

RESEARCH FACILITIES AND PROGRAMS

Stanford's Dish

A radio telescope designed and built by Stanford Research Institute under a program supported by the Air Force Office of Aerospace Research and the Defense Atomic Support Agency was installed late in September on the campus of Stanford University. Because of the scientific significance of the joint SRI-Stanford project, the trustees of the University passed a special resolution exempting the 150-foot steel-and-aluminum parabolic antenna from their long-standing ban against visible structures among the campus foothills. The Stanford radio telescope, which was constructed at a cost of \$350 000, is equipped with a 20-55-megacycle transmitter which will be operated by the University with the support of the Air Force Cambridge Research Laboratories. The transmitter's million-watt input will

give the dish a 300-400-kilowatt probe for use in exploring the solar system. The antenna is hoped to be in operation by the end of the year.

Two other radio telescopes which were also designed and built by Stanford Research Institute are nearing completion. One will be installed by the Air Force at its Sagamore Hill Radio Astronomy Observatory in Massachusetts; the other will be erected on the Virginia coast by the Navy.

Temporarily, the new steerable paraboloid at Stanford has the distinction of being the largest such instrument in the United States, although it will be exceeded in size by the 300-foot antenna which the National Radio Astronomy Observatory expects to place in operation next year at Green Bank, West Virginia, and



Aerial view of Stanford University's 150-foot radio telescope following installation.



Model of new NBS laboratories to be built near Gaithersburg, Maryland.

both will subsequently be dwarfed by the Navy's 600-foot dish which is being constructed at Sugar Grove, also in West Virginia.

NBS Site Under Construction

On June 14, Secretary of Commerce Luther H. Hodges broke ground for the new National Bureau of Standards Laboratories at Gaithersburg, Maryland. Wielding a gold-plated shovel last used 46 years ago in the ground-breaking ceremony for the Bureau's present chemistry laboratory, the Secretary initiated construction of a project which will eventually result in the moving of all the Bureau's facilities from northwest Washington to the Gaithersburg site, a 555-acre tract in Montgomery County, 20 miles from the District line.

The decision to move was taken for several reasons, including lack of room for expansion on the present Connecticut Avenue grounds and a desire to escape from the electrical, atmospheric, and mechanical interferences, unavoidable in a city, which hamper delicate work. Many of the buildings on the present site are temporary, and even the permanent buildings are outmoded, according to Bureau spokesmen. Renovation and modernization would be costly, amounting to more than half the estimated cost of a complete new facility. The over-all plans call for the construction of 20 buildings over the next five years at a total estimated cost of \$104 million.

In addition to a boiler plant and site development, the first phase of the project (for which Congress has appropriated \$27 million) will construct and equip a new Engineering Mechanics Laboratory. Highest priority was given to this building because of the urgent need, especially in the field of rocketry and space

flight, for the calibration of force-measuring devices with greater accuracy and higher capacities than the Bureau can now handle.

The Bureau's present dead-weight testing apparatus has a limit of 111 000 lb; any force-measuring device of greater capacity must be calibrated indirectly, a process which results in the introduction of unacceptably large errors. The new building will contain machines permitting dead-weight measurements up to one million pounds. Weights for these machines are expected to be accurate within 0.005 percent, compared with a present accuracy limit of 0.02 percent. The laboratory will also be equipped with a gravity chamber, a vertical tension- and compression-testing machine capable of loads up to 10 million pounds, and an Emery horizontal testing machine with limits of 2.3 million pounds in compression and 1.15 million pounds in tension.

Further construction plans (subject to new Congressional appropriations) include a Radiation Physics Laboratory, for which a new high-energy electron linac has been designed; a tank-type reactor planned to operate eventually at 20 to 25 Mw with an in-pile flux of 10^{14} neutrons/cm²/sec; seven interconnected general-purpose laboratory buildings, special-purpose laboratories, a fire-research laboratory, a concreting materials building, an administration building, and service facilities.

Special research programs in India, Pakistan, and Israel will be undertaken by the National Bureau of Standards with the help of a \$1-million appropriation from the foreign currency funds which have accumulated from the sale of US surplus agricultural products to other countries. The programs, which will be intended to complement and supplement work undertaken