Passing from the valley of the Dillon into that of the Clarence, distant about six miles in a direct line, and running parallel to it for some thirty miles, but fully 1000 feet higher in point of level, we find Lake Tennyson, dammed in by a moraine which rises about fourteen or fifteen feet above the level of the water. This moraine stretches about a mile and a half down the valley, sloping very rapidly. I had no means of ascertaining the depth of the lake; but I do not believe it exceeds 400 to 500 feet: at all events, there is nothing to lead to the supposition that its bed is lower than the foundations of the moraine by which it is dammed in.

In the case of these inland glaciers we have to assume that a considerable body of the ice of which they were formed lay below the upper level of the terminal moraine; but this would not prevent the water arising from the melting of the ice from escaping in the same manner as that which flows from a retreating glacier.

My knowledge of geology is not sufficiently great to enable me to see any difficulty in supposing that ice may have existed in the localities referred to during the enormous period required for the deposition and reelevation of the above-mentioned Post-pliocene beds, and this, therefore, I must leave to more competent judges; but I really cannot see anything to justify the opinion, that the lake-basins owe their existence to the "scooping power of ice."

I have confined my remarks to the lake-basins found among the spurs of the Spencer Mountains, which, however, afford a fair example of all the lake-basins north of the river Waitki. In fact, I firmly believe that all the lakes which lie in the valleys of rivers debouching on the Canterbury Plains owe their existence to moraine dams, which have the same foundations as the Post-pliocene shingle of which the plains themselves are formed, and that, therefore, the sites of those lakes were occupied by ice at the commencement of the period of depression, and so continued for some time after the re-emergence of the upper part of the plains above the level of the sea.

2. *On the OCCURRENCE of DEAD LITTORAL SHELLS in the BED of the GERMAN OCEAN, forty miles from the coast of ABERDEEN.* By ROBERT DAWSON, Esq.

[Communicated by T. F. Jamieson, Esq., F.G.S.]

(Abridged.)

THE bank called the "Long Forties," from 35 to 40 miles from land, extends from opposite Kinnaird's Head in a direction nearly parallel to the shore. Inside of this bank the depth varies from 90 fathoms at the northern end to about 50 fathoms opposite Aberdeen. Being becalmed we dredged on this bank for a considerable time in 36 fathoms, 40 fathoms, and 42 fathoms, on a bottom of broken shells and shingle. I remarked at the time that these dredgings contained none of the Arctic fossils found so plentifully in every haul when

dredging nearer the shore, and from this I inferred that the fossiliferous bed, which seems to stretch along the coast at a distance of from six to fifteen miles, does not extend beyond this deep water to the "Long Forties." On examination of the materials brought up by the dredge from the top of the bank, there were found shells of the following species in a worn and semi-fossil condition, namely:—

Purpura lapillus, one specimen.

Litorina rudis, one specimen.

Solen siliqua, two specimens.

Mytilus edulis, one large broken valve and several fragments of smaller specimens.

Before it occurred to me that these fragmentary fossils might be interesting in a geological point of view, the greater part of the dredgings had been examined. It is quite possible, therefore, that other specimens may have escaped notice.

Now as *Litorina rudis* is generally found on rocks above high-water mark, and never beyond low-water, and as all the other species are highly characteristic of the shore, or very shallow water, it seems a fair conclusion that at the period when these were living, the relative levels of land and sea were very different from what they now are, and that the bank had then formed the shore of the German Ocean. If only one specimen had been found it might have been accounted for by some of the many accidents which occasionally bring even a foreign shell into the dredger's bag; but four species having been found in the course of one day's dredging, it appears very probable that they lived and died where they were found.

3. On the GLACIAL PHENOMENA of CAITHNESS.

By T. F. JAMIESON, F.G.S.

CONTENTS.

1. Introduction. 2. General distribution of the Drift, its colour, texture, and contents. 3. Character of the Stones imbedded in the Drift. 4. State of the Shells. 5. The Glaciation of the Rocks and Boulders. 6. Absence of Moraines and Gravel-hillocks.	7. Relation of the Caithness Drift to that of the rest of Scotland. 8. Its place in the history of the Glacial period; reference to sections at Invernettie, King-Edward, and Arran. 9. The Post-glacial period in Caithness. 10. Appendix, with two tables containing lists of shells, &c.

1. *Introduction*.—In August 1865 I paid a visit to Caithness, in order to study the last geological changes in that north-eastern corner of Scotland. Mr. Peach has lately given us an excellent account of the fossil-contents of its glacial beds, from which he enumerates seventy-five species of Mollusca, besides various other forms of Invertebrata. The object, however, of my visit was not so much to look after the fossils as to satisfy myself about the conditions