associated reflex action. It is on this principle, that inspiration and expiration are linked together, constituting respiration; and that all the acts of ingestion and of expulsion are finished acts, and not mere actions. It is in this manner that certain excited movements are constituted into acts of flight, of leaping, or running, &c. It is in this manner that reflex acts come to resemble voluntary acts, and acts of design.

Another principle is called into action in these latter cases. In the perfect animal, the function of volition is accompanied by spinal action, reflex or direct; the two principles of action coincide with each other; and when one, as volition, is removed, the other or remaining one performs an action similar to the perfect or more complicated one; the wings excited, perform the act of flight; the feet excited, perform the acts of leaping or running. The decapitated fowl flies, the decapitated ostrich runs.

If, as I have said, in the decapitated frog the parts near the sphincter ani, *are irritated, the two feet are frequently drawn upwards, as if to remove* the cause of irritation. Similar facts have been observed in the decapitated alligator. Such facts have been recently mistaken by several physiologists for acts of volition, and have been supposed to denote the existence of sensation and volition in the isolated spinal marrow. Such, too, was the erroneous opinion of Legallois. I have already referred to the facts observed in the case of perfect paraplegia in the human subject, and to the absence of spontaneous movements in decapitated animals, as affording its refutation.

But I must not detain you longer with this discussion, rendered necessary by the recent experiments on the alligator, to which I have refered, and which I purpose repeating during the next winter; not that I doubt their accuracy; it is their rationale that I question, and I wish to see whether true spontaneous movements occur in that animal when decapitated.

I now beg your attention to the facts of direct and reflex diastaltic spinal action. I irritate the upper portion of the spinal marrow. You see what energetic convulsive movements are induced. These movements are, of course *direct*. I now excite the skin of the toe. *Similar* but *reflex* movements are the consequence. These events may be justly regarded as TYPES of the direct and reflex forms of epilepsy. And thus the paths of the physiologist and the physician meet!

I now proceed to point out distinctly the anatomical course of these reflex actions. I irritate the skin, and the limb and other limbs move. Now in the skin is the origin of the nervous arc in these reflex actions. This arc, originating thus in the skin, proceeds along the femoral and lumbar nerves to the spinal marrow; thence along the same nerves (for