

ore of which the Kingston, Brunswick and Copper Dollar are perhaps the best.

For information concerning a number of the properties mentioned, of which I have no personal knowledge, I am much indebted to Mr. Cory Menhinick, of Camborne.

It being manifestly impossible to give all of the hundreds of claims in a few lines, even the briefest notice, attention has been directed to those that, by their showings and work done, at present appear most worthy of consideration; in this, my purpose has been honest, and if any claims have been made unduly prominent, while others of greater merit have been overlooked, I hereby ask absolution for such sins of commission and omission.

With sufficient timber of excellent quality immediately at hand for every possible local requirement for a long term of years, and some, besides, for export; with a number of perpetually rolling and tumbling mountain streams ready to furnish the cheapest power at places needed, and in any required amount; with large bodies of ore, developed and apparent, of a character, in the main, permitting the cheapest form of extraction; with a temperate climate, and a large acreage of fertile soil, bordering Fish River, suitable to the growth of all kinds of grains, fruits and vegetables known to such climate; with very good transportation facilities now available, and with better still in prospect; with all these incomparable resources and advantages, active and latent, the future of the Fish River Camp not only looks very bright, but is practically assured.

A FEW NOTES UPON GOLD DREDGING.*

By F. Satchell Clarke.

A GREAT deal of attention has been paid of late years to gold dredging upon the rivers and placers of the Pacific Coast and North-West Territories down to Lower California, and, generally, a quantity of literature has been published by various papers and authors upon this subject, but, with one or two exceptions, little has been written by those having a direct and intimate knowledge of this form of mining.

This is really what is to be expected in any class of tentative work, for that is what it really has amounted to in British Columbia. Any work in which the experts are few will always cause to arise a host of empirics willing to learn at the expense of others.

Gold dredging in British Columbia, instead of being the leading mining industry owing to its enormous extent of auriferous gravels, has been so marred by such empiricism and marked with many failures by reasons so palpable to the writer, that it has often occurred to him to ask with amazement "what kind of business men are these who invest their money without having a consulting engineer in dredging to advise them?" A consulting engineer is always necessary with other mining, yet in this instance, in work that above all requires a specialist to advise, matters are left to run with the promoter, or quondam manager who may be appointed.

In New Zealand, the home of this industry, the work of recommending the claim and the actual details

and construction of the dredge with its design is left to the consulting engineer, who is necessarily an expert in designing and actually operating gold dredges, and stands between the owner of the claim, or rather, to speak more correctly, the intending buyer of the claim and all other parties, and is merely paid a salary for a specified time, or a fee to cover the intending operations until the plant is completed.

This proceeding saves both the buyer getting a claim sold principally by the silver tongue of an interested party, and in another case building a faultily designed plant, foisted upon the first party by some of the would-be experts connected therewith.

The chief and prime cause of these failures which form the subject matter of this article has been the appointment of managers who, prior to holding their position, were without the slightest knowledge of this class of work, simply because in most cases he is, or becomes, a stockholder, or had possibly sold the claim to the investor, and according to the old and obsolete custom still retained in placer mining, "who so able to manage a claim as the large shareholder, as he is looking after his own interests as well as ours." Never was a greater fallacy more exemplified than in dredge mining history in British Columbia. A little desultory reading in the mining papers and reports gathered of what other dredges are doing and the manager blossoms forth into the dredge expert.

After the appointment follows the usual trip to New Zealand, California, or other places, to investigate the best type of dredge suitable for the claim. It appears to the writer equivalent to appointing a manager to quartz mine and then sending him round to other mines to find out the best way to work the mine. He may, of course, return with the right ideas, but in the confusion of different opinions and dredges he has seen, it would be a matter of chance than otherwise, and his advice to his principals would be merely "the blind leading the blind." In some cases he returns with exaggerated ideas that he is getting the right machine and no other, and of course probably has been talked into it by the ready-tongued agent of some manufacturing company, or taken by the advertisements of some concern. Now, no matter how excellent the work of the manufacturing engineers is, he is unable to tell from his inexperience whether they are right or wrong in the details of general design. Then another class of managers are the persistent billet-hunters, who must be included among the causes of these failures, as these men are ready to take any job, provided there is a salary attached, no matter how ill their qualifications may fit in to the work.

Now to turn to the different types of dredges used. There are many engineers and persons still in existence who cling persistently to the centrifugal pump as a means of dealing with auriferous gravels. This process has been exploded years ago in the great dredging centres. As a rule, with rare exceptions, gold gravels are composed of rough boulders averaging anywhere from 10 in. in diameter, and mixed up with a compound of sand, fine gravel and clay, forming what is known in mining parlance as "a tight wash." It is almost impossible to work this by a pump, owing to the almost cemented qualities of this wash, and the throat of no pump has yet been made strong enough to stand the impact of the gravels, should the pump strike an occasional body of loose

*From a paper read before the Canadian Mining Institute.