

corporated layers, such as *moleskin*, in which, from the arrangement of the threads, what a draper would term the *tear* of the one layer or fold lies at a different angle in the general fabric from that of the other. We are thus presented, in a single fossil scale little more than the eighth part of an inch in thickness, with three distinct strengthening principles,—the principle of Cromwell's "fluted pot,"—the principle of a rampart lined with plank, and filled with sandbags in the centre,—and the principle of the double-woven fabrics of the "moleskin" manufacturer.* The contrivances exemplified in the cuirass of the *Pterichthys* were scarce less remarkable. It was formed of bony plates, strongly arched above, but comparatively flat beneath ; and along both its interior and posterior rims a sudden thickening of the plates formed a massive band, which served to strengthen the entire structure, as transverse ribs of stone are found strengthening Gothic vaults of the Norman age. The scale-covered tail of the creature issued from within the posterior rim, which formed around it a complete though irregular ring, arched above and depressed beneath ; whereas the anterior rim, to which the head was attached, was incomplete when separated from it. It was, in its detached state, an arch wanting the keystone. A keystone, however, projected outwards from the occipital plate of the head ; and, as it had to form at once the bond of connection between the cerebral armature of the creature and its cuirass, and to complete the arch formed by the strengthening belt or rib of the latter, it curiously combined the principle of both the dovetail of the carpenter and the keystone of the mason. Viewed from

* Perhaps one strengthening principle more might be enumerated as occurring in this curious piece of mechanism. In the layers of the nether plate, the fibres, instead of being laid in parallel lines, like the threads in the moleskin of my illustration, seem to be felted together,—an arrangement which must have added considerably to their coherency and powers of resistance.