AMERICAN INSTITUTE OF PHYSICS 25th ANNIVERSARY MEETING AND EXHIBIT

January 30 to February 4, 1956

Hotel New Yorker, NYC

Regular Winter Meetings of
American Physical Society
and
American Association of Physics Teachers
Special Meeting of Optical Society of America
and Acoustical Society of America
Joint Meeting of Society of Rheology
and APS Division of High-Polymer Physics
25th Anniversary Session of
American Institute of Physics

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Meetings

AAPT Summer Meeting

The American Association of Physics Teachers met jointly with the American Society of Engineering Education at The Pennsylvania State University, University Park, Pennsylvania, June 21–23, 1955. While there were sessions held separately by each society for the presentation of papers and reports of significance to their own interests, the chief purpose of the joint meeting was to bring the two groups together to hear the culminating reports and recommendations on "The Role of Physics in Engineering Education" which were to be presented by members of various committees, both separate and joint society, who have contributed many hours of hard work during the past two to three years in trying to build an evolved curriculum for engineering education which will embrace the rapidly growing fields of solid-state, atomic, and nuclear physics and which will impart to the student a point of view, an attitude of mind, and a capacity to deal with the principles and methods of analysis of contemporary physics. With respect to the emphasis on the evolving character of physics and an ever evolving curriculum and the emphasis that is placed on the need for good teaching and the need for more and better trained scientists, worthy contributions have appeared, among others, in the March and June, 1955, issues of *Physics Today*.

The first joint symposium, R. Ronald Palmer, president of AAPT, presiding, was a symposium on "Electricity in Engineering Education". Members of the symposium were L. V. Bewley (Lehigh University), Francis Bitter (Massachusetts Institute of Technology), W. Everitt (University of Illinois), and J. H. Van Vleck (Harvard University). A review of the report "Electricity and Magnetism in Engineering Education"[1] was presented. It was pointed out here, as well as in symposia which followed, that there must be close cooperation between the engineering and physics departments in each institution in order to plan the best curriculum for the engineering program, bearing in mind the general conclusions and recommendations which have been reached to date on the role of physics in engineering education, that calculus should appear early in the student's training, and that he should be trained to think rather than just to acquire knowledge. The physicist is primarily interested in analysis while the engineer is primarily interested in synthesis. The major objective of an education is to enable man to keep on learning. He must under-

1 See *Physics Today*, August 1955, p. 13.

stand the literature from a broad point of view. Physics should be taught by the physicist, mathematics by the mathematician, and engineering by the engineer; thus when the student gets out as an engineer and needs the work of each, he will be able to interpret what is written in the light of how it was written.

The second joint session was a symposium on "Mechanics in Engineering Education" with L. E. Grinter (University of Florida) presiding. John A. Sauer (Pennsylvania State University), D. Pletta (Virginia Polytechnic Institute), R. Seeger (National Science Foundation), and F. L. Singer (New York University) appeared on the symposium. For the engineer to have a background of learning sufficient to meet the demands ahead, basic physics, mechanics, solid state, and nuclear physics should be taught. It is felt that two years of physics must be provided in the curriculum previous to the beginning of professional engineering courses, and that the bulk of the work in atomic and nuclear physics should come after the student enters his professional courses, and should be taught by a physicist. The physicist uses problems and examples from experimental physics while the engineer uses concepts and principles to solve practical engineering problems. Emphasis was placed upon the value of classical mechanics appearing before engineering mechanics. Physical mechanics is the most highly developed of all disciplines and should be taught with the idea of challenging frontiers. When physical phenomena are expressed in mathematical terms, the equations are correct in so far as the assumptions hold, but the physicist and not the mathematician is putting in the assumptions; therefore, the constants have meaning and are needed from the physical point of view. Statistical mechanics emphasizes the scope and limitations of mechanics when applied in theoretical physics. It was the expression of the committee that if all of the engineering schools could bring their work in physics and mathematics up to the standard that is now being maintained by the programs, for instance, at Illinois, MIT, and Cornell, the engineering physics problems would be pretty well solved.

