

## THE MINING ENGINEER\*

By James F. Kemp.

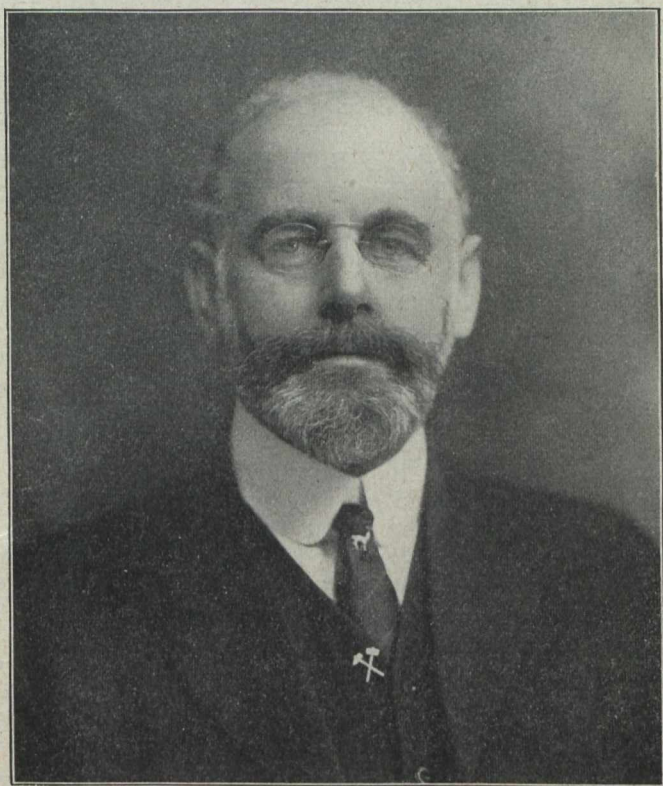
I do not feel like a stranger in the Copper Region. Nearly thirty-two years ago my class in the School of Mines at Columbia was brought to Houghton and Hancock for six or eight weeks in the mines. My chum and I put in our days at the old Albany and Boston mine, which was later known as the Peninsula. But we also made the acquaintance of a "man-engine" in the Quincy, and saw the close and successful work being done on the low grade amygdaloid of the Atlantic. In the years since I have been once or twice with classes in Houghton and recall with great pleasure one long morning with dear old Dr. Koenig and his mineralogical treasures. To his memory, greatly treasur-

Upper Mississippi valley were no small influences in the early colonial days. But who can say how far back prehistoric mining by the native tribes began, or how many centuries ago the blows were struck with those stone hammers which now from time to time we find on the outcrops of the lodes.

We people to whom mining geology means so much cannot be unmindful of the early work of the Foster and Whitney Survey, nor above all and in particular of J. D. Whitney's contributions, since he was the forerunner and father of us all here in America. I wonder if you have read the fascinating book of his Life and Letters, published within a few years past. In it we are taken behind the scenes and actually see the struggles of scientific men amid the forest trails of the Point and the storms on the lake. We sympathize with their lack of maps, as they tried to prepare a good and accurate description of the geology. Whitney was storing up experience and with the spirit of an apostle to the ignorant was preparing the data for his monumental work, "The Metallic Wealth of the United States." Among his countrymen, ignorant as babes of mining, he sought to spread in 1854 sound information regarding their material resources and the proper and reasonable development of them. While Whitney had done some youthful geological work in New Hampshire and had studied abroad, we can readily see that the main courses in the foundation of his later work were laid in the copper and iron regions of the Lake Country.

We have had another book within the last few years that is of unusual interest to all concerned with mining on the Point, and I doubt not very familiar to you all. It is the Life and Letters of Alexander Agassiz. In it we learn of the tremendous struggle which was undergone in the early years to place the Calumet and Hecla on its feet. Far be it from us who have seen the later prosperous days of this queen of copper mines to be unmindful of the heroic years which marked its development, or of the courage, faith, persistence and devotion which carried it through the initial stages.

I mention these qualities because they are characteristics which must be possessed by an engineer to a degree hardly equalled in the sister professions, and by the mining engineer pre-eminently among the different types of engineers. I wonder if you have ever thought of the contrasts which our profession offers to other branches of engineering. Almost all of our colleagues, civil, mechanical, electrical, are set to accomplish definite tasks. They build a railroad, design an engine, construct a dynamo or a power station. A problem in construction is theirs, and the elements of it are usually well known and definite. But we often have to discover and develop ore as we go along. We do not always know where it is ahead of us in the rock, or indeed if it is there at all. We are much more like the physician diagnosing an obscure disease. Our medical friend looks the patient over, learns symptoms, and infers causes. The X-ray photographs may help him immensely and give him a look at hidden organs or bones, but after all, he needs a peculiar and keen intuitive reasoning power that is a rare and very great gift. The medical schools prepare him not alone by information and disciplinary training, but also by



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ed by us all, let me pay this little word of tribute.

All of us who are interested in mining and its fundamental science of geology must feel that Keweenaw Point is classic ground. We are reminded of the early expeditions of the French, in parties from the lower St. Lawrence valley, consisting usually of a missionary priest, of a gentleman adventurer and of comrades not adverse to trading with the Indians. Probably you all have seen in Foster and Whitney's Report the reproduction of the early map prepared by the Jesuit Fathers in the seventeenth century and sent back to France. Lake Superior, or Lake Tracey, as they then called it, is very correctly drawn as regards all its larger features, so correctly in fact, that our admiration is greatly excited by the close and accurate work of these "voyageurs," so many thousands of miles from home in the bleak wilderness. We read of their reports of copper among the natives and of the hopes of a mining industry in future years. Copper on Lake Superior and lead in southeast Missouri and in the

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