

# from abroad

JAPAN

## Artificial mouth in two languages

Scientists attending the International Acoustics Society Conference in Tokyo this August will be greeted with an opening address by a digital computer hooked into an electronic substitute for the human mouth.

The machine, developed by a team at the Tanashi Electrical Experimental Station outside Tokyo, will speak both English and Japanese. The latest model is one in a series built by the station in cooperation with the Electro-Technical Laboratory of the Ministry of International Trade and Industry.

**It has already** vocalized portions of the fairytale, "The Sleeping Beauty," and team leader Eiichi Matsui expects to have both vocabulary and quality upgraded by the August meeting.

The engineers first built a plastic model, duplicating the length of the human vocal tract from glottis to lips (some 17 centimeters).

Explains Matsui: "If the acoustic tube is excited by pulsating air, we can hear vowels. If, for example, we open the front of the mouth we obtain sound *a*; if we rearrange, we get sound *e*. We used movable plastic strips, manually controlled, to set the configurations desired, in our first model made five years ago."

But the manual model could not be controlled swiftly enough. So the researchers turned to an analogue computer to generate sound frequencies and a digital computer for control. As before, they used strips of plastic in the voice box.

**Strips are** of varying lengths: for male—17 strips, 17 cm each, with a 100 cycle pitch frequency; for female—14 strips, 14 cm, 250 cycle pitch frequency, and for children—10 strips, 10 cm, 300 cycle pitch frequency. The length of the plastic strips controls the pitch frequency.

"In the digital computer," Matsui says, "1,500 words are now on hand, but soon it will hold between 5,000 and 6,000."

Matsui explains: "There are 83 different types of English sound patterns, and 40 Japanese, in the editing box."

The sound-composing machine can produce sounds very similar to those of the human voice but the intonation of the machine's speaking is still rather awkward, some words sounding blurred, thick or fuzzy.

To date, there is no essential difference between the male, female or child voice, so far as comprehension is con-

cerned. The Tanashi scientists are working to improve the overall intonation qualities of all three.

The machine has mastered Japanese sounds more readily than English sounds, gradually building up from an original 20 Japanese sounds to the full 50-sound syllabary used in Japan.

*Stuart Griffin*

GENEVA

## Window on East German medicine

A rare glimpse of medicine in East Germany comes from the Communist state's Secretary of State for Health, Dr. Michael Gehring. Medical education has been moved out of the rigid German mold, he claims.

Dr. Gehring headed a team of observers at the 21st annual World Health Assembly of the UN medical agency, his first visit to Geneva, as the East Germans tried vainly to join. (The vote was 59-19 against, with 51 delegates not voting.)

"We have overcome the old German traditions," he says. "Medical studies are no longer mostly theoretical; at least half is now practical work. After the first year, the theory progressively dwindles. By the sixth year, only three months' work consist of lectures, the rest is clinical."

Almost all of the 1,500 students entering medical schools each year join the German Youth Movement and "participate actively in their own groups" in the nine medical schools, he says.

**East Germany** has 17 million people and 22,000 doctors, a ratio of 1 to 780.

"At the beginning, some professors were inhibited or restrictive," he admits. "But many students boycotted their classes, preferring textbooks. Yes, this happened in medicine too. Now many professors invite medical students to discuss problems."

After the six years of medical school, every young doctor must specialize for five years. "We have raised even the general practitioner to the specialist level," Dr. Gehring claims. "He receives a special diploma—and more money—and is called specialist in general practice."

East Germany has eliminated internship; but during the five years, every physician gets a general training to enable him to meet every emergency, including accidents. Half of this work is in the hospital and half in out-patient departments. The young doctor studies alone and must attend certain courses organized by the Academy of Postgraduate Medical Studies. He takes an examination at the end.

East German physicians reportedly earn a very high salary in comparison with other people, and with doctors in other Communist countries. A young doctor receives about \$200 a month and a specialist about \$350.

Private practice is permitted, and the Health Ministry denies some doctors' charges that it is systematically destroying free practice. Dr. Gehring says the overwhelming majority of new doctors want to work in institutions, with benefits and the modern facilities they need. They still have considerable independence, he says.

East Germany has 2,500 private practice clinics. Most of the young doctors in private practice take over their fathers' practices, the Ministry says. They must also treat social insurance patients, but they can be paid by private patients.

*David Alan Ehrlich*

AUSTRALIA

## Britain lessens research support

Britain has always been an active supporter of Australian military research, but troubles with the pound and other economic difficulties have now resulted in Australia's being left a bit more on its own.

So Britain has decided to withdraw from its part in the joint operation of the Weapons Research Establishment at Salisbury, South Australia. On the other hand, it has agreed to renew its participation in the Woomera Rocket Range, for at least another four years.

The Australian Minister for Supply, Senator Ken Anderson, and the British Minister of State for Technology, John Stonehouse, have signed an agreement to separate the joint British-Australian project at Salisbury and Woomera into two organizations. While Woomera will continue under joint control, Australia will assume full control at Salisbury to develop electronics, microcircuitry techniques, data transmission, radar and computers for the Australian armed forces. To ease the effect of its withdrawal, however, Britain will pay part of the cost over the next few years of Australia's redevelopment of the Salisbury laboratories.

Major projects currently being tested at Woomera Range include the British-developed Sea Dart surface-to-air shipborne missile, the British Rapier low-level anti-aircraft system and the Australian Ikara anti-submarine system. Firings of the Skylark and other upper-atmosphere research rockets will continue, as will bomb research.

*W. A. Scholes*