

increase, in the budget for nuclear physics, FOM produced a report. It suggested that the necessary economies could be made by virtually closing down the Groningen and Eindhoven facilities and dedicating them to training only. In this way enough capital would become untied both to join the European effort and to construct the proposed Dutch accelerator as well.

In the meantime, a number of Dutch (mainly nuclear) physicists had a chat with the minister of education, defending the paramount interest of the proposed European machine. Among them were the people whose whole personal interest is the construction of the linear machine. The minister responded by asking the science advisory council to re-evaluate the situation. The council did so last year, restating its former position. Other policy forming institutions, such as the Royal Academy of Sciences, the Academic Council and the Scientific Council

for Nuclear Energy, have all given their opinions, most of which are mutually conflicting.

The upshot of this harassing affair has been that no decision has been taken and everyone continues more or less as before. The universities decide almost by themselves how more than 90 per cent of the budget is to be spent, leaving the other institutions to fight over the remainder.

This means, of course, that recent attempts to formulate a science policy have not done very much either to stimulate science or to guide it. On the other hand, it also means that science is not hampered by outside forces. The good scientists do their good work, the mediocre ones keep consumption up by spending their salaries. And as a conversational topic in the academic society, science policy in the Netherlands is always good for a laugh, even if it is only a painful kind of grin.

POLAND

Bonuses for Applied Research

The Party has declared that there is no distinction between pure and applied research, but the academic community has managed to dissuade the government from concentrating research on a narrow technological base.

BOTH academic and government bodies in Poland have been greatly concerned in the last year with the problems of financing science and technology. The government Committee of Science and Technology met in April 1969 to draft directives for Polish science and technology for 1971-75, and these topics once again commanded attention at the Plenum of the Central Committee of the Polish United Workers' Party held last month.

The directives of April 1969 abolished the "artificial" distinction between "theoretical research" and "applied research and technological studies", and decided that, in the current state of the Polish economy, the next five years are to be devoted to intensive research in selected fields "which are likely to yield sufficiently promising results to have a significant effect on the development of the economy within the next five years". This plan clearly depends on close cooperation between the Academy of Sciences and the government's Committee of Science and Technology. In spite of a certain initial conflict of interests (see D. Smoleński in *The Review of the Polish Academy of Sciences*, 24, (3-4); 1969) a satisfactory modus operandi has now been achieved, and 19 topics have been selected for concentrated research in the next five years. These are subjects of a fairly general nature, including technical cybernetics, semiconductors, magnetics and ferroelectrics, the development and application of mathematical methods, immunological response, and research on the nervous system. The Academy firmly supports the proposition (and seems to have convinced the politicians) that it is uneconomic to concentrate on a narrow aspect of a problem simply because it is of immediate practical application, or to build or equip one "prestige" institute in a particular field. What is needed is to raise the standard of research in those fields in which Poland is somewhat lagging, or which have been selected as being particularly promising for the future of the economy.

Since the directives appeared, several major discussions of the financing of these new R and D projects have taken place. The published figures vary somewhat from meeting to meeting, but the general picture is one of major invest-

ment. The projected appropriation for 1975 is 25 milliard zloty (£430 million), which is twice the 1969 figure, with a somewhat increasing proportion of the total going to the Academy. At present the Academy receives some 9.7 per cent of the total appropriation, but its increased allotment to the Academy will be strictly earmarked for specific projects.

Against this background of somewhat cautious penny counting, the proposals of the Fifth Plenum of the Central Committee of the PUWP show a somewhat quickening impetus. This meeting, devoted to the now familiar topic of ways and means of increasing the efficiency of Polish industry and technology, was attended by representatives of the principal academic bodies and of government committees directly or indirectly involved in implementing the 1969 directives. In his main policy statement, the Secretary of the Central Committee, Bolesław Jaszczuk, outlined a number of new practical plans and proposals. These include a scheme of "economic incentives", apparently in the form of prizes and bonus payments, as a spur to greater technological efficiency. The organization and financing of this scheme still require considerable study and were major topics of discussion; in particular, the Minister of Finance, Józef Trendota, stressed that the outlay on incentives must be ultimately recoverable from the gains of increased productivity, and hinted that economic incentives were only valuable if supported by "non-material" incentives.

The general note of the discussions, however, is promising. The increased stress on incentives, and the further progress in the discussions on investment in and financing of R and D projects at the Plenum, coincided with the publication by the Council of Ministers of a new educational scheme for raising the professional qualifications of engineers and similar specialists (*Trybuna Ludu*, May 19, 1970). It would seem that the long-discussed movement towards a new structure for Polish science and technology is now beginning to move from the planners' notebooks into the factories, laboratories and institutes it was designed to unite and serve.