THE ARMS DRAIN

JOB RISK AND INDUSTRIAL DECLINE

A TRADE UNION ANALYSIS

BY TIM WEBB

A CND PUBLICATION 50p

FOREWORD

by Alan Sapper
Chairman, Trades Union Congress

The 1981 Trades Union Congress in Blackpool made history by adopting overwhelmingly a resolution calling for unilateral nuclear disarmament — a resolution emulated by the Labour Party at its Conference. The adoption of these resolutions was followed, even more recently, by demonstrations throughout the major cities of Europe — demonstrations of a size unprecendented and which make CND a force to be heeded by governments committed to the madness of nuclear stockpiling.

The policy of the Labour Party and the TUC for unilateral disarmament will mean, if implemented, a reduction in arms and allied expenditure which will release considerable resources for the manufacturing and service industries of our nation, thus benefiting the community as a whole instead of international arms profiteers. The resultant more stable situation will encourage fuller and more useful employment and a higher quality of life for all our people.

The Arms Drain: Job Risk and Industrial Decline is, therefore, a timely document and the trade union movement welcomes the initiative of its author. It both considers and endorses the need for a policy of reallocation of labour arising from the implementation of unilateral disarmament. The booklet will be of great value to CND and the trade union movement when formulating the comprehensive plan to be submitted to the 1982 Trade Union Congress under the terms of the Blackpool resolution.

THE ARMS DRAIN: JOB LOSS AND INDUSTRIAL DECLINE
By Tim Webb
First published by the Campaign for Nuclear Disarmament. 11 Goodwin Street, London N4 3HQ. January 1982.

Cover illustration: *What Price Defence?* by Peter Kennard, taken from *No Nuclear Weapons* published by CND/Pluto Press, 1981.

Designed by CND national design and production collective. Edited by Chris Horrie. Illustrated by John Hutchinson.

Tim Webb is a National Officer of the Association of Scientific, Technical and Managerial Staffs (ASTMS) for the Electronics and Electrical Engineering Industries, 10-26A Jamestown Road, London NW1. The text of this pamphlet is adapted from papers given to trade union seminars.

Printed by the Russell Press, Nottingham.

Trade distribution (Southern England) by Southern Distribution Co-op Ltd., Albion Yard, Building K, 17A, Balfe Street, London N1. Trade distribution (Northern England) by Scottish and Northern Distribution Co-op Ltd., 4th. Floor, Granby Row, Manchester M1 3GE. Trade Distribution (Scotland) by Scottish and Northern Distribution Co-op Ltd., 48A Hamilton Place, Edinburgh EH3 5AX.

The CND publications committee would welcome written comments on this and other CND publications. Write to: CND Publications, 11 Goodwin Street, London N4 3HQ.

ONE: THE ARMS ECONOMY

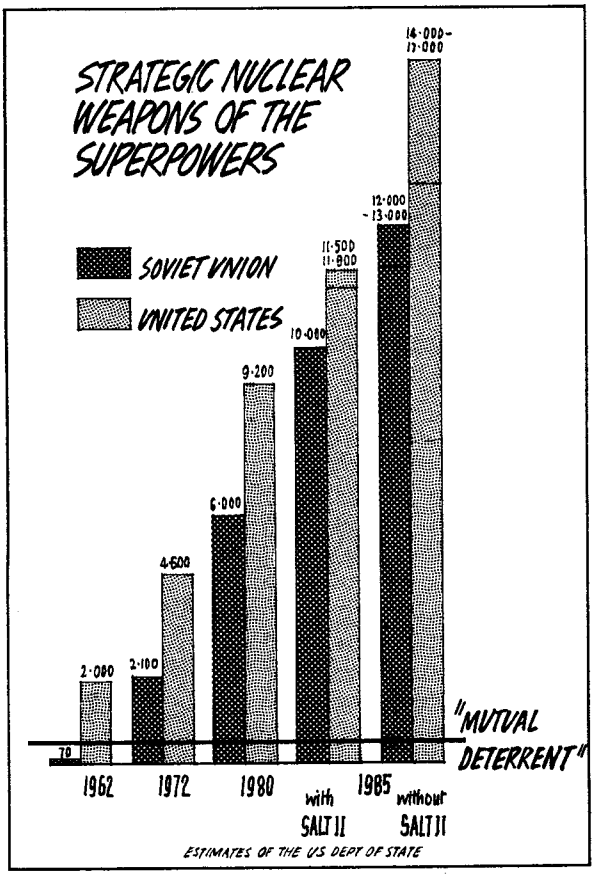
"Naturally the common people don't want war . . . but voice or no voice, the people can always be brought to the bidding of the leaders."

— *Hermann Goering*

The recent increase in support for the Campaign for Nuclear Disarmament has sharpened public interest and debate on the politics of disarmamant. In the early 1960s, when CND attracted a very high level of mass support, the debate mainly concerned the basic issues of survival and the morality of the use of nuclear weapons. These fundamental issues continue to play a major part in the increasingly influential role of CND and the newly formed European Nuclear Disarmament movement. However, there is now also a matter of concern that could well convince many more thousands of British people that national defence based on nuclear weapons is not only dangerous and illogical, but is also part of a wider problem that will seriously hamper recovery from the recession. The problem is the high levels of British arms expenditure in the wake of escalating military spending by the United States. The issues of unilateral nuclear disarmament and a substantial unilateral reduction in general arms expenditure are both part of a policy that would make an abrupt and radical departure from the programme of the UK military/industrial complex that has dominated the past decade.

President Reagan's first major pronouncement after his election was to increase defence spending by a massive 32.6 billion (thousand million) dollars to a record total of 222.2 billion dollars by 1982. A significant aspect of the past decade, supposed to have rejected unilateral nuclear disarmament, has been *unilateral* decisions to increase the speed and cost of the arms race. The US decision to develop the neutron bomb, stored in America, but for use in Europe, is an example. Sometimes this has occured without public knowledge, and not only in America. The last Labour Government decided to update *Polaris* at a cost of well over £1,000 million through the doubtful *Chevaline* project. The cost was buried in the defence estimates: not surprisingly, as defence expenditure is often passed 'on the nod' by Parliament, unlike the critical examination of financial support for public companies such as BL and British Steel. It is estimated that only about 1.3 per cent of the defence total of over £11,000 million spent in 1980/81 will have been subjected to any form of detailed scrutiny by the House of Commons, according to Sussex University's Armament and Disarmament Information Unit (ADIU Newsletter, Vol.3, No.5).

The failure of multilateral arms talks can be seen from the growth in the number of nuclear weapons to levels far above that needed for parity of deterrence capability.



Source: World Military and Social Expenditures (WMSE), 1980.

The social cost

Those who now campaign for British unilateral disarmament also realised that Britain does not have the resources to maintain its traditional role as an uncritical ally of the United States.

The cost of nuclear weapons and of NATO membership is subject to increasing scrutiny and scepticism. There is public concern over domestic, social and

economic crises which has focussed attention on how we spend our limited national finances.

The current comparative cost of NATO membership is as follows:

TABLE 1

Country	*Per cent of Gross National Product (GNP)**
United States	5.5
United Kingdom	5.2
Greece	5.2
Turkey	4.7
France	4.0
Portugal	3.4
W. Germany	3.3
Belgium	3.3
Netherlands	3.3
Norway	3.0
Denmark	2.4
Italy	2.3
Canada	1.8

*Gross National Product (GNP) is the measure of the total goods and services produced by the economy and taking into account inward and outward investment.
Gross Domestic Product (GDP) is GNP but not including investment calculations.

A more realistic look at Britain's position as a medium sized European country, economically weak and socially divided, has raised new questions about our military role. The outcry from sections of the military over the recent defence 'cuts' does not change the fact that arms expenditure will continue to *increase* overall. Military expenditure is planned to rise by 3 per cent *above* the annual rate of inflation. The cost could be even higher if the 3 per cent increase is calculated on defence items. These often have a greater rate of price increase than the retail price index. In future, spending will shift away from big employers such as the dockyards, shipbuilders and arms factories to advanced technology needing more skills, but providing fewer jobs. Much of this technology will be brought in from overseas causing a further loss of jobs and worsening the balance of payments.

Changing attitudes

Defence Secretary John Nott admitted in *The Times* (4.4.81) that his Ministry is worried that their policy is not getting across. His main response of issuing four "Defence Fact-sheets" or some of his colleagues' attempts to smear CND will not change public opinion. Active opposition to his policies has spread. Unilateralist resolutions are now being passed with surprisingly large majorities in unions that

traditionally have avoided the issue. The TUC is now officially committed to unilateralism for the first time.

But opponents of CND in the trade union movement and elsewhere, have argued that disarmament will cost jobs. It sounds like a reasonable argument and it is too often ducked by peace campaigners who have little first-hand experience of job insecurity and who may make easy reference to alternative products for peaceful use, without understanding the difficulties involved. It would certainly be easier to turn swords into ploughshares — using the same skills of the metalworker — than to switch from production of submarines into a programme of hospital building.

