

What a sad start for Mr A. Goodson, who took over from Mr R. H. W. Bullock as head of the Space Division at the Ministry of Technology on the morning of Black Arrow's failure.

All to Go at Gove

THE down-at-heel air that surrounds Britain's Black Arrow space programme is well illustrated by the news that the ELDO tracking station at Gove, Australia (where a computer failure caused the first postponement of last week's space shot) is up for auction. The sale will take place on October 20. All the station's equipment is to be auctioned off including presumably the errant computer and tracking dish that figured in last week's Black Arrow launch. For the Black Arrow firing last week the Ministry of Technology borrowed Gove from ELDO. Its function was to monitor the performance of the third (apogee motor) stage of the launch, a task that should in future be carried out by an onboard inertial apparatus on flight test for the first time last week. Some of the ELDO equipment in Australia is to be shipped to the Kourou range in French Guiana, where the remaining ELDO launchings will take place, but all of the Gove material is for disposal at the October auction. ELDO, chronically short of funds, hopes in this way to recoup some of its capital outlay. The sale is being widely canvassed among interested parties in the area—presumably the Japanese, the Americans and the various military establishments that make use of Australia. By a deft piece of public relations the announcement of the Gove auction occurred the same day as the postponement of the Black Arrow launch due to the failure in the Gove equipment.

States and the Soviet Union during the 1960s has continued into the 1970s, SALT talks notwithstanding, and these two powers alone are planning to spend \$114,778 million on their defences this year (*The Military Balance 1970-71*, ISS, 13s).

While the nuclear merry-go-round continues at this alarming rate, and the two chief military powers seem reluctant to step off, other powers are anxious to join in. The launching of China's first satellite in April this year inevitably increased speculation that Chinese missiles may soon be capable of hitting cities in the United States but, according to the Institute of Strategic Studies, there is still no evidence that the country has yet developed operational missiles, and its ability to deliver nuclear weapons is still limited to early bombers. Nevertheless, the long-term threat of that development seems to have provided a powerful lever for getting the appropriations for the safeguard system accepted by Congress.

As far as conventional forces are concerned, the Institute of Strategic Studies points out that the Warsaw Pact countries have some 11,000 more tanks and 2,000 more tactical aircraft in Europe than the NATO countries have, and that although the West is still superior at sea "Soviet fleets are now able to challenge at every level of military or politico-military activity". But it is in the Middle East that the chief economic effects of military build-up are being felt. Israel has planned this year to spend a quarter of its gross national product on defence, or a staggering \$400 for every Israeli citizen. The only other nation which comes close to spending that much is the United States, which reckons to spend \$393 a head this year, while Britain, for example, should spend about \$100. Egypt on the other hand, is planning to spend slightly more in absolute terms than Israel, but this amounts to about 13 per cent of its GNP.

DEFENCE

No Rest in Arms Race

WHILE the preliminary rounds of the Strategic Arms Limitation Talks (SALT) were going on earlier this year, the nuclear arms race showed little signs of slowing down. The Soviet Union, during the twelve months ending on June 30, 1970, added 250 new land-based and 120 sea-based intercontinental ballistic missiles to its arsenal, thereby putting it ahead of the United States in terms of sheer numbers of land-based missiles. But the United States continued to develop the Minuteman-3 and Poseidon multiple independent re-entry vehicles (MIRV) and a decision to expand the "safeguard" antiballistic missile system has just been taken by Congress. These developments, mapped by the Institute of Strategic Studies, provide ample proof that the policy of assured destruction capacity which has guided the defence policies of the United

Table 1

Table 1. GROWTH OF INTERCONTINENTAL BALLISTIC MISSILE (ICBM) AND SUBMARINE LAUNCHED BALLISTIC MISSILE (SLBM) STRENGTHS 1960-1970.

		1960	1962	1964	1966	1967	1968	1969	1970
USA	ICBM	18	294	834	904	1,054	1,054	1,054	1,054
	SLBM	32	144	416	592	656	656	656	656
USSR	ICBM	35	75	200	300	460	800	1,050	1,300
	SLBM	—	some	120	125	130	130	160	280

SEAL DEATHS

From Natural Causes

FORTY or so grey seal pups which were found dead or dying on the Cornish coast last autumn were suffering neither from pollution, nor from an epidemic, but from starvation after premature separation from their mothers. The deaths, in other words, were part of the normal juvenile mortality of the local seal population, according to Mr W. N. Bonner of the Seals Research Unit at Lowestoft, who has been conducting an investigation for the Natural Environment Research Council (*NERC publ. series C, no. 1, 1970*). On average some 60 per cent of all pups die in their first year, and this figure is likely to vary widely in stormy weather or crowded conditions, when pups can easily lose their mothers during the crucial three-week suckling period.

In view of the widespread publicity that the deaths received, and the ensuing speculation about pollution which blew up because of the Ministry of Defence experimental establishment at Nancekuke (Cornwall), eleven of the dead seals received post-mortem examinations. In all cases the primary cause of death was malnutrition; four of the seals had complications such as pneumonia or septicaemia, but the rest had simply starved. No startling amounts of contaminant were found in tissue samples, and even though the seals' blubber contained more polychlorinated biphenyls than expected, the concentration was well below that found