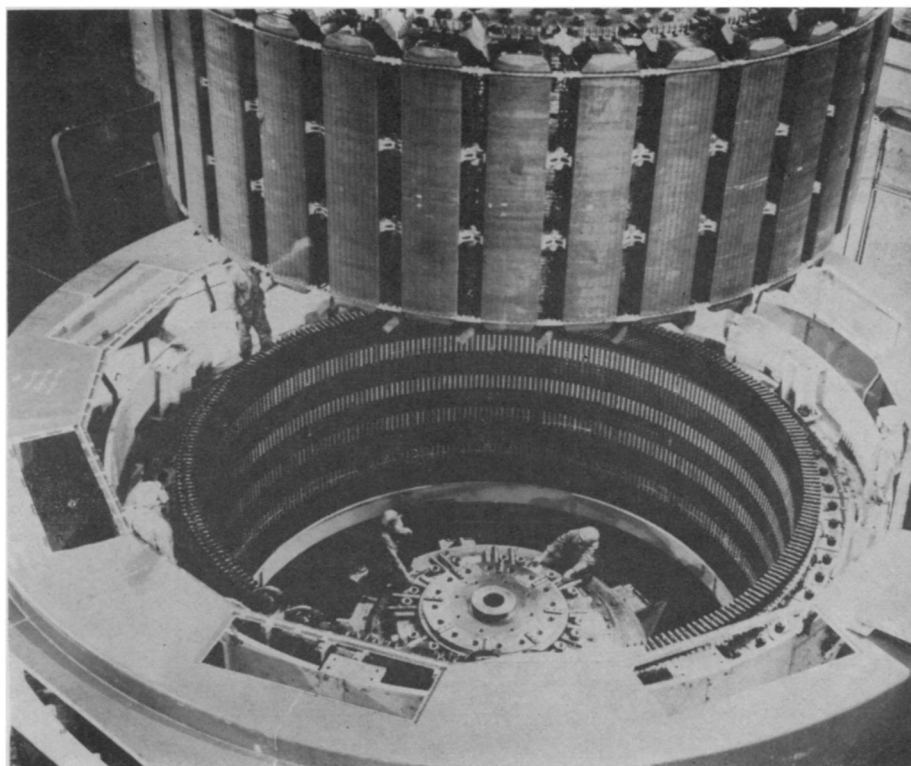


Japan's Switch to Metrics



Japan Air Lines

Precise fit of a rotor is easier in metrics than in Shakkan-Ho.

As bills advance in the United States Congress calling for the study of possible conversion to the metric system of measurement, another major industrial nation, Japan, has recently completed such a change. Her experience in the transition is reported by a Science News correspondent in Tokyo.

Japan, after a six-year headache in its real estate offices, has smoothly completed the six-year switch from the Shakkan-Ho measurement system of olden times to the metric system.

Although the conversion cost a lot of yen in machines altered or junked, books rewritten, and records revised, the Japanese feel they made a net gain in abandoning their three-fold system. "Most profitable," a commercial attache declares, not only in increased compatibility of Japanese goods with those of the nations it trades with, but in internal accounting as well.

Japanese experts believe that today more than 95 percent of their people know the metric system, and use it. During the changeover, officials were surprised to learn how much support the system picked up.

Many people, it turned out, dislike to use the old system because it dates them. Also, in a nation accustomed to conformity, once some leading people switched to metrics, the average citizens followed swiftly.

Only in the remote countryside are the old terms heard.

The metric system was formally adopted in 1959, except for land measurements, which were converted last year, at the end of a six-year program.

The Japanese had wrestled with a bewildering mixture of systems since their first measurement law was enacted in 1890, during the Meiji Restoration Period of Go-Isshin ("Single Minded Devotion," to the task of modernizing a feudal society). It took as basic units the traditional shaku (0.99419 foot) and the kan (8.2672 pounds) although it also authorized use of metrics.

In 1909 the foot-pound system was added, giving Imperial Japan three legal measurement systems.

Despite occasional efforts in the Twenties and Thirties, Japan's leaders clung tenaciously to the traditional system, paying only lip service to the metric system.

Business was conducted, property bought and sold, homes built, bottles filled, fields cultivated, cloth measured, traditional split-toe (tabi) socks purchased, and countryside trips reckoned by recourse to words as old as the Japanese language.