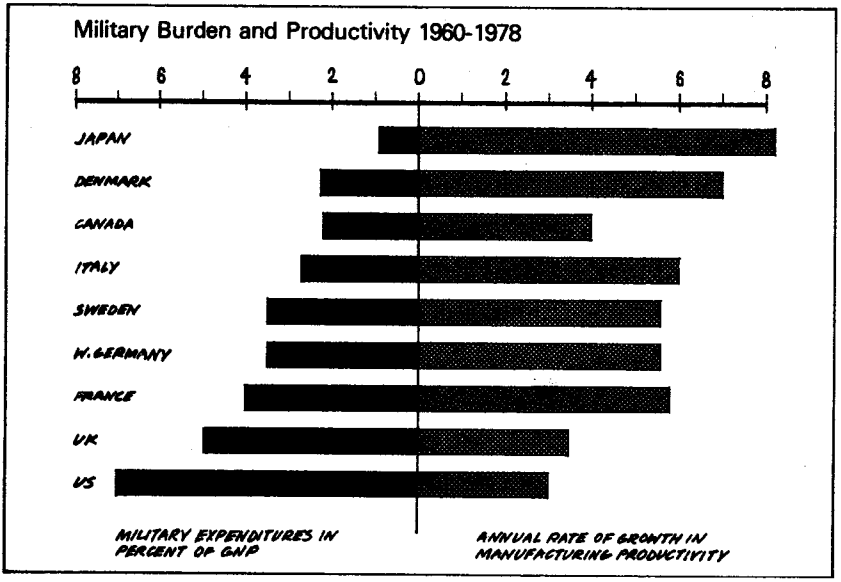
Union involvement

This should not stop us looking at practical alternatives. There is increasing concern amongst trade unionists that an excessive amount of our national resources is being squandered on military equipment and research and development (R&D) when public spending on education, health and other social purposes is being ruthlessly cut. The vast majority of workers in the defence industries would prefer that their education, training and skills should be used on useful products *if* this would provide a secure job. Trade unions with members employed in military-related industries do appreciate the difficulties of getting support on what specific steps should be taken. However, it can be accurately stated that:

a) Arms spending doesn't provide as many jobs per pound spent as spending in other fields. It doesn't provide secure long-term jobs and the vast spending power of the Ministry of Defence sucks in many of our key skilled technical workers.
b) Fast changing military technology and competition for arms sales means that workers in arms industries have inadequate job security.
c) Weapons are paid for at the expense of essential public services.
d) Companies can make quick profits from arms sales but these are not reliable and divert research from other products which could enjoy steady and stable demand.

Countries which spend the most money on arms have the worst economic prospects. The most important part of any national economy is its manufacturing productivity and as the following league table of nine industrial countries shows there is a clear link between high arms expenditure and poor economic performance.

The trade unions, especially those with members involved in R&D and product planning, are well placed to start an informed campaign on the need to make a general move away from our reliance on arms-related work. Any such move will be difficult and will be faced with political opposition from employers and government and apathy and nervousness from within the trade union movement.



Source: World Military and Social Expenditures 1980

The alternative is the stepping up of a dangerous arms race, coupled with a further drain on our economic resources at the expense of everyone. This analysis is intended mainly for trade union members in order to look at the need for urgent action.

TWO: BRITAIN — THE DISTORTED PRIORITIES

"We don't want to fight, but by jingo if we do,
We've got the ships, we've got the men,
We've got the money too."

— Music Hall song 1878

"The Government, that is me the taxpayer, buys Harrier jump jets and medical equipment like kidney machines. Lucas say it's profitable to produce Harriers but not profitable to produce kidney machines. People are dying because there aren't enough kidney machines to go round. We collected pennies on street corners and in pubs to buy a kidney machine for a little boy who was dying because the National Health Service couldn't provide one. The money was raised in no time. I wonder how many people would give pennies to government ministers or civil servants on street corners when they wanted a new Harrier or Tornado?"

— Lucas Aerospace worker (Burnley Factory)

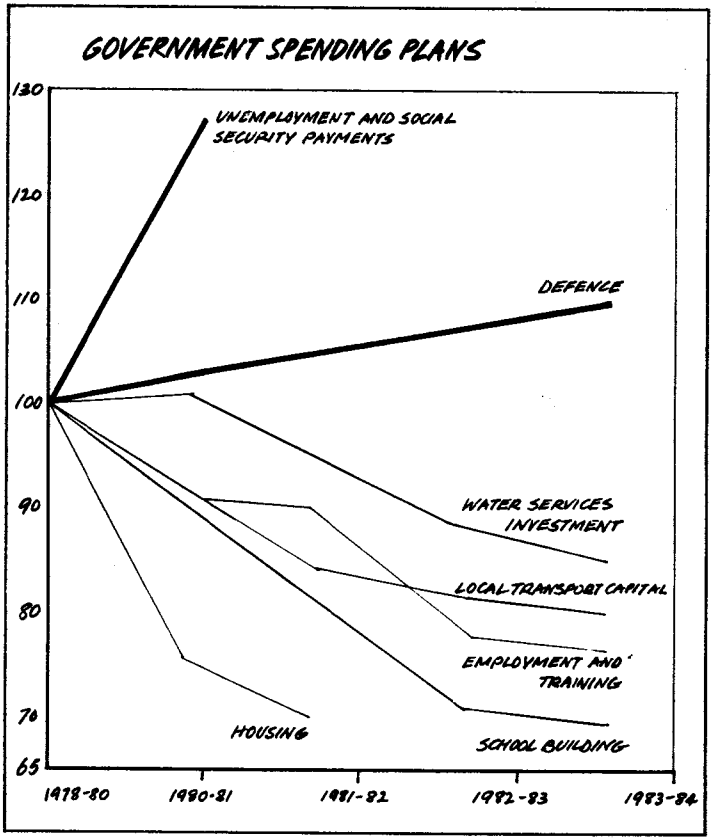
The *New Scientist* neatly summed up Britain's industrial and defence dilemma. In a leader headed "Time to join the real world", it said:

"Britain has spent nearly £1,000 million on a complex nuclear warhead called *Chevaline,* which, if it works at all, will see service for less than a decade.

"Japan, meanwhile, is preparing to fork out £200 million for inspired research which *may* produce a wonderful 'computer for the future', but is certain to result in many useful innovations which its electronics industry can harness. Are the two nations living in the same world?"

Every man, woman and child in the UK pays £4.50 per week for our military system, according to *The Times* (18.6.81). Total public spending has been cut by £5,000 million in 1981 from the levels of 1975-76. However, defence spending in 1981 is £4,000 million *more* in real terms than it was in 1975-76. The cost of the *Trident* system was originally estimated at £5,000m. and then shortly increased to £6,000 million *(The Times* 19.6.81). The authoritative Aberdeen Centre for Defence Studies estimates the actual cost at nearer £8,000 million *(Financial Times* 11.6.81). No UK *Tridents* have been built yet, and the estimates are for the early C4 version which may be uprated later to the more advanced and costlier D5 version favoured by the US.

The 1981 TUC Economic Review expressed concern at the imbalance between military and social expenditure shown in the following diagram.



Government Dogma

The 1980 Public Expenditure White Paper clearly showed the Government's list of priorities: (At constant 1979 prices).

TABLE 2

	1979/80 (£ million)	*1983/4 (£ million)*	*Per cent change*
Defence	7,723	8,740	+13.16
Overseas Aid	794	680	−14.36
Industry, Energy Trade & Employment	2,969	1,760	−40.72
Road & Transport	3,073	2,690	−12.45
Housing	5,372	2,790	−48.06
Education & Science	9.654	8,670	−10.19
Health	9,067	9,500	+4.78
EEC contributions	919	1,500	+63.22

The 1980/81 defence cash limits are expected to be exceeded by £150 million *(ADIU Newsletter,* Vol.3, No.5) without any heavy-handed government reaction to those responsible, in contrast to the sanctions meted out to local authorities who overspent their budgets.

The real test

An essential test of any country's priorities is the amount and direction of resources devoted to civil research and development (R&D). This national investment should be repaid in greater prosperity. Without the latest technological developments, a country will become dependent on foreign technology which will inevitably lead to industrial decline. Using R&D as the benchmark, let's look at UK policy compared with that of our competitors.

The growing UK emphasis on defence R&D is shown by the following table:

RESEARCH AND DEVELOPMENT PERFORMED AND FINANCED BY CENTRAL GOVERNMENT

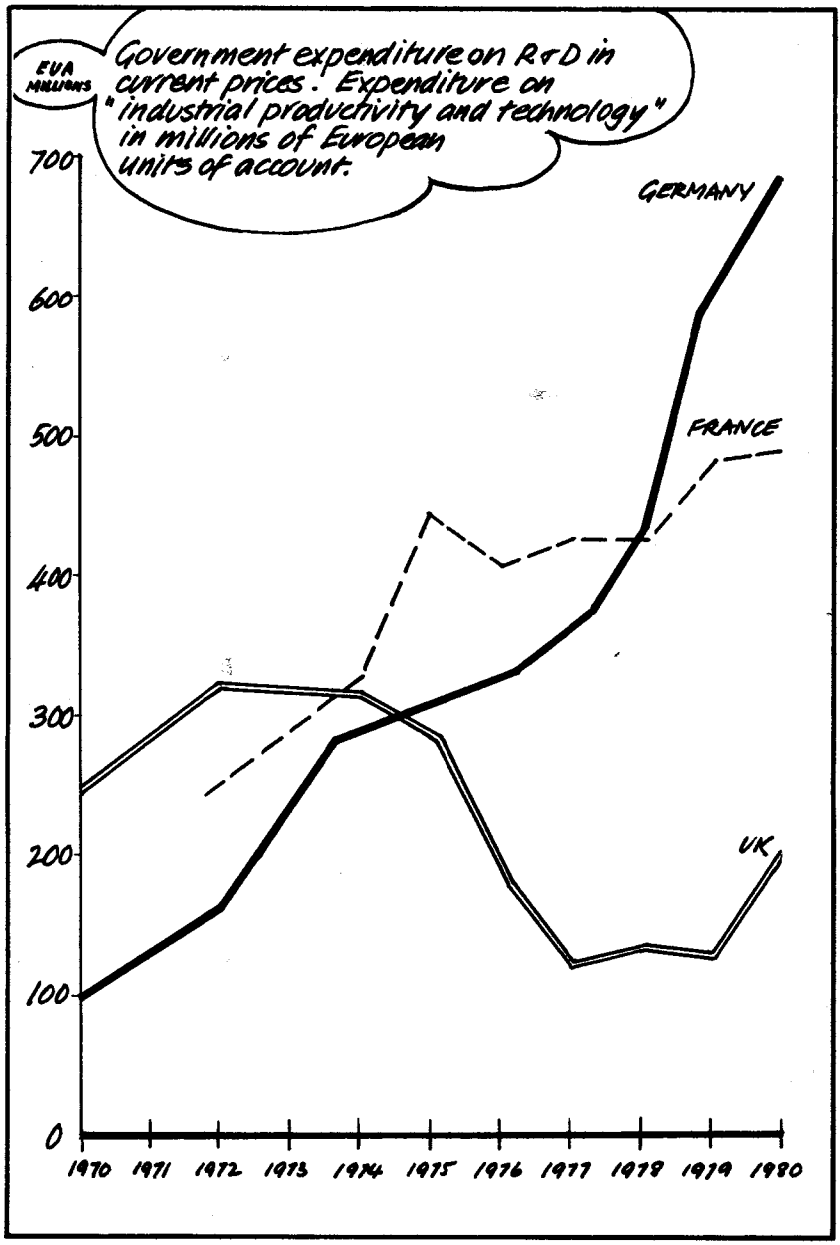
Expenditure as a proportion of GDP at Market Prices

