

troduced by emanations from the intrusive lava. In the Boundary Creek District the evidence is wholly in support of the latter view, (6) and the same seems to be true in Franklin Camp.

In many places the limestone is altered to marble, except in the mineral-bearing zones. These mineralized zones have not the accordance in strike, nor the regularity in distribution that impure bands in a limestone would possess. The ores must certainly have been introduced, and there is good reason for believing that the iron and silica of the silicates have been as well. Moreover, these deposits are not confined in these districts to limestone as a country rock. (7) In the Boundary Creek district the writer has shown that even the granodiorite is mineralized to some extent in this way, and that in it garnet zones are developed. A full description of this formation of garnet in granodiorite will be given in a paper shortly to be published. Kemp, in a recent paper (8), describes the formation of a similar mineral-bearing garnet zone in granite porphyry at White Knob, Idaho. In Franklin Camp, the magnetite ore of the Gloucester group, according to notes taken in 1900, occurs in the granodiorite, and some of the copper ores of the camp also have this as their country rock.

The development work already done in Franklin Camp is limited and shallow, so that it is not known how the values, particularly the copper values, will hold out in depth, nor is it yet demonstrated that a large tonnage of low grade ore can be maintained. To prove these points requires extensive development and time. While good values have been found on some of the lodes, it will probably be on low grade ore that the success of the Camp must depend. The results on the McKinley, so far, seem to be encouraging.

While nothing can yet be said of the extent and value of the mineralization, while it is yet too early to state that any one of the prospects is going to be a good mine, it may be said that the camp possesses many of the earmarks of a mineral-bearing district and that in kind, whether or not in degree, in the nature of its ores whether or not in extent, it takes its places in a goodly company of mining camps, among which its neighbor, the Boundary Creek district, is not the least important.

The expensive development work required in this camp will be greatly facilitated by the railway, and when this reaches the camp, its possibilities will no doubt be tested as they deserve to be.

(1) Preliminary Report on the Boundary Creek Mining District. Summary Report G. S. C., 1902, p. 90-136.

(2) Prof. Paper, 43, U. S. G. S.

(3) As examples the following may be cited. The Character and Genesis of Certain Contact Deposits. W. Lindgren. *Genesis of Ore Deposits*, A.I.M.E., p. 716, T.A.I.M.E., Vol. XXXI.

Copper Ores and Garnet in Association, W. P. Blake, T. A. I. M. E., XXXIV., p. 886.

Limestone Granite Contact Deposits of Washington Camp, Arizona, W. O. Crosby, T. A. I. M. E., XXXVI, p. 626.

Ore Deposits at the Contacts of Igneous Rocks and Limestones, and their Significance as Regards the General Formation of Veins. J. F. Kemp, *Economic Geologist*, Vol. II, p. 1.

Die Kieslagerstätten Roros Sulitelma und Rammelsberg. J. H. L. Vogt, also *Genesis of Ore Deposits*, A. I. M. E., 1902, p. 648. Zeilschlep for *Prak. Geologie*, 1894, p. 177, 464, and 1895, p. 154.

(4) Lindgren, U. S. G. S., pp. 43; and T. A. I. M. E., Vol. XXXV, p. 511.

(5) Ore Deposits near Igneous Contacts, Weed, T. A. I. M. E., Vol. XXXII, p. 715.

(6) Preliminary Report on the Boundary Creek District, R. W. Brock, Summary Report, G. S. C., 1902, p. 90-136.

(7) Op. Cit., page 107, also *Journal Can. Min. Inst.*, 1902, p. 369.

(8) *Economic Geol.*, Vol. II, p. 1.

THE BRITISH IRON AND STEEL INSTITUTE.

PRESIDENTIAL ADDRESS.

By SIR HUGH BELL, BART.

A little more than a hundred years ago, when the nineteenth century was still in its salad days, my grandfather, the son of a Cumberland yeoman, came to the Tyne to enter the service of a well-known firm of Newcastle merchants, into which he was shortly afterwards admitted as a partner. He was born in Cumberland, near Woodside, the seat of the Losh family, and no doubt Mr. Losh, the senior partner, was instrumental in bringing the young man to "The Quayside," a term which indicated the business quarter of the cannie town as clearly as "the City" does that of the English metropolis.

That I, the grandson, occupy by your kindness the distinguished position of your president, and, in that capacity, am called upon to deliver an address this morning, makes it not inappropriate that I should choose as my subject a review of the position of the great trade in which we are engaged as it was then and as it is to-day, a century after the occurrence which identified the fortunes of my family with the manufacture of iron.

I am only too sensible that it is because of my parentage that the choice of the Council has fallen on me, and that it is as the son of Sir Lowthian Bell that I have been selected to follow a most distinguished series of men who have adorned the chair I now unworthily fill. This affords an additional reason why I should choose

for the subject of my address a sketch of the iron trade in the last hundred years, for his life, begun in 1816 and ended nearly ninety years later, almost covers the period I propose to pass briefly in review; to do so exhaustively would mean a great and profoundly interesting volume.

Let me then ask you to recall the position of the world in 1807, when the young Thomas Bell entered the firm of Losh & Company, so that we may understand from what platform we started.

The eighteenth century had closed on a world under arms. The titanic struggle which we identify with the name of Napoleon was at its height, and the new century opened amidst the din of battle. The power of the Colossus who was attempting to overstride Europe was undimmed, and rumors of invasion of "the little isle set in the silver sea," which strove to withstand the overwhelming onslaught of his armies, were everywhere current.

The men of that day might well contemplate the future with anxiety bordering on terror. But before the first decade had closed an event occurred which, to those who had eyes to see, put a term to the dreams of universal dominion, which had dazzled the imagination of the great Corsican. In October, 1805, Trafalgar Bay had witnessed a sight which virtually ended the conflict, though nearly ten years elapsed before the war of the giants ended and Europe was left free to effect the great commercial development which, in one of its aspects, I propose to lay before you.

For while Europe was one vast battle-field, and men's