

will recommend areas in which use of the metric system should be encouraged, and propose ways to ease the difficulties (and pay the cost) of conversion. Then, it will be up to Congress.

If Congress decides to go ahead with a metric plan, McNish was asked, how long it would take the US to become accustomed to being a metric country? "Once started, only about 5 to 10 years for many sectors." —JPW

NBS Boulder Labs Unified Under Single Management

All Boulder laboratories of the National Bureau of Standards have been brought under single management in the Institute for Basic Standards. Bascom W. Birmingham, former chief of the Boulder cryogenics division, was named Boulder deputy to Ernest Ambler, IBS director.

The change completes the reorganization begun in 1964 when the bureau's programs were divided among IBS, the Institute for Materials Research and the Central Radio Propagation Laboratory. The mission of IBS is to provide "the central national basis for a complete, consistent system of physical measurement, coordinated with those of other nations," according to the bureau.

Columbia's Hudson Lab Will Close Next June

Another victim of the cutback in federal research funding is the Hudson Laboratory of Columbia University, among the top ten contract research centers supported by contracts from the Department of Defense. Columbia has announced that Hudson Laboratory will be shut down, its acoustics research projects ended and its staff dispersed by the end of next June. The reason: termination of support by the Office of Naval Research.

Columbia is trying to line up some alternative sources of support but present plans assume the shutdown of the laboratory, located in Dobbs Ferry, about 20 miles north of New York City.

Since 1951 Columbia has conducted underwater acoustics work and various related studies at the laboratory on Navy contracts. Last April, faced with an ONR decision to phase out its support of that research at Hudson Laboratory in favor of projects in

Navy-operated laboratories, Columbia decided it would have to phase out the laboratory itself. The university could not continue the laboratory because it does not have the necessary funds to support it on its own. For fiscal 1968, the Department of Defense provided funding of \$4.8 million, sup-

FAA Given Responsibility For Minimizing Sonic Booms

With three years remaining before supersonic transports enter commercial service in the US, the Federal Aviation Administration has been ordered under a new law to amend its rules and regulations to cope with the general problem of aircraft noise and the specific problem of sonic booms. The FAA Office of Noise Abatement will study available research data and consult whatever agencies it feels appropriate.

The physics of sonic booms is under intense study ("Sonic Booms," *PHYSICS TODAY*, February, page 31) and the whole subject is under intense debate ("Letters," *PHYSICS TODAY*, June, page 9). Time is running out. The British-French Concorde will be test flown later this year and is expected to enter commercial service in 1971. So far US airlines have ordered at least 38 Concorde; foreign airlines that fly to the US have signed up for another 34. The Soviet TU-144 is expected to fly "any minute" but the FAA does not know when it will enter commercial service outside Russia.

The American version will fly last. Boeing Aircraft is redesigning the airframe, losing at least a year in the process. First test flights are now expected in 1972 with commercial service to follow about 1975.

The FAA has some pessimistic documents to study as it begins amending its rules. A report made to the National Academy of Sciences last summer by the third of three special committees found "a growing consensus that is discouraging for the use of the current version of the commercial supersonic transport over populated areas at speeds at which it will be generating a sonic boom."

Residents of metropolitan areas, who suffer the most from present-day aircraft noise, are least likely to be affected by SST booms. The NAS panel points out that SSTs will fly at less than supersonic speeds within 100–150 miles of the airports they are approaching or leaving. They must go slow to mix in traffic patterns

port that Columbia would be hard pressed to contribute itself.

The staff of Hudson Laboratory, which numbers about 300 is being encouraged to look for other positions although some of the individual research projects can be continued within the university.

with subsonic aircraft.

The panel, concerned with human response to sonic booms, expressed "cautious optimism" that redesign of the plane could eliminate much of the problem, but admitted it did not know how or how soon this redesign could be done.

Conflict of interest. The FAA has been charged with a potential conflict of interest on the sonic boom question. Sen. Clifford P. Case (R-N.J.) pointed out to the aviation subcommittee of the Senate Commerce Committee that the FAA also is responsible for development of the American SST. He said: "It strains credulity to believe that the FAA will be able to regulate with any sense of detachment sonic booms from an airplane it is developing."

Case offered an amendment that would have prohibited nonmilitary overland flights at supersonic speeds for an indefinite period and left it to Congress rather than FAA to extend or limit the period. But his amendment was not included in the bill signed by the President.

Industrial R&D Doubles in Decade, Reaches New High

Industrial research and development expenditures have doubled in the past decade. The nation's industrial companies spent \$15.5 billion for research and development in 1966, compared with \$7.7 billion in 1957, according to recently compiled National Science Foundation figures. Industrial research and development accounts for about three quarters of all such work in the U.S. The 1966 level represented a jump of 10% from 1965.

Development, as usual, accounted for the biggest chunk of the spending, totaling \$12.1 billion for an 11% rise from 1965. Applied research accounted for \$2.8 billion and basic research for \$610 million, rises of 7% and 2%, respectively.

Company-supported research and development efforts climbed 13% to

\$7.3 billion, the largest annual gain in a decade. Federal funds rose only 7% to \$8.3 billion. Since 1960, company funding of research and development has grown 64%, while Federal funding has risen only 36%.

The full-time equivalent of 371 400 research and development scientists and engineers were employed in January 1967, a 5% gain over the previous year. This figure was more than double the number of such employees in January 1958. The aircraft and missile industry employed the greatest number, 27% of the total.

Compared with net sales, research and development spending in manufacturing companies represented 4.1% in 1966, off from 4.3% in 1965. The aircraft and missiles industry reported the highest ratio of research and development to net sales, a figure of 25.5%. Five industries spent 85% of the funds. Aircraft and missiles led with \$5.4 billion, followed by electrical equipment and communication with \$3.6 billion, chemicals with \$1.5 billion, motor vehicles and transportation with \$1.3 billion and machinery with \$1.3 billion.

Two Universities Join Argonne Laboratory Group

Membership in the Argonne Universities Association has reached 30 with the addition of Pennsylvania State University and Southern Illinois University. The association, founded in 1965 to broaden the management base for the Argonne National Laboratory of the Atomic Energy Commission, formulates and approves laboratory programs and policies. The University of Chicago operates the Argonne facilities in accordance with policies established by AUA.

Peay University Offers New Program For Teachers

A special physics program for future high-school teachers is being offered this year at Austin Peay University in Clarksville, Tenn. The four-semester course is devoted to an examination of methods of presenting physics such as Harvard Project Physics and the Physical Sciences Study Committee Course, current ideas in physics and current laboratory procedures. A year of calculus and a year of introductory physics are required.

The program is designed to help alleviate the shortage of physics teach-



EUROPEAN PHYSICAL SOCIETY comes into being as Denis van Berchem, rector of Geneva University, reads the formal proclamation. At left is Gilberto Bernadini, elected the first president during the meeting of the steering committee in September. At right is Etienne Vallotton of the Swiss government. Each of the 18 national societies will pay approximately \$1.30 per person as dues for the first 15 months; a sliding scale will apply to large societies.



NEW ERA OF COOPERATION. Bernard Gregory, director general of CERN, addresses the newly formed organization. From the left are Bernadini; Gregory; Josef M. Jauch of Geneva; Wolfgang Gentner of Heidelberg (hidden); Georges J. Bene of Geneva, elected vice-treasurer; and F. Janouch of Prague, vice-secretary. The group adopted a constitution that provides for an elected council and an executive committee to be drawn from the council; the first council will be installed during the society's scientific conference 8-12 April in Florence.