

STRUCTURAL ENGINEERING

Test for Tower Power

WITH the supply of pylons for electricity transmission becoming an increasingly cut-throat business where every pound of weight saved counts, an optimistic future for the National Tower Testing Station was predicted by its manager, Mr W. R. Box, last week. If nothing else, the station wins the prize for being the most bizarre laboratory in Britain. A stone's throw from Cheddar Gorge, the station's asset is a disused limestone quarry which happened to be just the right shape and a collection of hydraulic rams dotted around the floor and face of the quarry. To simulate the working conditions of the pylons—conductors covered with ice, and so on—the rams, by working backwards, exert known loads on ropes attached to the structure. But the science involved is more than the parallelogram of forces. From a control room perched above one face of the quarry Mr Box and his colleagues run a sophisticated system which controls the rams and measures the applied loads to one per cent.



The National Tower Testing Station. Some of the rams are enclosed in the shed on the far face of the quarry.

Established by the Central Electricity Generating Board in 1966, the station is not yet making a profit, but it is now covering operating costs and expects to be completely self-supporting by March 1973. Pylons for use overseas occupy about sixty per cent of the work of the station, divided half and half between pylons designed by British companies for export and pylons designed by overseas firms. A pylon designed in Stockholm for use in Pakistan was being erected on the test pad last week. Pylons for use in Britain are going to be in the minority until a new range of towers is instituted.

Although Mr Box and his staff would like to get their hands on all kinds of structures, it looks like the testing of electricity transmission pylons will be taking up most of their time for the next five years or so. Where the tendency has been to overdesign these towers in the past, designers are now paring down the quantity of steel to go after the lucrative contracts in the developing countries of Africa and South America. Competition is fierce and with transmission lines several hundred miles long contracts are won or lost on quite small savings on cost per tower. Towers have to be

tested by law, and designers can send their towers to the National Tower Testing Station where the various disasters which can happen such as icing or an uneven load due to a broken conductor are simulated. Once a tower has been shown to live up to its specification, the designer likes to see by how much he has overdesigned it, and about fifty per cent of the towers are eventually tested to destruction.

ENVIRONMENT

Last Year's Dirty Water

OIL spillages in Britain's coastal waters, both accidental and deliberate, were worse last year than ever before. This is the gloomy news reported by the Advisory Committee on Oil Pollution of the Sea, a body which consists of representatives of the voluntary associations and other British organizations interested in marine use and conservation (report available from 1 Dorset Buildings, Salisbury Square, London EC4). Most of the oil washed up along the coastline came from unidentified sources, and the actions of unscrupulous skippers can only have been encouraged further by the absurdly small penalties imposed after conviction for illegally discharging oil—the average fine for the year was just over £225.

A tougher line with offenders is now promised by the Oil in Navigable Waters Bill, which the new government has taken over. But there are still accidents which damage wild life, and the advisory committee has set up a research unit at the University of Newcastle upon Tyne to investigate the effects of oil on seabirds. The unit is concentrating on the rehabilitation of oiled birds, but difficulties so far have meant that killing the birds remains the recommended policy. In any event, it seems that the worst oil spillages are more likely to kill birds outright—a single episode off the Dutch coast in February, for example, caused at least 20,000 deaths, chiefly of scoters and eider ducks.

Fatalities from other causes, however, were even more serious during 1969. The Royal Society for the Protection of Birds reports that nearly half the breeding population of guillemots in the Irish Sea have not returned to their cliff ledges this year, and suggests that some 50,000 may have died. About 14,000 razorbills also seem to have been lost. Although some birds may be coming back late after wintering in the open sea, these figures may well be the aftermath of the baffling appearance last autumn of thousands of dead seabirds on the shores of the Irish Sea (see *Nature*, 224, 402; 1969). Since in general only about a quarter to a fifth of birds that die at sea are washed up on the land, the 15,000 known deaths correspond fairly closely to the depletions in the breeding population. What killed the birds will probably remain a mystery—suggested explanations such as disease or unusually prolonged gales or contamination with polychlorinated biphenyls all seem insufficient to account for its scale—but the final word must await the publication in a few weeks' time of a report by the Natural Environment Research Council, which coordinated the subsequent investigations.

Polluted water inland is put into less foreboding perspective by the report of the Water Pollution Research Laboratory for 1969 (HMSO, London;