	1971	*1972*	*1973*	*1974*	*1975*	*1976*	*1977*	*1978*	*1979*
Percentages									
Defence	0.53	0.56	0.56	0.60	0.64	0.61	0.61	0.61	0.69
Civil	0.69	0.67	0.64	0.69	0.69	0.61	0.55	0.56	0.58
Total net expenditure	1.22	1.23	1.19	1.30	1.32	1.22	1.16	1.18	1.27
Employment on R&D (thousands)	79.0	76.3	75.5	77.4	78.3	76.0	74.2	72.3	71.2

Source: Economic Trends, August 1981

Employment in government R&D fell from 79,000 in 1971 to 71,000 in 1979, whilst defence R&D rose from 0.53 per cent of GDP in 1971 to 0.69 per cent in 1979. Civil R&D fell from 0.69 per cent to 0.58 per cent in the same period. Civil R&D accounts for less than 50 per cent of total government sponsored R&D in the UK, but comprises 66 per cent in France, 88 per cent in West Germany and over 95 per cent in the other EEC countries.

The amount of money spent on industrial research differs between countries and the following chart shows how Britain has been overtaken by France and Germany since 1973. The chart uses "European units of account" — the standard EEC way of making comparisons between member countries.



Source: Department of Industry (NEDC papers, January 1981)

TABLE 4

GOVERNMENT R&D FINANCING BY OBJECTIVES – 1979

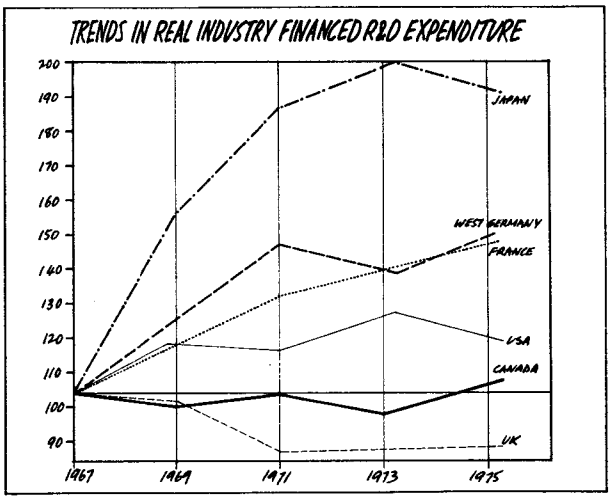
	Objective	*Germany*	*France*	*UK*
		in millions of European units of account		
1.	Earth & atmosphere	149	135	32
2.	Human environment	233	184	58
3.	Human health	370	247	93
4.	Energy	853	359	212
5.	Agriculture	121	171	115
6.	Industrial productivity & technology	606	443	135
7.	Social & sociological	290	61	37
8.	Space	249	208	75
9.	Defence	730	1,592	1,779
10.	General promotion of knowledge (higher education)	2,718	1,081	648
–	others not itemised	–	19	35
	Total	6,318	4,500	3,220

Source: Department of Industry (NEDC, January 1981)

Blinkered vision

These statistics show that in the seed-corn area of R&D, British governments have pursued a narrow concentration on the military at the expense of civilian projects.

If industry provided enough financing of civil R&D, it could make up for government dedication to defence. But international figures provide another dismal story showing that British industrial R&D spending has fallen far behind that of our major competitors.



Sources: OECD Science and Technology in the new Socio-Economic context. 1979.

There has been a small increase since 1975 but insufficient to restore competitiveness.

The most successful economy, Japan, spends less than 1 per cent of GNP on arms compared with over 5 per cent for the UK and over 7 per cent for the US. Japan has therefore been free to concentrate on long-term, profitable projects. The effect of the Japanese world-wide export effort, sponsored and maintained by government money and manufacturers, has been felt in consumer electronics, shipbuilding, the car industry and now computers. Redundancies in Thorn, Rank, Decca, British Shipbuilders, BL and other major British companies are a sad reflection on Japanese determination and the lack of proper priorities in this country. Despite substantial pressure from the US Administration to 'share more of the defence burden', Japan increased its defence expenditure by only 0.3 per cent in 1981 *(SIPRI Yearbook 1981)*. This disappointed the US State Department, but undoubtedly contributed to the growing economic strength of Japan.

European NATO countries, including Belgium, Denmark and the Netherlands, have also failed to rise to US expectations and avoided the 3 per cent increase commitment. Italy's military spending actually fell sharply in 1980 and Canada's expenditure dropped 8 per cent in real terms between 1978 and 1980. The only NATO country in Europe which has a consistently high level of military spending (average volume increase each year of 4.5 per cent from 1977-80; *(SIPRI Yearbook 1981)* is the UK, where unemployment is over three million, with massive redundancies, school-leavers unable to find jobs or return to school, public expenditure cuts, housing deprivation, NHS inadequacy and social disturbances in the streets of large cities.

Bluntly, the political judgement of successive British Governments has ensured that technological advance has been steered away from the productive sectors of industry towards the defence establishment. This policy has contributed to Britain's industrial and social decline.

THREE: EMPLOYMENT

"Armaments, universal debt and planned obsolescence — those are the three pillars of Western prosperity."

— *Aldous Huxley*

The question has to be asked: "Does high arms spending create jobs within the defence sector itself?" Job statistics show that, in general, it does not, even though specific orders can allow jobs to be temporarily created or retained.

The following table shows estimated defence linked employment in the UK in 1963 and 1978. It does not include the armed forces.

TABLE 5

INDUSTRIAL EMPLOYMENT IN DEFENCE

	1963	*1978*	*Per cent difference*
	(thousand jobs)		
1. *Direct Employment* (a)			
MOD Expenditure:			
— equipment programme	362	219	−39.5%
— other spending (incl. construction)	130	100	−23.1%
Exports of defence equipment	55	69	+25.3%
Total	547	388	−29.1%
2. *Indirect Employment* (b)			
MOD Expenditure	379	263	−30.6%
Exports	40	62	+55.0%
Total	419	325	−22.4%
3. *Total Direct and Indirect Employment*	966	713	−26.2%

(a) Direct employment includes those employees in the manufacturing, service, construction industries and the Royal Ordnance Factories (ROFs) but excludes HM Dockyards.

(b) Indirect employment relates to the number of jobs in sub-contractors to the main defence suppliers.

Source: Statistical News, November 1980

The reality is that over a quarter of a million jobs (253,000) in the arms suppliers have been lost over a period of fifteen years. Productivity has increased by 25 per cent.

In the United States, a study by the International Association of Machinists (IAM), a skilled blue-collar workers' union, revealed that whilst contracts awarded to the top 100 defence employers increased from one billion dollars in 1975 to five billion dollars in 1978, the union lost 12,300 jobs in those companies over the same period of time. In 1976 the US Bureau of Labour Statistics estimated that for every one billion dollars spent, 75,000 jobs could be created in Defence, as against 100,000 in Construction, 112,000 in Consumer Goods, 138,000 in Health and 187,000 in Education.

As the technology of the arms industries changes, this is reflected in the type of workers employed. Whilst defence employment overall is shrinking, a greater share of the job opportunities is being taken by qualified, white collar staff. *The Department of Employment Gazette* (June 1980) indicates that some 40,000 scientists, professional engineers and technicians are now employed in the defence divisions of these industries. One reason why qualified staff join defence contractors is that these companies, whose products are largely MoD funded, have been free from the cost restraints of R&D and commercial risk. They also pay higher salaries to specialists.

THE DEFENCE INDUSTRY
UK-BASED CONTRACTORS PAID £5 MILLION OR MORE BY MoD

Over £100 million
British Aerospace Aircraft Group
British Aerospace Dynamics Group
British Shipbuilders
GEC
Royal Ordnance Factories

£50-£100 million
British Leyland
Ferranti
Plessey
Westland Aircraft

£25-£50 million
Dowty Group
EMI (now part of Thorn)
Hunting Associated Industries
Lucas Industries
Racal Electronics
Sperry Rand

£10-£25 million
British Electric Traction
Marshall of Cambridge
Philips Electrical & Associated Industries
Pilkington Bros
Short Bros
Smiths Industries
UK Atomic Energy Authority
Vickers

£5-£10 million
British & Commonwealth Shipping
Chloride Group
Clarke Chapman
Courtaulds
Decca (now part of Racal)
Dunlop Holdings
Fodens
Gresham Lion
Guest Keen & Nettlefolds
Hawker Siddeley Group
Imperial Group
Mullards (Philips)
Rank Organisation
Rolls Royce Motor Holdings
Standard Telephones & Cables (ITT)
The Singer Co. (UK)
Thorn Electrical Industries
Vauxhall Motors
Weir Group
Source: Electronics Times 23.4.81

Declining prospects

Over the past few years a substantial proportion of these companies have been affected by sudden changes in demand for various military products. These changes created considerable insecurity for workers. The defence industries mean relatively high wages and salaries for specialist staff, but also job insecurity for the majority. Even the high technology staff will eventually face the prospect of redundancy as their skills become outdated. It is estimated that electronics engineers need re-training after only seven years.

