

The red rocks are found of many shades, varying from the high, brick color of the metamorphic beds at Fish-pools, Riverton, and the purple grits of McLellan's mountain to the dull and chocolate reds of the Lower Carboniferous and the Millstone Grit, and the fresher tints of the Permian with their local and characteristic metallic sheen. As it were a forecast of the latter, there seems a general resemblance to them in certain beds that lie on the northern limits of the field. These beds are classed as Millstone Grit, but it must be confessed there is an inability to trace a similarity either in structural character, cleavage or appearance with rocks taken as typical of that system in this belt; for instance, with those of McLeod's brook and those on the East river above the brick-yard unmistakably of the same age. The relative age of the red rocks in the several sections of this field has been so differently regarded by independent observers that in offering a new arrangement there is here no singularity. What the proper horizons are is of course still open to question, but in the recognition of distinct groups in series hitherto classed as identical an opening is made for future closer comparison and proper classification. The upper division of the Fish-pool beds put as Millstone Grit in section 1, p. 60. of the Report of Progress, will no longer be classed with those of McLeod's brook, or of Smoky-town, or of McLean's brook, or of Pine-tree. There can be no doubt that had Sir W. Logan himself compared the rocks below the Coal Measures of Mr. Hartley's divisions with those of his own much of the re-arrangement which now seems called for would have been avoided.

In the study of the relative position of these barren measures, a scale of hardness in the red argillites perhaps offers a rough and ready test of the age of rocks that otherwise may look identical. On exposure to the atmosphere the harder rocks, for instance, of Oliver's mill dam, present a slaty fracture, those of later origin associated with Carboniferous Limestone of McLellan's brook crumble into rhomboidal form; while in the Millstone Grit the particles have rounded edges, and in the Upper Coal measures the slickensided fracture of the marls facilitates their conversion into plastic clay.

(To be continued.)

CORRESPONDENCE.

Mr. J. Lainson Wills and the Walker-Carter Process.

Editor Canadian Mining Review.

DEAR SIR, A letter from Mr. J. Lainson Wills, M. E., dated New York, February 22nd, and published in your February issue, requires to be answered—not from any effect which that gentleman's name or opinion may have, as the one is scarcely known and the other simply worthless—but on account of the publicity which your all-known and admirable journal has given to the communication.

I need hardly point out the impertinence and presumption of a self-termed expert venturing to publish an opinion on a subject to which he has given "much study and attention during the past season of 1893," when chemists and experienced mining men have spent twenty-five and thirty years studying the same problem without satisfactorily solving the question. Probably, if Mr. J. Lainson Wills, M. E., spends five or six years longer at the task, he may, if he is wise, discover that he really knows nothing about it. It requires often considerable knowledge for a man to learn how ignorant he is. The serious part of Mr. J. Lainson Wills' letter is where he confesses to having "clandestinely obtained a sample of the tailing, by catching a few buckets of slimes outside the mill at various intervals of the operation of running off the overflow." Now, this confession is bad enough, especially when he could have gone directly into the mill and panned to his heart's content, instead of having to resort to such an underhand method of forming an opinion. The mill has been open to any and everyone for inspection for months past, and they were welcomed to pan on the tailings, the amalgamated and the roasted ore, and obtain all the information they desired. The process is no secret; it is free for examination by anyone.

The Superintendent and mill workmen inform me, however, that the tailings run out of the mill into deep water, and it would be impossible for any one to catch "a few buckets" without using a boat; and as there were no boats handy, it appears that Mr. J. Lainson Wills' confession is, after all, a bogus one.

In looking over certain correspondence with the Hastings Mining Co., I find, however, that Mr. J. Lainson Wills, M. E., was not always of the opinion regarding the Walker-Carter process that he is now.

