stitutions or of industrial laboratories. Perhaps the most important university function of an institution of higher education is that of increasing knowledge, and it must be recognized that productive scholarship is the usual test of the intellectual life of an institution.

There are two aspects of research; one of these is the work of research as a means of the solution of certain so-called practical problems, the other is research in general the object of which, while it may incidentally prove to be practical, does not have practicality as its end and aim, but merely the increase of human knowledge. In the universities, perhaps alone, is to be found in its most complete expression the spirit of pursuing knowledge for its own sake. There also is to be found the complete circle of human knowledge. The chemist, the historian, the mathematician, the geologist, the philologist, preserve a breadth of vision and a sense of proportion, owing to the fact that they are linked side by side in the same institution. Moreover the student in one field frequently finds in his own subject problems that require aid from the student in some other field. The universities, therefore, offer the best combinations of knowledge that are to be found in the world. From the university come the research workers of the future. The achievements in applying science may be justly and generously credited with great accomplishments, but all achievements of applied science rest upon the work of men and women who were, for the most part, university trained, and interested in the fundamental laws of nature rather than in any practical application of them. It is a distinct function of a university to advance knowledge all along the line, and to give to the world these additions to knowledge by which alone we can grow.

The National Academy of Sciences, composed as it is of the products of university education, is also the highest scientific body in this country. Its members are living exemplars of what universities have done, and they are also exemplars of what individuals have done who possessed and were possessed by the spirit of research, and who used their university foundations and principles merely as stepping stones to higher things.

JOSIAH H. PENNIMAN

FELLOWSHIP IN THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

ONLY fellows of the American Association may serve as elected members of the council or elected members of the section committees and only fellows may be representatives of the affiliated organizations in council and section committees. These are constitutional provisions (Constitution, Articles 4 and 5). Members who are not fellows may be elected to other offices and may be elected or appointed to other committees. In actual practice, however, the *ex-officio* members of the council and of its executive committee (the president of the association, the general secretary, the permanent secretary), as well as the section officers (chairman and secretary, the chairman being also *ex-officio* a vice-president of the association) are always fellows. The control of the affairs of the association is consequently in the hands of fellows. The council is the legislative body for the association as a whole, the executive committee acting for it at times other than during the annual meetings. The section committees are generally the legislative bodies for their respective sections, though action is sometimes taken by a section at one of its sessions. The permanent secretary and the section secretaries are the executive officers.

It is intended that the group of fellows shall include those members of the association who have contributed to the advancement of science by the publication of original scientific research or in other significant manner, such as teaching or directing research in an institution of repute. (By-Laws, Article II, Section 4, and special interpreting clause of December, 1924. See *Summarized Proceedings*, 1925, page 13.) This requirement is considered to have been met by members of affiliated organizations having a research qualification; on the basis of this statement the following categories of membership in affiliated organizations are now understood to imply eligibility to election to fellowship in the association.[1]

Fellows of the American Physical Society.
Fellows of the American Meteorological Society.
Regular members of the Optical Society of America.
Members of the Geological Society of America.
Fellows of the Mineralogical Society of America.
Members of the Association of American Geographers.
Active members of the American Society of Zoologists.
Fellows and honorary fellows of the Entomological Society of America.
Active members of the American Association of Economic Entomologists.
Members of the American Society of Naturalists.
Members of the American Psychological Association.
Members of the American Association of Anatomists.

[1] This list has been carefully prepared, but it may require additions from time to time. If an affiliated organization has research qualifications for its membership, or for a category of its membership, and if it is not properly cared for in this list, its secretary should take up this matter by correspondence with the permanent secretary of the association.

The secretary of each section is expected each year (with the assistance and advice of his section committee and the secretaries of the affiliated organizations of his section) to go through the list of members enrolled in the section, nominating for fellowship all members on the list who are not already fellows and who are eligible to election to fellowship because of the advancement of science by the publication of research or in other significant manner, including those who are eligible because of membership in one or more of the special categories just listed.

