The National University

Establishment of a federal center of learning has had advocates since 1787, but all their efforts have failed.

Robert D. Calkins

The establishment of a national university in Washington has been proposed repeatedly since 1787. President Washington and five of his successors urged congressional approval. Numerous bills have been introduced; a number have been favorably reported; but during a century and three-quarters not one has been brought to a vote in the Congress. The history of this effort is pertinent to recent ideas for improving the research and educational resources of Washington.

Shortly before the opening of the Constitutional Convention, Benjamin Rush, the well-known Philadelphia physician, published in the *American Museum* for January 1787 the first detailed proposal for the establishment of a federal university at the seat of government. In this and a later paper (*1*, *2*), he proposed a graduate institution that would offer instruction in history, law, economics, military science, agriculture, "the principles and forms of government with special application to the Constitution, and the laws of the United States," and "all useful subjects." The institution was to pursue research and maintain traveling correspondents to report back to the faculty the discoveries and improvements abroad. Rush considered the university more important than a federal city, and urged that "the honors and offices of the United States" should be confined to persons who had imbibed its federal and republican ideas; and after 30 years none should be chosen or appointed who had not taken a degree in this federal institution.

During the Constitutional Convention both James Madison and Charles Pinckney of South Carolina proposed that authority to establish a national university be explicitly named among the enumerated powers of the federal government. Gouverneur Morris asserted that the language was superfluous because the exclusive federal power over the seat of government would attain the object. Their motion lost by 6 to 4 (*3*, p. 28).

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Washington's Efforts

George Washington was the first of six presidents to urge a national university for the new capital. He mentioned the subject in his First Annual Address to Congress in January 1790. After stressing the importance of promoting science, literature, and knowledge for the creation of an enlightened and discriminating people, he said (*3*, p. 31):

> Whether this desirable object will be best promoted by affording aids to seminaries of learning already established, by the institution of a national university, or by any other expedients will be well worthy of a place in the deliberations of the Legislature.

The House and Senate took respectful note of his proposal and agreed not to lose sight of these objects. But nothing more happened.

Then in 1794–95 Washington's views took more definite form. The legislature of Virginia had honored Washington for his great public service by presenting to him 100 shares in the James River Canal Company and 50 shares in the Potomac River Canal Company. He had accepted the gift on condition that it might be devoted to a worthy public use. He now sought the advice of Randolph, Madison, and Jefferson regarding the establishment of a university to be aided by this gift (*3*, p. 32).

Because of the source of the funds, Jefferson thought the Institution should be in Virginia. He reported a communication he had received from Mr. D'Invernois proposing that the faculty of the College of Geneva, which was considered distinguished in science, be moved as a body from Switzerland to America. Washington replied that he thought a seminary in Virginia should be supported and that he was leaving the James River shares to such an institution. He favored establishing the university in the federal city. He was uncertain how soon any plans would materialize, and he questioned the propriety of transplanting the professors from Geneva. His doubts arose in part because "they might not all be good characters nor all sufficiently acquainted with our language." Moreover, it might be considered as an aristocratic movement, and might foreclose the opportunity to draw celebrated professors from other countries (*3*, pp. 33–35).

Washington deplored the practice of sending youth abroad for education, "where too often the principles and habits unfriendly to republican government are imbibed and not easily discarded." Early in 1795 he notified the Commissioners of the District of Columbia that if an institution of suitable scope under favorable auspices could be begun in a reasonable time, he would grant 50 shares in the Potomac Company as endowment (*3*, pp. 32–33). The Commissioners promptly selected a site, which Washington later approved (*4*, p. 251).

After obtaining the approval of the Legislature of Virginia, Washington provided in his will for the bequest of the James River shares to Liberty Hall Academy, which subsequently became Washington College and later Washington and Lee University. The Potomac shares, presumably worth about $25,000, he left toward the endowment of a federal university (*3*, pp. 34–35).

