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## THE USE OF GUM DAMAR IN PALEOHISTOLOGY.

(With Notes on the Genus *Benthopecten*.)

BY GEORGE H. HUDSON, Plattsburgh, N.Y.

In the study of the detail of opaque objects with the simple or compound microscope, there are some very decided advantages to be obtained through covering the object with some transparent medium that may be used to hold a cover glass in position. The writer has long used a solution of gum damar in benzol for this purpose, and whether the mounting was for temporary observation, for drawing under camera lucida or for photomicrographic work, the results were often of surprising value. For instance, he was enabled by this method to obtain a microphotograph which without retouching was used for the production of a figure (1911, plate VI, fig. 1) showing clearly the sutures surrounding the radial of *Palaeocrinus striatus*, Bill. Billings stated that he could not make out the sutures in this region, and so left it blank in his published analysis. Bather, in Lancaster's "A Treatise on Zoology," Part III, p. 172, gives an analysis that for this region is in error. How great a help this process is in revealing sutures may also be seen by comparing (1911) figures 27 and 28 on page 252. The writer will here give reasons for the character of the results obtained, present other advantages of the method, and give briefly a description of the process as he uses it.

Suppose that we make the attempt to photograph a printed page through a sheet of ground glass placed directly over it. Much of the incident light will be reflected and scattered. Such of these rays as enter the lens will tend to produce a uniform fog over the whole negative. They are from the ground glass surface and not from the covered paper. That portion of the light which reaches the printed surface cannot return without being subjected to both reflection and refraction on account of the many minute angles presented by the ground surface through which it must pass. This tends to give us numerous overlapping images. If now we will wet, oil or varnish the ground surface we shall cut down its reflecting power to a marked degree. The more nearly alike the indices of refraction of the two transparent media the greater will be the amount of light received by the lens from the covered object, and the sharper will be the negative secured.