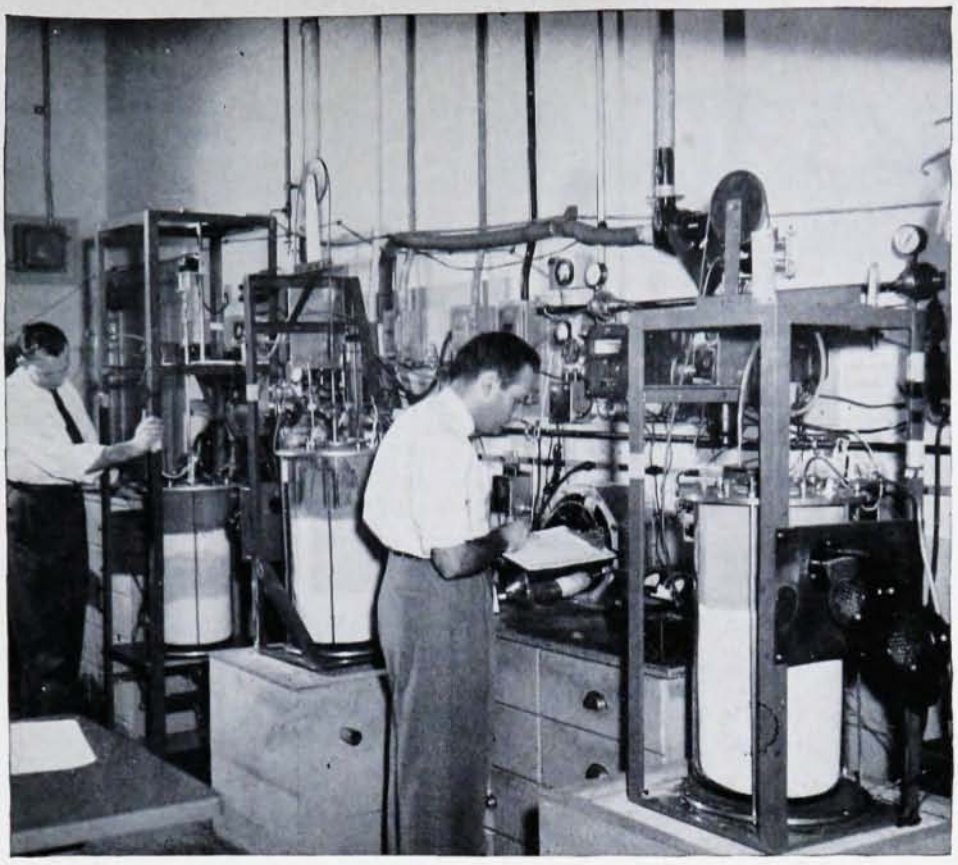
The third symposium dealt with "Intramural Conferences on the Role of Physics in Engineering Education", with G. P. Brewington (Lawrence Institute of Technology) presiding. John W. Graham (Carnegie Institute of Technology), J. E. Hendrick (Cornell University), Jesse W. Mason (Georgia Institute of Technology), John A. Sauer (Pennsylvania State University), Everett O. Waters (Yale University), and L. P. Winsor (Rensselaer Polytechnic Institute) were members of the symposium. The need for close cooperation between departments was emphasized. Calculus and higher mathematics should be employed in the basic physics work wherever it is needed to increase the understanding. A minimum of two years of physics should be prerequisite to any of the professional engineering curricula, with sufficient mechanics background for a later understanding of solid-state and nuclear physics. It was stressed by the engineers that the entire curriculum should be made more efficient by eliminating unnecessary instruction in

the professional engineering courses and, therefore, having the extra time needed for the modern physics section of the curriculum.

The fourth symposium consisted of a report of the American Institute of Physics committee on the evaluation of physics in engineering education, with Elmer Hutchisson (Case Institute of Technology) presiding and presenting the report and recommendations of the committee. Other members of the symposium were J. H. Keenan (Massachusetts Institute of Technology), J. W. Graham, L. E. Grinter, J. D. Ryder (Michigan State College), W. V. Houston (Rice Institute), J. W. Buchta (University of Minnesota), D. H. Loughridge (Northwestern University), and Marsh W. White (Pennsylvania State University). Dean Hutchisson stated that the physicist in his quest for knowledge often may confine his study to one problem at a time but the engineer must solve all problems in one integrated design synthesized from his knowledge of many disciplines.

