Magnetic Properties of Evaporated Iron Films

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the transmission decreases with increase in wave-length; the polarization increases.

3. With a given width of slit, and a given wave-length, the transmission decreases with increased depth of slit, the polarization increasing.

4. With a given depth of slit, and a given wave-length, the transmission increases with increase in width of the slit, the polarization decreasing. Some of these conclusions have been verified by direct experiment. It is hoped to test the remainder in the near future.

The results of the calculations indicate that if one is to measure the intensity of transmitted light by means of varying the width of a given slit, or if one is measuring the polarization of a given source of light, and in the process of this measurement the light is made to pass through a narrow, or a deep slit, then serious errors are almost certain to arise.

The full details of the theory will probably be published in the Journal of the Optical Society.

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A study was made of the magnetic properties of iron films deposited on tin foil in a high vacuum by the evaporation method used by J. C. Steinberg. The magnetization curves and hysteresis loops were obtained by an induction method in which the specimen, inserted in a search coil, was placed in a magnetic field of known strength and then suddenly removed from the search coil. The resulting flux was measured by means of a galvanometer which, in order to obtain the required sensitiveness, was kept on open circuit all the time except for an instant while the current passed through it. The results show that iron in this form possesses a high degree of hardness, displayed in a high coercive force. This hardness is now manifest in the thin films, but the maximum intensity of magnetization attainable seems to be independent of thickness. The work will be extended to include nickel and cobalt.

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