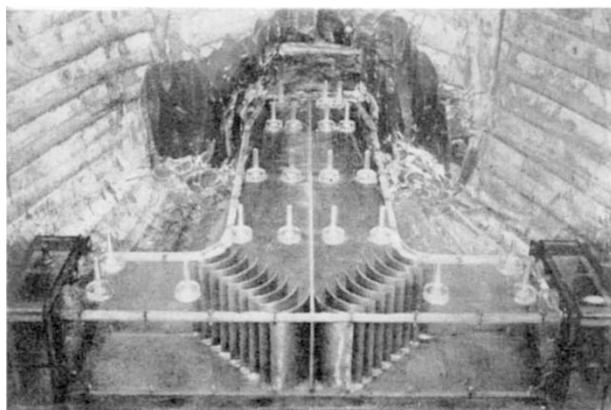


as a source of industrial activity is emphasized in its thirty-fourth publicity bulletin, *Inventions for Industry*. NRDC has been looking at the problems of developing an effective industry capable of servicing oil, gas and civil engineering equipment as far down as the continental shelf—about 600 feet—and was able to show a large number of exhibits at the Oceanology International Exhibition early this year. One of the items was the manned sea bed vehicle being built by Cammell Laird which should be available commercially next year. It is designed to work in depths of up to 600 feet and will travel on the sea bed on large wheels powered through cables from a control ship. The development of accurate homing and navigation systems is important for all underwater operations, and with the Decca Navigator Co. NRDC has been reviewing existing techniques and planning possible apparatus including sonar devices with underwater telemetry and optical and low frequency radio instruments. It is hoped that other companies will be stimulated to take part in the development work.



The diverging duct arrangement fitted to the NPL model ship's stopping device.

An ingenious project which NRDC is currently supporting is the development by Imperial Chemical Industries, Ltd, of artificial seaweed to stop coastal erosion. Tufts of polypropylene tape, attached by nylon straps to an anchor chain, seem to reduce the energy of the waves and make them less destructive. Arrays are being sown in Bridlington Bay in Yorkshire to stop erosion of a boulder clay cliff, and on the Norfolk coast where a beach on the estuary of the River Blyth is being eaten away. Another basically simple but commercially successful invention is the Dracone, a flexible towable barge made of nylon fabric and cord, coated with synthetic rubber, which is being used to transport refined petroleum and oil products, drinking water and vegetable oils, very cheaply.

The National Physical Laboratory has developed and tested a stopping device for ships. The problem, highlighted by the Torrey Canyon disaster, is to slow down in an emergency a ship moving at full speed to a speed at which the reversed propeller is most effective. The NPL's system uses an arrangement of ducts to direct water from a high-pressure to a low-pressure region, destroying its backward momentum in the process, and experiments indicate that it should decrease stopping distances by about 35 per cent.

ATOMIC ENERGY

Isotopes for Everyman

WITH the Treaty on the Non-Proliferation of Nuclear Weapons in the offing, the International Atomic Energy Agency is preoccupied with the impact the treaty will have on its work and in particular on the safeguards agreements affecting member states. This is one of the new responsibilities which the International Atomic Energy Agency sees for itself, according to its annual report for 1968-69. The implementation of the Non-Proliferation Treaty is being anticipated by the agency in its programme for 1970; recruitment of new staff has begun and new safeguards and inspection instruments are being put through their paces. The agency also received a request to prepare a report on the international control of nuclear explosions for peaceful purposes for U Thant, secretary general of the United Nations.

But beside all this the IAEA continues its worldwide efforts to coordinate nuclear technology. Nuclear power and its applications to such problems as desalination of sea water are becoming an attractive proposition for developing countries, but the agency also pleads for smaller plants that would make capital costs less prohibitive. Four new reactors went critical in 1968; there will be another twenty-three in 1969, and a world nuclear capacity of 110,000 MW is forecast for 1975. Because of this the report stresses the need for continued and increased prospecting programmes for uranium, but it makes no mention of recent developments in the centrifugal purification of uranium fuels.

The agency has also ventured into information processing. Data produced by member states will be fed into a central file and fed back either on magnetic tape or as a typewritten account. The agency has drawn on the experience of EURATOM and plans to adopt much of EURATOM's thesaurus in setting up a keyword retrieval service. In the field the IAEA is devoting a generous part of its budget to the application of isotope technology to the life sciences. It is supporting such projects as the investigation of radiation-induced mutation to improve cereal crops, isotope tracer studies of the fate of pesticides, the use of sterile male insects in eradication programmes and research contracts on radioisotope applications in medicine. It is not, of course, possible for all requests for funds to be met, and with inflation and the delays of some member countries in meeting their contributions the agency has to turn down an increasing number of applications every year. In 1969 little more than one quarter of the requests for funds were successful. Nevertheless, between 1969 and 1970 the agency's outgoings are expected to increase by 9 per cent from \$11,251,000 to \$12,250,000.

AGRICULTURE

Farming Maps

NEW agricultural maps of England and Wales are one of the benefits resulting from using the Orion computer at the Rothamsted Experimental Station to analyse the data collected in the annual agricultural censuses. Not since 1941 has the Ministry of Agriculture published a comprehensive set of types of farming maps, but last year the ministry published a composite map of all