Because the Congress had shown no real interest in establishing the National University, Washington proposed to stress the importance of this undertaking in his farewell address scheduled for September 1796. Alexander Hamilton advised against it, urging that his remarks would have greater effect in his last annual message. Washington acceded reluctantly, and in his farewell address merely urged "as a subject of

primary importance, institutions for the general diffusion of knowledge." But in his eighth annual message of December 1796 he forcefully stated (*3*, pp. 37–39):

> I have heretofore proposed to the consideration of Congress the expediency of establishing a national university and also a military academy. The desirableness of both these institutions has so constantly increased with every new view I have taken on the subject that I can not omit the opportunity of once for all recalling your attention to them.

He then elaborated on the value of such institutions. The Commissioners of the District followed with a memorial urging the establishment of the university, or at least a law authorizing the receipt of donations for the purpose (*3*, pp. 39–40). But the Congress took no action.

Washington died 14 December 1799. He had recorded in his will (*5*, pp. 10–11) that:

> It has been my ardent wish to see a plan devised on a liberal scale which would have a tendency to spread systematic ideas through all parts of this rising Empire. . . . My mind has not been able to contemplate any plan more likely to effect the measure than the establishment of a university in a central part of the United States. . . . I give and bequeath the fifty shares in the Potomac Company towards the endowment of a University to be established within the limits of the District of Columbia under the auspices of the General Government, if that Government should incline to extend a fostering hand towards it.

Though frequent public references were later made to this bequest, it was not until 1905 that the Congress inquired what disposition had been made of the shares. Secretary of the Treasury L. M. Shaw replied that there was no record in the Treasury Department that the shares had ever been received by the government. He reported that a published authenticated copy of the will contained the notation: "This desire was never carried into effect, and the fifty shares thus donated reverted to the estate" (*6*).

Presidents Adams and Jackson

Though Washington was unsuccessful in enlisting the support of Congress for the university, his successors continued the effort for the next 30 years, at times with unsolicited help.

John Adams, while Vice President, had expressed himself as favoring the proposed institution. But as President he considered the time not propitious—apparently for financial and constitutional reasons—and contented himself with the commendation of efforts "to encourage schools, colleges and universities," without urging specific action.

In 1806 President Jefferson favored a system of internal improvements and discussed education as a matter of public care. He viewed a public institution alone as able to supply those sciences necessary for the improvement of the country. He reminded the Congress it already had the power to support a national establishment for education, by endowing it with public lands (*3*, pp. 47–48). The Congress was unresponsive.

During Jefferson's administration the idea was pressed by two notable promoters. About 1803 Samuel Blodgett, Jr., a colorful real-estate promoter in Washington, undertook to solicit funds for the national university and for a monument to General Washington. In a memorial to Congress in 1803 he reported 1000 subscribers to the university and asked that a site and public lands be appropriated. Again in 1805 he memorialized Congress, reporting 18,000 subscribers who had contributed $30,000 (*4*, p. 553; *3*, pp. 42–44). But the request for a site and further patronage was never reported by the select committee to which it was referred. The funds Blodgett allegedly had raised were never publicly accounted for.

A second promoter was Joel Barlow, poet, speculator, and Minister to France, who had spent some time trying to interest the French and British in Robert Fulton's steamboat and submarine torpedo. Barlow proposed the establishment of a comprehensive university in Washington, to which would be attached an academy for the sciences and learned societies, other related colleges and facilities about the country, and he would be chancellor. "If you will put me at the head of the institution, as I propose, and give it the support which you ought to do, you can't imagine what a garden it would make of the United States," he wrote to Senator Baldwin. In 1805 he returned from abroad and subsequently published a prospectus for the institution, which he urged Congress and "opulent citizens" to support. Barlow drafted a bill to incorporate the institution. It passed a second reading in the Senate before being referred to a committee, never to be heard of again (*4*, pp. 580–581; *7*).

