

apparently with a good-sized cavity within. Spiracles of other Chrysomelid larvae have merely two lips or flaps, guarded inside by a few hairs. At the base of each of the sickle-like appendages occurs the eighth abdominal spiracle, which I believe to be open. The opening can be seen very clearly in one mount, though it occurs considerably below the surface of the body, and would probably not be seen except in a prepared specimen. A trachea branching from the main trunk can easily be seen opening at each of these spiracles. Around each of these and forming the base of the appendage is a circular, chitinous structure, apparently tubular. From this arises the appendage with no visible line of demarcation.

In cross section each appendage is seen to consist of five passages. The lower side of the appendage is membranous and encloses the lower channel which extends up through the central portion, between the two main canals. This membrane is clearly an outgrowth of the outer cuticle, connecting the chitinous wall of the two lateral channels, and doubtless covering the whole appendage, though not discernible in a rough, thick section. The two lateral passages have thick, chitinous walls, marked with striations, seemingly tracheal in kind. The two upper passages are open above, but can be readily closed by a wedge-shaped piece which runs along the top of the appendage. The lower canal has absolutely no connection with the tracheal system, as far as I can observe, and the membrane enclosing it below is continuous with that of the cuticle of the eighth segment. The lateral passages open into the tube surrounding the spiracle. At their base this is at first striated as are the passages, but the striations become irregular, forming a network, and finally a sieve-like or grate-like structure on the anterior portion. When the appendage is viewed laterally it is transparent enough to reveal a series of elliptical openings running along the upper portion, two series evidently arising from each of the lateral passages. From each of these openings arise several small tubes, sometimes branching slightly near the base, each of these structures resembling a rather coarse miniature gill. By breaking open a lateral passage from below one or two of these holes can be clearly seen. The outer series of holes and the tubules branching from each are easily seen both by a lateral view and cross section. The exact structure and position of the inner series I have not been able to determine so satisfactorily, but they seem to extend along the membrane forming the side of the wedge-shaped apex of the append-