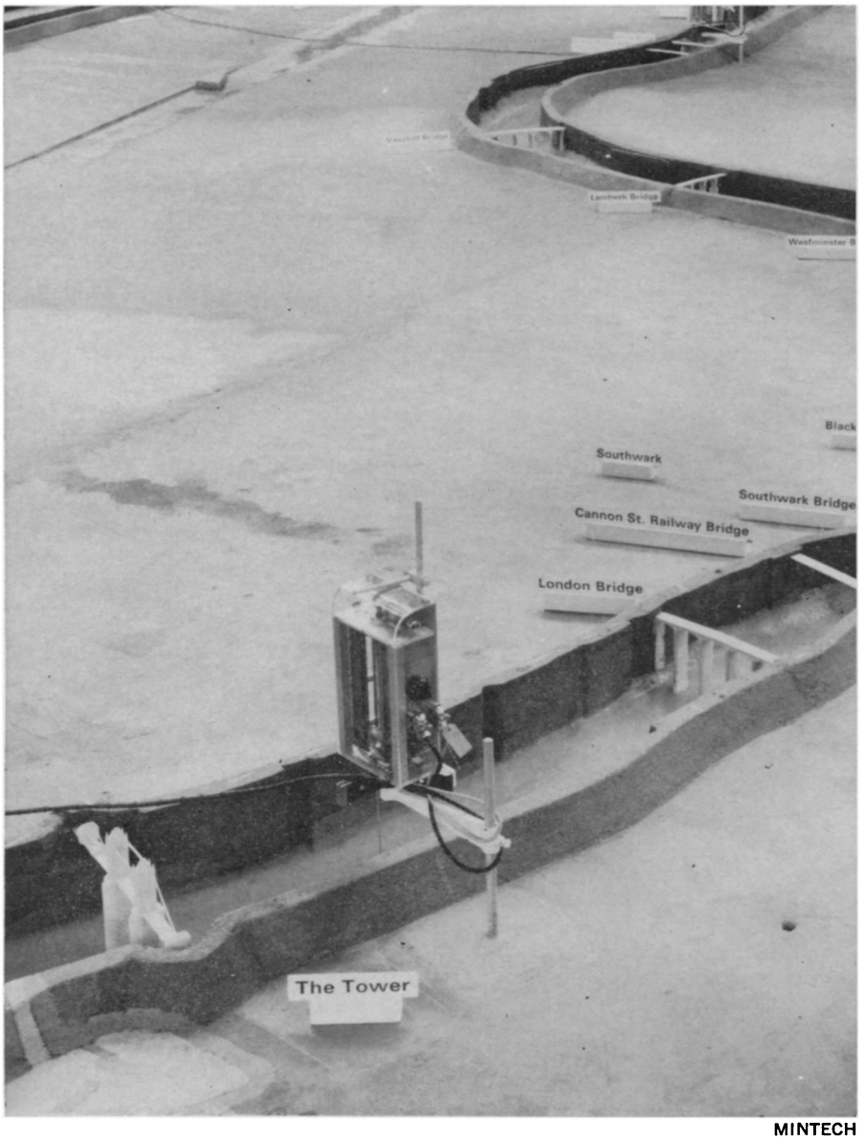


MINTECH

*Scale model Thames simulates what happens when tide and North Sea combine.*

CIVIL ENGINEERING

# Thwarting the surge

## British engineers are racing to design a way to keep the North Sea from flooding London

by Larry Miller
(Science News correspondent in England)

Once in every thousand years London can expect an exceptionally high spring tide to coincide with a North Sea surge, a wall of water created by changing barometric pressures in the Atlantic Ocean and fanned by winds. When it happens, the sea will sweep up the Thames estuary and overtop the banks. Water will rush down the subways, through the Houses of Parliament and cause chaos in every low-lying city office.

It hasn't happened in the 80 years that records have been kept, but the probability figures look just ominous enough to justify some official anxiety.

In the past 40 years there have been five occasions when the surge and the tide almost coincided precisely, but each time the North Sea surge hit at the time of something less than a maximum spring tide. In 1953, the worst occasion, the tide all but overtopped the banks; in the lower reaches, where fortifications were inadequate, many people lost their lives.

The Government knows that London is sinking at the rate of a foot a century. It also knows that west Scotland is rising, but the why of both or either is unknown. What is known, or at least feared, is that 1953's almost could be 1973's disaster. And it is moving against time to protect the city. It has instructed the Greater London Council, as the authority responsible for everything that happens above the high-water mark, to prepare a suitable flood protection scheme. As part of its preparations, the council has commissioned the specialist Hydraulics Research Station at Wallingford, in Berkshire, to build a 385-foot-long model of the tidal reaches of the Thames, extending 62 miles from Southend to Teddington Lock, which is as far as the tide rises.

**The model has** a horizontal scale of one inch in 450 feet, and a vertical scale of one inch in five feet, the distortion being necessary to obtain the correct velocities. It is to be used to determine the effect of constructing a barrier with movable gates or a dam-like barrage across the lower Thames estuary to exclude tides from London. Five possible sites are being considered and the model will reproduce all possible surge and fresh-water conditions.

A barrier is expected to cost in the region of $75 million to $100 million, and a barrage would be even costlier. With both structures, access would have to be provided for ships, though with a barrier this would be easier since the ships could pass through the gates when they are open. They would be closed only when a flood threatens.

Downstream of the barrier, or barrage, the banks of the river would have to be built to high levels; alternatively, selected areas of land would have to be deliberately flooded in order to contain the surge. Siltation could also be a problem in the London dock area, since the tidal flow which now moves silt along the bed of the estuary would be reduced. This factor is to be very closely studied since it could threaten Britain's livelihood. In particular, a continuous silt survey is to be conducted on the estuary.

**It will be** a year or more before the results of the model study are fully known, and no doubt several years more before anything gets built. In the meantime, the Government has installed an emergency warning system so that people can be evacuated from their homes or offices should the need arise. ◇