struments are direct external projections of protoplasm; the stimulus, which alights on the first, is immediately conducted to the other by the psychoplasm of the unicellular body, and causes it to contract. This phenomenon is particularly easy to observe, and even produce experimentally, in many of the stationary infusoria (for instance, the *poteriodendron* among the flagellata, and the *vorticella* among the ciliata). The faintest stimulus that touches the extremely sensitive hairs, or *cilia*, at the free end of the cells, immediately causes a contraction of a thread-like stalk at the other, fixed end. This phenomenon is known as a " simple reflex arch."

IV. These phenomena of the unicellular organism of the infusoria lead on to the interesting mechanism of the neuro-muscular cells, which we find in the multicellular body of many of the lower metazoa, especially in the cnidaria (polyps and corals). Each single neuro-muscular cell is a " unicellular reflex organ "; it has on its surface a sensitive spot, and a motor muscular fibre inside at the opposite end; the latter contracts as soon as the former is stimulated.

V. In other cnidaria, notably in the free swimming medusæ—which are closely related to the stationary polyps—the simple neuro-muscular cell becomes two different cells, connected by a filament; an external *sense-cell* (in the outer skin) and an internal *muscular cell* (under the skin). In this *bicellular reflex organ* the one cell is the rudimentary organ of sensation, the other of movement; the connecting bridge of the psychoplasmic filament conducts the stimulus from one to the other.

VI. The most important step in the gradual construction of the reflex mechanism is the division into