The engineer needs a broad understanding of the fundamentals of physics and other sciences whether they have immediate application or not. He must be able to grasp the implication of new discoveries and the developing concepts of nature and be able to respond to the enthusiasm and stimulation of the creative scientist. Also, he must have knowledge of the course of history and be well trained in the art of receiving, interpreting and communicating ideas to others. Yet, he must be taught that the engineer is a man of action, a doer, and a builder. Therefore, engineers and physicists must work together in developing the engineer of the future. The trend away from too great a dependence upon the practical arts and toward the sciences in engineering practice makes it highly desirable to consider a two-year general physics course for all engineers. The content of the general physics course must be carefully screened to eliminate much of the material of an engineering or applied nature. Furthermore, to achieve an understanding of and a feeling for the way nature behaves, a challenging set of laboratory experiments should accompany this general physics course. Routine "cook-book" experiments should be kept to a minimum. We also recognize that one of the goals of physics instruction should be an introduction to the basic principles underlying atomic and nuclear physics and the solid state. The two-year general course must be regarded only as a preparation for introductory modern physics courses which may be given at the junior-senior level. The committee expressed the cardinal aim of the physics instruction in engineering education to be that of imparting to the student a point of view, an attitude of mind, and a capacity to deal with the principles and methods of analysis of contemporary physics, for without training and experience in these modes of thought, neither physicist nor engineer will prove competent to deal with the emerging problems of science and technology. It was emphasized that the engineering student should have his first introduction to physics as early as possible in his curriculum.

Among the contributed papers presented to the soci-



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ety was a series of experiments with convergent polarized light given by Mark W. Zemansky (City College of New York) and a demonstration by Walter C. Michels (Bryn Mawr) on "Phase Shifts and the Doppler Effect". W. V. Houston, President of Rice Institute, speaking at the luncheon on Thursday, emphasized that physics contributes to the cultural education of a student and thus it serves a double purpose in the engineering education program.

In addition to a well-planned and timely program, the chicken barbecue in Horton Woods on Tuesday evening followed by the conducted tour through the physics laboratories, the Society dinner and luncheon, the modern comedy on Wednesday evening, and the use of the dormitories for housing were contributing factors to the success of the meetings.

The Association expressed its sincere appreciation to The Pennsylvania State University and to the committee consisting of Drs. Kenneth Manning, John Sauer, Robert Weber, Marsh White, and Walter Michels, the chairman, for the very significant, well-balanced program and for the most generous hospitality afforded the Society while on the Penn State campus.

Glenn Q. Lefler
Eastern Illinois State College

Biophysics Society?

In view of the rapid expansion of the field of biophysics during the last few years, a group of biophysicists is making a survey of scientific opinion as to the advisability of forming a Biophysics Society. The group has been motivated by the consideration that although biophysicists are found in almost every branch of physics, biology, and medicine, no existing society provides a common meeting place for such workers. It is planned to hold an informal discussion of this and related topics during the 25th Anniversary Meeting of the American Institute of Physics in New York, January 30 to February 4, 1956. Those wishing to express their views regarding the formation of a Biophysics Society should write to Dr. W. A. Selle, Department of Biophysics, University of California Medical School, Los Angeles 24, Calif. It will be helpful if those planning to attend the meeting will so indicate.

Electrical Techniques in Medicine

Sponsored by the American Institute of Electrical Engineers, the Institute of Radio Engineers, and the Instrument Society of America, the Eighth Annual Conference on Electrical Techniques in Medicine and Biology will be held November 14–16 at the Shoreham Hotel in Washington, D. C. Sessions have been arranged for the review of recent advances in angiocardiography, audiology and instrumentation for hearing, and instrumentation in medicine and biology. There will also be inspection trips to the National Institutes of Health, the Naval Medical Research Institute, and the National Bureau of Standards.