

defining the meter as 1,831,249.2 wavelengths of the green radiation characteristic of mercury-198 in standard air.

For measurements of time, it is proposed, the standard second might be defined as the duration of a certain number of oscillations of an electromagnetic field whose frequency lies at the center of some well defined microwave absorption line: the much publicized NBS atomic clock, for instance, relies for its accuracy upon a characteristic frequency associated with the vibrations of the atoms in the ammonia molecule.

Making use of these length and time definitions, the article continues, a third independent unit could then be based upon the recent absolute determination of the gyromagnetic ratio of the proton. It is suggested that a unit field strength of magnetic induction might be defined as that field in which protons would precess at the rate of 4,257.84 cycles per second.

Other physical quantities, new units of charge and force for example, might in principle be derived from these three primary atomic standards, while a mass unit could then be derived from measurements of force and acceleration. Drs. Huntoon and Fano are quick to point out, however, that although all other physical quantities might theoretically be found from the three primary standards, presently available means of measurement are not yet accurate enough to guarantee complete satisfaction since the new definition of length is the only case in which an atomic standard is now more precise than its conventional counterpart.

ESTABLISHED

NBS INSTRUMENT RESEARCH OFFICE

Since June, according to word from the National Bureau of Standards, all basic instrumentation research of the Bureau having to do with the evaluation and improvement of instruments for measuring basic physical quantities has been coordinated under a new Office of Basic Instrumentation. The concept of the Office was developed jointly by the Bureau, the Office of Naval Research, the Office of Air Research, and the Atomic Energy Commission; its program is an extension and enlargement of a project that had been conducted in cooperation with the ONR.

Typical of the instrumentation problems that will be considered immediately, it is stated, are the development of several types of transducers or sensing elements for dynamic mechanical measurements, experimental design of improved microscopes, and further development and application of new mass spectrometers.

AEC CANCER RESEARCH

AT ARGONNE AND OAK RIDGE

Two recent announcements have underlined the Atomic Energy Commission's concern with at least one extremely important nonmilitary subject, cancer research. On the University of Chicago campus a three and one-half million dollar hospital is now being constructed and is

to be operated by the University under an AEC contract. The decision to locate the hospital on the Chicago campus was made some months ago at the request of the management of the Argonne National Laboratory, and the building has been designed specifically for cancer research with radioactive materials. Experts from Argonne's health physics division will be available to the hospital staff and radioisotopes to be used will be provided from the Laboratory's nuclear reactor. Nearness of the Argonne pile to the new hospital is particularly helpful since isotopes with short half-lives may be transported with a minimum energy loss.

In a separate cancer research program, a somewhat more modest establishment is now in full operation at the Oak Ridge Institute of Nuclear Studies where a small research staff has been assembled and a thirty bed clinical unit, together with laboratories, treatment room, and radiation storage facilities, has been constructed and equipped. The Oak Ridge program, financed under the Institute's contract with the AEC, is designed to study the treatment of neoplasms through the use of radioisotopes obtained from the Oak Ridge pile.

ACOUSTICAL SOCIETY MEETING

SOME SESSIONS REPORTED

The Pennsylvania State College played host for the thirty-ninth meeting of the Acoustical Society of America last June 22, 23, and 24. Sessions covering a wide variety of subjects (including such matters as noise, hearing, speech, transducers and recording, the medical and biological effects of sound, the propagation of sound, etc.) were held in the college's Osmond Laboratory. A total of about ninety papers was given, of which something less than ten percent were invited and the remainder were contributed. Three of the meeting's ten sessions are reviewed below.

NOISE—ANY UNDESIRED SOUND (AMERICAN STANDARD Z-24)

Thursday's session A, on noise, brought out the fact that there are many sounds which are undesirable for many very practical reasons, and at the same time emphasized that the evaluation of noise involves some of the most technical aspects of the human sense of hearing—problems which have long been investigated but which are far from solution.

Subjects covered ranged over audiometry, offices, buses, electrical equipment, and auto horns. Techniques ranged from statistical analysis to worker questionnaires and recordings on highways and in moving vehicles. Organizations represented on the program included the U. S. Navy Electronics Laboratory, the Human Resources Research Laboratories, the Massachusetts Institute of Technology, the General Radio Company, the General Electric Company, the General Motors Proving Ground, and the Armour Research Foundation of Illinois Institute of Technology.

The common theme was that no single instrument measurement can be depended on to give even a useful