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RESEARCH IN COLLEGES AND PROFESSIONAL SCHOOLS[1]

INTRODUCTORY NOTE

IT was planned to introduce this program with a paper by Dr. John C. Merriam upon "Research as revealing an Attitude of Mind," but illness in his family prevented his being present or sending his paper.

A few college presidents and university professors have expressed the feeling that men qualified to do worthy research are rare, and that most college teachers would do well to let research alone and stick to their teaching. We who have been endeavoring to promote research in colleges have had a fundamentally different view, and it seems well to outline it briefly as a background for the discussions to follow.

We believe that every normal individual is born with some endowment of the research spirit—the inquiring mind given to trying to find out by exercise of its own powers. Normal children are full of natural curiosity and they have to a fair degree the habit of experimenting; that is, they are endowed with something of the research spirit.

We believe that this mental habit of learning by self-reliant experiment should be conserved and strengthened from the beginning throughout life. We believe that all education, from pre-kindergarten age on through the university, should have this encouragement of the spirit and habit of research as a main object. We believe that no worth-while job in life can be done with proper effectiveness in any other spirit. We believe that, in all education, learning through self-reliant experiment and exercise of individual judgment should dominate and that the habit of stopping with faith in the printed statement in the text-book should be avoided as leading to fatty degeneration of the mind and soul. We believe that teaching should be conducted only by those who have the research attitude themselves and have ability to cultivate it in their pupils.

Men with the research spirit are now available for the colleges, and from among university graduates are coming new men who, though wrongly trained in their earlier school studies, have later come into contact

[1] A series of papers arranged by the secretary of the committee on research in educational institutions, a subcommittee of the committee of one hundred of the American Association for the Advancement of Science, given at the Philadelphia meeting on December 28.

with the research spirit in the university and have presumably imbibed something of this spirit. We believe it to be vitally important to the colleges to encourage in every way in their power the spirit of research in their teachers.

It is equally important for the schools of all grades, but their problem is one of much greater difficulty, for they draw their teachers chiefly directly from the excessively pedagogic and therefore deadening atmosphere of the ordinary schools and normal schools rather than from among university graduates. We have, therefore, given our attention chiefly to the colleges, a phase of our educational system apparently now most ready for improvement. Conditions in professional and technical schools need as serious consideration as those in colleges.

In brief, so far as the American college is concerned, our main purpose is to change somewhat fundamentally its intellectual atmosphere, to set up a new standard, so that hack teachers will be barred and young men and young women at the time they are determining their life interests shall be in contact with teachers of scholarly habit and some scholarly attainment. This is a far-reaching program, requiring time and much money for its attainment. The first essential step is to see clearly the goal and to revaluate college customs, ideals and methods in view of this larger conception of college excellence.

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RESEARCH IN MEDICAL SCHOOLS

THE subject of starting medical students in research may well lead to discussion, for opinion now varies all the way from the theory that none should try research up to the idea that every medical student should undertake a problem. In the presentation of the subject as I see it, it will be well to make clear at the outset that one of the elements of liberty in education is freedom for the individual teacher to carry out his own ideas; in other words, outstanding ability for teaching and especially for leading students into research has so large an element of natural gift or creative talent that methods must vary with each teacher.

Medical schools, as they are organized to-day, have three functions: There is first their original purpose of training practitioners of medicine. Second, as professional schools, they must perpetuate themselves by training their own teachers. Third, they must carry their share of the progress of medical science in laboratory and hospital not only through the work of their own teachers but also by training those who are to carry on investigation in research institutes.

As is well known, every science passes through two phases, the descriptive and the experimental. In an address on the late Sir William Osler, Dr. Rufus Cole gave a delightful description of Osler's clinic as an example of teaching medicine in its descriptive phase. During the years from 1893 to 1900, Osler's wards in Baltimore were filled with typhoid fever in the fall, with pneumonia during the winter. In the clinic he had a large blackboard for the permanent records of the term, a line for each case with such essential facts as onset, temperature, complications, etc. The student kept a duplicate list and elaborated his notes at each ward round where he studied the cases and at each clinic where new symptoms were reported and discussed. At the end of the term, the student analyzed the data from his own notes into terms of the percentage of complications, the range of temperature, the duration of the disease, the mortality; in other words, each student wrote a text-book of typhoid fever from the cases he himself had seen, examined and recorded and then compared the findings of his own particular season of typhoid fever with the experience of other years and with the percentages from larger numbers. In this method, carried out with all the charm of Osler, the student became the physician at his very first clinic and started in the method by which he was to become a permanent student of medicine. Thus he had training in the essential methods of a descriptive science, observation, record and the periodic analysis of data.

I have taken this illustration from clinical teaching rather than from the laboratory because in the laboratory it was established even earlier that the student should gain experience from specimens which he himself prepared and studied, that he should analyze his own material and compare his results with the records in his text-book and in the literature. It may now be taken for granted that the method of descriptive science—observation, record, analysis—are so firmly intrenched in the fundamental courses given to all medical students that every single student in medicine must realize that the days when medicine could adequately be described as the art of healing have gone forever, for to the fine skill of dealing with patients has been added the application of the methods of a rapidly advancing science.

To meet the needs of this advancing science, how shall we introduce students into research? There are first those who believe that the demands of the medical course are so great that no student should undertake research until he has won the medical degree. To this idea is added the opinion that no student can have a sufficient mastery of the literature of any