The UK arms companies express concern over the changes in the level of orders for specific military products, but show little inclination to make changes that would enable them to compete with countries such as Japan in producing goods for which there is genuine public demand. Microelectronics will be a vital force in motivating change — for better or worse — throughout industry and commerce in the next decade. But there are desperate shortages of essential, qualified staff in the area of high technology. It is estimated that we need an extra 500 computer programmers per month until 1985 to fulfil the needs of industry, education, health and public administration *(NEDO Manpower Report 1980)*. However, many of these specialists now work in the defence divisions of the large UK multinationals.

Sophisticated defence products now rely on electronic technology but the US electronics manufacturers do not share the conservative attitude of their British counterparts towards dependence on the military. The President of the American Electronics Association, representing 1,200 US electronics companies, said: "What happened was a tremendous growth in civilian markets which did not exist

years ago. The whole computer industry, electronic games and other consumer products, electronic banking . . . all this represents a faster growing, larger market than the military market" (*Electronics Times* 6.12.79).

Unions and jobs

In an order book crisis the company often turns to the trade unions with alarming statements of potential job loss if a particular order is lost. Union representatives are given time off with pay by the companies to attend meetings to discuss the issue. This is in sharp contrast to the frequent difficulties encountered by the same representatives and shop stewards in obtaining facilities to discuss claims for improvements in wages and conditions. Detailed financial and product information is freely provided, again unlike the usual reluctance of most managements to reveal investment policies or enter into planning agreements with the trade unions. Local demonstrations against redundancies often take place and joint mangement/union deputations lobby government. Whilst the Department of Industry is technically responsible for private sector defence contractors, the Ministry of Defence has the real power, being responsible for the type of equipment and ordering it. The two Ministries have little in common and the MoD has shown little understanding or concern for lost jobs and is prepared to buy from overseas competitors rather than in the UK. This issue recently surfaced in the dispute between GEC/Marconi, who have developed a radar tracking system for the lightweight Seawolf missile, and British Aerospace, who manufacture the missile and wish to fit a Dutch system. There was also a see-saw of conflicting government departmental interests over the new heavyweight torpedo order which was finally awarded to Marconi, in the face of pressure from the US, the MoD and the Treasury. According to the company, several thousand UK jobs could have been lost if the contract had gone to the US Gould corporation. These problems will continue and contracts will be lost, as well as won.

The need for change

In the world of defence contracts, beset with technological obsolescence, fluctuating order levels and shrinking employment, trade union members have found themselves in an extremely difficult position. It is not true that there is any contradition between official policies of unions supporting unilateral nuclear disarmament, plus a substantial cut in defence spending and the unions' fight to save jobs. No *responsible* trade union official or representative should argue for an increase in defence expenditure, having seen the damage current levels have created in the national economy. However, it is perfectly legitimate to argue that, at whatever lower level of defence spending, every effort should be made to ensure that manufacture and employment are based in the UK.

The Labour Party NEC has argued for a reduction in Britain's defence com-

mitment to the average expenditure, as a percentage of GDP, of the other NATO members. Mr Brynmor John, former Parliamentary Labour Party spokesman on defence, didn't agree. In a letter to trade union general secretaries, he warned, "If, therefore, you support the NEC statement you must do so in the knowledge that it will have a severe effect on our conventional defences and at national level you will be pressed to explain to your members why you were allowing their jobs to go". Whilst Mr John does not support *Trident*, he does support UK based nuclear weapons, and his whole attack on the Labour NEC, by ignoring the alternatives in the Labour Party study *Sense about Defence*, clearly implied acceptance of the way in which the UK arms industry is currently organised. This is the traditional policy which has led Labour Governments into defence policies closely resembling those of the Conservative Party with the attendant costs and dangers.

If there is any criticism to be made of the trade union movement in this area, it is that we have paid insufficient attention to the practical economic conversion problem, defence industries to alternative, socially useful production. This does not only mean political initiatives, but also the need for trade unions to examine the possibility of diversification of specific company military product ranges at both local and national level. This is now a matter of urgency. Conversion projects need the support of CND and the peace movement.

FOUR: HARD TIMES AND THE HARD SELL

"We are certainly in a hell of a business when a fellow has to wish for trouble so as to make a living."

— Frank S. Jonas, US arms salesman

No national economy exists in isolation. The large multi-national companies have blurred national boundaries, switched jobs and products and have complicated pricing systems to ensure that the biggest profits are made where taxation is minimal.

The multi-nationals pay close attention to possibly profitable arms ventures. This leads to high pressure salesmanship in "flash point" areas, particularly the Middle East, which now takes 45 per cent of weapons supplied to the Third World. This has had a dangerous effect on the economies of developing countries. One of the more sordid aspects of the arms race has been the eagerness of the major arms producers to sell their products to countries facing desperate problems of poverty and disease.

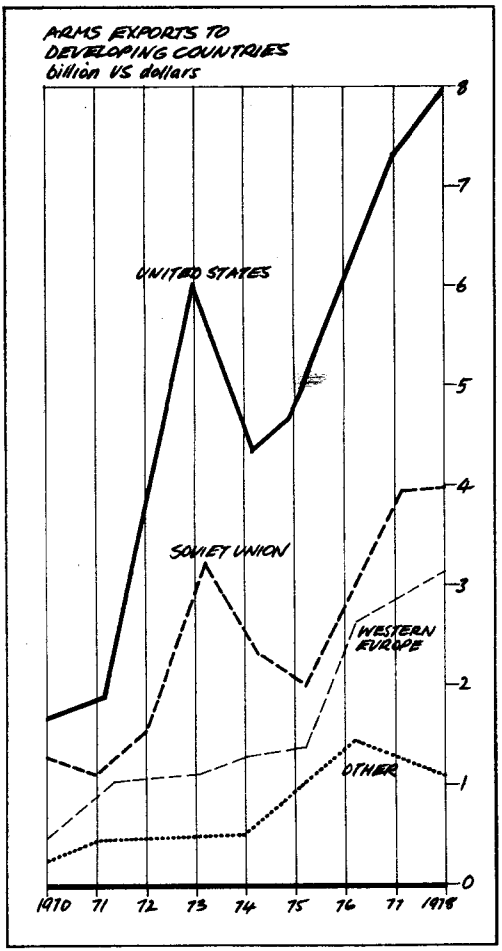
Some fifty wars were fought during the 1970s, almost all in Third World countries, with weapons supplied by the industrialised countries. During this period the Third World share of total world military spending rose from 9 per cent to 16 per cent (*SIPRI Yearbook* 1981).

The following chart shows the scale of arms exports to developing countries 1970-78 in billions of US dollars.

The reasons why Third World countries decide to spend so much of their scarce resources on arms are many and various. The legacy of the ex-rulers of the colonies was such that they often achieved political independence of a most fragile kind, sometimes divided within and always threatened from without by countries like South Africa, whose policies de-stabilise a whole continent.

World cost

1. In a petrol-hungry world the latest tank will consume 3 gallons of fuel per mile.
2. The training of the military in the US alone costs twice as much per year as the education budget of the three hundred million school-age children in South Asia.
3. Research on new weapons receives eight times as much public money as

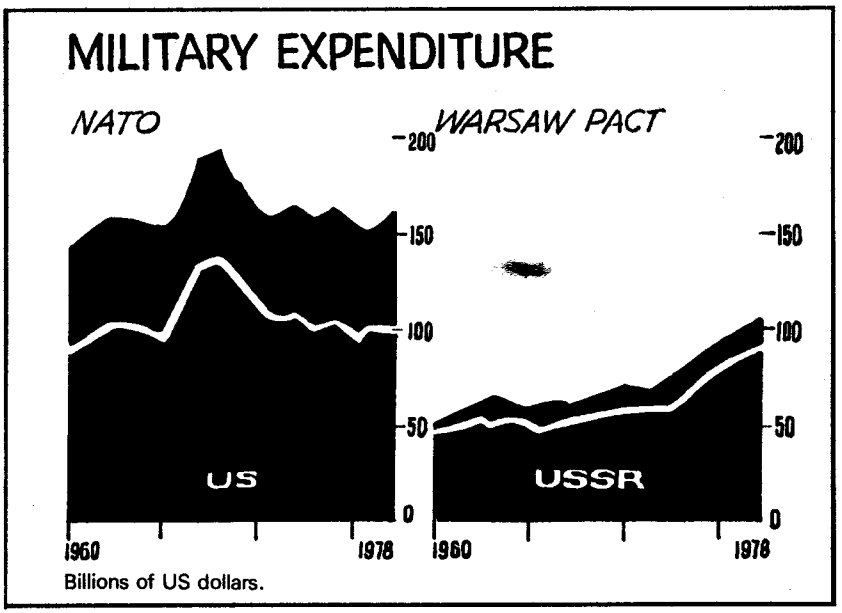


Source: World Military and Social Expenditures 1980.

research on new sources of energy.

4. With a stockpile of nuclear weapons one-and-a-quarter million times the destructive power of the Hiroshima bomb, the two major power blocs are still investing well over one hundred million dollars per day to "improve" and increase the numbers of their nuclear weapons.
5. Two governments in three spend more on arms than on health protection.
6. One quarter of the world's scientists now work on military programmes (*WMSE*).

The following chart shows the rate of increase from 1960 to 1978 in the total amount of military expenditure, in billions of US dollars, of NATO and the Warsaw Pact, and more specifically, the United States and the Soviet Union.



Source: World Military and Social Expenditures 1980.

