Scientific Meetings

Nuclear Emulsion Research

The Conference on Cooperative Nuclear Emulsion Research was held at DePauw University in Greencastle, Ind., on 31 Mar. and 1–2 Apr. Of the 71 physicists who attended, 60 came from colleges and universities, with this number about equally divided between small and large institutions. The remaining 11 persons represented government agencies and industrial and national laboratories. The conference participants came from nearly all sections of the United States, and two came from Canada.

The purpose of the conference was to explore problems related to the establishment and operation of cooperative research programs between the laboratories actively engaged in nuclear emulsion research and the college physicist who would like to undertake such research. Two years ago Amherst College and the National Science Foundation sponsored a conference at Amherst at which 25 college physicists broadly considered the general question of physics research in colleges. The report of the Amherst conference, which has been widely circulated, made the unanimous recommendation that physics research in colleges be encouraged. The Amherst report also proposed ways of supporting such research, listed benefits to be achieved from it, and suggested certain criteria for investigations suited to the general climate of the small college.

The DePauw conference discussed the practicability of nuclear emulsion techniques for physics research at the small college. Also considered were the various aspects of such research as it might be carried out in cooperation with an established laboratory. How this laboratory could offer aid in exposing and processing emulsions and instruction and advice in analysis procedures without at the same time reducing the small college physicist to "slave satellite" status was well aired.

The program and the arrangements for the conference were set up by the Steering Committee, cochaired by Marcel Schein (University of Chicago) and Malcolm Correll (DePauw University). The other members of the Steering Committee were Fay Ajzenberg (Boston University), M. F. Kaplon (University of Rochester), R. R. Palmer (Beloit College), Chaim Richman (University of California, Berkeley), and E. O. Salant (Brookhaven National Laboratory). J. Howard McMillen (National Science Foundation) worked closely with this committee, and the success of the conference is due in no small measure to his interest and assistance.

The formal program included: "Introduction of the conference," McMillen; "Summary of results achieved by nuclear emulsion techniques," Schein; "Structure and performance of nuclear track emulsion," John Spence (Eastman Kodak); "The processing and control of nuclear track emulsion," Arthur Beiser (New York University); "Microscopes and accessories," W. F. Fry (University of Wisconsin); "Accessory experimental equipment," Gus T. Zorn (Brookhaven National Laboratory); "Balloon techniques," John E. Naugle (University of Minnesota); "Minimum facilities for nuclear emulsion research," Schein; "Experiences with cooperative nuclear emulsion research," K. E. Davis (Reed College), Aaron Lemonick (Haverford College), A. D. Sprague (DePauw University); "Cosmic-ray work with nuclear emulsions," Kaplon; "Nuclear emulsion research with accelerators of intermediate energies," Louis Rosen (Los Alamos Scientific Laboratory); "Nuclear emulsion research with the cosmotron," Salant; "Nuclear emulsion research with the bevatron," Marian Whitehead (University of California, Berkeley).

Considerable time was allowed within the program for discussions from the floor. These valuable contributions are embodied in the following observations and recommendations, which, at the closing luncheon, received the unanimous approval of the conference.

1) It is the belief of this conference that nuclear emulsion programs of cooperative research between colleges and large research centers should be expanded. Active research stimulates the instructor and thereby makes him a more inspiring teacher by permitting him to contribute in an original manner to his chosen field. It serves to develop enthusiasm among students. It enables a college to attract and to retain a superior faculty and better students. Research with nuclear emulsions is particularly well suited to cooperative programs in colleges. Research centers are eager to share their facilities for work with nuclear track plates with interested researchers in other institutions. Significant research can be accomplished in studying such plates in colleges with limited facilities. Such programs have already demonstrated their value and could most profitably be extended to other institutions.

2) The conference concluded that universities and national laboratories would benefit from an expanded cooperative research program and would indirectly benefit from the stimulated students who would later seek careers in physics via the graduate schools of the universities.

