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The Rt Hon. Mrs Margaret Thatcher, MP
10 Downing Street,
London SW1.

12th February, 1981

Dear Prime Minister,

During the course of a recent stay in St. Thomas's Hospital, where I had to spend a few days undergoing some running repairs (I returned here on Tuesday) I came across several references to the so-called neutron bomb, and saw that you had had to deal with a question put to you in the House on February 5. Since the issue may come up in the course of your Washington visit, I thought you might like to have these personal notes to add to whatever official brief on the subject with which you are provided.

Like all these things, the idea of an enhanced radiation bomb dates way back to the late fifties, when the men in the weapons laboratories and in the Rand Corporation, dreamed up every variety of weapon to do this, that and the other, and having done so, then tried to find buyers in the Services or in industry to back them up. One which they tried to sell us when I was CSA in Defence, was called the Davy Crockett, a sub-kiloton weapon which every soldier carried across his shoulder. It was a piece of military nonsense, not only because it allowed of no control, but because when one set aside the fallout problem, it was a pretty expensive way to bring about localised destruction. Davy Crockett's progenitor was one Johnny Foster, then in the Livermore Laboratory and later to become Director of Defence Research and Engineering in the Pentagon.

Another current idea was what people now call the neutron bomb, to which the Rand Corporation gave birth, the man who was mainly responsible (or who claims to be) being Sam Cohen, who, if not the father, is certainly the salesman who got the weapon returned to the map in 1972/73 after it had been voted down on scientific and military grounds before. But these things never die. There are people in industry and in the Services ready to pursue Cohen's idea, regardless of the arguments against.

Technically, the bomb is so made that a major part of its explosive energy comes from the fusion of deuterium with tritium, and so that in theory nuclear radiation would be lethal at somewhat greater distances than in the case of a fission bomb. But as a detailed U.N. report which is about to become available points out (and I know the author of the Report, and he can be relied upon utterly), " for intermediate and large yields, the destructive radius of blast far exceeds that of nuclear radiation, since a doubling of blast kill radius can always be achieved by an 8-fold increase of yield, whereas the same 8-fold increase of yield from 0.5 KT to 4.0 KT fusion yield adds only about 250 m to the prompt lethal radius of nuclear radiation effects. Thus, a hypothetical "neutron bomb" which derived all its energy from fusion, would at 10-kiloton yield have about equal radius of blast kill and radiation kill. Only in

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the energy range of 1 KT would the kill radius due to high-energy neutrons considerably exceed that of the same weapon due to blast. Thus, the "enhanced radiation weapon", as represented by the neutron bomb, should more properly be called a "suppressed blast weapon". It is more costly to manufacture and has more constraints on its delivery than does a 10-KT weapon of the same radiation kill-range and greater blast kill. One must ask whether there is much military benefit associated with a modest suppression of blast."

But there are other military arguments which make a nonsense of the concept. I'll cite only three.

1. Troops and armour dispose themselves in the field in relation to the fire they are likely to encounter. I can't imagine Russian tanks aligned at the right distances to optimise the effect of anti-tank weapons, whatever their nature.

2. Radiation would not kill immediately; some of the tanks in the field of fire would still come on. What then ? A rain of nuclear bombs ?

3. The Russians aren't going to have teams of physicists waiting to rush in to say that the enemy has been firing such and such radiation weapons. They'd reply with whatever nuclear weapon suited them; if weapons with a desired radiation field, then with increased blast as well.

I never did understand why President Carter chose the neutron bomb to become a divisive issue in NATO politics - in response, I presume, to some re-assurance which Helmut Schmidt wanted about America's commitment. There were other symbolic nuclear weapons that might have been selected, which would not have incurred the odium of being called the 'capitalist's weapon'.

Another thing I noticed in my week's reading was a piece in last week's Economist entitled 'More money means less readiness'. I attach a photocopy. The story is all too true. I spelt it out in 1965 in a Lees Knowles Lecture in a section which I called 'The Inexorable Law' of R. and D. If you could spare a moment, glance at the photocopy I attach of the relevant paragraphs. If you have time to read what I said then, just think of what has happened in the past fifteen years. We have not been able to give to defence a bigger real share of the GNP. We have had to reduce our commitments. We have had to reduce the number of new weapon systems. We have had to make our forces smaller. In fact, the consequences of a trend which was already to be seen then, have turned out to be worse than I ever imagined.

