tailed statement of receipts and expenditures, and a brief outline of the work done during the fiscal year. This statement shall be sent annually to the officers of each association in the federation.

On recommendation of the executive committee it was voted that, pending the report of the committee on policy as to publication, the executive committee be authorized to print the reports and documents of the federation in such of the established journals as it may select.

At the meeting in 1906 in New York no officers were elected, but only an executive committee appointed. The articles of federation having now been formally approved by the meeting, the following officers were elected for the year 1908:

President—H. W. Tyler, Association of Mathematics Teachers of New England.

Secretary-treasurer—C. R. Mann, Central Association of Science and Mathematics Teachers.

Additional Members of the Executive Committee—R. E. Dodge, New York State Science Teachers' Association; F. N. Peters, Missouri Society of Teachers of Mathematics and Science; J. T. Rorer, Association of Mathematics Teachers of the Middle States and Maryland.

It was announced that the application of the federation for affiliation with the American Association for the Advancement of Science had been approved by that body, and that this affiliation entitled the federation to elect a representative to the council of that body. On nomination, duly seconded, the president of the federation, Professor H. W. Tyler, was elected as the representative of the federation to the council of the American Association for the Advancement of Science.

The questions: What can be accomplished by the federation that can not be accomplished by existing machinery? and, What does an association gain by joining the federation? were raised and discussed at length. Instead of trying to reproduce this discussion, the executive committee is preparing a statement of the purposes and proposed policy of the federation, and this will be issued in the near future.

The meeting adjourned, subject to the call of the executive committee.

C. R. Mann,
Secretary

The University of Chicago

THE COLLEGE AND THE UNIVERSITY[1]

The American university of to-day is a compound of two divergent and more or less antagonistic elements, which in the current academic languages, we call the college and the university. The college is in theory a place for general culture, for training the mind, broadening the intellectual horizon, and, so far as may be, making, by tasks physical, moral and mental, a man or woman better fitted for the work of the world. The university is a place of training for one's specific duties in life. Its functions include training for professional work, whatever the profession may be. Its general method is that of instruction through investigation, and its relation to the student is in many ways different from the task-setting work of the college. It demands for its teachers a somewhat different talent, that of creative work, and of the power and the will in one way or another to add to the sum of human knowledge.

Our colleges are English in their origin. Our universities are German in their inspiration and method. Thus far in America the one has in a way antagonized the other. There has been a tendency to build up the university work by neglect of the collegiate work. Very many institutions have given instruction in professional or technical subjects of university grade to students who have had no collegiate training, often even no work of the still lower grade we call secondary instruction. On

[1] Extract from the Report of the President of Stanford University for 1906–7.

the other hand, the college has gradually pushed itself upward, relegating its lower years to the secondary school, and absorbing two of the years which would naturally belong to the university. In most of our larger institutions the fourth collegiate year is frankly given to investigation or to the beginnings of university work. In fact, though not in name, it belongs to the university rather than to the college. In a general way the admission to the German university—or graduation from the secondary school, Gymnasium or Real-Schule—corresponds with the end of the sophomore year in the best organized American colleges. In England, where the university as such is still in a state of probation, the conditions are not very different, so far as degree of advancement on the part of the student is concerned.

Recognizing these conditions, there is a strong movement in Germany to introduce the American college, to set off the last years of the Gymnasium or Real-Schule, as an intermediate stage between the local preparatory school and the school of technical training and investigation.

In America there is a tendency to separate the college into two parts, the junior college, of two years, in which the work is still collegiate, and the university college, in which the work of the university begins. This separation, first accomplished at the University of Chicago, is still little more than a name. About the University of Chicago many collegiate institutions have become junior colleges, that is, institutions which recommend some or all of their students to the universities at the end of the sophomore year. This arrangement is in many ways desirable. It is better for the university to be as far as possible free from the necessity of junior college instruction. It is better for the student at this period to enter an institution with large faculty and large resources. Furthermore, if the junior college has the teachers and conditions it ought to have, it is in very many cases better that the student should take his early training there, rather than as a member of the enormous mass of freshmen and sophomores our great colleges are now carrying.

It is safe to prophesy that before many years the American university will abandon the junior college work, relegating it to the college on the one hand and to the graduate courses of the secondary schools on the other. Under these conditions its discipline and its methods of instruction will approximate those of the universities of Germany and other countries of Europe. Under these conditions the assistant professor of to-day will mostly find professorships in colleges; the professor will be an original scholar and investigator as well as a teacher, and the rule of Lehrfreiheit and Lernfreiheit will be established as a matter of course. It goes without saying that university conditions in America will differ in many ways from those of Germany. It is not likely that American legislative bodies will make a degree from the university a necessity for professional work, or its absence a bar to preferment. The trained man in America will have to take his chances with the rest, and for a time the "practical man," or even the ignoramus, may seem to distance him. But in so far as training is genuine, it will justify itself in every walk in life, and its value in the long run will be the more appreciated that it has no official attestation.

Thus far Stanford University has been a large college, well ordered for the most part, giving good instruction and with the highest collegiate standards. Its university work, though not extensive, has justly commanded respect.

The present condition of the university does not represent the original aim of the founders nor the ideal of the president. It

has been the necessary result of limitation of funds, the long delay of litigation and the final settlement of the estate, and the recent unwelcome disturbance of the earthquake.