Madison had no doubt about the constitutional authority of the Congress to establish and finance a university in the District of Columbia. In his message of 1810, he invited attention to the advantages of a federal institution supported by a grant of vacant lots in the city. The Institution, he said, might be local in legal character, but it would be universal in its beneficial effects. A House Committee recognized the value of such an institution and noted that Congress had the necessary authority to create it, but concluded that the lots available would be inadequate to finance the venture (*3*, pp. 48–49).

Madison repeated his plea in 1815 and 1816. The House Committee recommended a bill to establish and endow a national university. After reviewing the merits of the proposal it concluded that "the means are ample, the end is desirable, the object fairly within the legislative powers of Congress, and the time a favorable one." The Committee urged the sale of city lots worth about $950,000 and the investment of the proceeds for the support of the university. The bill on motion was postponed. A House bill authorizing a constitutional amendment to overcome the questioned constitutional power to establish a national university was deemed unnecessary by a vote of 86 to 54 (*3*, pp. 49–52).

President Monroe, who had not served, as Madison had, at the Constitutional Convention, took a narrow view of the federal powers. He went no further than to communicate to Congress the propriety of recommending a constitutional amendment that would authorize internal improvements and seminaries of learning (*8*).

Meanwhile, in 1819, the Reverend Luther Rice, Dr. Josiah Meigs, and others, who saw little hope of congressional approval of a federal institution, proposed the establishment of an institution under Baptist auspices. They enlisted President Monroe as a patron along with four members of his Cabinet and 32 members of Congress. The act of incorporation was first refused by Congress, but in 1821 it incorporated Columbian College as a nonsectarian institution (*9*, p. 11). This was the first private institution generated by the movement. In 1873 the name was changed to Columbian University, and in 1904 to The George Washington University.

In his first annual message of 1825 John Quincy Adams spoke emphatically of Washington's wish for a national university and for a military academy. He reminded the Congress that though Washington's wish for a military academy was gratified with West Point, his chosen site for the national university was "still bare and barren." The Congress left it so (*3*, p. 53; *2*, pp. 100–101).

Jackson played the meager role of approving a congressional appropriation of $25,000 in 1832 for the support of Columbian College when the college seemed likely to fail. At the time federal support for scientific or educational activities was generally regarded with disfavor.

In brief, the efforts of Rush, Washington, Jefferson, Madison, and Adams had been unavailing against congressional indifference, public apathy, and doubts as to constitutional authority.

The Interim, 1829–1869

From 1829 to 1869 the issue lay dormant except for sporadic discussion among scholars and several related, important congressional actions. During this period no president recommended the establishment of a national university; but with that issue quiescent, federal support of the sciences and education became in fact public policy.

The Smithson bequest of 1835 was followed by 10 years of debate first over whether to accept the bequest and then over the establishment of the Smithsonian Institution. In 1846, largely owing to the determined efforts of Congressman John Quincy Adams, the charter was approved, but only after numerous other schemes for the use of the funds, including a university, were diverted or defeated (*2*, p. 102; *10*).

The Morrill Act of 1862, providing federal support for state-operated land-grant colleges stressing agriculture and mechanical arts was enacted after substantial opposition from many colleges. It was, and was intended to be, a federal effort, by an agrarian and commercial society, to circumvent existing colleges with their classical curricula and to establish instruction in the useful arts. The act reestablished the principle of land grants for education, a principle long before initiated in the Northwest Ordinance of 1787. It implicitly and partially overcame the constitutional issue, which had plagued congressional consciences since 1790.

In 1863 the National Academy of Sciences was chartered by Congress and was authorized to receive federal funds for research. The next year Congress took a bolder step, chartering Gallaudet College and providing federal support. In 1867 it chartered Howard University, extending annual gratuities until annual appropriations were authorized in 1928.