3) It is recognized that this cooperative research, to serve its purpose as a necessary adjunct to a well-rounded physicist, must be of a meaningful nature. In addition there exists the requirement that for its adaptation by liberal arts colleges it must not require large financial expenditures. It is the belief of the conferees that basic research using nuclear emulsion techniques satisfies both of these requirements to a high degree. There exist large classes of problems in nuclear physics covering the entire energy spectrum from 1 Mev to the highest energies in the cosmic radiation that can be undertaken with a minimum amount of equipment by a small staff and yet lead to meaningful and significant physical results, representing a real contribution to knowledge.

4) It was felt that the participation of undergraduates in cooperative research is beneficial and should be encouraged. However it is suggested that, for students, the physics rather than the purely technical aspects of the research problem be emphasized.

5) It was recognized that, in order that cooperative research be carried out successfully by college physicists, it is absolutely essential that adequate time be made available. In some cases this can be accomplished only by decreasing teaching loads. In order to maintain effective cooperation, it is also imperative that means for frequent visits to the cooperating institution be provided. Although some colleges may not be able to make substantial financial contribution to these programs, they could share in the activity by giving such arrangements their whole-hearted support.

6) Many college teachers find it difficult to get started in the rewarding field of nuclear emulsion research because of their need for information about recent research developments and specialized techniques. It is recommended therefore that summer institutes be established to instruct college teachers in current nuclear emulsion research techniques and to review knowledge in relevant fields of modern physics.

A more comprehensive digest of the proceedings of the conference is being

prepared by members of the Steering Committee. Requests for this should be addressed to Malcolm Correll, Department of Physics, DePauw University, Greencastle, Ind.

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■ The science section of the Royal Society of Canada held its annual meeting at Toronto, 6–8 Jun. Contributed papers were distributed under the usual subsections of mathematics, chemistry, nuclear physics, spectroscopy, and general physics.

The presidential address was one of the three papers forming an astrophysics symposium pertaining to distance measurement and galactic structure. Another symposium devoted to problems in meteorology produced discussions between the professional meteorologists on the one hand and physicists and mathematicians on the other.

A third symposium, arranged jointly with the geological sciences section of the society, was devoted to discussions of geochronology and geophysics. The papers in this symposium provided a comprehensive review of the various methods of age determination currently used in Canada. The complete program of 119 papers presented a cross-section of the types of research being actively pursued in the various Canadian centers.

■ The Society for Industrial and Applied Mathematics will hold its 2nd general meeting at the University of Michigan, 30 Aug.–1 Sept. Invited speakers include Max A. Woodbury, Francis P. Callahan, Lofti Zadeh, Gerald L. Thompson, Richard Bellman, T. H. Berlin, and Yudell L. Luke.

Other societies that have scheduled meetings at the University of Michigan during the week of 29 Aug. are the American Mathematical Society, the Association for Symbolic Logic, the Econometric Society, the Institute for Mathematical Statistics, the Mathematical Association of America, and the Pi Mu Epsilon Fraternity.

■ The technical division of Tracerlab, Inc., Boston, Mass., is sponsoring a Symposium on Applications of Radioactivity in the Food and Food Processing Industries that is to be held at the Sheraton Plaza Hotel, Boston, 19–21 Oct. This is the second in a series of symposiums on the industrial applications of radioactivity sponsored by Tracerlab. The primary objective of the meeting will be to acquaint members of the food and food processing industries with the uses of radioisotopes in research, development, and process control.

The first day will be devoted to orientation talks directed to those persons who are contemplating the use of radioisotopes. There will be lectures on the fundamentals of radioactivity, establishing a radioactivity laboratory, Atomic Energy Commission regulations, health physics problems, training of personnel, and other basic topics.

The second and third days will be taken up by the presentation of technical papers by speakers from industry, academic research institutions, and the Atomic Energy Commission and other Government agencies. For information, address the Symposium Committee, Technical Division, Tracerlab, Inc., 130 High St., Boston 10, Mass.

