the long run produce some serious problems. Some critics of the system say that it is almost impossible for an MSC manager to keep on top of technical advances in his field. Argues one MSC division head, "It won't be long before there won't be more than a handful of people who actually know anything about the technical projects they're supposed to be supervising and coordinating. And some of these contractors can give you a terrific snow job." He recommends that the center hire many more engineers on civil service status, reduce outside contracting work as much as possible, and do much of the technical work in-house to maintain as high a level of technical competence as possible. The general rule at MSC is that in-house research is undertaken only when other NASA centers or prime contractors do not have appropriate research facilities for the job. Some of MSC's most creative research has been done with its vacuum chamber—reportedly the largest in the world. And the MSC Lunar Receiving Laboratory will provide a scientific quarantine for possibly contaminated returning astronauts and their moon treasure.

"Zero Defects"

It is also argued that spaceworkers who lose their technical grip on projects under their supervision are more likely to make mistakes whenever the decision-making pace speeds up. "Sometimes the most maddening thing about this place is the schedule," admits Heberlig; "You want to get your work done on time but you want it to be done right without sacrificing quality." But sometimes the pace is relentless and the decision-making situations multiply. "The space industry operates under a principle of what they call 'zero defects,'" explains Evans. "At one time they would allow a margin of error but now they operate on the notion that there is no room for error. It has a definite effect on personnel." There is no question that behind much of the anxiety lurks, like Banquo's ghost, the specter of the 1967 flash fire that killed astronauts Grissom, White, and Chaffee. "If we didn't catch that danger," said one MSC worker, "what other ones have we missed?"

It is no surprise that the wives and even the children of the spaceworkers in part reflect the pressures and insecurities, as well as the prestige, of life at the center, but such reflections some-

European Notes: Quids Pro Quo

London. Outside of the menace they pose to health, tobacco and nuclear power would seem to have nothing in common. But for the British government, the two are closely tied these days. The reason is that the United Kingdom Atomic Energy Authority earlier this year entered into a deal under which the Greek government would receive a $60-million power reactor in return for sending Britain 40,000 tons of tobacco over a 12-year period. Admittedly, it's an odd way to do business, but it is business; and that's what Britain is looking for, especially in the field of atomic energy, which, despite vast government investment, had previously made only two major foreign sales.

Jubilation over the Greek deal had barely subsided, however, when it became apparent that it might not go through, after all. The difficulty, it seems, is that British tobacco manufacturers concluded that Greek tobacco has an aroma that might not appeal to British smokers. The Atomic Energy Authority and the Greeks insist that the tobacco is "neutral" in flavor, and it is reported that the government is pressing the manufacturers to reconsider the matter. So far, the cigarette companies have publicly announced only that, "Although Greek leaf so far remains unacceptable to British tastes, the manufacturers recognize the importance to Greece of finding a new market for her tobacco crop and will continue to keep in touch with the Greek market." But, considering how finicky cigarette smokers often are about their preferences, it appears likely that the publicity, if not the aroma, will squelch the deal. It has been suggested that the packs containing Greek tobacco might be labeled: "Cigarette smoking is beneficial to the balance of payments."

In another part of the European nuclear field, there are also some peculiar happenings. Last year, the British government announced that, because of financial considerations, it would not take part in the construction of the 300-Gev accelerator planned by the European Organization for Nuclear Research (CERN). The decision was a serious blow to CERN, since Britain was to pay about 25 percent of the cost. It was also a blow to the prestige and confidence of the uppermost science advisory councils in Britain, which had strongly recommended British participation and had even proposed scaling down domestic high energy physics to meet the costs.

The very reverse of this advise-and-ignore process has occurred in the Netherlands. There, the Science Advisory Board told the government that high energy physics was absorbing too big a proportion of the Dutch research budget, and that it would be inadvisable to take part in paying for the new accelerator. The government responded that, in terms of scientific priorities, it might not be a good idea, but that, politically, it was desirable since CERN provides an inspiring example of Europe's ability to cooperate in a large and complex project, thus promoting European unification, which is an object of Dutch foreign policy. A final decision has been held up so that the Science Advisory Board can reconsider the matter.

Meanwhile, Britain, though a dropout from the 300-Gev project, has become the first CERN member to ratify an agreement that says the project can take place. The agreement is necessary since the present CERN convention restricts the organization to the laboratory that it now operates near Geneva. The site there is fairly well filled up, and the new machine will have to be located at another site, which is yet to be selected. Ratification costs nothing and serves as a reminder that Britain has indicated that it plans to join the project once it gets its financial affairs in order. Letters of intent to support the 300-Gev machine have been received from France, Germany, Italy, Austria, Belgium, and Switzerland, and sites are being considered in all but the last. No hitches are anticipated, and it is expected that the site will be announced by October.—D. S. GREENBERG