

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 Nemeč, of the Stockholm International Peace Research Institute. Mr Nemeč 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 Oganeg 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 Nemeč 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 Nemeč 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 Nemeč 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