientific research in the universities.<sup>166</sup>

In a general sense, the leaders of the Rockefeller Foundation were aware of their institutional role, which was implicit in the aim of the

<sup>163</sup> Weart, Spencer R., “The Physics Business in America, 1919–40: A Statistical Reconnaissance” (1976), unpublished paper; American Institute of Physics, “The Rise of Prostituted Physics”, *Nature*, CCLXII (1 July, 1976), pp. 13–17; Bud, R. F., Carroll, P. T., Sturchio, J. L., Thackray, A. W., “Chemistry in America, 1876–1976: A Case Study in the Historical Application of Science Indicators”, Report to the National Science Foundation, 1978.

<sup>164</sup> Dupree, A. H., *Science in the Federal Government* (Cambridge, Mass.: Harvard University Press, 1959).

<sup>165</sup> *Ibid.*; Kevles, D. J., “George Ellery Hale, the First World War, and the Advancement of Science in America”, *Isis*, LIX, 4 (Winter 1968), pp. 427–437; Kevles, D. J., *The Physicists* (New York: Knopf, 1978). See also Auerbach, Lewis E., “Scientists in the New Deal: A Pre-war Episode in the Relations between Science and the Government”, *Minerva*, III, 3 (Summer 1965), pp. 457–482; Cochrane, Raymond C., *The National Academy of Sciences: The First Hundred Years, 1863–1963* (Washington: National Academy of Sciences, 1978), ch. 10.

<sup>166</sup> Kevles, D. J., “The National Science Foundation and the Debate Over Postwar Research Policy, 1942–1945: A Political Interpretation of *Science the Endless Frontier*”, *Isis*, LXVIII, 241 (March 1977), pp. 5–26.

Foundation, "to promote the welfare of mankind throughout the world". But the institutional goals and history of the Rockefeller Foundation set implicit limits to the choice of particular programmes. Traditions and interest groups had to be taken seriously, even though they no longer met the needs of institutions after the war. It may seem inevitable that Fosdick should have seen research as the greatest opportunity for Foundation service. But that inevitability which seems so self-evident in the larger view, disappears when we see how decisions were worked out around more limited issues and the particulars of time and circumstance, with the ultimate criterion practically never being explicitly formulated. The balance between medicine and science was an open issue. Had Richard Pearce been more skilful, the Rockefeller Foundation might well have become the major supporter of medical research. Had Frederick Russell been more willing to be conciliatory and to cooperate, the new Rockefeller Foundation might well have preserved more of its earlier concern for social welfare. Had Abraham Flexner been less single-minded in his insistence on the separateness of research from teaching, might not the Rockefeller Foundation and the General Education Board have formed a more equal partnership? Might not the Rockefeller Foundation have concentrated on graduate and postdoctoral fellowships rather than on individual research grants? If Vincent had been able to control dissension, might not the Foundation's programmes have been more eclectic and less concentrated on scientific research?

If Raymond Fosdick's impressive organisational gifts had not been brought to bear at a critical moment, it is unlikely that the private foundation would have enjoyed the prestige and reputation it did. Things might have been different. And what precedent might some other Rockefeller Foundation have offered to the creators and promoters of the National Science Foundation and to the other institutions of governmentally supported science after 1945?