cember, and the cuts have applied only to funds for the current year. But NIH is predicting that all noncompeting grants will have to be renegotiated this year, and that such negotiations will probably be necessary next year as well. Meanwhile, NIH expects to make roughly 400 fewer competing grants this year—a big decline but not the precipitous drop that would have been necessary had NIH not reneged on its old grantees.

The extent of the damage caused by all these budgetary ups and downs is not yet known. Federal science officials say they have no idea whether certain fields of science are suffering more than others, or whether certain institutions have been badly hurt by the cumulative impact of cuts from several agencies. Efforts are now being made to pinpoint problem areas, and, in cases of dire need, some budget adjustments may be made. It is clearly not a happy year for science—even if total federal expenditures for R&D do end up equaling last year's figures.—PHILIP M. BOFFEY

Trained Manpower: British Find Too Much Stress on Pure Science

London. To the detriment of industry and education, too many of Britain's brightest young scientists are pursuing basic research careers in university and government laboratories.

American statesmen of science would probably ascribe such sentiments to a Neanderthal legislative body, but, in fact, it is one of the main conclusions in a unanimous report issued last month by an eight-man committee of British scientific leaders, including five who are members of that immutable bastion of pure research, the Royal Society. Chaired by Michael Swann, principal and vice chancellor of Edinburgh University, the committee concludes that "a positively dangerous situation" has developed from "a concentration of scientific talent in the fundamental research sector (particularly in universities) and a very significant movement abroad, with a consequent starving of industry and schools." To deal with the situation, the committee recommends a variety of steps, but central among them is a shake-up of many aspects of higher education so as to put more emphasis on preparation for careers in industry rather than in basic research. At the same time, the committee also stresses the need for better pay to attract more scientifically trained persons into secondary school teaching as part of an effort to reverse the "swing from science" in the school-age population.

Titled, "The Flow into Employment of Scientists, Engineers, and Technologists,"* the Swann report is the latest in a series of high-level studies that, over the past few years, have been looking into the development and employment of Britain's scientific and technological resources. Though the report mainly provides statistical substantiation for an interim report issued 2 years ago, it nevertheless has drawn a great deal of attention in this country that is so introspective about its sickly economy.

The report skirts around the fundamental question of whether industry could make profitable use of more scientifically trained persons, but it leaves no doubt that higher education and industry are far from intimate in Great Britain. Thus, it notes that in recent years only 9 percent of first class honor graduates in science took jobs with industry; 72 percent chose to continue their studies or to go into research. Industry did get 40 percent of the "firsts" in technology, but at the higher degree levels it got only 31 percent of the technology graduates and only 10 percent of the science graduates.

Noting that early specialization raises the likelihood of early obsolescence, the report points out that 65 to 75 percent of American science and engineering students receive "generalist" training as undergraduates, compared with no more than 20 percent in Britain. And it also points out that, while the school-age population is rapidly rising, there is an inadequate supply of replacements for the large number of teachers nearing retirement, and that, among these replacements, the proportion with outstanding academic records is declining.

The report repeatedly plays on the theme that Britain has gone overboard on preparation for careers in academic research. Thus it points out that, while employment of scientists and technologists at universities increased by 40 percent between 1961 and 1966, rapid expansion of the universities is now more or less completed, and current planning provides no place for a major portion of those who are training for careers in basic research. Citing "a strong preference for research training on a scale unlikely to be satisfied by employment opportunities over the next five years," it warns that this could lead "to increased emigration and dissatisfaction with careers in science and technology." And, in turn, this could affect "disproportionately the career decisions of the next generation." The solution, it says, is to steer these bright young people into industry and teaching so that they will not be frustrated by lack of opportunity in basic research and, also, so that they can be more directly involved in helping their country earn its way.

For pure scientists to advocate anything less than expansion of their ranks is not unlike the Pope's calling for fewer converts, and naturally, this departure from form has evoked a number of less-than-charitable interpretations among some who are beyond the inner circle of Britain's tightly run scientific community. Prominent among these is the view that the panel is not enamored of what has happened to the quality of scientific research during the rapid expansion of recent years, and that, at a time when money is tight, the cry of industrial need is a politically palatable one for warding off pressures to spread the wealth to second-rank centers. Interestingly, the panel does not call for spending less on basic research; rather, it comes out for channeling more scientifically talented students into programs that will prepare them for industrial and teaching careers. Clearly, this would be beneficial for industry and teaching, as well as for those who remain in the ranks of pure research.—D. S. GREENBERG

*Available from Her Majesty's Stationery Office, London; 7s 6d. Issued in conjunction with the Swann report was a separate study. "The employment of highly specialized graduates: A comparative study in the U.K. and the U.S.A.," also available from Her Majesty's Stationery Office; 4s 6d.