The Revival of Interest

After the Civil War the concept of a national university appeared to be dead. No one urged its establishment; indeed it is doubtful if more than a very few knew of the previous efforts. Interest in the project was revived largely because of one man, who for the next 40 years strove to induce Congress to honor Washington's bequest. He was John W. Hoyt, professor of law and medicine and later editor of an agricultural journal, who, as U.S. Commissioner at the Paris Universal Exposition of 1867, visited leading European universities with a growing conviction of the inadequancy of American colleges and of the need for a national university of outstanding distinction (*9*, pp. 14–15). In 1869 he urged the National Teachers Association (later the National Education Association) to sponsor the idea of a great federal university. The Association responded with a resolution stating that "a great American University is a leading want of American education" and authorizing a committee to study the matter under Hoyt's chairmanship.

Over the next few years the Association mobilized support for the establishment of a National University in Washington. Meanwhile, in 1871 a group of private citizens in Washington incorporated "The National University," comprising schools of law and medicine, with the expectation that it would become part of the federal institution when that university was established (*3*, p. 64). In 1872 and 1873 the National Education Association had bills introduced in Congress to create a federal university; but no vote was taken.

At the National Education Association's meeting of 1873 President Eliot of Harvard ridiculed the idea others had been supporting so fervently. He held it was not "the duty of government to maintain a magnificent university." Such a conception was obsolete everywhere. Government "is not the guardian of the nation's morals; it does not necessarily represent the best virtue of the republic." "Will such a university be more national than any other American University?" he asked. "It might be larger and richer than any other . . . but certainly it could not have a monopoly of patriotism, or of catholicity, or of literary or scientific enthusiasm. . . . There is something childish in this uneasy hankering for a big university in America, as there is also in that impatient longing for a distinctive American literature" (*11*). Much of the opposition was more tactfully expressed. President McCosh of Princeton said, "Although not approving of the bills referred to, I like the idea of a national university of a character so high that it would not be a competitor of any existing institution" (*3*, p. 71). The Association, however, reaffirmed its stand in favor of a federal university.

That year President Grant supported the idea in his message to Congress (*3*, p. 73):

> I would suggest to Congress the propriety of promoting the establishment in this District of an institution of learning or university of the highest class, by donation of lands. There is no place better suited for such an institution than the national capital. There is no other place in which every citizen is so directly interested.

President Hayes in 1877 and 1878 endorsed federal aid for public education in the states and urged support of a "university in keeping with the national capital" (*3*, pp. 82–83).

Nevertheless, the opposition of Eliot and others had a sobering effect on the movement, inducing a more detailed and realistic conception of the proposed institution. From the beginning most of the plans contemplated not a college, but a university that would supplement and not compete with existing institutions—a university that would stress graduate study and research. Accordingly, the early emphasis on teaching republican principles was now muted. Science and research were emphasized, as they gained status, influenced in part by the Smithsonian Institution and the new National Academy of Sciences.

Meanwhile, leading colleges across the country began establishing professional schools and graduate departments and changing their titles from

colleges to universities. These changes made it more difficult to define the special function of the national university. Most advocates saw it as something more than a local university. Some now extravagantly called for a central university to unify a fragmented system of colleges and to give leadership. Some urged a university that would be the great Sun of a solar system of institutions.

But unification and centralization under political auspices were achievements the leading institutions of the country least desired. They still believed in competition and doubted that educational objectives or programs could or should be set by a central university. In the discussions at educational and scientific meetings, there were undercurrents of influential opposition to the proposed institution, which, combined with public apathy, were obstacles the sponsors could not overcome.

Hoyt, who had revived the issue, gave it such encouragement as he could from 1874 to 1890, while he served successively as Commissioner of Waterways in Wisconsin, Governor of the Territory of Wyoming, and president of the University of Wyoming (*9*, p. 14). None of the bills before Congress in these years enlisted adequate support for action.

The Major Effort, 1890–1920

In 1890 Hoyt moved to Washington and worked energetically for the university. Several bills were introduced during the next few years. The Senate appointed a Select Committee for the Establishment of the University of the United States. Hoyt submitted a memorial giving a documentary history of the support for the institution (*3*, p. 12). He organized the National University Committee of One Hundred, composed of prominent educators and leading citizens, to promote the cause. The Senate Committee reported favorably the pending bills in 1893 and 1894. No vote was taken.