I would not be at all surprised if the Americans now spend tens of billions of dollars on lasar-armed satellites, etc. - but I would also be prepared to bet that these things will never materialise. All one can hope that the Russians don't mistake the word for the deed, or the fulfillment of an advertised objective, and that the present state of mutual deterrence is not disturbed.

Yours ever,
Solly

Lord Zuckerman

Latin America.

Yet the dramatic effect of this was muffled by the news that Mr David Stockman, the young director of the office of management and budget, was proposing to take away a third of Mr Haig's foreign aid money. The Americans give foreign economic aid—rather less per head than most western countries—for several reasons. The least arguable one, certainly when persuading a reluctant congress, has traditionally been national security: foreign assistance is the coin of Soviet containment in the third world. Mr Haig's and Mr Stockman's signals could hardly have been more crossed. Mr Stockman, like Mr Haig, believes aid should be given in American national interests. But paradoxically he thinks there should be less of it, not more.

What Mr Stockman proposed in his memorandum, "Foreign Aid Retrenchment", was to cut the Carter requests for foreign aid in 1982 of some $8 billion to about $5.5 billion. Anticipating such a step, the Carter administration had raised next year's request by $2m, from $6m, a real increase of 14%. So Mr Stockman was cutting from a high level. His proposal shocked none the less, and not only for its cuts in bilateral aid. Mr Stockman proposed halving the United States' pledge of $3.4 billion over the next three years to the International Development Agency, the World Bank's soft-loan affiliate for the poorest nations, welshing on other commitments to cognate banks, and withholding voluntary contributions from international organisations that did not always march to an American tune.

Backed with protests from leaders in congress and from America's principal allies, Mr Haig counter-attacked. As a result, many of Mr Stockman's proposals will be softened. The most contentious one—halving the IDA pledge—will be fudged, by asking congress to authorise funds for the three years as promised but to stretch the outlays over a longer period.

It is still unclear how aid, under Mr Reagan, is to be fitted into policy towards the third world. It seems, however, that there will henceforth be less American promotion of social reform, fewer complaints about human rights and a more robust use of both economic and military assistance. That, of course, is easier said than done. The limitations of aid as a precision instrument are nowhere clearer than in Central America. And that is especially so when congress and the various arms of the administration are trying to tug it in different directions, as happened last year with Nicaragua. The new administration is much less sympathetic to the government there than Mr Carter was (see page 12); in El Salvador, by contrast, it wants to bolster the present rulers. That is bad news for the American ambassador to El Salvador, Mr Robert White. He was criticised by several members of the Reagan transition team as a meddling reformer, and he, in turn, criticised them for making a crisis worse. So when the new team took over, it was only a matter of time before it and Mr White parted company. He was recalled to Washington and, at the weekend, fired in all but name.

Some observers of this change have suggested it was made to impress conservatives in Washington complaining that they have been cut out of the appointments. It is obviously also a strong signal, intended as such, to the government in El Salvador. To underline the message, Mr Haig has said that military aid to El Salvador will probably be increased.

Lest the new administration needed further to underline that human-rights considerations would play a small part in foreign policy, Mr Reagan greeted the South Korean president, Mr Chun Doo Hwan, at the White House this week. A reprieve for the condemned opposition leader, Mr Kim Dae Jung, was the administration's condition for the visit. Commutation of Mr Kim's sentence to life imprisonment, and probable exile, was cited by American officials to make two points. One was that behind-the-scenes pressure on behalf of political prisoners is more effective than public campaigns. The other is that South Korea's defences are too important to American interests to allow human-rights considerations to interfere.

The administration wanted Mr Chun to feel at home. The periodic human-rights report from congress, required by law, lists, as in past years, many violations of human rights in South Korea. A delay in its publication was arranged until after President Chun had gone. At the end of his talks with Mr Chun, Mr Reagan assured the South Korean that America's forces would remain. Officials added that security exchanges, suspended during recent years, would be resumed.

Defence

More money means less readiness?

WASHINGTON, DC

During last year's debate in the senate over the treaty to limit strategic arms, Senator Sam Nunn publicly bargained his support of Salt-2 for an administration commitment to long-term increases in defence spending. The new administration's commitment to just such real increases might therefore be expected to have received a hearty and unqualified endorsement from the senior senator from Georgia.