The section lists are taken from the regular roll of the association, being maintained up to date by cards sent to the section secretaries from time to time, and each name is accompanied by one, two or three letter symbols indicating the one, two or three sections in which, as the member has intimated, he is specially interested. The order of these symbols, when more than one occur, shows the member's relative interest; for example, ABD denotes greatest interest in mathematics, secondary interest in physics and tertiary interest in astronomy.[2]

After the eligibles on any section list have been nominated each nomination is referred to the section committee for the section indicated by the *first* section symbol on the nominee's record card. Thus, a member whose name is accompanied by the letters ABD is represented by a card in each of three section lists and may be nominated for fellowship by any or all of the three section secretaries concerned. In this case the nomination would be referred to the section committee of Section A. In many cases the section secretaries cooperate in making nominations, generally also securing advice from the secretaries of affiliated organizations or from the council representatives from those organizations.

[2] These letter symbols appear on the addressograph plates used by the Washington office in addressing annual statements to the members. If no section symbol appears this means that the member has intimated no special interest in sections and he is enrolled simply as a member of the association as a whole. Names without any section symbols do not appear in any section list. Each member should note carefully the imprint from his plate, making sure that the plate is kept correct in every detail, including the letter symbols referring to sections. The symbols used are just the letters designating the sections; A for Mathematics, B for Physics, etc. Be sure that the order of their appearance on the plate is correct. The plate also bears a membership formula indicating the year the member joined, the year of his election to fellowship, if he is a fellow, and the year of his becoming a life member or emeritus member if he belongs in one of those groups. The formula 20, F22, L25 means membership since 1920, fellowship since 1922 and life membership since 1925. A member may receive an imprint from his plate at any time from the Washington office.

After reference to the proper section committee, the nominations for fellowship are returned to the Washington office, marked *approved* or *disapproved* (with an explanatory note if the nomination is disapproved), and those that have been approved are then referred to the executive committee, which may vote the elections or recommend them to the council for election. After election by council or executive committee, each new fellow is notified, receiving the certificate of fellowship, and his addressograph plate is altered so as to show him as a fellow.

In uncertain cases, nominations may be referred, before going to the council or executive committee, to a special committee on fellowship, consisting of the general secretary, the permanent secretary and the secretary of the section in whose field the nominee's scientific work lies.

Our present organization for the nomination and approval of new fellows is not as efficient as it might be; all section secretaries and their committees do not operate with the same degree of efficiency, precision and promptness, and it may frequently occur that a member who should be elected to fellowship fails for several years to receive this important election. It is hoped that these difficulties may be overcome through the hearty cooperation of all the officers concerned. But it should be emphasized that the by-laws specifically state that nominations for fellowship may quite legitimately, and in all respects properly, be made by the member himself in any case. If a member is not a fellow and has reason to think he should be elected to fellowship, he should write fully about his case to the permanent secretary, who will see that the nomination is referred to the proper section committee and, if duly approved, brought to the executive committee or the council. Any member may nominate any member (including himself) for fellowship. New members may nominate themselves for fellowship at the time of joining if they judge that they are eligible. Fellowship nomination blanks are obtainable from the permanent secretary's office at any time.

This matter of fellowship is important in the association, especially on account of the fact that the activities of the organization are in the hands of the fellows, through the council. There are now about 5,200 fellows, representing about 36 per cent. of the total enrollment. No special obligations are entailed by fellowship. If a fellow resigns from membership or if his name has to be dropped from the roll on account of more than two years of arrearage in the payment of dues, his status as fellow is of course discontinued, but if he subsequently becomes reinstated or rejoins the association he is then automatically given the rank of fellow without a new election to fellow-

ship. The name of each fellow is specially designated by an asterisk in the quadrennial directory of members, which makes up the larger part of each volume of Summarized Proceedings.

