

judiciously, and (after a little further  
experience) liberally encouraged.

I am,  
Sir,  
Yours truly,  
John Brown.

Edward Watkin Esq<sup>r</sup>  
General Manager,  
Manchester, Sheffield and Lincolnshire Railway.

# Appendix (No. 1.)

Kirton and Appleby Iron Stone  
Analysed by Mr. Sollett, Hull.

## Top Bed

4 feet 4 inches thick  
(Two Samples)

|                  | <u>(1<sup>st</sup>)</u> |  | <u>(2<sup>nd</sup>)</u> |  |
|------------------|-------------------------|--|-------------------------|--|
| Oxide of Iron    | 61.52                   |  | 62.12                   |  |
| Silica           | 12.36                   |  | 12.20                   |  |
| Alumina          | 6.04                    |  | 5.97                    |  |
| Water            | 20.08                   |  | 19.71                   |  |
|                  | 100.00                  |  | 100.00                  |  |
| Metall. Iron 45% |                         |  |                         |  |

## Bottom Bed (Analysed dry.)

|                 |        |
|-----------------|--------|
| Oxide of Iron   | 92.34  |
| Silica          | 5.16   |
| Alumina         | 2.44   |
| Magnesia        | .05    |
| Sulphur         | .01    |
| Lime            | None   |
| Manganese       | None   |
| Phosphoric Acid | None   |
| Carbonic Acid   | None   |
|                 | 100.00 |

This bed 6 feet thick contains an average of 8 or 10 inches of heavy Stone marked A in Analysis below.

Metall. Iron 64 3/4 per Cent.

(A)

(A)

|                    |        |
|--------------------|--------|
| Oxide of Iron      | 58.50  |
| Carbonate Acid     | 19.25  |
| Magnesia           | 7.78   |
| Alumina            | 5.52   |
| Oxide of Manganese | 4.25   |
| Lime               | 3.25   |
| Silica             | 1.45   |
|                    | <hr/>  |
|                    | 100.00 |

Metallie Iron 42 per Cent  
 Specific gravity 3.191

|                    |        |
|--------------------|--------|
| Oxide of Iron      | 47.10  |
| Carbonic Acid      | 15.50  |
| Magnesia           | 14.34  |
| Lime               | 6.63   |
| Alumina            | 8.52   |
| Oxide of Manganese | 5.27   |
| Silica             | 2.14   |
| Loss by Analysis   | <hr/>  |
|                    | 50     |
|                    | <hr/>  |
|                    | 100.00 |

Metallie Iron 33 per Cent  
 Specific gravity 2.821

(A)

|               |         |
|---------------|---------|
| Oxide of Iron | 66.25   |
| Carbonic Acid | 27.12   |
| Lime          | 4.32    |
| Magnesia      | A trace |
| Alumina       | 1.30    |
| Manganese     | .57     |
| Silica        | .50     |
|               | <hr/>   |
|               | 100.00  |

Metallie Iron 48 per Cent (nearly)  
 Specific gravity 3.253

## Appendix (N<sup>o</sup> 2)

### Analysis of Iron Stone from Scunthorpe by M<sup>r</sup> Beale.

Metallic Iron 46 per Cent.

|                                 |       |
|---------------------------------|-------|
| Oxide of Iron                   | 66    |
| Clay and Argillaceous<br>matter | 16    |
| Salts of Lime                   | 12    |
| Water                           | 3     |
| Silica                          | 3     |
|                                 | <hr/> |
|                                 | 100   |
|                                 | <hr/> |

### Addenda

I. M<sup>r</sup> Richardson offers to supply any quantity of Lime Stone put into Wagons, at the rate of 6<sup>d</sup> per ton.

II. Dunford Budge Iron Stone not noticed in the foregoing preliminary report, and now under investigation, will be made the subject of a future communication.