DEFENCE EXPENDITURE AND NATIONAL ECONOMIES

Country	Defence expenditure (US $ million) 1968	Expenditure per head 1967 ($)	Expenditure as a percentage of GNP 1965	1966	1967
Britain	5,450	97	6·3	6·0	5·7
France	6,104	106	5·6	5·4	5·3
Germany	5,108	93	4·4	4·8	4·3
Portugal	305	32	5·8	6·3	6·7
Sweden	1,008	125	4·4	4·2	3·9
Switzerland	415	64	2·5	2·6	2·4
Czechoslovakia	1,538	100	5·7	5·7	5·7
East Germany	1,715	62	3·0	3·3	3·7
USSR	39,780	147	9·0	8·9	9·6
Israel	628	124	11·7	12·2	13·8
UAR (Egypt)	690	21	8·6	11·1	12·7
China	7,000	9	8·5	8·9	9·2
Japan	1,172	11	1·3	1·0	0·9
North Korea	629	37	8·9	15·4	17·3
North Vietnam	500	27	19·7	23·1	25·0
United States	79,576	368	8·0	9·2	9·8

Sinkiang province where nuclear tests are carried out, and possibly because of a partial failure of the last Chinese nuclear test in December 1967, these predictions have not been fulfilled. Continuing references in the Chinese press to a second artillery and a missile launching force suggest, however, that deployment of missiles is not far off.

Information about Russian military developments is relatively easier to come by, and the past year is outstanding for the rapid expansion of the Russian ICBM force. The Russians apparently now have about 800 of these weapons, almost twice as many as in 1967, and approaching the American total of 1,054, and the newer weapons are being deployed in hardened and widely separated sites. The Russian ICBMs are generally of greater megatonnage than those of the USA, but the American Minuteman force is powered by solid fuel rockets, which give a faster reaction time than those of the Russian liquid-fuelled rockets. The United States maintains its superiority over the Soviet Union in submarine launched rockets, with about 650 against 125. The Russians are said to have deployed a limited anti-ballistic missile defence around Moscow, but the so-called Tallin Line along the eastern Baltic coast and north-eastwards is now thought not to include any ABM system.

In the past year, Russian conventional forces have continued to develop a policy of flexible response to both conventional and nuclear war and there has been a build-up of airborne and marine troops. The invasion of Czechoslovakia attests the efficiency of the airborne force, and Russian tank-landing and helicopter carriers in the Mediterranean are being watched with interest. The military balance on the ground in Europe is reaching parity; although the Warsaw Pact forces have twice as many brigades as the NATO forces and more than twice the number of tanks, NATO brigades are nearly twice the size of Warsaw Pact brigades. Thus, in terms of manpower at least, the opposing forces are more or less equal and the Warsaw Pact superiority in armour is offset by the NATO forces' superiority in anti-tank defences. In the air the roles are curiously reversed. NATO aircraft have significantly higher performance and are predominantly strike and ground attack weapons, whereas the Warsaw Pact air forces are equipped primarily for defence. Defence expenditure in terms of percentage of gross national product (see Table) is highest in the Middle Eastern countries, North Korea and North Vietnam. In Europe the proportion has either stayed constant or dropped in the past three years, with the exception of Portugal which is paying for its colonial policy. The United States and the Soviet Union spend virtually the same percentage, 9·8 and 9·6 per cent respectively. The comparison also clearly reveals the cost of neutrality. Sweden spends more per head on defence than any other European country and Switzerland is high up in the list.

SOCIAL SCIENCE RESEARCH

No Policy Here

DURING the two and a half years that the Social Science Research Council has been in existence, selected committees and ad hoc panels of specialists have been compiling information originally intended to guide the council in its future policy. This information—which includes the views of some of the "leading workers in the field" on current research developments, likely developments in the future, research needs in terms of manpower, money and other resources and research organization—has now been published for the council by Heinemann. So far, opportunities for research in automation, international organization, political science, social anthropology and poverty have been considered. In practice, however, no doubt because of the very general terms of reference, few tangible policies emerge. When Mr Andrew Shonfield, at present director of studies at Chatham House, succeeds Dr Michael Young as chairman of the council at the beginning of January, he is unlikely to find that all his work has been done for him. The reviews do pin-point some of the problems facing social scientists and sometimes provide sensible suggestions as to how these could be solved.

There is also a common theme in several of the reviews—the complaint that social scientists have little time to spend on research compared with the time they have to spend on teaching. Also, there seems to be a need for more opportunities to establish "intellectual contact" with other workers, especially abroad. (The case for sabbatical leave is clearly emphasized.) There are several suggestions that the career structure of social scientists should be expanded; and at least three of the reviews suggest that the time has come for interdisciplinary research projects going against the grain of the traditional university set-up. Among suggestions for overcoming these obstacles is that there should be set up research units for social scientists, with emphasis on research rather than on teaching, in which people from various disciplines could put their heads together over the solving of problems. The council is also urged to bring pressure to bear in the provision of better library facilities, and the co-ordination and exploitation of research data.

HYDRAULICS

Along the Seaway

ONE of the longest hydraulic models ever built is being put together at the Department of Mechanical Engineering of the National Research Council in Ottawa.