World arms spending is growing at 2.0 per cent to 2.5 per cent per annum in real terms. This is less than the mid-1950s to 1960s, when it was 3.0 per cent to 3.5 per cent. However, world economic growth is down to 3.0 per cent per annum, compared with 6 per cent in the previous period. Arms are a relatively greater international economic burden than before (*SIPRI Yearbook*).

Escalation

Pressure to re-arm is exerted by political and military alliances. Reported in *The Times* of 17 June 1981, the Defence Committee of the Western European Union "warned" that "although the Soviet threat to the security of Greece and Turkey *had not increased,* these two countries needed urgent help to redress the alarming military disparity with their Warsaw Pact neighbours". The report goes on to urge "the modernisation of the military potential of Greece, and even more urgently, Turkey", and ends with a note of regret that in the latter country, there

is an "absence of a timetable for a return to democracy". This point will be well understood by Turkish trade unionists who face long periods of imprisonment for activities that would be perfectly legal in Britain. It is likely that the use of any "modernised military potential" by these two NATO allies would be against each other, rather than as defence against the Warsaw Pact. This is only one of many examples of military reports and studies intended to convince governments and the general public that the level of military threat means that the only logical response is greater social sacrifice and yet another twist in the upwards spiral of military spending. This has been termed 'threat inflation.'

The inaccurate and emotive use of the media also plays a large part in conditioning the public, however sophisticated the reader or viewer. The *Financial Times* headline, "Kremlin threat as US gives neutron bomb go-ahead" on the day President Reagan unilaterally announced the decision to produce the neutron warhead is a typical example. Friends "go ahead", enemies "threaten".

Juggling the facts

Any, even partly official, defence statistics should be treated with caution. In 1976, the US Central Intelligence Agency (CIA) startled the American public with the news that the Soviet Union had suddenly almost doubled its military expenditure from between 6-8 per cent to 11-13 per cent of Gross National Product (GNP) (*SIPRI Yearbook* 1981). This gave the powerful US arms lobby yet another reason to press for more expensive aircraft, submarines and missiles. What had actually happened was that the CIA had lowered its estimates of the efficiency of the Soviet military programme. Their revision indicated their belief that the Soviet arms industry was not so efficient and therefore cost a greater percentage of Soviet GNP that previously thought. This change in the figures did not mean that the Soviet Union had substantially increased its arms production — although it was portrayed as such. The CIA costings of Soviet military expenditure are based on an "illegitimate method of international comparison" *(SIPRI)* by taking the Soviet military products at the cost (in dollars) of manufacture in the US. Soviet military personnel are also valued at the same wage-levels as they would receive in the United States. The point made here is not that there is little cost to the Soviet Union — their acute economic problems contradict any such idea — but that there has been a deliberate and consistent over-estimation by the Western Government of the relative amount of growth in arms expenditure by the Warsaw Pact.

Export and die

Faced with the problem of a continual drain on national resources by military expenditure, both in terms of skilled manpower and money, Labour and Conservative governments have attempted the same solution — to boost the export of

sophisticated weaponry. It is generally considered that Britain holds a leading position in certain areas of military technological expertise.

Those who question the real value of arms sales usually receive the type of response given in the House of Lords by Lord Orr-Ewing, "If we do not look after our own industry (the arms industry) we shall become a de-industrialised agricultural country again . . . We shall have an extreme government of some sort in this country; we shall have serious unemployment and we shall no longer play a leading part in the free world." *(Hansard,* 23.4.80). Cynics might assert that his Lordship's fears are already a reality, at least partly as a result of pursuing the policies he advocates.

Britain is now the fifth largest exporter of arms, after the USA, the Soviet Union, France and Italy.

In 1966, the Minister of Defence, Denis Healey, appointed Sir Raymond Brown to a new Job, Head of Defence Sales. Br[redacted]was the co-founder of the military electronics firm Racal, whose subsequent history shed light on the bribery and fixing prevalent in the shady world of arms sales. In 1978, a senior official of the Government sales organisation, International Military Services, was convicted of receiving bribes from Racal in order to obtain a large order for a communications network for the Iranian police.

Bribery has been revealed as an integral part of the military sales effort and large contracts have involved payments to Swiss bank accounts. In 1976 Iran ordered 1200 of the latest version of the Chieftain tank at an estimated cost of over £500 million. The deal was hailed as one which would not only prove of financial benefit to Britain, but would also provide employment at the Leeds Ordnance factory and main subcontractors, Rolls Royce, Vickers and David Brown. The Shah's government made a pre-payment of £280 million for the research and development. By the time the deal was cancelled by the new Iranian government in 1979, no tanks had been delivered and no new jobs had been created. However, the main beneficiary was the Shah's friend, Sir Shapoor Reporter, who received his cut of over £2½ million for so-called "consultancy" fees *(New Statesman* 17.10.80).

The amount of military aid given to the Shah and the corruption this involved goes some way to explaining the hostility of the present Iranian government towards the governments responsible. It is difficult to imagine that workers in the supplying countries received any real benefits from the Shah's massive arms bonanza, or indeed that the Iranian people would not have benefited from more productive investment in industry, health services, transport and irrigation systems that could have been supplied by Britain and other Western countries in return for some of the Iranian oil revenue.

Doubtful value

The face value of British arms exports is considerable (currently £1,200 million) but value to the taxpayer in terms of profit is uncertain. The Ministry of

Defence's own agency for overseas arms sales is International Military Services (IMS) and a detailed investigation by the *New Statesman* published on 17 October 1980, revealed that:

1. IMS doctored its accounts turning a £½ million loss into a £6 million profit.
2. The directors of IMS have probably broken the Companies Act.
3. They have acted in the arms business as a channel for paying bribes or special 'commissions'.
4. A payment of £½ million was made by IMS into a secret code-named Swiss bank in January 1980.

Again, this demonstrates the shaky foundations on which this apparently profitable business is based. Britain's uncritical support for the Shah of Iran and the high degree of commitment of arms manufacturers to supplying his armed forces and police clearly showed what can go wrong.

Whilst big short term profits may appear to be available from arms sales, if they are made to repressive and unpopular regimes — usually the most eager customers — they can be cancelled with little notice and are potential loss-makers and a political disadvantage. It could also be argued that by giving preference to exports, Britain's own limited conventional military requirements are damaged. Apart from any moral consideration, employees in any company which has a high degree of dependence on arms export orders should be aware that their job security is threatened by factors other than normal commercial considerations and over which they have little influence.

FIVE: THE HIGH PRICE OF HIGH-TECH

"Frankly, I'd like to see the government get out of war altogether and leave the whole field to private industry."

— Joseph Heller, 'Catch 22'

The debate of the 1960s on the British 'independent deterrent' was swiftly settled when escalating cost and technical failure led to the abandonment of home-grown long-range missiles such as Blue Streak.

The realisation that Britain could not afford to develop and maintain obsolescent weapons independently of the United States came as a shock to those in government and military who believed in this country's role as a world power, particularly 'East of Suez'. The new strategic thinkers, however, believed that some military independence could be maintained if the missiles remained under British control even if they were American supplied. This theory was demolished after Britain reorganised its offensive capacity around the American Skybolt missile. This weapon was then abruptly cancelled by the US Government, once again leaving the British planners groping for an apparently consistent solution in order to maintain some public credibility. Since then it has been tacitly admitted that Britain is dependent on US political control and military technology in the event of any major outbreak of hostilities. The number of US bases in Britain testify to this.

The doomsday machine

There is a firmly entrenched school of thought among Western military strategists which believes in the 'technological imperative'. Put simply, this means that where technology leads, human beings must follow. The following exchange in a US Senate Hearing in 1969 illustrates this:

Senator Brooke: "What I am getting at, Admiral is, as we improve our capability, then the Soviets respond by trying to catch up with us, and as they begin to catch up with us we find it necessary to improve our capability beyond that. I am just wondering where this ends."

Admiral Moorer: "Well, I think it is a function of technology, Senator, and I do not think it ever ends. I mean this has been going on since the Stone Age."

The attraction of this argument to advocates of high military spending is obvious as it justifies any weapons development on the grounds of scientific pro-

gress. It also has the added 'advantage' of including a feeling of helplessness in any political opponents who are depicted, at best, as unrealistic and anti-science. However, there is a good deal of evidence to show that a favourite phrase of the computer industry, 'GIGO' ('Garbage in, garbage out') also applies to the design and performance of advanced weapons. This asserts the primacy of human decisions and, of course, error, in high technology systems.

It is interesting, whilst we live under the shade of the US military umbrella, to look at some examples of recent military technological developments.

The MX

The MX nuclear missile is an allegedly more accurate version of the Minuteman III, a missile which itself has never been successfully tested from its operational silo. In the original land-based system, the MX missiles were intended to confuse the Soviet Union by making a first strike difficult as the 200 MX missiles would be hidden among 4,600 empty silos. However, construction of this vast MX complex would use 40 per cent of the US concrete capacity for three years. More earth would need to be excavated than for the Panama Canal and 10,000 miles of roads would have to be built. Local opposition from the States of Utah and Nevada to this plan, not least from the usually conservative Mormon Church, has made the Federal Government concentrate on the possibility of MX missiles in old Minuteman silos.

Cruise

For a price of 1.2 millions dollars each, the Cruise missile has the apparent advantage of being 'cheap' and small. Although Cruise can be aerially launched, Europe, once again, is being asked to play host to its land-based version. The missile is supposed to fly towards its Soviet target at a very low altitude guided by a small computer system that reads the terrain below and matches it with an appropriate map that has been stored in its electronic brain. The direction of the missile is then corrected by the data fed in through the scanner. According to a report published in *New York Magazine* (22.6.81) there are four major problems:

1. The missile has so far only worked well at high altitudes that could easily be spotted and hit by Soviet defence systems.
2. The Cruise computer scanner needs a clearly distinctive terrain, unlike the flat steppes where many Soviet targets are based.
3. The correct detailed contour maps needed cannot be obtained unless the Soviet Union allows the Cruise's war-time course to be photographed and charted prior to a Cruise launch.
4. The contour map could be confused by stationing reflectors in the path of the missile.

