

turned, now edgewise, now flatwise, to the resisting medium. The fore-arm is short; the radius is carried down and back under the ulna, and the inner side of the hand carried down with the radius. By this peculiar arrangement, the flat surface of the hand is more directly presented to the resistance of the water in the downward and backward flying blow. The fingers add the greater part to the length of the blade; they are very long, stiff, and fixed in their respective places, their only movement consisting in a slight accommodation to the turning of the whole blade. The muscles and skin form one continuous surface over the fingers, excepting the last joint of one or two of them, which, sometimes at least, protrudes, and has its protruding surface covered with a nail. The coracoid process is very long; the other bones of the shoulder apparatus short and stout. It is necessary to the flying locomotion of this sub-order that the wings should have a free sweep by the front end of the body, and that nothing should hinder them in rising and descending or moving backward and forward; hence the shield cannot project forward above or below, and the humerus carries the elbow, in all its positions, beyond it. Again, as the humerus is so short, and the blade so long, the front limbs cannot be brought round before the body; but, when at rest, the blades hang down, or are placed beside or upon the outer edges. Although the front limbs are the principal locomotive organs, and are essentially wings in all their operations, there is yet one marked structural difference between them and the wings of a Bird; for with the Turtles the humerus reaches forward, and the forearm and hand are turned backward in one line from the elbow, whereas with the Bird, the humerus reaches backward, the forearm forward, and the hand again backward, the main surface of the wing being in the angle of the forearm and hand, instead of being, as in Turtles, in the angle of the humerus and the limb below. The pelvis and hind legs are very small. The legs, as was said above, do not move together with the wings, and they take little part in locomotion beyond aiding to balance and guide the body. The femur and leg are short, and the toes also short, compared with the fingers, but they form the greater part of the whole blade below the knee. The leg and foot are formed into a paddle, much smaller than the blade of the front limbs, and broadest near the outer end. Below the knee, this blade is generally turned backwards; but it moves through a long arc back and forth, and may even be brought out upon a line, or nearly on a line, with the femur. The paddles often strike directly downwards, so that the plastron cannot extend under them, and is very small under the pelvis.

The neck is short and little flexible, so that the head is not withdrawn under the carapace; instead of this, it is protected by a very large development of the post-frontal, parietal, jugal, and mastoid bones, making a bony arch over the whole