The telescope is intended to orbit 320 miles above the Earth for 15 years and is being designed so that it can be serviced and, if necessary, retrieved by astronauts using the space shuttle.

The ceiling of 90 personnel was the result of an agreement between NASA and the Department of Defense, which wanted to limit the number of NASA employees "penetrating" contractors who were also working on classified defence projects. The ceiling was lifted in 1979 but NASA built up to its present level of more than 200 too slowly, the report says. Meanwhile, communications between NASA headquarters and the Marshall Space Flight Center were strained, and Marshall's engineers experienced difficulty in matching their technology with the needs of the science community.

Officials at Marshall admitted to the congressional investigators that they had failed to oversee the work of the Perkin-Elmer Corporation closely enough, having "assumed" that the corporation would be able to work with the same level of NASA supervision as a large aerospace firm. This turned out to be a "grievous and costly error": NASA officials attribute some \$225 million of cost overrun to "deficiencies" in the corporation's handling of the project.

These deficiencies, NASA claims, included unrealistic pricing of the project; an inability to muster a skilled optical work force; a preoccupation with technical excellence regardless of time or cost; "crisis

management" and a reluctance to make management changes until forced by NASA to do so. Early this year, NASA at last took action to retrieve the situation by installing its own 15-member oversight team at Perkin-Elmer, farming some of the corporation's work out to other contractors and creating a six-man "recovery effort" team at headquarters.

The cost overruns on the Space Telescope have been gobbling up a growing share of NASA's budget. James Begg, the agency's administrator, has asked Congress to transfer an extra \$45 million for the programme in fiscal year 1983 by juggling funds in NASA's physics and astronomy programme and plundering space flight operations, the Landsat programme and Spacelab. In fiscal year 1984 an additional sum of between \$40 million

and \$80 million is likely to be switched to the Space Telescope budget with an unknown extra amount required in 1985.

In a letter to the Senate, Beggs says the extra \$45 million for 1983 is needed to solve the technical problems standing in the way of completing the Optical Telescope Assembly, and particularly the fine guidance sensor which enables the telescope to "aim" with sufficient accuracy at distant stars and galaxies. The funds will be used to install additional testing equipment at Perkin-Elmer and purchase more spare parts.

A detailed study of the Perkin-Elmer

contract, provided in the congressional report, says the original \$69.4 million contract awarded in 1977 has increased to \$280 million. Since its inception there have been 141 contract changes, costing about \$173 million. NASA maintains that only \$34 million of these changes were initiated by the government and the rest were a result of the corporation's technical and managerial problems. Despite its poor record, Perkin-Elmer had by last February received more than \$5 million from NASA in fees which are supposed to be based on business management and cost control.

Peter David

Poland's agricultural crisis

Advice coming from all sides

THE Polish Government has presented plans for the rescue of the country's agriculture, and further advice is being offered from all sides. The government's announcement, however, begs a number of questions at the heart of the crisis in Polish agriculture — a crisis closely linked with recent Polish political and social upheavals.

The draft programme for agricultural reform, announced last month by Stanislaw Zieba, Minister of Agriculture and Food Economy, aims to restore self-sufficiency in food "at a level which would make it possible fully to meet the community's needs in accordance with the requirements of a rational diet". Together with an economic rescue operation, the programme includes two variants of long-term action, the final choice of which will be made in 1986. According to Mr Zieba, the government hopes to implement the "more difficult, more ambitious variant", which will include a wide-ranging research programme for land conservation and improvement, water management, mineral fertilizers, high-protein fodders, veterinary medicine and crop protection.

The economic base of the new programme will be "a rational system of prices, agricultural taxes, credits and subsidies, equal for all sectors, and taking into account the needs of all farmers", and the index of success of the plan is to be the *per capita* consumption of meat — with a target, in the most optimistic variant, of 62 kg per person per annum in 1990.

The government's programme, presented to the Sejm (parliament) on 12 May, is not the only recent proposal for the rescue of Polish agriculture. The most important alternatives are the proposal, by the Catholic episcopates of Western Europe and the United States, for the establishment of a special aid fund to finance investment loans to small farmers, and the findings of an agricultural mission to Poland by the Rockefeller Foundation in 1982. These two plans attack the problem from opposite standpoints; the bishops envisage a self-help scheme of loans, the ultimate repayment of which would be administered by the Polish church,

and the building up of an infrastructure of nongovernmental self-managing bodies for purchasing and essential supplies. The Rockefeller scholars conclude that the state sector would have to retain responsibility for purchasing and distribution of farm produce, as well as the provision of essential supplies to the farmers.

Although the Polish Government does not formally support the Rockefeller plan, the latter's acceptance of the current state control of the supply and purchasing system has won for it the off-the-record approval of several Polish "elder statesmen", particularly when contrasted with the bishops' plan which has overtones of the "alternative society" proposed by the underground Solidarity leadership.

The Sejm's proposals, ironically, appear to leave more to the nongovernment sector than the Rockefeller report. There already exists a network of "rural circles" and agricultural self-help groups, which the government, when abolishing the private farmers' "Rural Solidarity" union, pledged itself to maintain and support. Current policy on scientific research puts considerable emphasis on direct contracts, and with the government at present fostering agricultural "self-governance", research contracts between farmers' organizations and institutes seem a possibility.

One major issue, however, is not tackled: the level of meat consumption. During the 1970s meat prices were kept down by massive subsidies as a kind of compensation for the chronic lack of consumer goods. Meat consumption soared and, in order to satisfy the market, high-grade feed grain had to be imported for the livestock producers. According to the Rockefeller scholars, these imports account for some \$7,000 million of Poland's trade deficit. Economists, nutritionists and sociologists are all agreed that meat consumption could well be cut, but the last two attempts to do this led to social unrest and the fall of the Gierek administration. General Jaruzelski's government, in spite of two years of meat rationing, seems unwilling to attempt a long-term reform of eating habits.

Vera Rich