■ A Conference on Low Temperature Physics and Chemistry is to be held at Louisiana State University under the auspices of the university and the National Science Foundation, 28–30 Dec. The members of the steering committee for the conference are F. G. Brickwedde, S. C. Collins, J. G. Daunt (chairman), E. A. Long, J. H. McMillen (NSF representative), J. M. Reynolds (L.S.U. representative), and C. F. Squire.

The topics for discussion will include, but will not be confined to, (i) liquid and solid helium; (ii) superconductivity; (iii) ionic and nuclear paramagnetism and magnetic cooling; (iv) electronic and thermal properties, and others, of metals at low temperatures. Those wishing to attend and/or read a paper should write to Dr. J. M. Reynolds, Department of Physics, Louisiana State University, Baton Rouge, La.

The deadline for submission of abstracts of papers to be included in the conference is *28 Oct.* Contributions should be as brief as possible and should be descriptions of work in progress rather than surveys of particular fields. A program, including abstracts, will be distributed to the participants before the opening of the conference.

■ The 7th fall meeting of the American Physiological Society will be held at Tufts College, Medford, Mass., 6–9 Sept. A feature of the program will be the lectures and conferences on the "Teaching of fluids, electrolytes and acid-base." On 9–10 Sept. the APS will meet with the Society of General Physiologists at Woods Hole, Mass. For further information address the Local Committee, American Physiological Society, Department of Biology, Tufts College, Medford 55, Mass.

■ The 4th National Clay Conference, sponsored by the Clay Minerals Committee of the National Research Council, will be held 10–13 Oct. at Pennsylvania State University as part of the university's centennial activities. Arrangements have been made for several scientists from Europe and Asia to attend and present papers. In the past, the conference has attracted a diverse group of scientists, ranging from colloid chemists and ceramists to mineralogists and soil scientists. For information write to the chairman of the local committee, Prof. T. F. Bates, College of Mineral Industries, Pennsylvania State University, University Park, Pa.

■ The International Society of Vegetative Neurology will hold its 6th annual symposium at Strasbourg, France, on 29 Sept.–1 Oct. The theme is "Peripheral vascular regulation." For information, write to Prof. R. Fontaine, University of Strasbourg Faculty of Medicine, or to Prof. Carmen Coronini, Editor of *Acta Neurovegetativa,* Springer-Verlag, Alserstrasse 32/I/13, Vienna, Austria.

Society Elections

■ Common Cold Foundation: chairman, O. Parker McComas, Philip Morris & Co., Ltd., Inc., New York; honorary chairman, Edgar Mayer, New York University; pres., John P. Syme, Johns-Manville Corp., New York; sec., Leighton Coleman, Davis, Polk, Wardwell, Sunderland, and Kiendl, New York; asst. sec., Parker Bailey, Davis, Polk, Wardwell, Sunderland, and Kiendl; treas., Gilbert H. Perkins, Chemical Corn Exchange Bank, New York; asst. treas., Pierce Onthank, Chemical Corn Exchange Bank. The vice presidents are M. H. Manson, American Telephone and Telegraph Co., New York; Benjamin H. Namm, Namm-Loeser's, Brooklyn, N.Y.; and William A. Sawyer, industrial medical consultant, Rochester, N.Y.

■ American Society for Artificial Internal Organs: pres., W. J. Kolff, Cleveland, Ohio; pres.-elect, Clarence Dennis, Brooklyn, N.Y.; sec., P. F. Salisbury, Institute for Medical Research, Cedars of Lebanon Hospital, Los Angeles, Calif.

■ Harvard Medical School Association: pres., Joseph T. Wearn, Western Reserve University; pres.-elect, George Denny, Boston; v. pres., Richard Capps, Chicago; sec., James Jackson, Brookline Mass.; treas., John R. Brooks, Wellesley, Mass.

■ The Chemical Institute of Canada: pres., Roger Gaudry, Ayerst, McKenna and Harrison, Ltd., Montreal; v. pres., Clifford B. Purves, McGill University.

Erratum: In the issue of 17 June, page 11A, the International Congress of Anthropological and Ethnological Sciences, 5th, was mistakenly announced for 2–9 Sept. This meeting will take place in 1956, not 1955.