deacon Verschoyle, and Mr. John Kelly, upon parts of the same country, and proceeded to describe the district as composed of a great nearly horizontal series of stratified rocks, consisting of sandstones below, carboniferous limestones of impure, thin, and shaly character above, and paler, more pure limestones of the same group overlying them; the whole surmounted by 400 feet of the millstone-grit series. This group of horizontal rocks forms fine tabular mountains, with picturesque valleys, and a peculiar likeness in all their profiles. Cutting across the country formed by these horizontal beds is the rugged chain of the Ox Mountains, extending from Mayo across the county of Sligo to the south of Lough Gill, and terminating beyond Benbo mountain, in county Leitrim. Some of the most picturesque valleys in the county are the lateral ones near this chain, running along its flanks, and dividing the old micaceous and gneissose rocks of which it is formed from the horizontal series above alluded to; and in these valleys, as well as transversely crossing the chain, occur deposits of serpentine of considerable size and interesting character.

The denudation which exposed the Ox Mountains at the east end of the chain was alluded to, and the circumstance stated, that the limestone contained bands of sandstone which appeared to be of irregular thickness, and were most numerous in the lower part of the carboniferous series seen in the district under consideration.

The occurrence of trap-dykes and mineral deposits was noticed, and also the changes of level at recent periods, as well as the manner of the occurrence of the drift, which was found, in one instance, to contain shells of the common mussel, at a considerable distance from the sea, and in connection with which, the horns, skulls, and other bones of fossil deer and cattle had been found. The paper was illustrated, and a list of fossils (by W. H. Baily, Esq.) found in the district was appended.

ON THE CAUSE OF THE DIFFERENCE IN THE STATE OF PRESERVATION OF DIFFERENT KINDS OF FOSSIL SHELLS.

By H. C. SORBY, F.R.S.

Most geologists have, no doubt, remarked, that in very many rocks certain kinds of fossil shells are well preserved, whilst others are very badly preserved, or have entirely vanished, and left nothing but casts: for instance, oysters retaining their organic structure, whilst many others, like trigonæ or most univalves, having lost their original structure, being quite crystalline, or even having been entirely removed. After having made many experiments with recent and fossil shells, the author has been led to conclude that this difference was due to the original difference in the mineral constitution of the various shells; and that when their carbonate of lime was in the state of *calcite* they were less prone to undergo any change; but where it was in the state of *aragonite* they always have had a tendency to become crystalline, by passing into calcite, or to be entirely removed if the conditions were more favourable to the crystallization of calcite in some other place rather than *in situ*.