

by the accumulated impulse, to a considerable height in the air. The leaps of insects being generally forwards, all the legs do not participate equally in the effect; for the fore legs contribute much less to it than the hind legs, and are more useful in modifying the direction of the leap, than in adding to its force. The power of leaping is derived principally from the great size and strength of the extensor muscles of the legs, which, being contained within the femur, necessarily swell that division of the limb to an unusual thickness; and in order to procure sufficient velocity of action, both the femur and tibia are much elongated. Thus the locust, which is so constructed, leaps with ease to a distance two hundred times the length of its own body. We may in general, indeed, infer the particular kind of progressive motion for which the insect is intended by observing the comparative length of the different pairs of legs. When they are of equal size, the pace is uniform:—swiftest in those that have the longest legs,—slowest when they are short. When the anterior legs are much longer than the posterior, the power of prehension may be increased, but that of progression is impeded. The great prolongation of the posterior legs is generally accompanied by the power of jumping, unless, indeed, they are at the same time much bent, for such curvature disqualifies them from acting advantageously as levers.

Many insects have the extremity of the tibia armed with a coronet of spines, which assist in fixing this point against the plane from which they intend to spring, and which give to the limb a steady fulcrum. The *Cicada Spumaria* has been known to leap to a distance of five or six feet; which is two hundred and fifty times its own length: this, if the same proportions were observed, is equivalent to a man of ordinary stature vaulting through the air the length of a quarter of a mile. When the same insect is laid on glass, on which the spines cannot fasten, it is unable to leap farther than six inches.*

The insects belonging to the genus *Flater* are provided

* De Geer, III. 178, quoted by Kirby and Spence.