Facts of flying for Weinberger

But the defence business is full of surprises these days. Not only was Mr Caspar Weinberger assailed as a "budget cutter" by the conservatives who advised President Reagan on defence during the campaign. He was enjoined by Senator Nunn during an armed services committee hearing last week to read, mark, learn and inwardly digest a report on the consequences of Pentagon spending that challenges many cherished defence assumptions.

"Defence Facts of Life" is the work of a Pentagon analyst called Mr Franklin Spinney. Originally delivered orally to Senator Nunn's manpower and readiness subcommittee last December, it argues—using classified air force data—that, for the air force at least, higher defence spending alone may be as much a problem as a solution.

Mr Spinney points out that the armed forces have been investing in ever more complicated weapons over the past 30 years, despite the fact that defence budgets have remained more or less constant, in real terms, since the end of the Korean war (with the exception of the Vietnam years). That in itself might be seen as support for all the arguments on the need to spend more. But Mr Spinney goes on to examine in detail one area where there has been steady real growth—fighter planes. From 1973 to 1980 the budget for fighter planes grew at an annual average rate of 10.4% in real terms. In those years the air force invested no less than $52 billion in new equipment in this area. The result, however, has been a decline

both in numbers of aircraft and in readiness. Quite simply, the more the air force has invested in sophisticated aircraft and support equipment, the less ready it is to fight a war. For example, the F-15, a complex fighter, is "non-mission capable" 44% of the time. The F-111D, which carries some even more sophisticated electronic equipment, is out of action 67% of the time. The much more simple A-10 has a better record, being out of action only 33% of the time.

One argument for this greater reliance on high technology in weapons systems has been the shortage of manpower. But again, on Mr Spinney's figures, the problem and the solution have become mixed. Demands on manpower for maintenance have increased by 40% since the early 1960s. The F-15 has its breakdowns diagnosed by "black boxes" on board: these are then removed to be analysed with the help of an advanced computer which needs a highly skilled man to operate it.. In the last three months of 1980, 33 of these precious personnel, as important as the pilots in keeping the aircraft in the air, came up for re-enlistment. Not one chose to sign on again.

The exodus of pilots from the air force has been well publicised—the loss rate was 65% last year, up from 25% in 1976. Mr Spinney says that the pilots are not leaving the air force because of low pay. They are leaving, according to a survey carried out at the Air Force Academy, because they are not able to do much flying. Too many of those smart aircraft are sitting on the tarmac. The F-15, for example, can manage only 16 sorties a month.

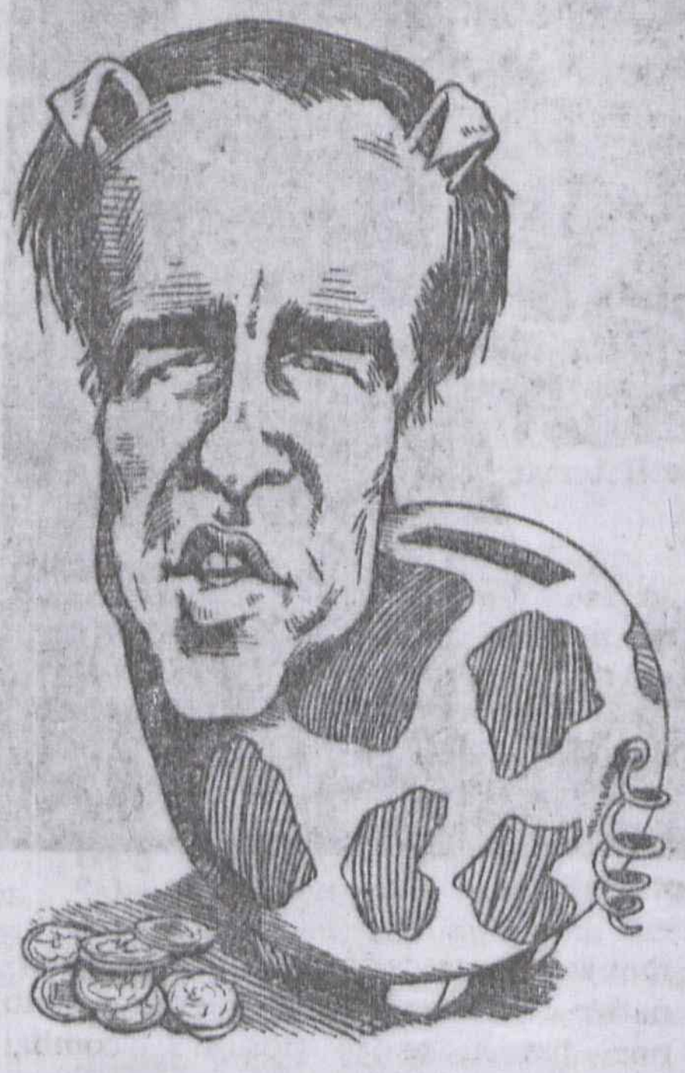
Like Mr Nunn, Mr Weinberger is said to be giving close study to "Defence Facts of Life". The air force is not pleased about that.

