



and VIEWS

Instrument Show

More than thirteen thousand people came to see the exhibits of nearly two hundred manufacturers and to attend the technical sessions at the Third National Instrument Conference held in Philadelphia the week of September 13. Institute members who attended found their interest in instruments a means of introduction to many active engineering groups.

This ambitious program was initiated and for the most part organized by the Instrument Society of America, a rapidly growing national organization which came into being about two years ago by the coalescence of local groups of scientists and engineers who had been brought together in various parts of the country by their common interest in problems of control. Collaborating with the Instrument Society in this conference were sections of the American Society of Mechanical Engineers and the American Institute of Electrical Engineers, as well as the American Institute of Physics.

Attendance at the technical sessions exceeded all expectations—the Institute's programs, for example, held in a room seating three hundred, on many occasions had large standing audiences and people had to be turned away. The American Institute of Physics papers were concerned primarily with the basic scientific principles of instrumentation and how these principles are applied, say, to the electron microscope, to the measurement of particle size in powders, to infrared equipment, to vacuum measurements and production, to acoustics measurements, to the physics teacher's instructional instruments, to radio spectroscopy and the mass spectrometer, and to radioactive tracer techniques. American Institute of Physics members who wandered into the technical meetings of the engineering societies heard discussions of the techniques of industrial instrumentation. The emphasis in Instrument Society of America papers was on control mechanisms, but one session was devoted to ordnance instruments and another to electronics. The two American Society of Mechanical Engineers sessions dealt with temperature and pressure elements and process controls.

Physicists also found interest in the exhibits, although most of these were directed to industrial users. Many research problems today are in some respects engineering projects and it was hard to find an exhibit that did not apply to some problem of a research laboratory, industrial or academic. The big manufacturers were of course well represented but the large number of small two- or three-year-old companies also in evidence was an encouraging sign of the health of the industry. Most exhibits were devoted to production and flow control and an impressive number of automatic devices, commercially available, were on display. Vacuum devices, perhaps, represented the most advanced techniques. It would be impossible to comment on all the displays, which ranged from tiny ball bearings and new synthetic jewels to automatic recording spectrometers. More and more instru-

ments that formerly had to be made in the laboratory can now be bought readymade. The resourcefulness and initiative of the instrument makers as reflected by the show and conference, augur well for the strengthening of experimental science in the country. G.R.H.

Applied Acoustics

In attractive Jarvis Hall of the Royal Institute of British Architects, a group of scientists representing about eleven nations met to exchange information on the reduction and measurement of noise. They were attending the International Conference on Sound Transmission and Noise, held July 14–16, 1948. There is a greater emphasis now on research in applied acoustics in Europe, with the exception of Germany, than there was before the war.

In the main, the talks dealt with means of reducing and measuring noise transmitted through walls and floors of apartment houses and of quieting airplanes and ships. Well-known scientists presenting papers included W. Furrer of Switzerland, E. Meyer of Germany, C. Kosten of Holland, V. Jordan of Denmark, P. Chavassee and F. Canac of France, and A. King, R. Dadson, P. Parkin, and W. Allen of England.

It was apparent that substantial effort has been and is being devoted, in England, Denmark, Holland, Sweden, and Switzerland, to the attenuation of sound and impact noise through floors and partitions. The first three countries now have building codes which specify acceptable noise reduction by floors and walls. In Rotterdam, a new apartment house, one block in length, has been built specifically for detailed acoustic and heating studies; this step has been taken, no doubt, in anticipation of the large reconstruction program in Holland. This building has forty-eight apartments and includes forty-five types of wall structure and thirty-eight types of floor structures which are now under study. Two groups, the Building Research Station, Garston, Herts., England, and the Laboratorium voor Technische Physica der Technische Hoogeschool in Delft, are taking acoustic data. Their results will be reported separately early in 1949 and much valuable information should be derived from these studies.

It would certainly seem desirable to have such a program in this country, using the materials and techniques of the American building industries. The field of building acoustics in particular is receiving more attention in most European countries than in the United States.

A survey of noise in homes in Britain was described, showing that one in four homes is troubled by noise from neighbors' houses, and about one in three by noise from neighbors' apartments in old construction units, the figure rising to about two in three in modern apartments. The noise of banging doors appears to be the most troublesome source, while movements on apartment house stairways, children, and radios rank lower. Impact sounds from apartments overhead are also a serious distraction.

A paper on a new artificial voice for use in the testing of aircraft communication systems and another on the general problem of noise in aircraft and its reduction were presented, and a new noise-level meter design was

described. A particularly interesting paper was presented on the acoustics of the ancient theaters at Orange and Vaison. The conference heard proposals for international standards of measuring airborne and impact sound both in the laboratory and in the field. These were also discussed at another conference following the general meetings, with the result that a revised form of this standard will be circulated through the International Standards Association to other nations.