Despite the 'Zero Option' bluff, European governments are being pressurised

to accept a missile that is unproven and yet will exact certain retribution from the Soviet Union if ever used and, because of its famed mobility, would force the USSR to 'pepper' most of southern and midland England to be sure of preventing a launch.

Technical failure

The F-15 Eagle is America's most complex land-based fighter. Packed full of radar and electronics (avionics) it is a very expensive and 'advanced' piece of equipment. Each F-15 contains forty-five 'black boxes' which are the computer systems that run the avionics. When one of the boxes fails it shows up on the pilot's indicator. In the service bay the faulty box is tested by another computer system. In 1979 the testing system worked only 50 per cent of the time and even when it was working, 25 per cent of the tests failed to find the fault. The result is that the F-15 is only 'mission capable' for about 35 per cent of the time and in 1980 the F-15 equipped First Fighter Wing was found to need *three week's notice* of use. Understandably, the F-15 has been nick-named the 'Hangar Queen' by US pilots.

Examples abound. The new M-1 tank costs 2.8 million dollars each, uses three gallons of fuel to the mile and there is a 70 per cent probability that it will need a new engine after only 4,000 miles. America's largest transport plane, the C-5A, can only accommodate one M-1 tank — and there are only 77 C-5As in the whole US air force.

In Britain the *Financial Times* (1.7.81) reported that our own secretly developed £1,000 million Chevaline warhead "has failed to meet the exceptional standards of reliability required of any nuclear system."

It is now thought by NATO planners that sophisticated 'solid state' electronic systems in modern communications — telephones, computer and radio — are far more vulnerable than the old systems which were largely based on electro-mechanical equipment and more resistant to the 'electro-magnetic pulse' generated by a nuclear explosion. It is estimated that one single nuclear blast at a height of 300 miles above the atmosphere could knock out an entire continent's communications. Early warning systems of missile attack break down and high command decision would never reach their destinations. The Pentagon and NATO are understandably embarrassed about the subject.

Some sophisticated equipment operates when it should not. In November 1979 and twice in June 1980, the US computerised detector system signalled an impending nuclear attack on North America. The false alerts were detected just in time and the fault was traced to an overheated micro-chip. The cost of this small faulty component is about 50p *(World Social and Military Expenditures).*

Too expensive

More mundane reasons often occur to put a spanner in the complex works of

military technology. A West German report indicates that the Bundeswehr may run out of costly fuel for its tanks and aircraft in the very near future. A Social Democrat MP suggested increasing the tax on tobacco or sparkling wine to assist the Bundeswehr. Belgium dropped out of military manoeuvres in 1980 for the same fuel-cost reasons.

Franklin Spinney, a senior Pentagon analyst, summed up the situation in his major report on the costs and inefficiencies of the US military programmes, when he said, "By ignoring the real world, we have evolved a self-reinforcing, yet scientifically unsupportable, faith in the military usefulness of ever-increasing technological complexity. The costs of this can be generalised into low readiness, slower modernisation and declining forces . . . Our strategy of pursuing every increasing technical complexity and sophistication has made high technology solutions and combat readiness mutually exclusive *(Defence Facts of Life,* F.C. Spinney).

These comments could be equally related, on a smaller scale, to Britain. Where the US leads, we have followed.

Unfortunately, detailed defence information is far less accessible in the UK than in the US due to lack of legislation allowing public examination of decisions that affect employment and social provisions.

For supporters of the deterrent strategy of 'mutually assured destruction' (MAD) it must come hard to learn that a great deal of the much vaunted and technologically superior NATO equipment does not perform as supposed.

The Soviet Union must be aware of this and probably experiences similar difficulties. Meanwhile the costs rise steeply, further risks are taken and jobs both in the defence industries and the civil sector continue to be lost. It could be argued that the basic economic system under which we in Britain have been governed is irrational. The continued excesses and failures of the arms industry within the economy produce symptoms that border on insanity.

SIX: ALTERNATIVES

"Progress is a nice word. But change is its motivator and change has its enemies."
— *Robert Kennedy*

Whilst the case for the conversion of arms industries to civil purposes may be obvious to the outside observer or the worker in the non-defence sector, employees whose jobs depend on military contracts are less convinced. In our unplanned economy the loss of an important military order could also mean the loss of livelihood for these employees, often with severe consequences for a whole community. Another factor, which is sometimes under-estimated, is an understandable pride in the products themselves. Many military machines have a certain physical and technological attraction. Most workers in the defence industries have experienced the ups and downs of contracts upon which their income depends, but over which they have little influence. Few have any illusions about the unstable nature of their work, but there is also a natural tendency to hang on to what is, or seems to be, available.

Well documented, competent and courageous initiatives on conversion at company division level have come from some joint trade union bodies, notably at Lucas Aerospace, BAC and Vickers. The frustration of experiencing continuing loss of jobs and skills in companies making defence-related systems and hardware, together with a desire to participate in the manufacture of more socially useful products led to the formation of such alternative plans. These were comprehensive and technically feasible. However, faced with employer intransigence and no government support, it is difficult to see how such initiatives *by themselves* can succeed.

Employer attitudes

British employers are hostile to workforce innovation, particularly if it involves challenging traditional managerial perogatives. They much prefer the 'suggestion box' approach which also includes bodies such as works productivity committees or staff councils. Whilst improving efficiency is acceptable to them, joint decision-making on investment policy and product lines is not.

This employer attitude has been experienced and resisted by the trade unions over many years on issues such as pensions and health and safety at work. Where progress has been made on such non-traditional bargaining matters, it has tended

to involve some form of effective union-sponsored legislation compelling the employer to behave in a reasonable manner. Political pressure then becomes essential, through individual unions, union federations, the TUC, through to Government and eventual legislation. This is not such a straightforward path as it may seem. Inter-union differences — white/blue collar, craft/non-craft and political interests must generally be resolved before TUC endorsement and legislation by a receptive government. It is essential that careful preparation should be made to alert and motivate the general membership on the question of alternative products.

New products

Some real possibilities of conversion from military research and development to peaceful R&D were listed by the United Nations' Secretariat as long ago as 1972. These are listed in Appendix A.

In the early 1970s the AVCO engine manufacturing plant in Charlestown, South Carolina stopped producing Army helicopters and changed to the manufacture of truck engines — it now employs more people than before.

Between 1961 and 1977, 75 communities in the USA were affected by military cutbacks and received federal adjustment aid. Consequently 78,000 jobs were created to replace 68,000 military-based jobs that were lost.

The Labour Party's Defence Study Group *Sense about Defence* also listed specific alternative products to replace those manufactured by the Aerospace, Shipbuilding and related military industries. They also looked in detail at two case-studies, Tornado, the Multi-Role Combat Aircraft (MRCA) whose contractors were BAC and Rolls-Royce and the Anti-Submarine Warfare Cruiser manufactured by Vickers. Both studies concluded that conversion to peaceful products was indeed feasible without job loss, but also acknowledged that this would need to involve government and outside agencies. Incidentally, the study recommended a *phased* conversion *not* a cataclysmic change.

Other organisations have made recommendations on how this might be achieved and the following should be a practical allocation of responsibilities in initiating an intensive trade union based campaign.

Trade Unions

The role of the unions will be a key factor in any major move away from military to peaceful production. The whole issue is now of such importance that it cannot be regarded as a broad 'option', merely to be agreed at annual conference without further active involvement and official support at all levels. There is a very practical job of work to be done and it cannot just be left to individual shop stewards' committees. Hard-pressed full-time officials and lay representatives are dealing with immediate issues involving redundancies and plant closures, but practical steps could be taken to set up committees and appropriate structures

that would involve other union members who have a certain level of experience and technical expertise. The ability of workers to understand, motivate and manage change must never be under-estimated. All organisation within the Labour movement should be involved and the following are some practical suggestions:

a) There should be a consistent campaign of education and explanation rather than demonstration. The TUC is now much more forward thinking than in previous years. The initiative taken on the analysis of the effects of new technology and the subsequent conferences and courses at national and regional level did much to make union members aware of the implications of the application of micro-electronics.

b) It should not prove difficult to mount a similar exercise, for union representatives throughout *all* industries, to explain the current economic drain of arms expenditure and to provide practical advice on setting up local and national trade union bodies to examine and present alternatives. A small number of specialists could be employed at TUC headquarters.

c) Individual unions have very different structures with decision-making sometimes centralised through the executive, in others the branches have considerable autonomy whilst a few have powerful district or regional committees. However, this should be no real obstacle to the formation of factory or site committees on a joint trade union basis in those companies with a heavy reliance on defence-related products. Using the practical knowledge and skills of their own members, these conversion/alternative product committees could examine the current product ranges, the order book, together with the possible threat of cutbacks and transfer of work.

d) It would not be necessary at this stage to make specific recommendations on alternative products, but to highlight any employment problems which could occur due to fluctuating demand and obsolescence of defence products.

e) This information could be collated on a district, divisional or regional basis, through the unions' appropriate machinery. If this proved difficult it could be done on an informal basis with the assistance of the local full-time officials. It is always advisable to use the official trade union machinery wherever possible.

f) Trades Councils and Regional TUC bodies can have considerable local influence and potential and could raise the issues publicly and bring local political pressure to bear.

g) Some unions now have National Advisory or Combine Committees which co-ordinate policy in multi-plant companies. These could be used to obtain a much broader picture on a national basis, of the problems and possibilities of conversion in those companies.

h) After this stage informal national level meetings could be held to co-ordinate the views of the individual unions and to avoid sectional dif-

ferences. Most defence industry employment is concentrated in the engineering sector, together with the industrial civil service.

i) Trade union federations such as the Confederation of Shipbuilding and Engineering Unions (CSEU) should also be involved at local and national level, TUC and outside professional, technical and financial advice on alternative products could be sought at the appropriate later stage.

