

pronounce as to the true character of the structure producing the interference, and find these very phenomena a great help instead of a plague and a torment.

A class of phenomena accompanying the use of "oblique illumination" should be considered here, but we must confine ourselves to pointing out the form the errors generally assume. The phenomena are strictly analogous to the second images seen when the image of an object is viewed in a thick looking-glass, and were, of course, due to successive reflections from the different surfaces of the mirror and its metallic coating. When such objects as diatoms are viewed by very oblique light from the mirror, these secondary images are very numerous, arising from successive reflections from the surfaces of the thin cover, glass slide, the object itself, and the medium in which it is mounted. These successive reflections produce the appearance known as false striæ, and may be detected by slightly changing the angle of incidence of the illuminating pencil, or by rotating the object in a horizontal plane.

*Molecular Movements.*—We must notice these very briefly, as our space has nearly run out. These, called often after their discoverer, *Brownian movements*, are hardly to be distinguished from those more properly called vital by any other than an experienced microscopist. Indigo, carmine or gamboge rubbed up in water is admirably adapted to show the movements, and a careful study of them will be the surest means of enabling the student to recognize them. Their want of power of choice (*i. e.*, their movements are purely mechanical) is, perhaps, their sole distinguishing feature. The differences between Brownian and vital movements in small particles are so slight, that it is doubtful whether they can be described, or that anything but experience will enable the student to distinguish between them.

Certain sources of error of interpretation arising out of the use of the micro-polariscope and micro-spectroscope, must be deferred, as must also the discussion of a few other points with reference to the use of the ordinary stand. Enough has, it is hoped, been said to be of use to the student in microscopy, who, like the author, in his younger days especially, is pretty often at his wits' ends.

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## SOLVENTS FOR INDIGO.\*

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*Translated by C. Dengenhardt.*

Some new solvents for indigo have lately been given by de Aguiar and Baeyer, and by Prof. Wartha. (See *American Chemist* Vol. I. p. 472). To these I will also add a few which I have discovered,

\*From the *American Chemist*.