

will be replaced by the Egg Authority in March 1971. The Egg Authority will be more broadly based than the Marketing Board, and it will consist of twelve members from all branches of the trade. Its general terms of reference will be to improve the marketing of eggs, buying them up when necessary, and providing a market intelligence service, research and development work and advertising and sales promotion. It will not take over the Egg Marketing Board's role of buying from the producer and selling on the open market, and thus the bulk of the selling will be done by producers or their cooperatives.

The Bill would also simplify the system of capital grants to the industry and encourage farm amalgamation. It intends to replace the multiplicity of existing schemes by a single general scheme on a continuing basis and, in addition, grants given for the amalgamation of farmland will restrict the use of this land to agriculture for fifteen years instead of the previous forty-five. As well as helping to establish larger farms, the Bill also includes legislation covering smallholdings. County and borough councils which now provide smallholdings will become "smallholdings authorities", whose general aim will be to provide opportunities for persons with agricultural experience to become farmers by letting smallholdings which are capable of giving full-time employment to one or two men.

Fertilizers and feeding stuffs must be sold with much more information if the Bill is passed and by this means the consumer should be protected from buying goods which are not fit for the purpose which he intends. This part of the Bill will be enforced by local authorities. Finally, the Bill provides for a specific grant of £150,000 to encourage river authorities in England and Wales to improve their flood warning arrangements. This follows the recommendations of a conference held in December 1968 to discuss the widespread flooding caused by exceptional rainfall in July and September of that year. Similar provisions are included for Scotland.

SHIPPING

Nuclear Power at Sea

WITH the MinTech study group report on nuclear merchant ship propulsion expected at the end of the year, the struggle to produce plans for an economic atom-powered vessel is hotting up. Last week a team from Vickers—who share with Cammell Laird an intense interest in nuclear merchant shipping—released their plans for a 60,000 horsepower container ship which, unlike their earlier designs, appears to have an indisputable economic edge over a conventionally fired sister ship.

When Vickers originally made public their plans for a container ship—along with the oil tanker the only type of vessel with a high enough load factor to justify nuclear propulsion—it was for a 40,000 shp model, designed to carry 1,100 containers between Britain and New Zealand at an average speed of 24 knots.

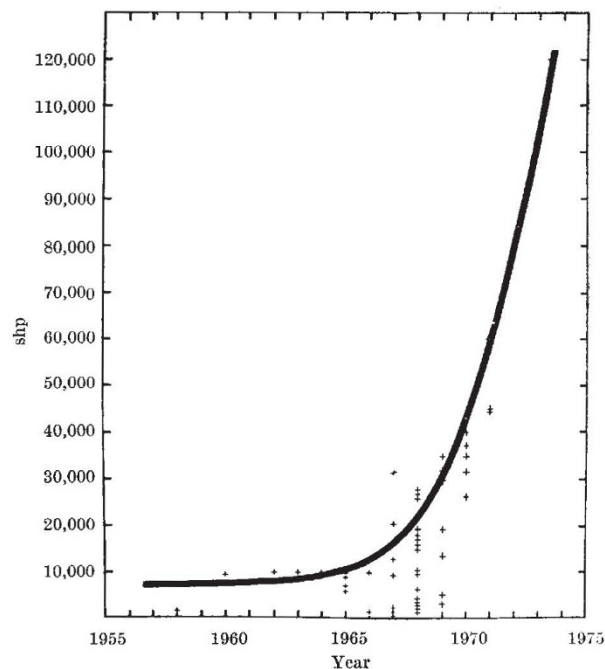
It was, however, admitted in the same paper that this figure of 40,000 shp was only the break-even point for nuclear economics when compared with fossil fuels.

Since then tonnages, load factors and horsepowers have increased dramatically to a point where, Vickers claim, there is little doubt that nuclear propulsion

would be a good deal less costly than any other form of power.

The operating economics of the new model, which the Vickers nuclear team of G. R. Wilkinson, I. A. B. Gaunt and J. R. Rouse announced at a meeting of the Newcastle University Naval Architects Society, seem extremely favourable.

Powered by a UKAEA burnable poison pressurized water reactor, the 43,000 ton vessel would carry 1,800 containers at an average speed of 27 knots between Europe and Australasia.



Trends in container ship horsepower—ships in service or on order.

The freight rate per container, as calculated by the economist of the team, Mr Rouse, would be as low as £44 for each voyage, as compared with £49 for conventionally carried containers. And assuming discount rates of eight per cent, the ton rate between the two terminals works out at £3 18s 0d, some 6s per ton lower than for an oil fired vessel.

Mr Wedgwood Benn made it clear in a recent policy statement that economic arguments alone would decide whether or not this country would go ahead with a nuclear merchantman. The fact that Russia, America, Germany and now Japan each has such a vessel apparently cuts no ice at Millbank. Whether or not this latest Vickers argument—or the presumably equally plausible arguments advanced by Cammell Laird—will sway the minister remains to be seen. Shipowners and shipbuilders await the study group's report—if it is to be made public—with interest.

