A NOTE ON THE TRANSMISSION OF LIGHT IN SEA WATER AT COCHIN NAVAL JETTY

By

J. N. Nanda and A. K. Kelkar,

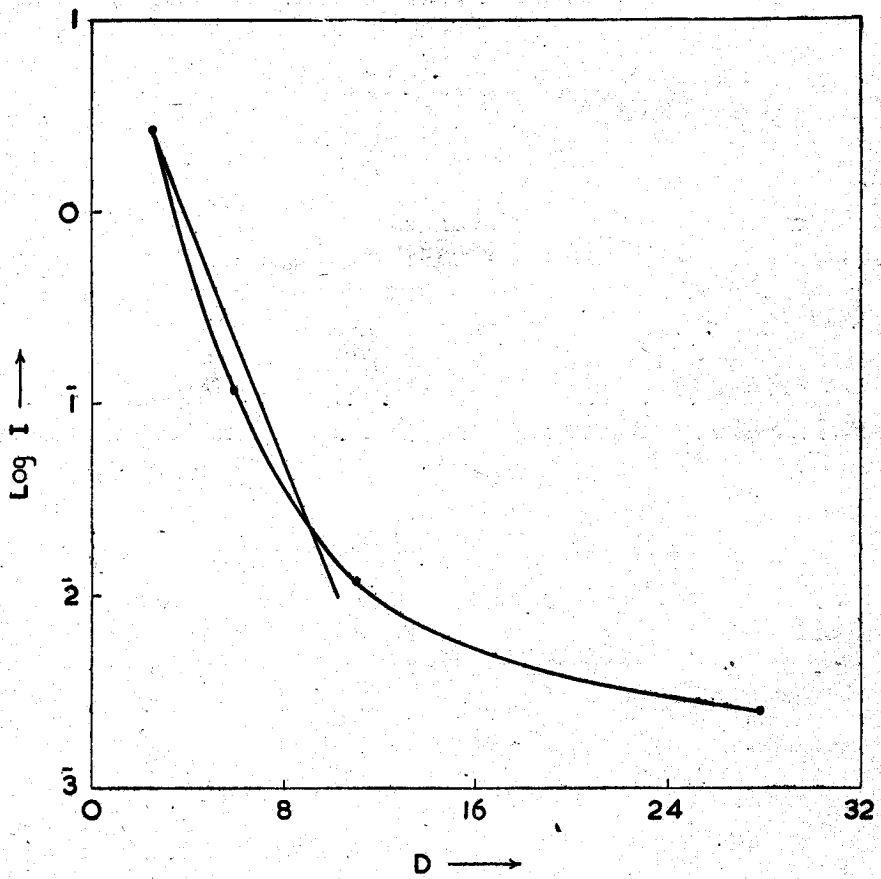
Office of the Scientific Research and Development, Naval Headquarters, New Delhi

In connection with under-water illumination at Cochin, practical trials indicated that a diver could not see 500 watt lamp immersed in water from a distance of about four feet or so, the transparency being rather low. Transparency was measured by means of response of a photo-cell to immersed light. Both the light (500 watt search light lamp) as well as the photo-cell were immersed to a depth of 1 yd. and distance between the two was varied from 2·5 ft. to 28 ft. The observations are recorded in figure 1. These observations were taken at night.

The transmission does not show logarithmic relationship and there is slightly more illumination at distant points than permitted by an exponential law. This can be ascribed to multiple scattering as well as scattering from the surface. The extinction coefficient(x) calculated from the first three points is 2·3. The photocell response was observed by noting the difference between meter readings when the photo-cell faces the lamp and when it is turned away from the same.

As a check, Secchi disc observation was made at mid-day. The depth (D) at which the disc disappeared was 0·8 meter. From the relation $x = \frac{1 \cdot 7}{D}$ we get $x = 2 \cdot 1$. The results show tolerable validity of Secchi disc relation even for such high rate of extinction.

For comparison, the extinction coefficient for visible light in Californian coastal waters is only about 0·4. The high opacity for Cochin water is due to suspended matter in it.



Graph showing Logarithm of Photo-Electric cell current and Distance in feet from Search Light.