Jerry Brown

The medium is the message

SAN FRANCISCO

For those who thought Governor Jerry Brown of California the consummate devotee of television politics, it may come as a surprise that he has switched preference to a new medium: money. His discovery of money's political importance coincides with his pondering upon his own future. Within the next six months he will decide if he wishes to run for the senate in 1982 (still uncertain), seek a third term as governor (possible but unlikely) or follow the example of his immediate predecessor, Mr Ronald Reagan, and prepare himself for a presidential try



in 1984 via the citizen-savant route, writing columns in the press, lecturing on the national dinner circuit and putting in regular television appearances.

Performing on television may be Mr Brown's forte, but the prospect of newspaper columns reveals a change of style. Print has become a new fascination for this apostle of electronic communication who, until lately, disdained preserving copies of his speeches for posterity. Indeed he has never even committed those speeches to paper, but for six years has ad-libbed almost every appearance. By this indifference to formal speech-making, he expressed his revulsion at conventional politics.

It is in keeping with Mr Brown's new approach to the mechanics of political success that today his least utterance is taped, typed, printed and made available for distribution to all who ask. He still spurns speech-writers. Not even the usual signature-writing machine for letters is used in his office. But he has a new respect for the permanence of type. He has started his own newsletter, "Cornerstones", an unashamed propaganda-sheet. He is also considering an official governor's newsletter, less overtly political, which will report on events in California's government, presumably improving upon press accounts.

These changes, together with increased attention to computer mailing lists and a new diligence in attending meetings he formerly found boring, suggest that Mr Brown is nursing long-range political goals. He still sees himself as the Democratic party's sometime future hero. The pretensions of Senator Edward Kennedy or Mr Walter Mondale in the same direction do not deter him. As first step, he is out to rebuild the Democratic party in California. The key to this effort is his ability to amass campaign money and his new-found enjoyment in spending it.

In recent months Mr Brown has been preoccupied with fund-raising. Even immediately after the collapse of his presidential hopes at the Wisconsin primary in April, he found that he could draw political donations. In short order he paid off his own debt and began building a political fund, roughly $250,000, which he could dispense to those he favoured in local and state elections. With a year-round programme of fund-raising dinners in prospect, the governor hopes to amass a political war chest of $1m by the end of the year. Officials who support issues dear to the governor, such as energy conservation or toxic-waste control, are likely to be the chief beneficiaries.

An expansion of such fund-raising to the national level may take place within weeks. The governor's staff is considering forming a nationwide political action committee to allow Mr Brown's beneficence to spread outside California. Such a fund could support a move by the governor towards the senate, if that develops. He is not the only person rumoured to be interested in Senator S. I. Hayakawa's seat, which comes up in 1982; Mr Gore Vidal (the novelist), Miss Maureen Reagan (daughter of the president) and Mr Barry Goldwater Jnr have also been mentioned.

The governor's priority is to find and keep his allies at home. To that end, he has already given some $65,000 to help Democrats in the upper house of the California legislature. He is also trying to keep track of his grass-roots support. In December the Los Angeles Times discovered that a computer leased with state funds, ostensibly for state purposes, was being fed the names of Brown campaign supporters. In future the names of those who volunteer personal support for the governor will be filed in a computer in his fund-raising headquarters.

