



Still the brain drain

**Japan's loss of scientists
to the U.S. is increasing**

by Stuart Griffin

The worry over the brain drain in European countries, while still acute, is apparently easing somewhat, but Japan is getting more bothered all the time. The country now ranks fifth, together with Italy and France, in the world flight of scientific talent to the United States, and Japan does not have that many trained specialists.

According to a Government survey, only Canada, Great Britain, West Germany and Switzerland have a greater exodus of scientists to the U.S.

The last official survey, in 1967, showed that 124 top-level Japanese scientists, engineers and technicians left the country in the year ending March 1967. That was five times what it had been 10 years before. But unofficial figures for the two years since the survey are even more troublesome: They top 150 each year.

The Japanese drain is small compared to the worldwide scientific emigration to the U.S., which Japanese figures peg at more than 10,000 a year. More than half of those come from Canada and Great Britain, where language is not a problem, and another tenth from West Germany and Switzerland.

Many of the rest come from underdeveloped countries. For them the drain is particularly bothersome because it means that scarce resources are being used to train scientists who then add nothing to the growth of the home nation. But in one respect the loss of talent is a relief, since often there is a lack of opportunity for all the specialists who have been trained. India, for instance, has a serious unemployment problem among engineers (SN: 10/4, p. 314), to the extent that some firms welcome the emigration of those they cannot use.

Japan, on the other hand, has no lack of demand for trained scientists and engineers. The country's continually growing economy needs the kind of inventiveness and drive that are found among those who, paradoxically, are the first to leave.

Japan's difficulty is that its drive to close the technological gap between it and the United States requires a great deal of home-grown inventiveness. Before the war the country had the reputation of copying and even pirating the inventions of other nations.

In the postwar period it progressed to the point of adapting foreign inventions: making marginal innovations that improved slightly on foreign ideas. Electronics and photographic equip-

ment were two examples of this kind of adaptation.

The last decade or two have seen Japan become a source of innovation, however, and the results are apparent in the international market. Japanese firms are marketing their technology abroad, and are being paid high royalties by U.S. and European firms, including those in iron and steel, shipbuilding, plastics, marine engines and sheet metal fabrication, as well as such specialized fields as brewing, instrument making and the manufacture of industrial soda.

But the country still lags in glamor fields like computers and nuclear energy, and such lucrative industries as petrochemicals, automobiles and pharmaceuticals are only beginning to expand.

In order to push this kind of expansion the Government has invested its own money and stimulated private industry to invest more in research and development. But money is still lacking—especially the kind of money that keeps top-flight people on the job. So a part of the brain drain problem comes from standard conditions: Wages are lower—in the Japanese case much lower—than in the U.S., laboratory facilities are scarcer and investment capital is harder to come by. An additional attraction is contact with other top-flight scientists—an important factor for Japanese scientists, who are isolated by great distance from both Europe and the U.S.

Japan has its own unique difficulties, however. Despite the existence of huge combines, much of Japanese industry is on a small scale, cottage industry level, with consequent lack of marketing ability and demand for the kind of mass production techniques that are inherent in modern technology.

Japanese also leave because of the traditional way in which young scientists are relegated to the background. Credit for work goes not to the inventor but to the senior leaders, whose posts are secured more by longevity than by talent.

"Brains are not treated like brains," says Tokyo University biochemist Masahiro Io, "and young men, regardless of promise and intelligence, are still sidelined in Japan."

"Japan is still an old man's country," agrees Soichi Iwamoto, a young graduate of Tokyo's prestigious Keio University, "and we young men have little chance until we too become old men."