variable depth; for the heavier erratics require icebergs of a larger size to buoy them up; and even when there are no stones frozen in, more than seven-eighths, and often nine-tenths, of a mass of drift-ice is under water. The greater, therefore, the volume of the iceberg, the sooner would it impinge on some shallower part of the sea; while the smaller and lighter floes, laden with finer mud and gravel, may pass freely over the same banks, and be carried to much greater distances. In those places, also, where in the course of centuries blocks have been carried southwards by coast-ice, having been often stranded and again set afloat in the direction of a prevailing current, the blocks will diminish in size the farther they travel from their point of departure for two reasons: first, because they will be repeatedly exposed to wear and tear by the action of the waves; secondly, because the largest blocks are seldom without divisional planes or "joints," which cause them to split when weathered. Hence as often as they start on a fresh voyage, becoming buoyant by coast-ice which has frozen on to them, one portion of the mass is detached from the rest. A recent examination (in 1852) of several trains of huge erratics in lat. 42° 50′ N. in the United States, in Berkshire, on the western confines of Massachusetts, has convinced me that this cause has been very influential both in reducing the size of erratics, and in restoring angularity to blocks which would otherwise be rounded in proportion to their distance from their original starting point.

The "northern drift" of the most southern latitudes is usually of the highest antiquity. In Scotland it rests immediately on the older rocks, and is covered by stratified sand and clay, usually devoid of fossils, but in which, at certain points near the east and west coast, as, for example, in the estuaries of the Tay and Clyde, marine shells have been discovered. The same shells have also been met with in the north, at Wick in Caithness, and on the shores of the Moray Frith. The principal deposit on the Clyde occurs at the height of about 70 feet, but a few shells have

Fig. 110.
Astarte borealis.

Fig. 112.
Saxicava rugosa.

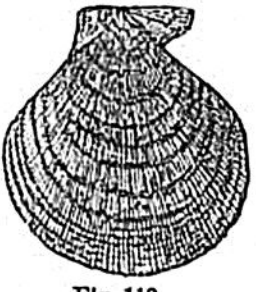

Fig. 113.
Pecten islandicus.

Fig. 111.
Leda oblonga.

Fig. 114.
Natica clausa.

Fig. 115.
Trophon clathratum.

Northern shells common in the drift of the Clyde, in Scotland.

been traced in it as high as 554 feet above the sea. Although a proportion of between 85 or 90 in 100 of the imbedded shells are of recent species, the remainder are unknown; and even many which are recent