Atlanta

Pornography retreats

ATLANTA

Mr Hinson McAuliffe, a devout Southern Baptist of puritan persuasions, is claiming victory in his 10-year joust with pornography in Atlanta. As solicitor-general for Fulton County, the most populous in the Atlanta metropolitan area, Mr McAuliffe is empowered to issue warrants and pros-

SIR SOLLY ZUCKERMAN

Scientists and War

THE IMPACT OF SCIENCE ON MILITARY AND CIVIL AFFAIRS

HAMISH HAMILTON
LONDON

1966

If a country wishes its forces to live up to the standards set by the arms race between the super-powers, it must re-equip them at frequent intervals with weapons which are more sophisticated and therefore much more expensive than previous equipment. Considerations of the absolute size of the economy come into play at this point. The cost of developing a weapon system of a given degree of sophistication is much the same in all advanced industrialized countries. But the greater the 'buy' over which these costs can be spread, the lower the resultant unit cost. For this reason alone, the United States and the Soviet Union by their very size can, therefore, always expect to produce sophisticated weapon systems more cheaply than we can in Britain.

Let us suppose that as the Gross National Product rises, as a result of the greater productivity of a more or less static working population—the latter being Britain's lot at the moment—defence continues to draw off the same proportion each year. Would we be able, as the Americans say, 'to buy more defence', because of the greater absolute amount of money that would be going to the armed forces? (I am speaking, of course, in terms of money values standardized to take account of the effects of inflation.) The answer is 'No'. New aircraft, new surface-to-air missiles, new radars cost more than their predecessors, while improvements in the sophistication or effectiveness of our own weapon systems tend to be cancelled out by those of our enemies' weapons. A more expensive offensive system is countered by an even more expensive defence. The net result is an increase in expenditure on defence equipment by both parties—I am talking here about the race between the Western and Soviet blocs—and usually an increase in the security of neither.

But, on the other hand, if one side or the other unilaterally curtailed its defence expenditure, it would soon find itself at a military disadvantage. This is the fear that lies behind the arms race. The pace of this race is not of our determining; it is set for the world by the two super-powers.

We also have to remember that about half of the annual defence vote is consumed by pay, pensions, housing, feeding and clothing. The other half goes on building of one sort of another—for example, barracks and airfields—on the purchase of weapons, including ships and aircraft, and on research and development. As fast as the Gross National Product rises, so there is a corresponding rise in the cost of providing for the men the Services need. Only to a small extent do our forces consume goods whose relative costs are decreasing as a result of increases in productivity in the

industries concerned. Assuming that the proportion of the G.N.P. that goes to defence remains constant, this means that, at best, not more than the same proportion of the defence budget would be available each year for procurement and research.

But as everyone knows, the absolute amount available is already not enough, in our own case, to provide what the forces believe they need.

Each new generation of weapons, as I have already emphasized, costs more than its predecessor. Unless, therefore, we were prepared to spend an increasing proportion of our Gross National Product on defence, we could afford increasingly expensive re-equipment only if we accepted forces of a diminishing size (diminishing, that is, in terms of uniformed manpower, not necessarily of fire-power). In fact, as the British Government's economic plan has indicated, it is hoped that defence spending over the next five years will be held so that by 1970 it does not exceed £2,000m. at 1964 prices.

The consequences of the costs of increasing sophistication—which we would have had to face sooner or later, whether or not £2,000m. had been set as the ceiling of defence expenditure for 1970—can be abated to a certain extent, but are none the less inescapable. The first measure which to some extent mitigates is choosing weapons that are being produced in greater quantity than the ones they replace. This, in practice, would mean a smaller variety of equipment—and since weapons are usually highly specialized for different roles, the result might be having to give up certain military roles. Another measure which could mitigate would be to lessen the load of research and development costs—which, as I have said, are rarely less than one-half of the cost of development and production—by co-operating with other countries. A third and related measure is trying to avoid the research costs—if possible entirely—by buying weapons that are being produced abroad in quantity for several countries.

But not one of these measures is more than a palliative. Even with larger scale production, new equipment tends to be much more expensive than what precedes it. (Indeed, it is so expensive that without special efforts at standardization it is bound to be ordered in smaller quantities than before). The long-term consequences are, therefore, inescapable. If we are to be efficient in defence, we cannot plan on allowing our equipment to become obsolete. Equally, we cannot assume that a rising share of the Gross National Product will be allotted to defence. Therefore, the alternatives between which we are forced to choose are to plan on altering our tasks so as to avoid the need to introduce some of the most expensive new weapon systems; or to make our forces smaller; or a combination of both these measures.