

No. 3.

"On Deep Levels in Mining Practice in the United Kingdom."¹

By BENNETT H. BROUGH, Assoc. R.S.M.

In view of the rapid exhaustion of the thicker and more accessible seams in the British coal-fields, and in view of the depressed condition of the metalliferous mining industry of this country, great importance attached itself to the future development of deep-level mining. The deepest mine in Great Britain was the Pendleton colliery, near Manchester, where the deepest workings were 3,474 feet below the surface. This depth had been largely exceeded in other countries, the Red Jacket shaft of the Calumet and Hecla mine, Lake Superior, being 4,900 feet deep, a colliery at Mons, Belgium, 3,937 feet deep, and the Adalbert shaft, Przibram, Bohemia, 3,672 feet deep. The obstacles to deep-level mining were the decreasing capacity of shafts, the increase of pressure, temperature and cost. These obstacles were considered by the Author, who concluded that mining in coal seams up to 6 feet in thickness might be carried on up to a depth of 4,000 feet. In the case of thicker seams, the limit of depth would be less. There were no difficulties peculiar to Great Britain in deep-level mining. If pumping, winding, and ventilation could satisfactorily be dealt with in a Lake Superior copper-mine nearly a mile in depth, there was nothing to prevent the same measure of success being attained in Cornwall.

No. 4.

"Prospects of Deep Mining in Cornwall."²

By WILLIAM THOMAS, Assoc. M. Inst. C.E.

At the present time the deepest mine in Cornwall—Dolcoath—was 2,600 feet deep. The shafts of the principal Cornish mines were altogether inadequate for the work required of them, and the

¹ *Engineering*, vol. lxxiii. p. 712; *The Engineer*, vol. lxxxiii. p. 536; *The Colliery Guardian*, vol. lxxiii. p. 995; *The Mining Journal*, vol. lxxvii. p. 685.

² *Engineering*, vol. lxxiii. p. 713; *The Engineer*, vol. lxxxiii. p. 537; *The Mining Journal*, vol. lxxvii. p. 707.

tram roads were unsatisfactory. Tonnage costs were therefore increased in two ways. The practice had generally been to adhere to existing methods and appliances unduly. Recently, however, comprehensive schemes for placing the equipment of the leading Cornish mines on a more satisfactory footing had been carried out. New engines of modern type had replaced older ones, and deep, circular, vertical shafts were being sunk at Dolcoath and at the Basset mines. The system of centralization of work, rendered possible by these shafts, would greatly increase the output capacity and would effect a large saving in labour and in general working costs. Even then the aggregate working costs, which averaged 15s. to £1 per ton, were not high when compared with those obtaining in other districts.

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“The Mechanical Appliances used by Metallurgists.”¹

By WILLIAM CHANDLER ROBERTS-AUSTEN, C.B., F.R.S.

The Author illustrated by a number of examples the handling of materials which were either charged into or issued from furnaces. He described the hydraulic pig-breaker used at the Dowlais Works, the Uehling pig-iron casting-machine used at the Lucy plant of the Carnegie Steel Company, and the Wellman electric machine for charging open-hearth furnaces used at the Otis Steel Works in the United States.

No. 2.

“Steel and Iron Alloys.”²

By ROBERT ABBOTT HADFIELD, M. Inst. C.E.

In the use of iron, the latest phase of development was found in its alloys with other elements. The Author cited the results of Professor Arnold's investigations of steel alloys, and briefly discussed the properties of his own experiments upon carbon steel,

¹ *The Mining Journal*, vol. lxvii. p. 694.

² *The Iron and Coal Trades Review*, vol. liv. p. 791.