Government actions

The role of Government is crucial in ensuring that arms spending is cut, the resources released are put to productive use and that employees in the defence sector are protected. This does not mean, however, that union members should merely wait for Government to act. The preliminary steps outlined above could be initiated within the trade union movement as a matter of priority.

A Government committed to a radical shift away from dependence on US policy towards reduced arms spending — and this clearly implies a planned approach — would have to pay close attention to the inadequate structures available to deal with the problem. The tension between the Ministry of Defence and the Department of Industry is only one aspect. The continual lobbying and conflict within the defence sector is another. Tight control and planning would be absolutely essential.

The scope of conversion mainly covers three major government departments, Ministry of Defence (military orders and overseas sales), Department of Industry (industrial support and organisation) and the Department of Employment (manpower).

The following steps could be taken:

a) There would need to be a new government body linking these areas, possibly called the Office for Defence Conversion. This Office would need to have a Minister with specific responsibility for its work which would be to investigate and assist the implementation of a reduction in defence spending by encouraging and authorising research, development and production facilities for alternative products. At the same time it could make recommendations on how to minimise any negative effects on skills and employment.

b) The Office would also have close links with the Manpower Services Commission and the appropriate Industrial Training Boards. An overall planning committee comprising the interested parties, including the trade unions, could be set up. All relevant information from the Ministries would be examined by the Office in the light of its specific legislative terms of reference.

c) Another essential step would be to introduce legislation to bring appropriate key divisions of the private defence contractors into public ownership, possibly under a restructured National Enterprise Board.

Sweden has a law that no company may have more than 25 per cent of its business in defence.

d) The MoD Defence Sales Organisation should be abolished and arms export orders should be controlled by a strict licensing system to specified 'friendly' countries and with a register, open to public scrutiny, listing full details of each transaction involving arms hardware or support systems such as radar or computers for military use.

e) Companies should be required by law to publish full financial details of defence sales in their annual reports.

Obviously a great deal more detail would have to be worked out in the light of prevailing political and economic circumstances, but the above steps would help to ensure government assistance and accountability to employees in the defence industries as well as extending some social control over companies and organisations that have readily accepted public money but have operated far from the public eye.

NEDO

Trade Union representatives also have the opportunity to raise the whole issue in other organisations which have some influence and may provide further information. The National Economic Development Organisation (NEDO) comprises senior representatives of government, employers and unions. One of its main purposes is to examine Britain's record of industrial competitiveness and productivity and to make recommendations for improvement and implementation by the three parties. To this end Sector Working Parties covering all the major industrial sectors examine the relevant factors. This provides a useful opportunity for unions in the appropriate sectors to raise the issue of the industrial inefficiencies created by excessive concentration on defence investment. There has been little radical trade union input into the work of NEDO and too much reliance on the conventional wisdom and middle ground approach of senior civil servants and employers' representatives. NEDO itself will not change the situation but could be helpful in making public recommendations which highlight the contradictions between civil manufacturing productivity and the wasteful nature of arms production.

CAITS

An extremely useful independent organisation is the Centre for Alternative Industrial and Technological Systems (CAITS) which was set up by the Lucas Combine Committee and the North East London Polytechnic with the aid of charitable funds. Its role as a research and practical advice centre could prove highly influential in any trade union initiative on conversion. At the moment it is inadequately funded and trade unions should consider giving it far greater financial support.

CAAT

The Campaign Against the Arms Trade (CAAT) can provide useful information on the latest trends in arms promotion at home and overseas and the various movements mobilised to oppose them.

CND Trade Union Committee

CND and its Trade Union Committee can provide an overall framework of organisation that enables unions and individual union members to participate in its activities and to receive updated information on the campaign against the bomb and the bases.

The November 1981 conference of CND passed policy that places emphasis on drawing up plans for the conversion of military industries and pledged support for groups of workers struggling for this. And in October 1981 CND hosted a Labour movement conference on the topic of conversion in Central London. Copies of the papers are available from CND, 11 Goodwin Street, London N4 3HQ.

The CND Trade Union committee, in addition to this pamphlet, will be sponsoring more detailed research into conversion throughout 1982. Extracts from this research will be published.

International

The international aspect of trade union work is vital in establishing counter measures to the activities of the multi-national companies. Employers in the arms industries and governments often use the blackmail of foreign competition and loss of jobs when pressure is mounted in Britain to reduce the export of military products. Many British unions are affiliated to organisations such as the International Metalworkers' Federation and the International Chemical Workers' Federation and a number of similar bodies. This provides opportunities for international trade union conferences and co-operation in bringing common pressure to bear on governments and companies to reduce the international arms trade.

There is no easy solution to the whole question of arms spending but, equally, in Britain no alternative economic strategy can succeed whilst millions of pounds are wasted each year on developing products that can never be fully utilised without ensuring national obliteration. The real defence of Britain does not depend upon military hardware but upon the education, training, skills, research and manufacturing output that will provide jobs and a secure income for a workforce free from the constraints and dangers of the arms economy. Trade union members have a vital role to play in achieving this political and economic transformation.

APPENDIX A

Military R&D	Peaceful R&D
Chemical and biological warfare	High yielding varieties of staple food Edible protein Pest and [illegible] control Communicable diseases control (including parasitic diseases), particularly trypanosomiasis, leprosy, cholera, schistosomiasis Toxicological research Cancer research
Civil engineering institutes for defence work	Urban renewal in general Research on indigenous building and construction materials for developing countries Housing construction methods for quicker, lower cost production of houses for developing countries Urban waste disposal, sanitary equipment and pollution Highways, railroads, airports for both developed and developing countries
Military aerospace research, engineering, electronics and telecommunications	Appropriate aircraft and airport facilities for developing countries Artificial organs and limbs Recording of human organs' functions for diagnostic and monitoring purposes
Military space technology	Telephones
Systems analysis techniques and computer technology used for military, aerospace and nuclear operations, military computerised data banks	Systems analysis techniques and computer technology applied to development problems, including health planning and operations Computer-aided instruction Training programmes on computers, data

	processing and programming in developing countries
	Science and information technology systems for developing countries
	Transfer of technology
Naval research institutes	Ocean shipping and ports of developing countries
	Offshore oil exploration
	Mineral resources of the sea; exploration and inventory of water resources of developing countries
	Tidal power
	Fish research assessment
	Aquaculture R&D
Military engineering programmes	Human environment: (i) non-pollutive sources of energy (ii) recycling of waste (iii) research on non-pollutive sources of energy (solar satellites, geothermal, fuel cells and other batteries for automobiles, solar cells)
Armaments industries under contracts by the military	Industrial research and design applied to local materials of developing countries — glass and ceramics
	Metallurgical processing
	Industrial chemicals
	Household chemicals
	Processing of natural fibres
	Plant and equipment design
	Industrial research
Military institute for research on food supplies	Storage and preservation of agricultural products
Military institutes for petroleum	Research, exploration and development of petroleum and gas
Military vehicles research	Design of automobiles adapted to the needs of developing countries
	Effects on man of noise and vibration
Release of classified information	Advances in peaceful research in any number of areas
	Transfer of technology

Armed forces training programmes	Science and technology education
	Improvement and strengthening of science teaching in secondary schools of developing countries; building up of scientific and technological capacity
Military research in physiology, pathology and hygiene	Nutritional problems
	Health hazards of climate
	Occupational hazards and personal protection
	Readaptation processes
	Reanimation
	Mental health research
	Health hazards of ultrasonic waves
	Plastic surgery and burns
	Models of vital organs (teaching purposes)
	Observation of various health parameters by means of telemetric technology
	Environmental health monitoring
	Improvement of various laboratory control methods through automated instrumentation (higher precision; acceleration; design of various portable medical devices, etc.)
	Improvement of pharmaceutical control
	Natural resource surveys by remote sensing from aircraft or satellites
	Fuel cells
	Solar energy (with or without use of satellites)
	Geothermal energy
	Natural disasters warning and meteorological research on tropical cyclones
Early detection of intercontinental ballistic missiles by satellite	Natural disasters warning systems
	Broadcasting
	Television
Military telecommunications agencies and institutes	Communications satellites for education and training

APPENDIX B
Glossary and Acronyms used

ADIU: Arms and Disarmament Information Unit. Based at the Science Policy Research Unit, Sussex University, Falmer, Brighton. Independent unit researching into all aspects of the arms race.

BAC: British Aerospace Corporation. Britain's main manufacturer of military aircraft

Bundeswehr: The West German army.

C-5A: Main US airforce transporter plane. Refueled in flight by tankers based, amongst other places, at RAF Fairford in Oxfordshire.

Blue Streak: British long range nuclear missile project abandoned in the 1960's due to cost.

CAAT: Campaign Against the Arms Trade. Monitors British arms exports and militarisation of the economy. 5 Caledonian Road, Kings Cross, London N1 9DX.

CAITS: Centre for Alternative Industrial and Technological Systems. Based at the North East London Polytechnic. Independent unit researching into practical *conversion* (cf).

Chevaline: £1,000 million project started in secret by the Heath government to update the missiles carried by *Polaris* (cf) nuclear submarines.

Conversion: General term for plans to give military industries and workers useful work to do and avoiding redundancies when arms spending is cut.

Cruise missiles: Highly controversial longer-range tactical nuclear missiles. Distinguished from ballistic ('free-fall') missiles by on-board guidance system and ability to continuously change course during flight like a jet plane. There are three versions Ground Launched, Sea Launched and Air Launched. They are the subject of the Geneva negotiations on arms control and the Zero Option *(cf).*

Electromagnetic Pulse: Very powerful 'radio wave' caused by the explosion of a nuclear bomb. Amplified by transisters in *solid state* (cf) electronics including telephones, computers, radios, Electromagnetic pulse (EMP) can generate powerful electric currents which would destroy most solid state equipment. Old fashioned valve electronics is far more resistant to EMP.