The following letters explain themselves.—

206 ALBERT STREET,
OTTAWA, Sept. 20th, 1893.

F. B. ALLAN, Esq.,
Pres. Hastings Mining & Reduction Co.,
Toronto Street, Toronto:

DEAR SIR,—I was very much interested when I had the opportunity of seeing the work of your plant and process for gold ore working at Marmora, and regret that circumstances obliged me to return to Ottawa without

having more time to talk over details with you. Having had considerable experience in ordinary gold mill work and amalgamation, and followed up the later improvements and processes, I was able to appreciate sweet roasting effected by the Carter-Walker furnace, and the advantages to be obtained by the volatilisation of mercury in attacking the gold, and it appears to me that with certain improvements or modifications to your present plant the process may be rendered almost perfect for a certain class of gold ores. I would desire to know what is the cost of a calcining furnace of the various capacities, and what arrangements could be made for employing your patents in Canada. I should be glad to have any other information of details and record of results attained which may be useful to me in deciding the adoption of your plant in the development of a property now under consideration.

I thank you for this information in anticipation, I am, dear sir,

Yours faithfully,

JOS. LAINSON WILLS

OTTAWA, Oct. 11, 1893.

F. B. ALLAN, Esq.,
Toronto.

DEAR SIR, I beg to thank you for yours of the 6th inst. and the information regarding the Walker-Carter furnace and amalgamator. I have been engrossed during the past four days with the work of (removing) changing residence and office. (My new address is 106 Sparks Street.) Hence my delay in replying to your letter. My first idea referred to British Columbia gold fields as locality, but a property in Lake of the Woods district is also under my consideration. I leave to-morrow (Thursday) for Marmora where I expect to be until Sunday night. I may have the good luck, perhaps, of meeting you there; if not I will endeavor to come to Toronto shortly.

Yours faithfully,

JOS. LAINSON WILLS.

It seems that this gentleman first bargained for working a territory under the Walker-Carter process, and was desirous of getting the company to adopt "certain improvements or modifications of your present plant," which emanated from his great intellect, and that failing in both he seeks to "get even" with the company.

I leave your readers to judge of the value of the opinion of such a man. So much for Mr. J. Lainson Wills, M. E. By the way, I would suggest to Mr. Wills that he change the personal pronoun "M. E." to "I," and place it at the front instead of at the rear end of his name, so as to read I, Mr. J. Lainson Wills. It would be more in harmony with himself and decidedly more grammatical.

Regarding other processes mentioned in the letter, everyone knows that chlorination was tried under the very best conditions at the Delora mine and was a decided failure. The cost of such treatment was far in excess of the gold obtained.

As to the cyanide process, although useful with auriferous sulphides, has not been successfully applied to the treatment of mispickel ores. The best known cyanide process is now being used in Africa, but I am informed by the superintendent of one of the principal mines controlled by the Kothschilds, that they average only 70% of the assay value of the ores in gold.

The Walker-Carter process as it now stands is the result of years of hard and patient study, and of thousands of dollars of experimental work. It was in 1875 that Mr. Walker first commenced the investigation which has culminated in what is conceded by those qualified to judge, to be the only process capable of successfully and profitably treating the Hastings county ores.

The process was examined and endorsed by the late Professor Genth, probably the most able and experienced mining chemist in the United States. Prof. Riotti, of the New York Metallurgical Works, used a small Walker-Carter plant in his laboratory for several months, and stated to the writer that it was not only the best, but the only process that would treat satisfactorily arsenical ores and recover float gold.

Prof. Ricketts, of Ricketts & Banks, the best known chemist in New York, made several tests and has fully endorsed the process. The result of the last test is that a large plant is now being erected in Blacksburg, S.C., to treat the pyrites found in that district, and recover the gold, iron oxide and sulphurous acid. Acid chambers are being erected for the manufacture of sulphuric acid in connection therewith.

The following is from Walter S. Bates, a well known assayer and mining expert of Denver, Colorado, who spent two or three months at the mill at Marmora:

PHILADELPHIA, Pa., 3/19/94.

Mr. ARTHUR KITSON,
Provident Building, City.

