BOOK REVIEW

Insects In Flight. W. Nachtigall. 1974. McGraw-Hill Book Co., New York, 153p. $13.95. (originally published in German, 1968; translated by H. Oldroyd, R. H. Abbott, and M. B. Thorson). This book includes almost everything you wanted to know about insect flight but weren’t sure where to ask, and it does it in a fashion that is understandable to college undergraduates, old professors, and capable high school students. It is organized into 44 essays or capsule chapters on a wide range of subjects: sail butterflies gliding on the seashore; the wonderful substance resilin; a catapult launch is nothing remarkable for the fly; one two-hundredths of a second in the life of a bluebottle; how the wing beats generate aerodynamic forces; sense organs are the insect’s flight control instruments; what controls the muscle twitches? Or! $30,000 worth of electronics; the precision mechanism that drives the wings; fuels for insect flight; how do pigmy insects fly? There are chapters dealing with fundamental insect biology that give the non-entomologist some background: the external and internal structure of an insect; the importance of classification; the form and construction of the wings of insects: glistening scales and glassy membranes; migratory flight of locusts and butterflies; how foraging bees find their way back to the hive: an exercise in direction-finding and aerial navigation, insects walk on 6 legs. These also make it possible for the book to be used as a text around which an insect natural history course could be built. And there are chapters that relate and analogize insectan and human flight: comparison between insect and human flight; painstaking experiments mean safe aircraft.

Nachtigall writes as the participant in the study of insect flight, not as an interested or mercenary literary. He discusses from personal experience the construction and operation of the gaudettry that is necessary for precision measurement of aerodynamic forces and for recording wing movements on film. (The complexity of this preparation is sufficient to turn one to blacklights and taxonomy). With its homey style ("Is our 'wonder insect' thus no better than an old postcard and a couple of paperclips? We shall see!") general readability, and high informational content this book should be on library shelves in schools and entomological sanctuaries everywhere. I challenge anyone to read it without getting the urge to glue a fly to something—the better to know it. Teachers of basic biology and entomology, and perhaps aerospace engineering, can get a number of lectures and lab exercises from the book.

I wish that Nachtigall had discussed why "Nature, on the other hand, knows nothing of revolution round a shaft . . .", and "... the beating of wings (is) the only feasible flight mechanism for animals." In sum, good content, format, figures, photos, binding, few errors, and a good investment for time and coin.

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