A SERIOUS TURN

THANKSGIVING MEETING OF THE AMERICAN PHYSICAL SOCIETY

The corridors and the common room in Eckhart Hall were remarkably devoid of buttonholers and other truants, a component that has been prominent, hitherto, at the postwar APS meetings. The Chicago meeting, November 25 and 26, had the largest attendance in the history of that event. An estimated 700 were present; the registration exceeded 550. The spirit of the meeting was one of earnestness and sober attention to the material that was being presented in the scheduled papers.

As a result of this rather serious turn of events, a turn that is reflected by the fact that the attendance at the dinner of the APS was overestimated by a factor 1.5 (a factor far more impressive in such matters than in cosmic rays), the abstracts as published in Bulletin No. 7, Volume 24 are much better record of the meeting than otherwise might be suspected. At least four sessions in which papers were being presented were held concurrently throughout Friday and Saturday. As a result of this, plus the fact that the research interests at Minnesota have been centered in other fields, I am unable to pass on to the reader any commentary on the papers relating to the solid state, to spectroscopy, and to electron physics. On the remaining subjects, however, I cheerfully submit the following impressions.

Invited papers, generally, reviewed previously presented material, plus current additions, in a more lucid manner than the standard, ten-minute presentations permit. One invited paper that was greeted with great applause was Abraham's report on the properties of liquid helium 3 (and 4) as determined by the group at the Argonne National Laboratory. It appears that measurements on specific heats and on viscosity clearly demonstrate the normal behavior of liquid He^3 down to 1°K. This is to be compared with the most extraordinary properties of liquid He^4 in the same temperature range. These "chemically" identical substances differ not only in atomic mass but also in the nature of the statistics obeyed by their nuclei. By the type of experiments reported one hopes eventually to unravel the tangle that is the curious behavior of He^4. A noteworthy sidelight on this report is, of course, that here macroscopic experiments are being performed on a substance that occurs in nature as 10^{-7} part of ordinary helium and that less than fifteen years ago such experiments were proposed only in wild flights of the imagination.

With regard to the published abstracts, a nuclear physicist would call particular attention to the paper by Dempster and Shaw (G 11) wherein it is reported that the ions used for mass spectroscopic comparisons may be affected in different ways by conditions at their source even though their deflection in the spectrograph is nearly the same. This development will be followed with great interest by those engaged in precise comparisons of atomic masses. Also, considerable consternation was created by the reported, low lying, and easily excited levels of Be^7 (paper H 5). If the results as reported are valid, all previous work on neutron cross sections using the lithium reactions for a source will have to be reviewed. Several investigators announced their intentions to look into the matter as soon as possible.

The paper received with greatest enthusiasm in the nuclear field was probably that of Robson (H 6) on the measurement of the half-life of the free neutron (i.e., its decay into a proton and an electron). The neutron beam emerging from the Chalk River pile provided the source. The result obtained was a half-life between 9 and 18 minutes and was confirmed from the floor by Art Snell who has been pursuing the same problem at Oak Ridge.

Then, of course, there was a gratifying number of rumors of preliminary results on this and that, mesons and whatnot, that cannot be passed on in print and which, after all, constitute one of the reasons for attending the meetings of the American Physical Society.

—Charles Critchfield

VARISONIC

WIND TUNNELS: BUILT, BUILDING, AND PLANNED

Air velocities in supersonic wind tunnels, which have been limited to a mere seven or so times the speed of sound (and then for intermittent periods of a few seconds each), have been eclipsed by the performance of the newly completed wind tunnel at the California Institute of Technology. The tunnel, according to an announcement issued simultaneously by the Institute and the Army Ordnance Department (for whom it was designed and built), has generated an air speed exceeding ten times that of sound which may, by continuous operation of the tunnel, be maintained for extended periods of time. Suggesting obliquely that there must be a limit somewhere between seven and ten times sound velocity beyond which the prefix "super" ceases to apply, the announcement explains that Caltech's is a "hypersonic" tunnel because of the terrific air speeds attained therein.

The important thing, as was pointed out in the October issue of Caltech's bulletin Research, is that the air speed in the tunnel be compared to the speed of sound in the same air (i.e., the Mach number). In this case, the Mach 10 reached required a not too impressive actual air velocity because of the extremely low temperatures which occur in the tunnel, temperatures which duplicate that of the upper atmosphere where the mph speed of sound is much less than in ordinary air. The fact, however, that the behavior of air around an object moving through it is the same for any given Mach number, regardless of particular temperatures or pressures, makes the new Mach 10 tunnel a valuable research tool for examining the operating characteristics of objects designed to travel at speeds above that of sound.

Designed by Allen E. Puckett, who also supervised its construction, the tunnel will be operated under Ordnance Department contract and will be used to obtain data on shockwaves, boundary layers, and high velocity air flow, as well as to study the performance characteristics of tunnels working at such extreme velocities. Operation of the tunnel is under the supervision of Henry T. Nagamatsu of the Caltech Guggenheim Aeronautics Laboratory.

The construction of two other tunnels (of the super-