Property, land, house and room sizes were expressed in terms of tsubo, six shaku square, roughly six square feet.

Distances between villages were marked off in ri, one ri equal to 3.8 kilometers.

Goods were bought in kan, a kan

being 3.8 kilograms, or in units smaller than kan, in terms of momme, one momme equaling 3.75 grams.

On the farms, where 60 to 65 percent of all Japanese worked in pre-World War II days, people spoke in terms of bu, tan, cho, and se, standard ancient measurements for paddyfields. One bu equalled one tsubo, 10 tan equalled 1 cho, one tan equalled 300 tsubo, and one se equalled 30 tsubo.

The early Japanese dealt with two kinds of shaku, moreover: the kujira-jaku, whereby tailors handled cloth and the kane-jaku for everything else.

Japanese formerly bought split-toe socks to go with traditional kimono or even baggy-knickerbocker workclothes, and shoes by the mon system. One mon was held equal to one sun, and one sun measures 3.3 centimeters.

Liquids were measured in terms of go, sho, and koku, just as potatoes, meats, vegetables, etc., were sold in terms of kan and momme. One sho equals 1.805 liters of sake or soy sauce, or vinegar, to name three historic staples of the average Japanese household.

Ken Azuma, Section Chief of the Bureau of Weights and Measures, of the Ministry of International Trade and Industry, explains the history of



Japan Air Lines

Vegetables bought by grams and kilos, rather than by ancient Ran and Momme.

Japan's conversion from Shakkan-Ho.

Jingoist Japanese in the 1920's and 1930's saw only evil in imitations of the hostile West, and they fought all attempts by liberal, trade-minded Japanese to adopt the metric system. Adoption would be "un-Japanese," in those prewar days when the mood was Son-o, Jo-i, "Respect and Revere the Emperor, and Expel the Foreign Barbarian," and would be detrimental to the national language and classics, both heavily in debt, ironically, to China.

The same thinking, in the Pacific War years, erupted in a wave of such xenophobia that even conventional terms like "Strike" and "Ball" in baseball, the national sport, had to be changed to "Yoi" and "Warui" (good . . . bad), lest Japan be contaminated.

These arguments found parallel expression to those advanced in the U.S.—that adoption of metrics was not essential, that it would be expensive and that it would cause dislocation in public life.

Advocates of metrics had their day, however, with Japan's defeat, and the discrediting of so much that was traditional and hitherto sacrosanct.

New technology was introduced, requiring new measuring instruments, machine tools and calibrations. From 1945 to 1952, England and the U.S. supplied much equipment for first rehabilitation and, since the Korean War, prosperity. A boost in the use of a more international system became inevitable.

Reform was pushed, against opposition from older people, traditionalists, farmers and fishermen for the most part, by the Ministry of International Trade and Industry, the Science & Technology Agency, the Economic Planning Agency, and on a private level, by department stores; industries

doing volume business overseas; universities and their research centers, and the Keidanren, Japan's National Association of Manufacturers.

Azuma points out: "The impetus came from scientific beginnings, and was rapidly penetrated into technical, educational, and industrial levels."

Cost of the system switch overall is impossible to estimate, but the MITI budget was small, even at the outset, a mere eight million yen or \$22,222 for fiscal 1958-59 with about \$750 budgeted each year since.

Cooperation was immediate and complete from retail-wholesale business elements, small shops and big department stores alike, dating from September 1956, when Tokyo stores began selling first candy, then foodstuffs, then fish, then meats, and then dry goods, on a metric basis.

The schools picked up the pace, in Japan where since 1925, pupils had known the metric system anyhow. Postwar, with free education extended under the Roku-San-San, the "6-3-3" system, knowledge of metrics bounded.

In prewar years some 63 percent of the 56 million Japanese knew the metric system. Nowadays, with 98 million Japanese, the percentage has soared to well above 95 percent, it is estimated.

The Measurement Law now provides a \$140 fine for violators, but this has never been applied. Exceptions are permitted in special instances, like imports and exports. Civil aviation is excluded, too, because of the rules of the International Civil Aviation Organization, a body to which Japan adheres.

So successfully has the metric revolution taken hold that the Republic of South Korea, long a colony of Japan and using for long years the old Shakkan-Ho, is now studying implementation of its own Metric Standards Law.

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