Chemical disarmament still elusive

THE Spring session of the United Nations Conference of the Committee on Disarmament (CCD) droned to a close in Geneva this month with little concrete progress made on the thorny issues involved in negotiating a chemical disarmament treaty. Though a proposal put forward last year by the British delegation received many general endorsements—including one from the United States—delegates have been marking time for the past three years awaiting a long-promised but elusive joint proposal from the United States and the Soviet Union.

Part of the problem stems from the fact that there is considerable confusion about the United States position, particularly in regard to the US Army's plans to launch a massive new programme to replace its existing chemical weapons stockpiles with so-called binary chemical weapons. The time has come for President Carter to clarify the matter.

The background is this. In the early 1970s, while US delegates were telling the CCD that the United States supports chemical disarmament, the US Army was requesting funds from Congress to begin building binary weapons—nerve agents made from two non-lethal components which form a deadly compound when mixed together. Not surprisingly, the negotiators were not taken very seriously. In 1974, however, Congress refused to appropriate the funds. Undeterred, the Army came back with another request the following year. This time, the House Armed Services Committee deleted the funds, but it stated that unless progress is made at the CCD talks, future requests for binary weapons would be viewed more favourably.

Consequently, no funds were requested for binaries in the budget proposed by President Ford early last year, but the Army nevertheless argued within the Administration for the programme to be reinstated in President Ford's final budget, presented to Congress last January. Ford decided not to include the funds, however, and passed the matter on to his successor. The binary programme is therefore far fom being killed off, and it still looms large over the CCD talks.

While this was going on, President Nixon and Secretary Brezhnev announced at their summit meeting in July 1974 that the United States and the Soviet Union would offer a joint initiative to break the deadlock at the CCD talks. So far, however, only two rounds of bilateral discussions have been held, the last of which took place early in April, and little progress was made.

Very tricky issues concerned with measures to police a chemical disarmament treaty are involved in the negotiations. But the time has come at least for President Carter to clear the air by announcing that the United States will scrap its plans to produce binary weapons and that the new Administration is serious about chemical disarmament.

The microprocessor phenomenon

Basil Zacharov separates fact and fiction to comment on the microprocessor 'revolution'

SINCE the introduction of the first commercial microprocessor in 1971 by INTEL the growth in number of microprocessors has been little short of phenomenal. It is estimated that the present sales, already £10 million for the European market, will grow at least tenfold by 1980. Microprocessors are used in scientific, domestic, military and commercial applications. Conferences entirely devoted to microprocessors are now commonplace. There are professional journals which are concerned only with microprocessors. And there is hardly any research grant application with a computing or electronic content where the word 'microprocessor' does not appear somewhere or other.

The microprocessor is an electronic device, fabricated on a single small semiconductor chip, enabling certain operations to be performed on input digital data, the transformed data then becoming available either on an output data highway, or in appropriate internal registers of the microprocessor. Depending upon the choice of microprocessor, the width of the data path may be anything from 1 bit upwards, and the operations may include arithmetic instructions, logical instructions and certain others, familiar to every professional computer programmer, such as conditional and interrupt-handling operations. Thus the microprocessor is just one example of a very broad class of monolithic digital elements, using one of several large-scale integration (LSI) technologies to implement as many as 10^5 components on a single semiconductor chip perhaps only 25 mm^2 in area.

Not surprisingly perhaps, the very rapid evolution and exploitation of microprocessors has been accompanied by a corresponding growth in publicity, some of which has been not altogether accurate. There has emerged a mythology about microprocessors or, at the least, a certain amount of confusion. Probably the most widespread myth is that a microprocessor is a microcomputer which, still, it patently is not. Probably one should not be too pedantic about this, and anyway there are many different kinds of stored-programme digital computer, but all of them have to have a memory, a control unit for instruction sequencing and some means of input and output as well as the processing section. So the microprocessor is nothing more than one component of a computer although, admittedly, a very powerful component indeed.

A much more dangerous myth is that it is easy to replace minicomputers by microprocessor systems and presumably, because the cost of microprocessors is so low, that it is possible to build a microprocessor-based minicomputer at a cost much lower than that of commercially-available minicomputers. And so we have seen numerous examples of minicomputers fabricated by the do-it-yourself process. The truth, unfortunately, is that, if all the component costs are really taken into account (including power supplies, circuit cards, casing and so on) and fabrication costs properly included, then it is almost impossible to compete even with the hardware costs of small minicomputers supplied to equipment manufacturers (the so-called 'naked' minicomputers, with no peripherals or other trappings). And this is not the least surprising, for minicomputer manufacturers have been making use of modern LSI components just as much as anyone else. However, if the fact is included that even the most modest minicomputer arrives with some software, then any thought that an individual can compete economically in synthesising a minicomputer just cannot be supported.

A more subtle myth is the claim that, because microprocessors are inexpensive, it is possible to produce at much lower cost a computing system that is comparable in performance to that of large general-purpose computers. Such claims are generally supported by demonstrating that microprocessor-based computing systems can be built with certain instruction execution times comparable to those of some chosen large computer. The more outspoken of those making these claims then go on to conclude that anyone