

to the board of trustees: members who made tentative noises about the need for the board to be responsive to the needs of the public. Board members are usually elected without opposition.

• Refused to consider a resolution condemning the appointment of Wilbur Cohen as Secretary of Health, Education and Welfare. The committee that threw out the resolution said it would serve no purpose. Any chance to slap at Cohen, architect of Medicare, would have been enough of a purpose not too long ago.

(For more from the San Francisco AMA meeting, see *Medical Sciences Notes*, p. 14)

AFTER A CENTURY

Metric study passes House

More than 100 years have passed since Congress, in 1866, made metric system units the legal standard of measures in the United States (the yard, for example, is officially defined in terms of the meter). At that time Senator William Graham Sumner (R.-Mass.) predicted that only a few elderly people whose arithmetical habits were forever set would be immune to the logical system.

The Senator's optimism was misplaced. Only now does Congress seem ready to authorize even a study of the impact on the economy of a thorough switch to metric.

Last week, the House passed a bill calling on the Department of Commerce to make the study. The Senate has a similar bill in committee; it is expected to pass after the July 4 recess. The Senate passed similar legislation in the last Congress.

Such bills have been introduced year after year only to die in the House Rules Committee where conservative powers kept them from the floor. The obstacles were retired in the 1966 elections, and this year the bill finally got to the floor. But it lost its funds.

In an economy move, a floor amendment cut out a \$500,000 appropriation. Commerce could find the money elsewhere, Congressmen said.

The United States and Canada may soon be the only major countries in the world still wedded to the traditional English units. Great Britain is changing, and Australia and New Zealand recently began serious consideration of such a move (SN: 6/15, p. 568). The only other hold-outs are a few small former British colonies.

American scientists, the electric industry and some manufacturers, including drug makers, are already metric.

(SCIENCE NEWS readers have proven enthusiastically interested in the metric system: See *Letters* starting on p. 4).

FROM JAPAN

Next in speedy trains: approaching Mach 1

Japanese transportation designers, with a flair for the frontier in transportation research, are developing a pair of futuristic trains, one for connecting Tokyo and Osaka—515 kilometers apart—in 35 minutes, and another which will have a speed twice as fast as that of the most advanced monorail now in operation anywhere.

So far the chief attention is focusing on a wheel-less train that has traveled over rollers at speeds approaching the speed of sound during research and test runs at Meijo University in Nagoya City, 400 kilometers from Tokyo. A model of this train recently attained a speed of 920 kilometers per hour over a 300-meter course. It is the brainchild of Dr. Hisanojo Ozawa, former chief engineer and wartime aircraft designer for Mitsubishi Aircraft Manufacturing Co., Ltd. and the man who designed the KI 21 and KI 67 heavy bombers for the Imperial Japanese Air Force. The model is 3.5 meters long, 12 centimeters wide, and weighs 45.8 kilograms. It was powered by two rocket engines and made the course in just 1.97 seconds, nearly equal to the speed of sound.

Future trains, in Dr. Ozawa's opinion, will all be powered by rockets and run over rollers instead of rails. He likens the future tracks to a series of rollers placed on frames resembling hurdles.

His next model will be equipped with three rocket engines and will aim for a speed of 1,180 kilometers an hour, or .996 Mach, within a year and a half to two years.

His eventual train will be 220 meters in length and six meters wide, will accommodate 1,000 passengers in rows of five apiece on either side of the central aisle. It will be powered by four rocket engines capable of a total thrust of well over 4,000 kilograms, and will flick along on rollers through large square frames, set up 100 meters apart. These powerful rollers will revolve, he says, more than 70 times a second, adding impetus to what he calls his sonic gliding express.

Transporting passengers from Tokyo to Osaka in 35 minutes will provide a sharp contrast with today's best time, achieved by the New Tokaido Ivory Bullet which cruises at 200 kilometers an hour and can add 25 percent to that at full-throttle. The present train, claimed to be the world's fastest, makes the run from Tokyo to Osaka in three hours and 10 minutes.

Even when they rely on wheels, the Japanese engineers are not bound by traditional wheeled concepts.

A more advanced, hybrid creature



Sky-car model: partly up and away

moving toward reality is the sky car, an invention of Dr. Hideo Fukuda, Meiji University professor of engineering.

This weird hybrid that half flies and half runs on rails combines elements of an aircraft, an automobile and an overhead rail vehicle. It is actually an elevated electric railway designed to carry 80 persons at 200 kilometers an hour or more.

It resembles, more or less, a section of an airplane wing in shape.

The sky car has already successfully been demonstrated on Meiji University campus in downtown Tokyo. Scaled to one-tenth of its intended size, it whizzes over a miniature track at 20 kilometers an hour, one-tenth its projected speed when built to full size, probably before 1970. The demonstrated model weighs 80 kilograms as against 15 tons envisioned for the finished train.

The sky car is designed to lift gently with the air currents while it gathers speed, until its wheels carry only about a third of the actual weight. Of the 15 tons, 10 can theoretically lift, leaving only five tons of pressure upon the track. Wheels are designed so that they never leave the rails despite the upward pressure of air-currents on the wing-shaped body.

Dr. Fukuda claims his sky car will be far cheaper to build than either monorail or subway lines, and discussions are under way on a possible sky car line running along a 20-kilometer coastal highway, to be built between Kamata, in Tokyo's industrial suburbs, and Yokohama.

Per kilometer cost for the sky car rails, he says, would average \$62,000 against \$280,000 and over \$5 million for a kilometer of monorail or subway equivalent respectively.

Stuart Griffin