Notes on 1952 I.R.E. National Convention: held in New York, 3-6 March

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It might be said that engineers are divided into two groups: business men who have to be scientific and scientists who have to be businesslike. This same division of outlook, ranging all the way from the ivory tower to the market place, is naturally apparent also in any engineering organization, and particularly in one as large, and with as many fields of interest, as the Institute of Radio Engineers. The annual convention reveals very well both sides of the Institute's interests; it also is a proof, if one be needed, of the importance which electronics and related arts and sciences have come to have in industry and commerce, in science generally, and in everyday life. The registered attendance at the convention was over 28,000, the Waldorf-Astoria and Belmont Plaza hotels were practically taken over, while four floors of the Grand Central Palace were occupied by exhibits, mostly those of various manufacturers.

In general, there are three reasons for attending such a convention. They are: papers on new developments in the field, contacts with others in the profession, and the opportunity of becoming familiar with various manufacturers' lines. Those interested particularly in research would, of course, probably be most interested in the papers; however, in the writer's opinion, wide familiarity with the various components and equipment offered by various manufacturers is a most valuable asset to a research worker in a field such as electronics; so much so that time spent in acquiring such familiarity is well spent, and for the following reason. It is usually out of the question for a research laboratory to make all the equipment needed for special projects, (let alone standard equipment); thus it may be necessary to postpone projects, or to conduct them in inefficient ways, because equipment to do otherwise is not available. It is easy to conclude that such equipment is not available, when in fact it is, unless one keeps himself rather familiar with developments in equipment and components.

It is impossible here to do more than mention briefly a few of the exhibits. There was very great interest in television, a large variety of equipment being shown. Interest in semi-conductor devices still runs high; several companies displayed rectifiers and transistors, and one showed germanium crystals being grown for use in these devices. Little was said, however, as to when transistors would be available commercially. Several varieties of travelling-wave tubes were on display, and should be available for commercial use presently.

The plasmatron, a recently announced tube for continuous control in low-voltage high-current circuits, was exhibited, but it is unknown when it will be available commercially. As well as thermionic amplifiers, magnetic amplifiers by several companies were seen.

Several of the exhibits were rather directly concerned with basic physics. A great variety of equipment for nuclear instrumentation was on hand, as is to be expected. Two companies had apparatus for the study of nuclear magnetic resonance, and for the application of that phenomenon to very precise measurement of magnetic fields.

Measuring equipment was, of course, a large item in the exhibits. In this field, development is usually gradual, rather than spectacular, but it was apparent that improvements in convenience, range, and precision, are continuing. The writer encountered several vacuum-tube meters which measure currents and voltage so small that otherwise one would have to use quite sensitive galvanometers and potentiometers. Oscilloscopes seem to follow one of two trends; either they become more precise instruments, with wider pass band, more stable calibration, and better linearity of sweep, or else they become smaller and lighter. Several types, only about one fifth the size of older types, are now available. A wide variety of accessories for use with oscilloscopes and test instruments was available, including signal generators, pulse-forming circuits, and the like. It is unfortunate that manufacturers still have many different ideas about outlets, and especially coaxial fittings, on these instruments. The popular types of coaxial fitting seem to be UHF, N, and BNC, but it can be rather inconvenient if one has to set up an experiment involving equipment using about three types of connector.

Various items of equipment for automatic computation were on display, as well as related devices, such as automatic plotting boards.

Many manufacturers had small components, in which the trend toward smaller and smaller sizes is apparent. Along with this goes interest in the "package" or "plug-in" type of construction, and bases, plugs, sockets, and other parts for mounting small assemblies in this manner were present in great variety.

The present shortage in some places, of men trained in electronics and related fields was reflected in the displays of equipment and literature for training. Literature covering the general field of electronics and related matters was in evidence, several companies having exhibits of books.

It was the writer's particular purpose to attend papers on semi-conductor devices, solid state and related experiments, and instrumentation and circuit theory. Those on semi-conductor devices

did not, actually, include much that had not been given previously in the literature; however, several new applications of transistors were described. Incidentally, the very large attendance at these papers (at one session there was not even standing room for all who wished to attend) was more evidence of the intense interest in semiconductors.

Work reported on solid state research and devices included more research into ferrites, and related magnetic material. Ferroelectric substances, especially barium titanate, received some attention, and a ferroelectric amplifier was described. Some recent study of thin metallic films was also reported.

The sessions on instrumentation were concerned with the solution of mathematical problems, among other things. Devices for solving polynomial equations were discussed. Other instruments considered included a direct reading admittance meter, and a precise source of microwave voltage.

Under circuit theory were discussed several design methods. A treatment of dispersion in transmission systems, based on Gabor's theory quantum theory of communication, was presented. Among the devices considered were a device for producing highly accurate time delays up to a few hundred microseconds. Another paper showed how circuits having time constants of minutes or even hours can be obtained without unreasonably large resistances or capacitances.

This report is intended merely to mention some of the things which the writer saw or heard at the convention. Thus, it can cover chiefly only certain aspects of electronics, and should not be taken as a balanced account of the activities, but rather as a discussion of some of the things which were of particular interest to one person.

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