

NBS Team Starts 3-Year Study of Metric Advantages for US

In the decade to come, the US may join most of the rest of the world in using the metric system. Great Britain plans to make the changeover by 1975, a decision that has given new impetus to studies of metric-system advantages in Canada and the US.

Last summer the Congress ordered a three-year study of the "desirability and practicability of increasing the use of metric weights and measures in the United States." Alvin G. McNish, former chief of the metrology division at the National Bureau of Standards, will report directly to NBS Director Allen V. Astin during the study. He is assisted by Jeffrey V. Odom, also a physicist. For the rest of this fiscal year (which ends 30 June) they will have only clerical help; after that they plan to add other professionals, including economists and engineers, to their staff.

The bill signed by the President 9 Aug. (PHYSICS TODAY, September, page 81) authorized the spending of not more than \$500 000 during the first year of the study, but appropriated no money. The money was to come from "funds previously appropriated to the Department of Commerce," a phrase which set off a scramble to have the Commerce appropriations bill signed earlier the same day.

McNish told PHYSICS TODAY, however, that he is getting much help from inside and outside the government. "We are getting marvelous support from the trade associations," he said. "I suppose private industry will pay two or three times as much as the federal government."

No stranger to the problem, McNish had studied the problem for six months before the bill was signed. Metric bills have been introduced in Congress intermittently over the years, McNish noted, but they had not received much support until 1965 when the language was changed from "general conversion" to "increased use." The last metric bill adopted, 102 years ago, made it legal to use the metric system in the US, but said nothing about conversion to that system.

Some industries use metric units already. Optical, photographic and

drug manufacturers have been metric for years. Some consumer products are labeled in both systems; motor oils and many foods are examples.

On the other hand, some areas probably never will switch to metric units. McNish says it would not make sense to require the nation's lawyers to rewrite deed descriptions; too many errors could creep into conversions from feet (not to mention rods and chains) to meters. Air traffic controllers have found 1,000-foot vertical separations between planes ample. Converting these to meters would mean losing the simplicity of altimeters whose clock hands work on a decimal system; altimeters would be based on units of 304.8 meters. McNish and Odom are working closely

with trade and industrial groups, professional societies and even with metric committees within individual companies. Other agencies of government are helping: The Bureau of the Census and the Office of Education are applying their special expertise to the problems raised by the introduction of metric units. At the same time McNish is keeping in close touch with his counterparts in Canada and Great Britain.

What will result? First, interim reports will be issued as information and recommendations are gathered. Then sometime in 1971 the secretary of commerce will report to Congress on how increased use of the metric system would affect industry and trade, military operations and education. He

RESONANCES

Final federal appropriations are as low as expected. Actual expenditures will be still lower during the fiscal year which ends 30 June. The National Science Foundation received \$400 million in place of the \$495 million it received in fiscal 1968; the National Aeronautics and Space Administration will have \$3.995 billion, down from \$4.588 billion. Atomic Energy Commission funding rose from \$2.509 to \$2.571 billion.

Faced with a threatened drop in page-charge revenue, the American Physical Society took emergency action 26 Sept. Authors of papers in *The Physical Review* will be asked at the time of acceptance whether the page charges will be honored. The APS decided that in 1969 the number of pages published in *The Physical Review* will depend on the percentage of page charges paid; under the present system about 70% of the publication cost is paid with page-charge income.

CERN has cut the budget for the 300-GeV accelerator by \$101 million to \$307 million. A simpler injection system will provide a beam intensity of 2×10^{12} instead of 10^{13} protons per sec. Energy may be restricted to 200 GeV during the initial operating period unless even heavier cuts are made elsewhere. Support facilities are reduced and installation of the main computer postponed. The number of physicists having access to the machine will be cut to 60% of the original target; after two years this may be raised to 75%. Initial voting on a site is scheduled for December.

A military nuclear expert has been named to the Atomic Energy Commission by President Johnson. Capt. Francesco Costagiola, who had been military consultant to the Joint Committee on Atomic Energy, resigned from the Navy 25 Sept.

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