Considerable interest greeted the news that acoustics research is being revived in Germany, the group under Erwin Meyer in Goettingen being the largest. It is expected that the *Akustische Zeitschrift* will be published again soon. Also, the formation of a French acoustical society, the "Groupement des Acousticiens de Langue Française," 24 Rue Bertrand, Paris 7, with Professor Y. Rocard as president, was announced informally. L.L.B.

NBS News

A highly sensitive variable resistor that transforms slight mechanical displacements into large changes in electrical resistance, current, or voltage, has been developed under the direction of W. A. Wildhack at the National Bureau of Standards. A conical spring is wound with variable tension so that its turns separate one by one rather than simultaneously and as a result its electrical resistance varies from that of a cylindrical tube to that of the total length of the uncoiled wire. Thus displacements as small as a hundred-thousandth of an inch can be measured without using an electrical amplifying device.

Wind tunnel tests by G. B. Schubauer and W. G. Spangenberg of the National Bureau of Standards have shown that fine wire screens, properly spaced, produce smooth, uniform flow of air through rapidly expanding ducts. Thus it is now possible to increase the cross section of an air stream in a much shorter distance of travel than heretofore, and still avoid undue turbulence. The characteristic action of the screen is to spread the air stream and so prevent separation of flow from the container walls.

Willard H. Bennett of the National Bureau of Standards has developed a radiofrequency mass spectrometer that detects, separates, identifies, and measures the negative atomic ions of the heavier metallic elements. It has been difficult to detect these ions because they lose their charges in very short distances. Experiments begun at the Bureau by Dr. Bennett in 1946 indicated that negative atomic ions might well exist in the many familiar forms of electrical discharge in vacuum tubes, but that they would not be detected if the distance through the tube between the discharge and the electrode was large. In its more advanced form, this two-stage spectrometer may be used for positive as well as negative ions. The equipment consists essentially of a multigrid tube in which an adjustable radiofrequency is applied to two grids while all other electrodes are held at the proper direct-current potentials, and the ion current is measured at the plate. The difficulties in negative-ion separation require the use of a

small magnetic field produced with coils, but if positive ions are being separated, no magnetic field is needed.

Preliminary experimentation at the National Bureau of Standards indicates that many specialized uses for this kind of tube will come to light as it becomes better known.

Vannevar Bush Resigns

Upon the retirement of Vannevar Bush after two years as chairman of the Research and Development Board of the National Military Establishment, President Truman announced the appointment of Karl T. Compton to succeed him in directing U. S. military research. Dr. Bush stated in his letter of resignation that he felt it wise to have a reasonable rotation in the civilian membership of the Board. He now returns to full time service as president of Carnegie Institution of Washington. Dr. Compton resigned his presidency of Massachusetts Institute of Technology and was elected chairman of the Institute's corporation. On his recommendation, his executive assistant, James R. Killian, Jr., was chosen to succeed him as president of MIT.

Physics Abstracts

Dwight E. Gray, on leave from his position as supervisor of technical reports at The Johns Hopkins Applied Physics Laboratory, is director of the study of physics abstracting first announced in the August *Physics Today*.

The project, under the co-sponsorship of the American Institute of Physics and the American Physical Society, is operating under contract with the Office of Naval Research.

The objective of this program is to find out what physicists, as a group, do not like about abstracting services now available to them, what they think would be an adequate abstracting service, and what it would cost in time, people, and money to provide the desired service.

Survey methods will combine personal interviews, round table discussions, and questionnaires. Volunteer comments and suggestions will be welcomed, it was announced, and should be mailed to the project's main headquarters: Dwight E. Gray, National Research Council, 2101 Constitution Ave., Washington 25, D. C.

Radioisotopes

Because three hundred qualified people applied for one of the three radioisotope courses offered during the summer, whereas only ninety-six students could be placed in all three, the Oak Ridge Institute of Nuclear Studies has scheduled four additional courses for the fall and winter months. Additional information and application blanks may be had from Dr. Ralph T. Overman, Oak Ridge Institute of Nuclear Studies, Post Office Box 117, Oak Ridge, Tennessee. Another note in this expanding field is the announcement from the Atomic Energy Commission that more than a hundred research institutions and hospitals in fifteen countries are now using radioisotopes, principally in medical and biological work. Twenty-one nations made arrangements to receive radioisotopes in the first year they were shipped abroad from the Oak Ridge pile.