The elimination of these factors makes it necessary to look forward to the future. Is Stanford University to be a college or a university, or a compound of both? In my judgment the last can not be a permanent condition in any of our large institutions. Collegiate instruction is relatively cheap. It is given well in upwards of two hundred institutions in America, and more or less badly in as many more.

University work on a large scale is expensive. If properly undertaken, it is the choice privilege of the few institutions that are generously endowed, or that are the educational pride of wealthy states.

Among these Stanford University must stand. Its great endowment was given for that purpose, and its freedom from outside control enables it to undertake lines of work, and long-continued series of investigation, efforts of the highest intellectual type, which would not find support in public institutions with their natural tendency towards the demanding of immediate results.

In 1892 Governor Stanford said repeatedly that he wanted this institution to combine the technical work of Cornell University with the highest post-graduate work or work of investigation, at that time represented by Johns Hopkins University; that he wished it to be a university in the highest sense, " beginning," to use his own words, "where the state university leaves off." I may say in passing that at that time the University of California was chiefly an undergraduate college. In its present expansion, it has largely begun where it then "left off," and we may admit that it has already gone much farther in the realization of the ideals of Governor Stanford than Stanford University has yet gone. But we have time before us, and most things are possible with time and patience.

To make a university, in the world-sense, of Stanford University the following elements seem to me essential:

The elimination, as soon as possible—let us say in the course of five years—of the junior college, by the addition of two years to the entrance requirements. This need not necessarily raise the requirements for the bachelor's degree, which would then be, as now, two years of approved university work beyond the work of the junior college. These requirements are high enough. There is much to be said in favor of lowering them to the level of completion of the junior college course. This would correspond to the bachelor's degree of twenty to thirty years ago.

With this should follow the extension of the university as such and the intensification of the higher work. Especially medicine should be added to its scope of instruction, and other lines of advanced work would naturally follow if the university were relieved from the burden of elementary instruction—of work which is done more or less well in every part of the country.

Unlike the German universities the American universities must include instruction in the various professions of engineering. This is in Europe generally relegated to a separate institution, the Polytechnicum. The development of the creative phases of engineering is costly, and yet of the highest importance to the material progress of the country. Besides the increase of equipment, the library must be greatly enlarged, a process at present going on at a generous rate. It will also be necessary to provide adequate means for the publication of results of scientific,

literary and other forms of research. The means for beginning this work have been already provided by your honorable board.

It will also be necessary to provide means for fellowships and scholarships. The present writer has been strongly opposed to the present fellowship system in America, believing that its evil of hiring men to study in a certain place often outweighs its advantage of furnishing promising men with means of making the most of their period of training. But in a matter of this kind it is not possible for a single institution to stand aloof from its associates, and to demand an adequate return in laboratory or other assistance from each fellow will tend to minimize these evils of the system.

SCIENTIFIC BOOKS

Anatomy of the Brain and Spinal Cord, with Special Reference to Mechanism and Function. By HARRIS E. SANTEE, M.D., Ph.D. Fourth edition, revised and enlarged. Philadelphia, P. Blakiston's Son & Co. 1907.

In this fourth edition, Dr. Santee has so enlarged upon the previous editions as to make a book of 451 pages, including an excellent index, and has added a considerable number of illustrations. His confessed endeavor has been to present the present knowledge of the anatomy of the human central nervous system. To do this, he states that he has gleaned, as far as possible, from "original sources" and he gives special credit to the works of McMurrich, Cunningham, Morris's "Anatomy," the reference books of Barker, and to Dr. A. W. Campbell's recent "Histological Studies of Cerebral Localization."

Published in this country, we already have an exhaustive compendium of the literature up to that time, in Barker's "Nervous System" and, in its contemporary, the work of Gordinier, we have a very excellent and serviceable text-book. Dr. Santee's book is less exhaustive as to the anatomy of the nervous system than either of these and one of its aims is to include added findings which go to make up the present status of our knowledge. It is designed as a text-book for medical students primarily. In the preface it is stated that the special objects in view throughout the book are the "location of functional centers and the tracing of their afferent, associative, and efferent connections." Attention is very wisely given, in the general text, to the embryology when such will aid the student in comprehending the adult structures, and, at the end of the book, a special chapter is wholly devoted to the origin and differentiation of the brain and spinal cord.

In arrangement of subject-matter, the author has presented the structures in the order which he thinks convenient to the dissector, though the book is manifestly for use, not in the dissecting room, but in the laboratory, where properly hardened (and therefore long removed) brains and spinal cords may be used, supplemented with the study of stained sections under magnification. The order begins with the meninges of the encephalon, then passes to the cerebrum and rhombencephalon with their various subdivisions, then takes up the meninges of the spinal cord, followed by a study of the cord itself, and ends with a chapter on the tracing of impulses and the chapter on embryology.

While the dura mater of the base of the cranium almost of necessity has to be studied in the dissecting room, the spinal cord is more easily and safely removed with its dura intact, and usually it is thought that all the membranes are best studied and their significance better grasped while, or after, studying the superficial characters of the structures they envelope. In the study of related mechanisms, it is usually considered pedagogically wisest to proceed from the simpler to the more complex structures. The spinal cord, being much less voluminous and its architecture much more easily grasped, as well as having functional precedence in most of the activities of the general body, is considered first by the student in most laboratories.

In the total 128 illustrations, Dr. Santee has displayed good judgment in the choice of those taken from other works, fifty-three of