Skynet is claimed to be the most advanced defence communications satellite system at present in existence. The only other one currently in being is the United States Air Force's Interim Defense Communications Satellite Programme (IDCSP) inaugurated in 1966. This has employed medium-orbit satellites of relatively low power, so the ground stations working them are required to be both highly manoeuvrable and rather large.

Britain has benefited from participation in the IDCSP. The Ministry of Defence was invited to make use of the satellites for test purposes—though strictly not for operational signals—and four ground stations were designed and built and all were ready in time to start operating as soon as the first bunch of satellites were up. The experience then acquired has been harnessed to the Skynet concept. Besides this, Skynet is inter-operable with the IDCSP system and is intended to be inter-operable with its successor now in view within a year or so. In addition, the contractor for the two first generation Skynet satellites is Philco-Ford, builders of the IDCSP satellites.

In fact, Skynet is several steps in advance of the current American military system. For example, it employs a geostationary satellite—40° E over the Indian Ocean—in place of the series of fast passing vehicles. It is not likely now that further military communications systems will use low-orbit satellites but it was a bold step before Early Bird. SRDE, Christchurch, now part of the Ministry of Technology, drew up system specifications.

Other features of Skynet are proving sufficient improvements over previous techniques to warrant copying. For example, the two-path transponder that enables small ground terminals to have equal and simultaneous access with large ones without being swamped is apparently being incorporated in the projected NATO satellite communications system. The advantage of this arrangement is that it permits terminal antennae only a few feet across to be effective, which in turn makes for mobility and flexibility, for they can be easily dismantled and flown to a flare up area. Of the ten terminals so far commissioned, only one—that at the headquarters station of Oakhanger—is truly fixed. Two, each 2 metres only in diameter, are mounted in ships.

The Royal Air Force is in overall command of the system, though each of the services handles one of the ground elements. The members of RAF Signals group are extremely pleased to have got into the space business, "and now the RAF has got in it does not intend to let go". It is pointed out that the thinner the forces on the ground the tighter the command must be. And this means faster communications.

CBW

Closing Pandora's Box

UNDER certain circumstances, inspection procedures for chemical and biological weapons have a fifty-fifty chance of success, according to Mr Theodor Nemec, of the Stockholm International Peace Research Institute. Mr Nemec was speaking at a meeting in London last weekend organized by the Women's International League for Peace and Freedom. The three-day affair, called primarily to discuss U Thant's report on chemical and biological weapons published in July, was run in an atmosphere of cheerful disorder. Scientists such as Professor Matthew Meselson of Harvard University and Dr John Humphrey, who is a member of the Pugwash subcommittee on CBW, found themselves talking to a committed audience when they spoke of the dangers of chemical and biological warfare. So did Academician Oganes Baroyan, director of the Gamaleya Institute of Epidemiology and Microbiology of the USSR Academy of Medicine, who was revelling in his role as the only speaker from the Soviet Union. But the meeting tended to be suspicious of the motives of some of the politicians who addressed them.

Mr Nemec said that the Stockholm institute was inspired by the Pugwash subcommittee on CBW to look at the pros and cons of inspection for chemical and biological weapons. The problem is of course that the lack of trust which gives rise to the need for inspection is the obstacle to its introduction, but the inspection procedure does not have to be 100 per cent efficient. What the institute has been doing is to look at ways of detecting whether CBW work is going on. It seems clear that larger factories than many people think would be needed to produce significant quantities of chemical and biological weapons, and Mr Nemec cited as an example the Pine Bluff Arsenal, Arkansas, which employs 1,800 people and has a daily water consumption equivalent to a London suburb. This is why the institute played a game with fourteen European laboratories in nine countries, including NATO, Warsaw Pact and non-aligned states. The aim was to see how useful on-site inspection would be. Two laboratories in Britain took part, the Wellcome Laboratory at Beckenham, and the Lister Institute. Inspection was by questionnaire and visits. The fact that one western European pharmaceutical company estimated that it had cost $10,000 to fill in the questionnaire was a measure of how searching was the document. The Stockholm institute had twenty-five inspectors drawn from thirteen countries, and they discussed the problem of inspection with some 100 other scientists. They then posed the following question: after a series of five visits by the same team, how effective would a sixth visit be in detecting a military CBW capability? The mean of the answers gave a 61 per cent chance of success, but Mr Nemec noted that people directly involved with the experiment rated their chances 20 per cent higher than those who were not. He concluded that a substantial measure of on-site inspection is a feasible way of looking for CBW activity.

PARTY MEETING

Technology in Poland

from a Correspondent

THE recent Fourth Plenary Conference of the Central Committee of the Polish United Workers Party in Warsaw, following closely on the "Poland 2000" exhibition inaugurated by the Polish Academy of Sciences, has focused attention on technological progress and development in Poland.

