

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 trappings, 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-

sonic variety) has been announced respectively by the Massachusetts Institute of Technology and the Johns Hopkins University. MIT's tunnel, part of the recently dedicated Naval Supersonic Laboratory in Cambridge, has already been operated at a Mach 2 level, and is expected to reach approximately four times sound velocity. Constructed under the auspices of the Navy's Bureau of Ordnance, the tunnel was designed under the direction of John R. Markham, director of the laboratory. The wind tunnel will be operated under the administration of MIT's department of aeronautical engineering headed by Jerome C. Hunsaker.

The Johns Hopkins wind tunnel is now being constructed with student assistance and under the sponsorship of the Office of Naval Research; it will be in operation within the next few months. Making use of four 1600 horsepower aircraft engines, air velocities in the tunnel are expected to reach about twice the speed of sound. The tunnel was designed by Francis Clauser and Leslie Miller, of the University's department of aeronautics.

RADIAC SYMPOSIUM

HELD AT SIGNAL CORPS ENGINEERING LABS

A decade or so ago the instrumentation needs of radiologists, of x-ray technicians, and of persons working in industrial radiography were met largely by a few manufacturers working in close cooperation with the x-ray division of the National Bureau of Standards. The special problems then encountered in physics laboratories were made relatively minor by taking sensible safety precautions. More recent developments in work with high energy particle accelerators and with nuclear reactors and weapons have extended the physicist's problem with regard to the energy range over which the instrument must give true dosage readings, the radiological intensity ranges which must be covered, and the numbers and types of personnel it may be necessary to protect—or risk, if such an occasion should arise.

The problem has now reached such proportions as to require the combined attention of government, industrial, and university groups. As a means of encouraging the interchange of information among such groups, a radiac symposium was sponsored by the Signal Corps Engineering Laboratories and held at Fort Monmouth, New Jersey during September 14–16, 1949. The topics discussed at this symposium (one of a series initiated by the Atomic Energy Commission) fall roughly into the following categories: design problems and instrument types; calibration problems; and investigations of components.

Although counting type instruments came briefly into discussion, the emphasis was in general limited to ionization chamber instruments, including personnel dosimeters. Francis R. Shonka of the Argonne National Laboratory discussed quartz fibre techniques and the use of these fibres in electrostatic instruments. He discussed in detail a personnel dosimeter of the direct reading type which was developed at Argonne and after outlining certain design problems which had to be solved in the development of such a dosimeter, Dr. Shonka mentioned briefly certain other instruments employing quartz fibre indica-

tors. Other papers covering special design features of specific ionization chamber instruments were presented by Robert W. Schede of the Oak Ridge National Laboratory and by Marvin G. Schorr of Tracerlab.

Calibration problems were discussed by Bureau of Standards personnel. Lauriston S. Taylor led this phase of the program with a discussion of the measurement of the roentgen by means of standard chambers. He discussed in some detail the problem of designing standard chambers for the measurement of dosage arising from hard x-rays or gamma rays. The types of calibration equipment that should be included in a production engineering laboratory also received some consideration. Other topics dealing with thimble chambers, secondary standard chambers, and results of calibration tests on AEC instruments were discussed by H. O. Wyckoff, H. F. Gibson, and F. H. Day, all of the NBS.

The discussion of components was divided somewhat as follows: high performance insulators by A. J. Warner of Federal Telecommunications Laboratories, Inc.; characteristics and measurement of high megohm resistances by K. E. Burmaster and R. K. Abele, both of the Oak Ridge National Laboratory; and problems associated with electrometer tube design by P. T. Weeks and H. F. Starke of Raytheon.

Lt. Colonel D. T. Griffin of the Signal Corps acted as chairman of the symposium, and G. Failla of the Radiological Research Laboratory, Columbia University, served as moderator. Of particular interest to those in attendance were the comments of Dr. Failla regarding certain new physiological aspects of gamma and x-radiation and their significance with respect to the design of equipment for military use.

—W. S. McAfee

ICI ON PARLE FRANÇAIS

CELSIUS, CENTÉSIMALE, AND CENTIGRADE

The decision of the Ninth General Conference on Weights and Measures, to substitute the name Celsius for the centigrade system has apparently caused some confusion and the Bureau of Standards recently issued a report explaining the confusion in which the decision was born.

The action had not been proposed in advance of the Conference and the decision arose from a question regarding preferred usage in French, the sole official language of the Conference, the Bureau report stated.

In preparation for the General Conference the National Bureau of Standards submitted a revised text defining the International Temperature Scale to supersede that adopted in 1927. The proposed text was drafted in English and, in accordance with common English practice as well as the official French text adopted in 1927, it used the name "centigrade." This name was carried over into the French translation prepared for consideration by the Advisory Committee on Thermometry in May, 1948. However, in the printed report of that meeting, the term "centigrade" had, in most cases, been changed to "centésimale," the term that is used in the French law governing weights and measures. When asked to choose between the two the International Committee on Weights and Meas-