Reviews

The lowly relay, mainstay of the gadgeteer and the pinball machine, is nevertheless "the basic building block of modern dial switching systems and also of various automatic control systems and computers". Accordingly a great deal of effort has been expended by the Bell Telephone Laboratories in the improvement of the relay, some aspects of which are described in the 260 pages devoted to the design of relays in the January issue of *The Bell System Technical Journal*. The articles deal with measuring equipment for the study of relays, magnetic design of relays, analysis of measured magnetization and pull characteristics, estimation and control of the operate time of relays, principles of slow release relay design, and economics of telephone relay applications. It is interesting to note that every dial call made in a large city involves about 1000 relays. Since the faster a relay operates the more often it can be used, and hence the fewer the relays required, a useful analysis of relay speed can be made in terms of value per millisecond per relay in given applications. This quantity varies with the use of the relay, ranging from \$0.266 in one case described to \$67 in another, and forms a basis for a cost-value analysis of relay design.

Solid-state electronics was reviewed in four lectures by K. K. Darrow, delivered at the University of London last June, and these papers are being published in the English journal *Research* starting with the January 1954 issue. The first article deals mainly with electronic conduction, with the "life of frustration" of the average electron described in a detailed yet lively style.

The fundamental discovery in 1820 by Hans Christian Oersted of the magnetic properties of electric currents has been the subject of several errors by historians, and in an effort to "stake them [the errors] firmly in the grave" R. C. Stauffer has written a paper on the subject that appeared in the December 1953 issue of the quarterly *Isis*, the journal of the History of Science Society. Misconceptions demolished by Stauffer concern the actual date of the discovery, which was 1820 and not 1807 or 1819 as has been asserted, and the manner of the discovery, which is alleged by several authors to have been accidental. It appears, according to Stauffer, that Oersted proposed the study of the possible magnetic effects of currents in 1812, and the successful experiment was the result of considerable planning and effort.

The interaction potential between two nucleons has been derived in different ways by Hans Bethe and Wolfgang Pauli on the basis of a meson field, and while each approach gives the same pseudoscalar term, the scalar part of the two interactions differs in both magnitude and sign. Writing in the second issue of the *Indian Journal of Theoretical Physics*, K. C. Kar and H. Mukherjee show how both forms of the potential can be derived "from purely classical ideas" by considering each nucleon to be a magnetic dipole. Bethe's result follows if the magnetic moment of the dipole is used in the calculations, while Pauli's result is obtained by treating each dipole as though it were composed of separate magnetic poles. Kar and Mukherjee conclude that "since in regions of nuclear dimensions the idea of separability of poles is not valid, it appears that Bethe's form of potential is preferable to Pauli's".

Laboratories

"D Building", one of the original technical area structures of the Los Alamos Scientific Laboratory and birthplace of the first readily visible chunks of plutonium metal ever to be produced, is to be demolished and its contaminated parts interred in a burial pit in one of the outlying areas of the Los Alamos project. Of temporary wood-frame construction, D Building was erected at the New Mexico site early in 1943 to serve as the chemistry and metallurgy laboratory for the Manhattan District's Project Y. It was there that the nuclear components for the Trinity, Hiroshima, and Nagasaki weapons were fabricated two years later. Some room surfaces of the building became contaminated with small quantities of radioactive materials during its occupancy. For the most part only alpha particles were involved, however, and their short range permitted satisfactory contamination control simply by painting the walls. The decision to dismantle the building, thus breaking paint layers and stirring up contaminated dust, required the adoption of safe disposal measures. Most members of the chemistry and metallurgy division staff have already moved into a new building constructed as part of the AEC's \$120 million permanent technical area program at Los Alamos.

A "hot canyon" area located on the two lower floors of the Research Building at Ames Laboratory, the AEC's installation at Iowa State College, has been constructed to permit handling of fissionable materials and high-level radioactivity. Equipped with elaborate shielding, ventilating, and remote-control systems, the area is to be the scene of experiments in the reprocessing of atomic fuel for re-use in power reactors. While some of the features of the canyon are similar to those found at other AEC installations where work with high-level radioactivity is in progress, much of the equipment is specialized and was specifically designed or adapted for Ames Laboratory by Gordon Winders, a mechanical engineer on the Laboratory staff. General design of the area was directed by Ray Fisher, group leader in charge of building and engineering services. The radiochemical part of the experimental program is directed by Adolph Voigt; work in metallurgy is supervised by Adrian Daane.

Cenco Corporation has announced completion of its new \$100 000 research, development, and engineering laboratory which was started last year in Chicago at the firm's principal subsidiary, Central Scientific Company, producers of scientific instruments and apparatus. According to John T. Gossett, chairman, the new laboratory enables the company to amplify its operations in the fields of physics, chemistry, electronics,