

sion will continue but its rate will be reduced. Too often, groins are brought into use more-or-less by trial and error when a beach is in a state of erosion and starved of its sand supply." It was generally concluded that groins promise more than they can produce.

Among the new and unconventional structures described was a flexible, porous, floating breakwater consisting of pulpwood logs. Because the "log-jam breakwater" acts near the surface where most wave energy exists, it caused significant attenuation over a wide range of conditions. In another design, a tubular breakwater was developed to disperse energy by friction and turbulent jets and thus reduce wave height. The action of air bubblers, often used as barriers for spreading oil, salt water intrusion, and ice formation, was analyzed to provide a means of correlating the vertical velocity field of an air jet-water mixture in model tests with field observations. Because "bubble curtains" require large quantities of air to suppress wave action, use of bubblers as a breakwater was deemed too costly. By successive experiments in a model with a stable beach profile, W. Price and K. Tomlinson demonstrated the effect of

artificial seaweed planted on an offshore bed in promoting greater net onshore transport. Field tests on an unstable eroding beach at Bournemouth, South England, showed that artificial seaweed can build beaches. Use of seaweed is one of the few methods known to bring material onshore but its use is still in an early stage of development.

The methodology papers presented information on new equipment, field methods, and analytical techniques, key parts of coast engineering research. Introduced were: methods for measuring nearshore currents; a system of daily coast-wide observations at numerous points on the California coast; a computerized linear multi-regression analysis for longshore current velocity; a field program of synoptic sediment and dynamic parameters; a sterowave meter for characterizing surf waves; a systems approach to selecting petroleum port sites; and "stabit," a new armor block for beach defense. Discussion pointed to a need for more routine and reliable measurements of wave direction in addition to concurrent measurements of waves at sea and in the surf zone.

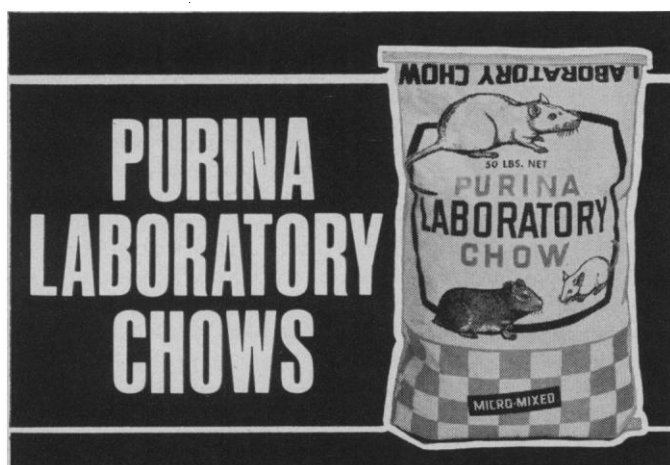
A series of "case histories" showed how experiments and theory could be

used, as well as expedients on hand, to solve practical problems in different parts of the world. Whether or not these cases were successful, they allowed many to learn from the experience of others. Among the cases presented were: the design of jetties for lagoon entrances and river mouths, development of artificial beaches, recession of terraces, shoaling of harbor entrances, and protection of dunes by stone mounds on a sandy beach. Although numerous case histories were reported for different parts of the world, few recorded the failure of structures and their life history in relation to forces of the environment. With passage of time coastal engineering problems will become more complex and solutions more difficult.

Papers will be published as proceedings by the American Society of Civil Engineers, 345 East 47 Street, New York 10017. They will be available in May 1969 at a cost of \$12. As for future conferences, the Council recommended Washington, D.C., for fall 1970 and Canada for 1972.

MAYNARD NICHOLS

*Virginia Institute of Marine Science,
Gloucester Point 23062*

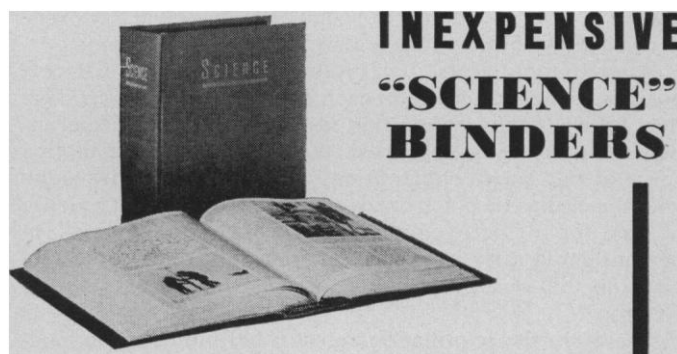


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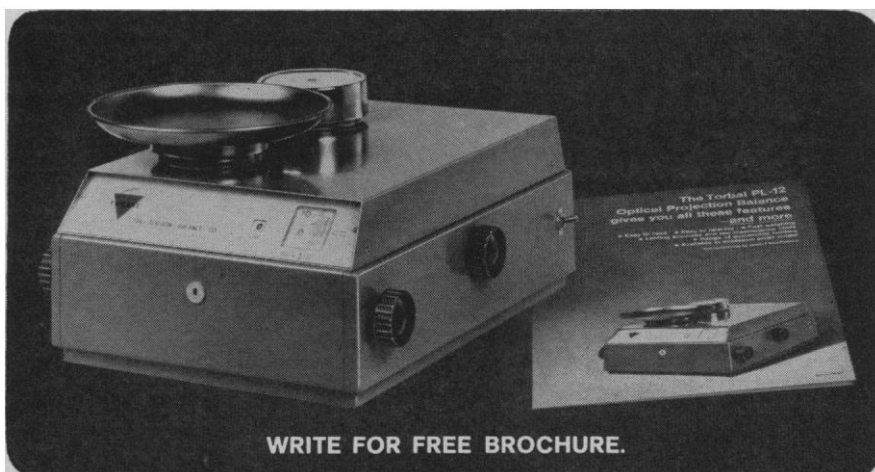
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