

pulley made twelve turns for each one made by the lower, and could be caused to rotate twenty-four times in a second. The insects were killed by ether vapor immediately before each experiment; and the wings could be fastened, by a simple contrivance, to the front prolongation of the axis of the upper pulley.

A wing, in its folded state, was fixed on the instrument in such a manner that its plane made, with the plane of rotation, an angle of 45° , as in the living animal. On turning the pulleys, it struck the air obliquely by its upper surface and front margin; but the small diameter of the apparently continuous revolving disc (as indicated by a graduated scale) proved that the wing was still folded, and that centrifugal force had not affected it. When rotation was produced in an opposite direction, so that the wing struck the air both by its posterior membranous margin and interior surface, the increasing diameter of the disc gave proof of the expansion of the wing, which, indeed, continued to be much extended when motion was arrested. When the plane of a wing was perpendicular to the plane of rotation, and the revolution of the wheel was such that the wing struck the air by its dorsal or upper surface, no extension ensued; when it struck by its lower surface, only partial extension followed. Now the oblique, not the perpendicular plane, is that chosen by nature, and is as has been seen, much more favourable for flight.

On fixing an open wing on the axis so as to make an angle with the plane of rotation, and turning in one direction, the wing remained open; on reversing the direction (*i.e.* acting on the upper surface) it became partially closed.

EXCHANGES, &c.

LEPIDOPTERA.—Canadian Lepidoptera desired in exchange for British.—E. H. COLLINS, *Daily News* Office, Kingston, Ont.

PUPÆ AND OVA OF LEPIDOPTERA.—I am desirous to obtain, if possible, *live* Pupæ and Ova of certain Canadian and other North American Lepidoptera. Would purchase, or give in exchange English or other European species.—CHAS. GEO. ROTHERAM-WEBSDALE, 78 High-street, Barnstaple, England.

COLLECTING TOUR IN WESTERN TEXAS AND NEW MEXICO.—At the request of several gentlemen in this country and Europe, I intend to make an extensive eight or nine months Entomological collecting tour in Western Texas and Southern New Mexico, if sufficient means can be raised. I therefore invite every Entomologist, who wishes to enrich his collection with valuable and unknown species, to assist me in the undertaking. To give