DEAR SIR,—In response to your enquiry regarding results of the mill run of the Walker-Carter mill at Marmora, Ontario, last summer, I state: The ore treated was principally from a mine called the "Gatling Mine," adjoining the Delora, in Hastings County. The ore furnished was arsenical pyrites, or mispickel. The average assay value in gold of this ore as taken from the regular mill samples was \$8.50 gold per ton. The tailing samples taken daily from the settler discharge averaged \$1.32 per ton in gold. The average saving was 84% of the gold contained in these ores. The arsenious acid gases set free in the oxidizing furnace were perfectly condensed as arsenious oxide. Owing to the coarse pulp furnished by

the machine used, it was impossible to obtain higher per cent. With uniform pulp, say 60 or 80 mesh, from 90% to 95% of the gold would have been recovered.

Yours respectfully,

WALTER S. BATES,

Assayer.

I do not wish to burden your columns unnecessarily, otherwise I could furnish your readers with expert opinions and tests regarding the Walker-Carter process, voluminous enough to fill the entire journal.

Regarding Mr. Harvey Beckwith's report, published in your January issue, this was not written for publication, but for some capitalists who desired to invest in the process. Mr. Beckwith had examined the process elsewhere and several times before going to Canada, and hence did not need to make as exhaustive a report as he otherwise would have done.

I would say in conclusion that the plant at Marmora was merely an experimental one, put there for the purpose of demonstrating the success of the process in handling these ores. It is our intention to erect plants in various parts of Canada for recovering gold, silver, and manufacturing iron oxide, sulphuric and arsenious acids.

Yours respectfully,

ARTHUR KITSON.

Philadelphia, 29th March, 1894.

CANADIAN COMPANIES.

Bell's Asbestos Co., Ltd.—The Directors' report for the year ended 31st December last, shows that the result of the year's operations is a net profit of £4,683.12.8, to which has to be added the amount brought forward, £3,047.12.9: leaving for appropriation £7,731.5.5. The Directors recommend the payment on 19th March of a dividend of 5s. per share, being at the rate of 5 per cent. per annum, and £1,731.5.5 is carried forward.

United Asbestos Co., Ltd.—The Directors recommend the payment of the following dividends for the past year: 10 per cent. on the £10 preference shares, 6 per cent. on the £5 preference shares, 2½ per cent. on the ordinary shares, carrying forward a balance equal to 5¼ per cent. on the ordinary shares.

Harrigan Cove Gold Mining Co. has given notice of application for charter of incorporation with the object of carrying on mining operations in the County of Halifax and elsewhere in the Province of Nova Scotia. Authorized capital, \$60,000, in shares of \$100. Head office, Halifax: Directors, George Fawn, Halifax, E. Whidden, Halifax, A. Carter, Truro, J. G. White, Halifax, and J. N. White, Halifax.

Cariboo and Kootenay Prospecting and Mining Co. has been registered at Victoria, B.C., to purchase from the Vancouver Lardeau Mineral Prospecting Syndicate all their rights, title and interest in certain claims or mining locations in the Lardeau district, West Kootenay, B.C., and to work same. Head office, Vancouver, B.C.: authorized capital, \$100,000 in 50,000 shares of \$2.00. Directors, Walter H. Kendall, Benjamin J. Cornish, Edward E. Penzer, F. M. Robertson and John Williams.

Intercolonial Coal Co.—The new board elected at last meeting of shareholders is as follows: J. P. Cleghorn, President; H. A. Budden, Vice-President and Managing Director; H. S. Macdougall, W. M. Ramsay, Thomas Wilson, A. Gunn, E. G. Penny, A. W. Hooper, R. MacD. Paterson.

MINING NOTES.

[FROM OUR OWN CORRESPONDENTS.]

Nova Scotia.

Caribou District.

Mr. W. A. Sanders, having thoroughly tested the old workings of the Lake Lode Co., has purchased the property, and will open up the mine and fit up the surface plant the coming season. A large body of low grade ore has been shown, which will be opened up as rapidly as possible.

The Dixon Company will erect a new 10-stamp mill this summer, and will also make some changes in other parts of the mine plant.

The Caribou Gold Mining Company has amalgamated the Truro, Caffrey and Andrews properties, and will work