CHAPTER 12

THE DEVELOPMENT OF A SAND BEACH BY DEEP-WATER WAVES

Harold Flinsch
Mississippi State College
State College, Mississippi

ABSTRACT

In a previous paper**, it was shown that the mechanism of the trochoidal waves can be used to determine the equilibrium slope of a sand beach under any wave conditions. As a start it was assumed that the beach material was of uniform grain size, and that the waves approached the beach directly with all motion in planes at right angles to the shore line.

In the present paper, the application of the theory is shown in the development of various sand and gravel beaches. The equilibrium theory is studied in the light of the fact that there is usually considerable transportation of material along the shore. In particular, attention is called to the characteristics of beaches with rounded or pointed contours, of beaches whose ends are closed off by rocks or cliffs, or whose ends are open and extend into deep water without barriers of any kind.

A method of study and analysis is demonstrated which can be applied to all beaches. Finally, it is shown that an accurate forecast of the natural development of a beach can be made on the basis of the equilibrium slope equation, as well as a forecast of the effect of any structure placed in a naturally developing beach.

---

* Manuscript not submitted

** The Effects of Waves on a Sand Beach, by Harold Flinsch, Proceedings Minnesota International Hydraulics Convention, Minneapolis, Minn., September 1953.