EUROPEAN SPACE

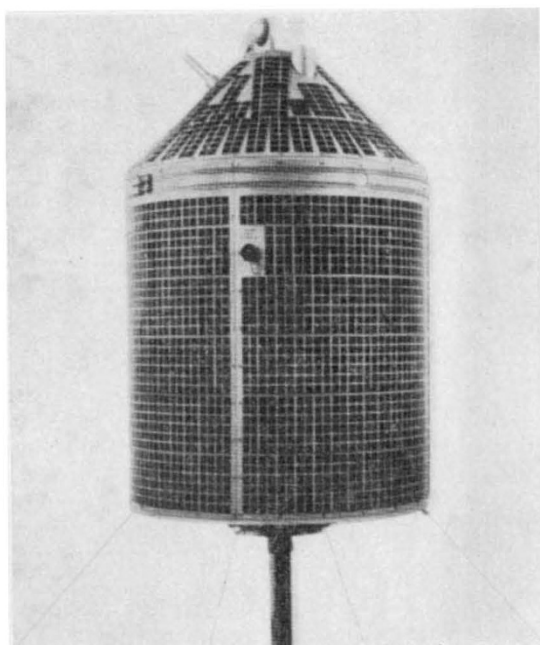
First All-German Satellite

from our Astronomy Correspondent

THE first satellite to be built entirely in West Germany—the German equivalent of Ariel 3—ought by now to be in its elliptical polar orbit. The satellite

was due to be launched by a Scout rocket from the Western Test Range in California on November 6. A symbol of West Germany's burgeoning space programme, the satellite is the final phase of an agreement between NASA and the German Ministry for Scientific Research which was signed in 1965. The agreement allowed for a series of rocket and balloon flights to prove the instrumentation of the satellite, and these were carried out from sites in Canada, Sweden and Brazil during 1966 and 1967. There has been no exchange of funds between the two nations—NASA has provided the sounding rockets and the Scout launcher free.

Although Germany's contribution to the European space programme is expected to remain more or less steady at about DM 150 million into the 1970s, there is to be an enlargement of the national programme which must be the envy of space scientists in France and Britain. Depending on what projects are chosen, the national programme in 1971 could be either twice or two-and-a-half times the contribution to Europe. The latest satellite—to be called Azur once it has achieved orbit—comes under the national programme.



The German satellite Azur.

The seven experiments which Azur contains are aimed at investigations of the Van Allen belts, aurorae and solar particles, and come from the Technical High School, Braunschweig, the Max Planck Institute for Extraterrestrial Physics, Garching, the Max Planck Institute for Aeronomy, Lindau, the University of Kiel and the Institute of Atmospheric Physics, Oberpfaffenhofen. Five of the experiments are to measure protons and electrons at various intensities and from different directions, while the sixth and seventh experiments are a magnetometer, and a photometer for detecting auroral lines. With an apogee of 2,000 miles and a perigee of 240 miles, the satellite should cover a considerable volume of the magnetosphere.



A WEEKLY ILLUSTRATED JOURNAL OF SCIENCE.

*"To the solid ground
Of Nature trusts the mind which builds for eye."*—WORDSWORTH.

100 Years Ago

From a leading article, Lectures to Ladies, in Nature, November 11, 1869.

WHAT is the meaning of the present stir about the "Higher Education of Women"? We have before us announcements of courses of lectures intended to be given during the coming winter to the ladies of Edinburgh, London, Glasgow, Manchester and Bradford. . . . If both lecturers and students are in earnest in trying to make these lectures really educational and serious, they cannot fail of producing valuable results. But this will require a good deal of determination on both sides. The most obvious, and perhaps the most serious, danger besetting the teachers, is the temptation—arising from an unconscious want of respect for their audience—to make their lectures *interesting*, instead of trying to impact the greatest possible amount of solid instruction. We confess that one or two very attractive looking programmes that we have seen have suggested the thought, that possibly the lectures they announced might be equally well described as essays, such as constitute the more thoughtful kind of magazine articles; and that, if this were the case, it was not obvious what greater advantage would arise from their author reading them aloud to an assemblage of ladies than would result if the same ladies could be induced to read them aloud to themselves at home. Thorough teaching, and not entertainment, of however high a kind, is what we trust that every lecturer will strive to give, and every student to obtain.

Ladies who intend to join any of the classes now forming will not expect to get any benefit from them, unless they give up for them all other engagements, at least so far as to be able to attend with regularity.

APOLLO

Countdown for Apollo 12

BEING the third and fourth person to land on the Moon does not guarantee a place in the history books, but the crew of Apollo 12 does have the important task of demonstrating that lunar landings are as deceptively easy as Armstrong and Aldrin made it seem four months ago. The countdown for the launch is due to begin today, November 8, and, if all goes well, the crew should be on their way by 1122 EST, November 14. They are Richard Gordon (command module pilot), Charles Conrad (commander) and Alan Bean (who is called the lunar module pilot although it is Conrad who does the flying). Once again a landing site in a flat mare region has been chosen, not far from the lunar equator which is the most accessible part of the Moon.