Opposition to the federal institution now became more vocal among major universities and among some of the local institutions whose aspirations were thought to be threatened. Columbian College had expanded its program and had become Columbian University in 1873. The National University School of Law had preempted the name. The proposed federal institution thereafter was referred to as the University of the United States. Catholic University had been founded in 1889. The century-old Georgetown College took on university functions.

An argument for a graduate university was now the growing prevalence of research facilities and opportunities in government agencies. In 1892 Congress approved a joint resolution designed to encourage the establishment and endowment of institutions of higher education in Washington, by making government facilities accessible to investigators and students in these local institutions. Within a year Bishop John F. Hurst and his associates obtained a congressional charter for American University under Methodist auspices. Although 21 years were to elapse before this university could open, Bishop Hurst promptly became an active opponent of the federal university, which he viewed as a nonsectarian, godless place, unfit for youth.

When in 1896 a minority of the Senate Committee expressed the first officially registered opposition to the establishment of a federal university, Hoyt vigorously replied to the arguments, which were predicated on the threat of expanding federal power, the lack of need, and the neglect of religion. He called attention to the historical inaccuracies and "biased" views by which this minority misjudged the proposal. He also replied to the opposition reflected in appended letters from the presidents of Harvard, Yale, Columbia, and Pennsylvania. But he criticized with special force the views of Bishop Hurst, whom he had elsewhere characterized as "the self-appointed champion of an incipient sectarian institution." He cited the more charitable position of Catholic University, whose rector had said: "We will do the best we can here to give the very highest and best education, but we will do nothing to hinder others from doing as well, or better, if they can" (*12*).

The most determined effort to gain congressional approval occurred between 1895 and 1917. More than 20 bills were introduced. The support of educators and members of Congress was widely solicited. The presidents of the leading private universities, with notable exceptions, became the hard core of opposition. They were reinforced at times with support from local universities.

The National Education Association revived its active interest and in 1898, through its National Council of Education, appointed a committee headed by President Harper of the University of Chicago to study the issue. Eleven of the 15 members, including Presidents Eliot and Butler, recommended the abandonment of the project and the support of the Washington Memorial Association, an organization seeking to sponsor a memorial to the first president. The Council emphatically rejected the report and reaffirmed its advocacy of the federal university (*9*, p. 20).

In 1901 the Washington Academy of Science in collaboration with other educational organizations induced Congress to extend access to government facilities to investigators and students from institutions of higher learning throughout the nation. The Academy and the Washington Memorial Association then founded the Washington Memorial Institution, to foster the utilization, by scholars and students, of the extensive facilities for research in Washington. Sponsors of the Memorial Institution tried to interest Andrew Carnegie in providing a generous endowment, while others were seeking to interest him in financing a great private university in Washington. When in 1902 he announced the establishment of the Carnegie Institution, the vitality went out of the Washington Memorial Institution (*9*, pp. 29–30; *13*, pp. 10–11). The ardor of those favoring the federal university continued.

Hoyt, who had been energetically enlisting support, expanded his Committee of One Hundred, and a few years later it appealed to the Congress as the Committee of Four Hundred (*5*, pp. 37–42). In 1905 he gained the endorsement of the National Association of State Universities, which agreed to work with the National Education Association and the agricultural colleges for the federal university (*9*, pp. 20–21). This collaboration produced supporting articles in educational and scientific journals, and evoked a few dissents. In 1912 President James of the University of Illinois spoke out in favor of the federal university in an address to the National Education Association (*14*). He had earlier, in 1899, reviewed the constitutional issue and found no impediment (*15*). The bills in Congress multiplied, but progressed only their customary distance short of passage.

In 1914 Congressman, later Senator, Simeon D. Fess of Ohio gave his sup-

port to the proposal, and thereafter he introduced bills in almost every Congress for the next 13 years (*9*, p. 21). Congressional hearings in 1914 produced numerous supporters and 12 opponents, including Presidents Lowell, Butler, and Hadley. The next year a House Committee, favoring action, reported (*5*, p. 49):

> Even today there exists in the capital the university, only awaiting organization, and research students. Probably in no one place in the world is there such a rare and numerous aggregation of material for laboratory uses as in Washington.

