Copy of a printed diagram representing electro-magnetic waves referenced as "E.M. waves"

wellcome collection

Wellcome Collection
183 Euston Road
London NW1 2BE UK
T +44 (0)20 7611 8722
E library@wellcomecollection.org
https://wellcomecollection.org

down and a spark passes between the rods. During the passage of the spark the charge on each rod passes to the other rod, then back again, then to the other again, etc. That is, there is a surging or oscillation of the charge. The charge, in passing to and fro from one rod to the other, constitutes an oscillating electric current which in turn gives rise to an oscillating magnetic field at right angles to the rods forming the oscillator. There are electro-

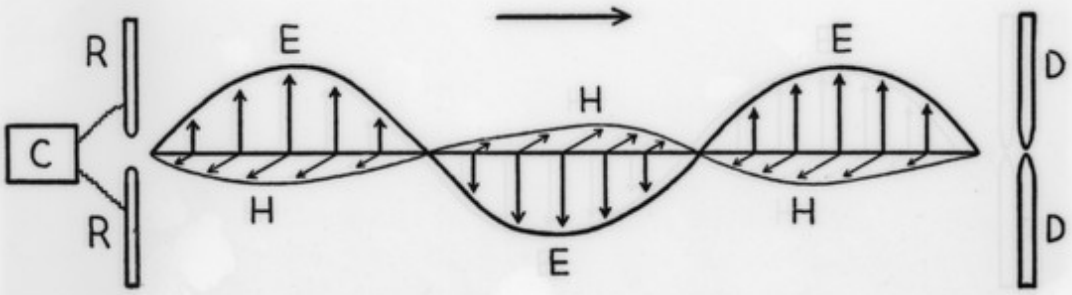

FIG. 10

magnetic waves sent out. For a direction of propagation horizontally to the right, indicated by the arrow above the figure, the waves take the form illustrated. The undulating electric force, E, lies in the plane of the figure and is vertical, and the undulating magnetic force, H, is perpendicular to the plane of the figure; it is horizontal. Both vectors are perpendicular to the direction of propagation of the waves—that is, the waves are transverse.*

Hertz detected the existence of the waves by a second oscillator, which we shall again represent as two rods, DD. The gap between the two rods is very small in the detector. The incoming waves build up sufficient potential difference between the two portions of the detector to cause a minute spark to pass in the small gap. This spark reveals the existence of the waves—which induce a surge of charge in the detector.

Having devised the above-described means for producing and detecting electromagnetic waves, Hertz made large mirrors of metal and showed that the waves could be reflected—and he brought the waves to a focus by a con-