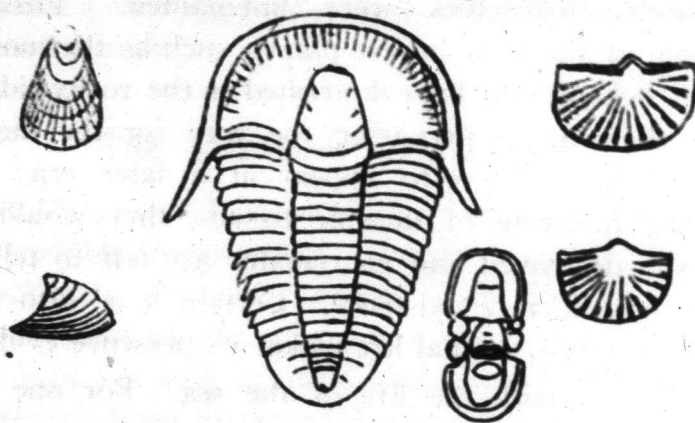


to us? Evidently a shell, for not only has it a form resembling that of a mussel or clam, but one can readily distinguish the valves which as in a mussel or clam lie on either side of the soft bodied animal and protect it from danger. But the shell we have is neither mussel, clam or oyster. Close study shows it to belong to the group of lamp-shells, or brachiopods, as naturalists term them, still not uncommon on our shores. It owes its name to its resemblance to the form of an ancient Roman lamp. It was attached to the rocks by a sort of flexible worm-like stem and is regarded by naturalists as being more nearly allied to the worm than to the true Mollusca. There were ordinary sea-worms also; as shown not only by the vertical borings which marked their homes, but also by the numerous trails produced by their soft bodies as they dragged themselves here and there through the soft mud. And now we have a form quite different from either of these, much larger, with a broad



CHARACTERISTIC FORMS OF CAMBRIAN LIFE.

convex crab-like shell covering the back of the animal and with numerous segments behind something like the joints of a lobster's tail. Two lines, running lengthwise from front to rear, give to the form a somewhat three lobed appearance, and from this fact has led the animal to be called a trilobite. It is one of the commonest forms in these ancient rocks, and though most of the species are small, not exceeding a few inches, some have been found over a foot in length and nearly a foot broad. The shell was of course for protection, and its broad anterior portion, known as the "buckler," and which was strengthened by a stout rim along its margin, could be used as a sort of a mud plough, enabling the animal to push its way into the muddy bottom in its search for worms and other animals which constituted its food. On either side of the head can be seen the creature's eyes, compound as in the modern crab and lobster, but not usually as

with the latter raised on stalks. These trilobites are related to the king-crabs or horse-shoe crabs (*Limulus*) so common on the Atlantic coast south of Cape Cod, but especially recall the embryonic stages of the latter. They are very numerous in some of the beds about St. John and are characteristic of these early times. With them there were also other low forms of life, such as the pteropods or whale-food and cystids, related to the sea-lilies of later days, but an entire absence of forms of high grade, no fishes or other vertebrates, no crabs, lobsters or barnacles, no large-sized spiral shells, no squids or cuttles, no reef building corals, probably no sea urchins or star-fishes. Jelly fishes, related to those which are now to be seen in countless millions in the waters of the Bay of Fundy were probably also in existence, and forms have been observed which are probably of this nature, but naturally such soft bodied animals, made up as they are of little more than water, could hardly be expected to have their remains preserved. In all ages indeed the preservation of fossils, from which we read the life of the past, is mainly restricted to such animals or parts of animals as by the possession of hard parts would be able to endure the conditions of burial.

Both water and air on our Cambrian beach were probably warm, as indicated by facts to be hereafter detailed, and man, had he been there, could with perfect safety, except perhaps for the jelly-fishes, whose stinging properties are well known, have taken a dip in the sheltered bays or enjoyed the tumbling of the surf on more exposed points, for there were no sharks there, as later, to make such a luxury hazardous; and he could have dried himself in the warm sun, for the presence of eyes in the trilobites shows that there was a sun to shine, and neither black flies, mosquitoes or "Bite-em no-see-ems" had yet put in an appearance to make such exposure intolerable. But though there was little variety in the life, and thus wholly confined to the water, individuals representing that life were very abundant, and the shores must in places have been strewn with their remains, many strata, as we now find them, consisting of little else. Moreover, as indicated by their comparative complexity, we can hardly suppose that they were the very earliest forms of life to come into existence. All our knowledge of later times and the principles of evolution go to