After the death of Hoyt in 1912, and the hearings of 1914, efforts to establish the federal university dwindled. The biennial bills of Senator Fess and a few introduced by others commanded diminishing attention until they ceased in 1933. Honoring the debt to President Washington had long before lost its force in the debate. The basic issue was whether higher education, public and private, should have a strong federal rival, and whether federal funds could in fact create the sort of pioneering institution envisaged by its advocates. On these issues the silence of Congress conveyed the decisive answer for the time being.

Recent Proposals

Since the 1930's no significant demand for a national university has arisen, though the idea has continued to be discussed. Bernard Berelson ended his recent book on graduate education by urging the establishment of a great Washington university to serve as "an influence," "a model," and a "standard setter." He saw it as "lending tone" to the intellectual life of the capital, lending faculty as consultants to government, and lending special aid to the improvement of education in the South (*16*). More recently a Cleveland businessman, Oscar H. Steiner, has urged the honoring of Washington's bequest for a federal university (*5*, pp. 68–69). But this effort has elicited little more than the good will which has always been felt toward Washington's views and beneficence.

As the prospects for a federal institution have diminished other means of partially filling the gap have multiplied. The effort of 1901 to utilize the research opportunities in government agencies for university students and investigators was less than successful. The availability of these resources for university research or instruction was overestimated. That federal agencies had responsible work of their own to pursue was often overlooked. In 1901 Director Walcott of the Geological Survey, after an inquiry, reported 272 research opportunities for qualified students in 22 agencies. Eight years later Hadley of Yale estimated that a similar inquiry would find officials willing to accommodate no more than one-third that number. The earlier experience had shown that government research assignments for students were used more as a means of support than for scientific inquiry. The students used scarce space, funds, and time of staff; they presented administrative problems; there were no suitable instructional arrangements; the students interfered with the serious full-time work of a growing body of capable scientists and scholars in government employment, and led to inefficiency in the professional work of the agencies (*13*, pp. 15–21). That special arrangements were needed if these resources were to be used without interfering with the normal operation of the agencies was suggested. Some agencies proceeded to make their own arrangements for such numbers as they could accommodate. Others abandoned the effort.

In 1916 the historians and political scientists proposed a residential center for scholars and graduate students wishing to pursue research in Washington. It contemplated the development of arrangements with public agencies. A start was made in 1921, but without adequate financial support it waned (*9*, p. 30). The idea was proposed again on a larger scale by Julian Boyd in his address before the American Historical Association in 1964. The Smithsonian Institution is now exploring ways and means of performing this service for scholars and students in a wide range of fields.

Meanwhile the Bureau of Standards, the National Institutes of Health, and many other agencies have developed their own programs for research students and guest investigators. The research resources of government agencies are far greater now than in 1901, and numerous arrangements for visiting scholars have been devised. But there is still no national or private university that fulfills the role envisaged by Rush, Washington, or later advocates of a federal university.

Early in 1964 the universities of the District of Columbia organized a consortium for the exchange of graduate students and credits, and to effectuate other forms of cooperation (*5*, pp. 66–68). This is a commendable step toward strengthening the existing institutions. That it can provide arrangements for a great graduate school in the District remains doubtful.

Over the years other educational institutions have been proposed, but few are intended to serve the purposes of a federal university. Since 1920 various training schools for federal employees, for the public service or the foreign service, have been urged, but with little or no support from the Executive Branch or the Congress (*5*, pp. 54–65). Defense and commercial interests in recent years have suggested the creation of an M.I.T. of Washington, an Institute of Science and Aeronautics, and other scientific institutions for education and research. Few of these ventures have passed beyond the stage of preliminary discussion. The national university meanwhile exists only as a dream.