F-15: Latest modern US airforce fighter/bomber. It can fly in all weathers and carry nearly all types of nuclear weapons including the advanced version of the air-launched *Cruise missile* (cf).

GEC: The General Electric Company. Britain's biggest electronics firm. GEC supplies the

Ministry of Defence with over £100 million worth of military electronics each year.

GNP: Gross National Product. The value of all goods and services at market prices produced by a given country. Investment by firms in foreign countries is subtracted and the investment by foreign countries in this country is added to GNP.

GDP: Gross Domestic Product. The same as GNP without the adjustments for investment.

IMS: International Military Services. A department of the Ministry of Defence's Defence Sales Organisation.

MAD: Mutual Assured Destruction. Part of the strategic doctrine of 'deterrence' suggesting that nuclear war can't take place because no country would dare push the button. Somewhat undermined by recent talk about 'limited' nuclear war in Europe.

Minuteman III: An American Intercontinental Ballistic Missile. The US plan to supplement Minuteman III with the more destructive *MX* system (cf).

MRCA: Multi-role Combat Aircraft. A plane designed to be both a fighter and a bomber. Most modern *NATO* (cf) planes are MRCA's. In 1983 Britain plans to replace most of its existing nuclear bombers with *Tornado* (cf) MRCA's.

MX: Missile X. New intercontinental nuclear missiles with increased destructiveness and accuracy. The US plans to introduce MX the later part of the 1980's. Plans to base the MX system on trucks in a large system of underground tunnels have been abandoned. The missiles will now be placed in old *Minuteman* silos (cf).

NATO: North Atlantic Treaty Organisation. A military alliance of 'western countries' dominated by the USA. At the moment Britain, Turkey, Portugal, West Germany, Belgium, Netherlands, Norway, Denmark, Italy and Canada are full members of the alliance. Greece joined in 1981 but now plans to withdraw. France is a member of NATO but not a member of its military command or nuclear planning group. Spain has applied to join NATO.

NEDO: National Economic Development Organisation. Forum for Government, Big Business and Trade Unions. Looks at possible economic growth strategies for the British Economy.

Neutron Bomb: A short-range or 'battlefield' nuclear weapon distinguished from other 'mini-nukes' (all of which, like the neutron bomb, have at least the destructive power of an Hiroshima-type bomb) because it releases almost all of its energy as radiation rather than heat or blast.

Polaris: The name of Britain's nuclear missile carrying submarines. The government plan to replace them with the still more destructive *Trident* missiles (cf).

R&D: Research and Development. Research into new and better ways of producing goods and services. Carried out directly by the government, privately or with government financial sponsorship at colleges and universities.

ROFs: Royal Ordnance Factories. ROFs assemble military equipment for the government using parts and materials supplied by the arms firms. The Navy's ships have military equipment fitted at the Royal Dockyards.

Solid State (electronics): Most modern electronic equipment uses solid-state technology which is much smaller and lighter than the old valve-based technology. Military disadvantages of solid state include vulnerability to *EMP* (cf) and difficulties in maintaining the very complex modern solid-state technology.

SIPRI: Stockholm International Peace Research Institute. Swedish government-funded research institute that provides unbiased information on military matters.

Tornado: New nuclear bomber to be bought by Britain to replace the old Vulcan bombers. Jointly produced by Britain, West Germany and Italy, the British contribution will be over £4,000 million. The planes will come into service in 1983.

Trades Councils: Local federation of trades unions.

Trident: New American submarine-launched long-range nuclear missile. Trident missiles and their guidance systems will be bought by the British government to replace *Polaris* (cf). The estimated total cost of the project has been put at anything between £6,000 million and £10,000 million.

Warsaw Pact: Military alliance of the 'eastern countries'. The alliance is dominated by the USSR and includes at the moment Poland, East Germany, Czechoslovakia, Hungary and Bulgaria. Roumania is a member of the Warsaw Pact but refuses to allow Pact manoeuvres to take place on her territory.

Zero Option: A disarmament proposal made by the Americans following the massive disarmament demonstrations in the Autumn of 1982. In return for substantial cuts in existing Soviet nuclear missiles the Americans would agree not to bring any *extra* nuclear missiles to Europe. The proposal was initially described by the Russians as 'propaganda'.

MORE INFORMATION

More information about the topics covered in this booklet is available in the following books, reports and periodicals.

Disarmament and World Development. By Richard Jolly. Pergamon Press.

Alternative Work for Military Industries. Various contributors. Richardson Institute. 1977.

Defence Cuts and Labour's Industrial Strategy. Various contributors. Labour Party Publications. 1976.

Introduction to the Corporate Plan. Research paper by Mike George. Centre for Alternative Industrial and Technological Systems (CAITS). August 1979. North East London Polytechnic, Longbridge Road, Dagenham, Essex RM8 2AS.

Tridents into Ploughshares. By Bill Niven. New Statesman, 12th June 1981.

Workers' Alternative Corporate Plans. By Mike George. Workers' control bulletin. 1979 No.4.

Military Spending, Defence Cuts and Alternative Employment. Statement issued by the General Executive Council for the Twenty-seventh Biennial Delegate Conference of the Transport and General Workers Union. TGWU 1977.

The Lucas Aerospace workers' campaign. By David Elliot. Young Fabian pamphlet 46.

Problems of Conversion from War to Peace Production. Peace and the Sciences. International Institute for Peace Vienna. 1979. Möllwaldplatz 5, A-1040 Vienna, Austria.

Bombs for Breakfast. Committee on Poverty and the Arms Trade (COPAT).

The Arms Traders. Campaign Against the Arms Trade. 5 Caledonian Road, London N1. Also full list of CAAT publications.

CND PUBLICATIONS

Civil Defence — the Cruellest Confidence Trick. By Phil Bolsover. Facts that show you can't, as the government and others say, survive a nuclear war. Second edition due in the summer of 1981 dealing with latest developments in the campaign to expose the Civil Defence confidence trick. 40p + 20p postage.

Nuclear Disarmament for Britain — Why We Need Action not Words. By Betty England. Nearly everyone says they want to get rid of nuclear weapons. Some say we should wait for a grand international agreement. This pamphlet argues that we need action now. 50p + 20p postage.

No More Hiroshimas. A picture pamphlet showing the effects of the atomic bombing of Hiroshima and Nagasaki. Introduction by a survivor of the attack. 30p + 20p postage.

On the Brink. By Pat Arrowsmith. Poems, drawings and pictures dedicated to peace and disarmament. Forward by Adrian Mitchell, 60p + 20p postage.

Nuclear Britain. By Chris Horrie, Alan Lenton and others. A map of Britain showing the main military installations and nuclear bases. Second Edition available in May 1981 with many additions and alterations. This map does not claim to be exhaustive but even a glance shows the massive involvement of Britain in the nuclear arms race. 35p + 20p postage.

The Silent Killers — New Developments in Gas and Germ Weapons. By David Bays. This pamphlet throws light on a little talked about subject and shows how technical developments point towards the possible use of these weapons in a 'limited' nuclear and chemical war in Europe. 40p + 20p postage.

No Nuclear Weapons. By Peter Kennard and Ric Sissons. Peter Kennard is one of Britain's top photo-montage artists. This pamphlet has many graphic illustrations of the nuclear threat. Explanatory text by Ric Sissons. Jointly published with Pluto Press. £1 + 20p postage.

Questions and Answers About Nuclear Weapons. By Frank Allaun MP. One of CND's most outstanding parliamentary advocates gives his answers to the ques-

tions nuclear disarmament campaigners face. Copious illustrations. 40p + 20p postage.

Blessed are the Peacemakers. Sermons and articles compiled by Christian CND. John Taylor, Victor de Waal, Michael Hare Duke, David Gosling, Paul Oestreicher and others. 40p + 20p postage. ALSO: Christian CND resource pack. 20p + 20p postage per pack.

SANITY

Sanity is CND's regular magazine. Cover price 40p. It is published once every two months and all national members of CND get *Sanity* delivered to their door free of charge. Non-members of CND can get *Sanity* from street sellers, local CND groups and good bookshops. You can also subscribe to *Sanity* by sending £2.00 to Sanity Subscriptions, 11 Goodwin Street, London N4 3HQ. CND offers the following generous discounts for bulk orders of *Sanity*:

10-99 copies . . . 25p each.
Over 100 copies . . . 20p each.

● Many more pamphlets are planned for publication in Spring of 1982. In addition CND stocks all kinds of publications from local CND groups and other peace organisations. Please write to CND orders department, 11 Goodwin Street, London N4 for a full, up to date list. Badges, stickers, posters and other campaign materials are also available.

JOIN CND

I enclose a cheque/postal order for £.....*
I will pay by Bankers' Order, please send a form*

Membership subscriptions

Adult	£6	Youth & Student	£2
Couple	£9	Pensioner	£2

Name .....

Address .....

.....

.....

☐ *Tick for information about Trade Union CND*

* delete as appropriate

AIMS OF THE CAMPAIGN FOR NUCLEAR DISARMAMENT

The aim of the Campaign for Nuclear Disarmament is the unilateral abandonment by Britain of nuclear weapons, nuclear bases and nuclear alliances as a prerequisite for a British foreign policy which has the worldwide abolition of nuclear, chemical and biological weapons leading to general and complete disarmament as its prime objective.

The Campaign for Nuclear Disarmament is opposed to the manufacture, stockpiling, testing, use and threatened use of nuclear, chemical and biological weapons by any country, and the policies of any country or group of countries which make nuclear war more likely, or which hinder progress towards a world without weapons of mass destruction. (From CND's constitution, adopted by Annual Conference, 1980.)

CAMPAIGN FOR NUCLEAR DISARMAMENT
11 GOODWIN STREET LONDON N4·TELEPHONE 01 263 4954