BURTON E. LIVINGSTON,
Permanent Secretary

WILLIAM JOSEPH HUSSEY

WILLIAM JOSEPH HUSSEY, fifth director of the astronomical observatory of the University of Michigan and professor of astronomy, died in London on the twenty-eighth day of October, 1926. Three weeks before, he had set out from Ann Arbor for Bloemfontein, South Africa, on a project that marked the culmination of years of planning and effort—a project involving the erection of an observatory and the installation of the twenty-seven-inch Lamont refractor primarily for the prosecution of a double star survey of the southern skies. While waiting to continue his journey from London death, caused by heart failure, came instantly as he and Mrs. Hussey conversed with friends at the dinner table.

Born in Ohio, August 10, 1862, on a farm where funds were limited, an education was not gained without a struggle. Teaching and other work needed to eke out available resources interfered with progress in study to such an extent that it was not until 1889 that Professor Hussey received his bachelor's degree. He graduated in civil engineering from the University of Michigan, with a brilliant record. For a time in 1889 he was an assistant in the Nautical Almanac Office at Washington, D. C.

Then began a period of seven years devoted principally to teaching. Instructor for three years at Michigan in mathematics and astronomy and acting director of the Detroit Observatory during the last one of these years, he was called to Leland Stanford Junior University as assistant professor of astronomy in 1892 and rose in three years' time to a full professorship in that subject. During this period he visited the Lick Observatory frequently as a volunteer observer. It was during this time that his remarkable photographs and studies of the physical characteristics of Comet Rordame were made. His appointment as successor to Barnard at Lick Observatory came in 1895.

The years as astronomer at Lick Observatory, from 1896 to 1905, formed for Professor Hussey a period of most intense activity in research. Space is lacking to consider the details of his researches there. His photographs, orbits and micrometer observations of comets, his drawings of the planets, his micrometrical observation of satellites and asteroids, but most of all his epoch-making discoveries, measures and other investigations of double stars brought him international distinction and the widest recognition.

Professor Hussey's most notable achievements at Lick Observatory were his observations of the double stars discovered at Pulkowa and his discovery and observation of 1,338 new double stars. The report of the former studies fills Volume V of the Lick Observatory Publications, a model of its kind. The discoveries of double stars resulted from a survey begun independently in 1899 by Dr. R. G. Aitken and Professor Hussey but pursued jointly by them almost from the first and completed by Dr. Aitken working alone after 1905. This great work with related investigations won for both collaborators the Lalande Gold Medal of the French Academy in 1906. Subsequently, at La Plata, Professor Hussey, observing in the southern skies, increased the total of his double star discoveries to 1,650.

Dr. Hussey returned to Michigan as professor of astronomy and director of the observatory in October, 1905. Though always assuming his full share of teaching, in which he was notably successful, and finding time for countless other tasks, he nevertheless kept before him always the larger problems connected with the growth and extension of the observatory. The initial program of construction for Ann Arbor, beginning with the buildings, instrument shop and smaller instruments, culminated in the 37½-inch reflector. When this instrument was completed with its spectrographic equipment and auxiliaries in 1911, the original plans for reorganization and construction at Ann Arbor were essentially realized, and a period of research began.

At this juncture there came an opportunity for similar offices at a great southern institution. The observatory at La Plata, in Argentina, had expended considerable sums of money but then lay dormant with a group of sightly buildings and a complement of equipment needing only the attention of experts to make it productive. A cooperative arrangement was formulated under which Professor Hussey was to add the duties of the professorship and directorship in astronomy and geodesy at the National University of Argentina in La Plata to those at the University of Michigan, dividing his time about equally between the two institutions. When this was quickly approved by the regents of the University of Michigan, the incident was a source of much gratification to many interested in the betterment of Pan-American relations and to those interested in scientific progress.

Arrived in Argentina, July 19, 1911, it was found that the attitude of the University of La Plata was cordial and entirely favorable. However, unexpected difficulties in securing full authority at the observatory were disheartening for a time. But soon with