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COPPER

In his presidential address before the Institution of Mining and Metallurgy at the recent annual meeting, Prof. W. Gowland paid particular attention to the advances in copper smelting in late years. After pointing out that Great Britain, which, during the first half of last century, was the chief producer of copper in the world, gradually lost that position, owing first to the discovery of important deposits in Chili, later in the United States, and to the decreases in the output of the Cornish mines, the speaker proceeded to say that the present enormous output of the metal would have been quite impossible with the old methods, furnaces and appliances, some of which still survive in Continental Europe and in Great Britain. The extraordinary development of the copper industry is due chiefly to the remarkable increase in the size and capacity of furnaces; the application of the Bessemer process to copper mattes; the introduction of pyritic smelting; the general reduction in the costs of production; and last, but not least, the removal of the chief producing centres from the old world to the new. In Prof. Gowland's opinion advances as great, or perhaps greater, than those of the last fifty years will be made before the end of the next half century, probably, in part, in the following directions:—

(a) The extended application of producer gas as fuel in copper reverberatory furnaces. This would, he felt sure, be found to be specially efficacious with large furnaces, such as those of the Anaconda Company. Gas could be admitted at several points in their sides, and so secure a uniformly high temperature throughout their length.

(b) The introduction of the tilting furnace of the open-hearth steel manufacturer into the copper refinery. A movement in this direction has already been made at the Tacoma Refinery, Puget Sound, but oil and not gas is used as fuel.

(c) The extended adaptation of the Bessemer converter to the treatment of poor copper matte, etc. Even now, with a basic lining and the addition of silicious ores of value to the charge, a certain amount of success has been attained in this direction, but this is only an earnest of what may ultimately be reached.

(d) The roasting of cupriferous pyritic ores in cast iron vessels with a blast and additions of silica or lime.

(e) The utilization of the sulphur dioxide from the poor gases from calcining and roasting plants for the manufacture of sulphuric acid by a "contact" process.

(f) Lastly, but by no means least, the electric smelting of copper where water power for generating electricity can be obtained at small cost. This process at present, however, has not passed out of the experimental stage.