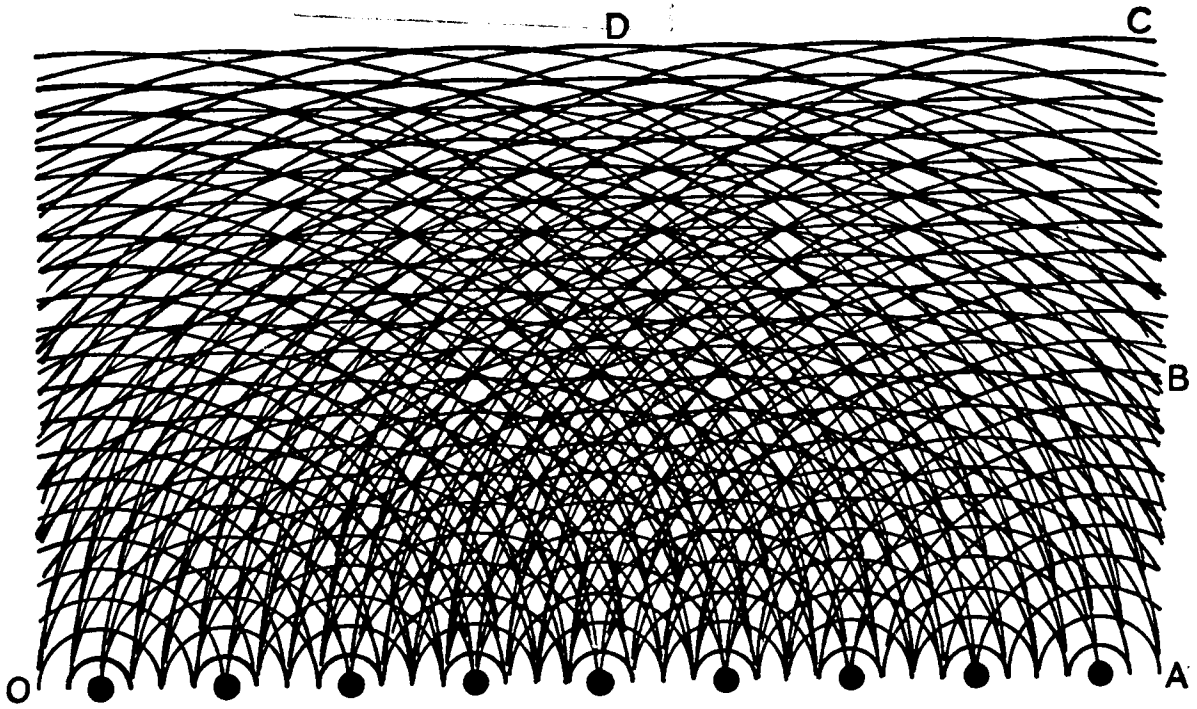

Fig. 66. The black dots here may represent a set of regularly spaced openings in the barrier of the ripple tank, or they may represent a set of particles, evenly spaced, which scatter the incident light in the form of circular ripples (or spherical if we extend the treatment to the three-dimensional case). The waves are advancing from below, and their front is parallel to O A. The wave-front D C is formed as already explained Fig. 65. Here other wave-fronts are formed also. To see them look along the diagram obliquely in the directions O A, O B, O C, and O D in turn. There are no other wave-fronts but these. (Diagram by W. T. Astbury.)

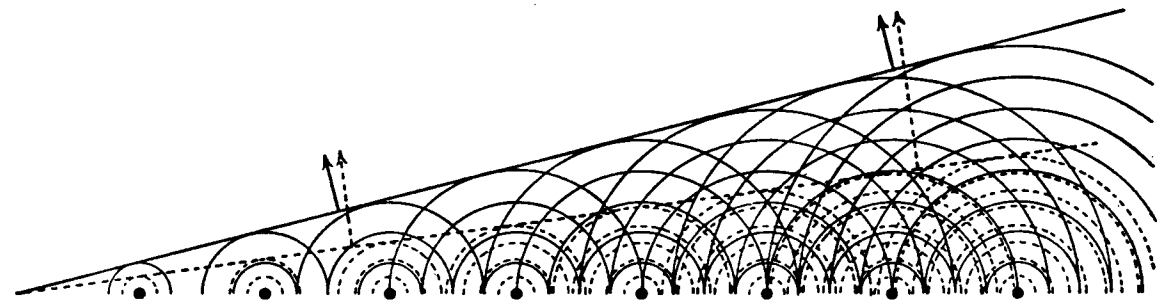

Fig. 67. This diagram is an extract from the last, showing the formation of the diffracted waves of the first order. It also shows how the direction of diffraction depends upon the length of the wave. The shorter waves are related to the longer in approximately the same way as the blue waves to the red.

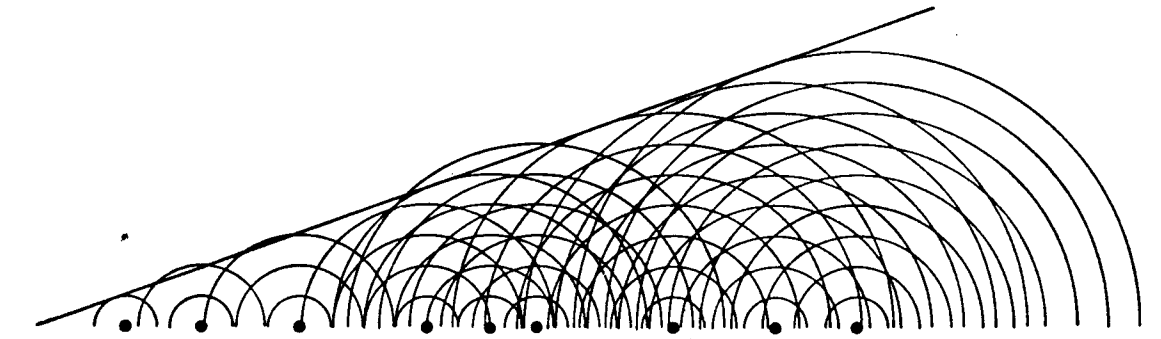

Fig. 68. This diagram shows that a diffracted set of waves is not formed unless the centres (black dots) are spaced evenly. If a straight line is drawn, as in the figure, to touch some of the wave crests which the circles represent, it goes between others. Thus some of the ripples would cause a crest on the front and some a hollow, and in the aggregate there is mutual destruction. The 'interference' between the separate sets of ripples is more fully discussed in what follows.