

II. — *Report on Slides of Insect Scales.* Sent to the Royal Microscopical Society by the CHEVALIER DE CERBECQ, accompanied by a letter. Examined by HENRY J. SLACK, Sec. R.M.S.

(Read before the ROYAL MICROSCOPICAL SOCIETY, Jan. 3, 1872.)

THE objects on slides sent by the Chevalier appear to be mounted in balsam, by which many are rendered so transparent as to require great care in illumination. His intention in forwarding them was to show that they confirmed the idea that a beaded structure was a reality, and not a mere optical illusion. On several slides the scales are arranged in star patterns, so that an illuminating ray from any direction will fall upon them at different angles.

The following examinations were made with Powell and Lealand's new $\frac{1}{4}$ th, Ross' C eye-piece and $\frac{1}{4}$ ths condenser, stopped to an angle of 75° , and employed with a single radial slot giving unilateral light, generally sent across a scale nearly at a right angle to its long axis.

? DEILEPHILA ELPENOR (Elephant hawk-moth) exhibits various appearances according to illumination and focussing. An aspect of coarse beads is evidently an optical illusion, and even if the objective is well corrected, a false appearance is seen if the focussing is too near the object. The most probably correct view seemed that of longitudinal ribs, with trough depressions between them, each trough crossed thickly with very numerous rows of beads in fine lines. A false aspect is presented if these horizontal beads are not well displayed.

MELANIPPE.—1. A scale showing better than most, gave appearances somewhat similar to the preceding, but the bead rows between the ribs inclined to be convex. This was not the case in some other scales. Some scales appeared to contain a great many more beads than others. In injured scales some bead rows were displaced without injury, but in some spots which looked crushed—no structure visible. Many scales show beading as plain as possible. The fineness of the beading varies in different scales.

2. Delicate beaded ribs, transverse rows as if in depressions; very distinct.

MORPHO HELINOR.—Structure much the same. Beading very delicate and fine, but beautifully sharp and clear.

MICROLEPIDOPTER.—Ribs not as strong as in most others. Beading very delicate; linear on some scales, in others running in curved and angular directions to perpendicular axis. Beads very distinct, though small.

JUNONIA (GAROVIVUM ?).—Beaded ribs very distinct; bead rows at right angles to them and between them distinct. A very slight error in focussing confuses the appearances. Each rib should be shown as a raised row of single beads.

MARS CHANGEANT.—Ribs numerous; beading fine, but distinct; transverse beading not uniform in angle. Careful focussing needful.

PAPILIO AGARIS.—Beading distinct both in broad and long scales; rib beading in former somewhat irregular.

LYCOREA ATERGATIS.—Ribs close together; beading distinct. Slight error in focussing confuses ribs and interspaces. Torn scales show that line of separation tends to run between beaded ribs; in some places single bead rows have been detached with little injury.

ABETINOR DE SURINAM.—Rather difficult; beads distinct when well shown, and seeming close together. Damaged scales confirm fact of beading. It is very easy to confound the ribs and interspaces with their bead rows at a lower level.

ATLAS CHINA.—No reason to doubt the beading. Ribbing best shown towards serrated tips.

ALCANDOR (CHINA).—Beading between the ribs irregular. Central ribs in one scale obscured by thick dark irregular beading. Another scale has this character all over.
