
The Anomalous Dispersion of Cyanin

Magnusson Carl Edward

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THE ANOMALOUS DISPERSION OF CYANIN

BY

CARL EDWARD MAGNUSSON, B. E. E., M. S.

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THE ANOMALOUS DISPERSION OF CYANIN.

PART I.

HISTORICAL SURVEY.

(a) *Experimental.*—It has long been a well known fact that prisms having the same angle of refraction, but made of different kinds of glass, yield spectra which are wholly unlike one another in character. Not only is the refraction or the deviation of the light produced by one prism different from that which results when a prism of different material is employed, but the amount of dispersion, or the angular extent of the spectrum, depends likewise upon the material of which the refracting substance is composed. Moreover, to a very great extent, refraction and dispersion are independent of each other, so that media are frequently found having a high refractive index but a small dispersive power, and conversely, other media exist having small refractive power but possessing high dispersion. The angular distance between any two given wave lengths in the prismatic spectrum depends, therefore, not only upon the refracting angle of the prism but upon the nature of the material of which the prism is made, so that in general, prismatic spectra are unlike one another both in angular extent and in angular distance between corresponding wave lengths. This variability in the character of prismatic spectra is known as the irrationality of dispersion.

Until the year 1840 no exception had been found to the general law that short waves are deviated more than longer ones, that is to say, that the order of arrangement of colors in the spectrum is always the same although the distances between any