Just as the "Poland 2000" exhibition concentrated largely on forecasting the progress of science and technology, so the party meeting gave exceptional importance to technological progress. Although, in the centenary year of Lenin's birth, one would expect any such conference in any Communist country to lay

large stress on anniversary tributes, the Warsaw meeting gave relatively small space to these honorifics, and the main feature of the opening session was the speech of Jan Kaczmarek, chairman of the Committee of Science and Technology. In his speech, Chairman Kaczmarek stressed in particular the necessity for working out methods of automating Polish industry to ensure optimum productivity, and also discussed the importance of increasing the effectiveness of industry-orientated scientific and technological research. The financial problems inherent in such research were stressed: the appropriation for such research in the period 1969–75 will increase at a rate in excess of the rate of increase of the national income. In 1975, the proposed expenditure on research projects will be at least 25 milliard zloty (£430 million), which is twice the 1969 appropriation. In view of this increase, it is not surprising that much of the latter part of Chairman Kaczmarek's speech was devoted to practical and financial problems: improvement of the organization and structure of the scientific basis of industry, organization of education and training, and the stimulation of initiative and "commitment" of scientific workers. In the discussion which followed, Henryk Japloński, Minister of Education, stressed the need for a "confrontation with the principal aims" of the Polish economy, the financial coordination of research projects and the revision of technical training programmes in institutes of higher education in accordance with the needs and trends of current technology.

Both Chairman Kaczmarek and the speakers in the discussion raised the question of international cooperation on scientific and technological problems (with special reference, of course, to the Soviet Union and other countries of the Soviet bloc), but this topic seemed less important than the main subject of Polish financing of Polish industry. Clearly, the current expenditure is seen as a self-liquidating project, which will ultimately repay the initial investment by greater returns from industry, brought about by automation, rationalization and the introduction of new and more efficient methods. It is interesting to note, however, that while the Soviet Union still (at least in its publicity) seems to treat all scientific and technological progress (from sputniks to fish-spotting and from television sets to trans-continental pipelines) as primarily "prestige" achievements, at least one of her Socialist-bloc neighbours regards such progress from the practical and pragmatic basis of financial outlay and projected material returns

AIRPORTS

Bold Plans from New Group

Two independent companies are to join forces in an attempt to add more weight to the arguments for building London's third airport at Foulness. They are the Thames Aeroport Group, a large consortium of companies backed by private investment, and Bernard L. Clark and Partners, a group of civil engineering consultants. This new group, which will operate as the Thames Aeroport Group, has submitted proposals to the Roskill Commission for a combined major airport and seaport on reclaimed land at Foulness, in the Thames Estuary. The Roskill Commission is at present investigating the suitability of sites at Foulness, Wing, Nuthampstead and Thurleigh.

Thames Aeroport Group's proposals are for a major seaport, on the lines of the massive Dutch Europort complex, and an airport to be built on fifty-six square miles of reclaimed land. The seaport would be capable of accommodating huge million-ton tankers and would provide an obvious location for a major container terminal. In fact, Mr F. Stower, chairman of the Thames Aeroport Group consultants team, said that the seaport may well be more important than the airport, and Mr Bernard Clark emphasized this by saying that every acre of Holland's Europort provides £10,000 of business a year. The proposals also include a terminal for the airport, situated between St Katherine's and London docks, linked to the airport by a fast road and rail service through the North Thames docks area.

Mr Clark indicated that much of the engineering studies on the project have already been done, and an economic survey is now needed. Such a survey will be carried out by the Netherlands Economic Institute, under contract to the group. The institute has carried out similar surveys for the World Bank, the EEC Development Fund, and several governments, and its president, Professor Leo H. Klaassen, has said that priority would be given to the Thames Aeroport Group's Foulness proposals.

The formation of this new consortium means that there are now two main contenders for possible development of the Foulness site: Thames Aeroport Group and Thames Estuary Development Company (TEDCO), both of which will be making proposals to the Roskill Commission. Sir William Gorell Barnes, Thames Aeroport Group's chairman, took pains to point out, however, that the new consortium hopes to avoid intense competition between interested companies, because this might prejudice the chances of Foulness being accepted for the airport. It seems, however, that TEDCO are not enthusiastic about cooperation with Thames Aeroport, and, on the other hand, Thames Aeroport have stopped exchanging information with TEDCO. Sir William claims that the two consortia are not duplicating each other's work to a great extent but, as they are both submitting plans for similar installations, that viewpoint is rather difficult to see. Moreover, TEDCO have already studied the possibilities for a combined seaport and industrial complex at Foulness (see *Nature*, **221**, 702; 1969), and have come up with plans which bear a marked resemblance to the proposals made by the Thames Aeroport Group.

MEDICINES

New Medicines Commission

THE thirteen members of the new Medicines Commission, which under the 1968 Medicines Act will advise the British Government on all matters relating to the safety, efficacy and quality of all drugs intended for human and veterinary use, have now been appointed and hope to have their first meeting before the end of the year. The chairman of the commission will be Sir Derrick Dunlop, who has been chairman of the Committee on Safety of Drugs since it was established in 1963 and which has been responsible for the voluntary cooperation between the drug manufacturers, the medical profession and the government.

Under the new Act, the government will introduce