Conclusion

It is impossible to say whether or not the proposed university, if it had been established, would have achieved the role contemplated for it. It would doubtless have changed the course of educational development in the capital and possibly in the nation. It might have emerged as an institution of great eminence and influence. Or it might have become the political monstrosity that some feared. How would it have fared during the Jacksonian era, the slavery and secession controversies, the anti-German feeling of World War I, or the McCarthy era? Would it have provided the pioneering leadership which was expected of it? Could it have withstood the congressional assignment to it of miscellaneous tasks and responsibilities far beyond its function? Could it have maintained the highest standards of quality in staff and students? Would it have been, and be today, a monument to the first president, or something less? These questions are unanswerable. But they remind us that it takes more than the initial act of creation to build a great educational institution that can survive in greatness the vicissitudes of politics.

In light of this background and the present needs, what are the prospects for achieving Washington's dream? Perhaps that is the wrong way to pose

the question. Perhaps we should ask what would Washington's dream be today for the late 20th and the 21st centuries? Perhaps what is needed now is not the university he envisaged, or that Hoyt desired and Eliot feared, but a university designed for the capital city in view of our whole system of higher education.

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BioSciences Information Service of Biological Abstracts

Abstracting and indexing provide input for a dynamic, computer-based information system.

Phyllis V. Parkins

The major abstracting and indexing services of the world are feeling the pressures of enormous changes. New tools and techniques for abstracting and indexing, long overdue, are becoming increasingly available in greater variety and with a wider range of applicability to tasks that have grown to unprecedented proportions. "Big Science," (*1*) "literature explosion," "information crisis," all are now familiar terms and aptly characterize the increased volume of research writings with which each of the discipline-based abstracting and indexing services has had to cope. And until recently, the problems of control of this literature have been approached by each service with tools and methods not vastly different from those available to bibliographers of generations ago.

The scientist, too, is demanding a change. He is finding it ever more difficult to sort out from the world's literature only that portion which serves his interests. The traditional publication of ever greater numbers of abstracts and their respective indexes is annually producing volumes whose bulk and weight alone cause serious problems for both the scientist-user and the librarian. In 1965 *Biological Abstracts*, for example, with its 24 indexed issues plus the first four issues of its new *BioResearch Titles* and the annual cumulative indexes, occupies in an unbound state about 3 feet of shelf space, and the total weighs nearly 79 pounds. When these publications are bound, the amount of required shelf space and weight will go up proportionately. The accumulated publications of Biological Abstracts in 1965 represent something over 130,000 research writings in the field of biology. And in 1966 the bulk will be even greater, for this year we plan to cover at least 180,000 biological articles.

But can the abstracting and indexing services respond effectively to the scientists' clamor for change? If so, what significant changes are taking place? Will they be disruptive? Or can a transition be accomplished smoothly, with no loss of continuity in maintaining the record of scientific research? Can the individual scientist soon hope to satisfy more fully his variety of needs for information? I believe that considerable light can be focused on these questions by a description of how one organization, Biological Abstracts, is adapting its thinking and operations to take advantage of certain new tools and methodology. What follows, then, will be a case history—a brief account of how Biological Abstracts has begun systematically to transform itself from a traditional, discipline-based abstracting and indexing service into a more dynamic and flexible information-processing and disseminating facility.

It should further this purpose to look briefly into the history of abstracting and of Biological Abstracts. I shall also describe the information requirements of the biological scientists and examine the Biological Abstracts information system as it now exists and as it is developing to meet these requirements. Finally, in the light of research in process, we can predict unusual and useful new services that should soon become available.

At this point, however, I should digress to mention one tangible, if superficial, change involving the name of our organization. Lest Biological Abstracts be thought of in terms of a tradition—no matter how beneficent—created over a period of nearly 40 years, it seemed desirable to make an obvious and formal distinction between the organization itself and its principal publication. It was largely to emphasize and project the idea of the increasing flexibility and growing variety of services of Biological Abstracts that the Board of Trustees elected to modify the name. Thus BioSciences Information Service of Biological Abstracts (BIOSIS) came into being in December 1964.

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