

WHAT SHOULD A STUDENT LEARN?

Some sensible things were said by Professor Richards, of the Massachusetts Institute of Technology, on the occasion of the opening of the McDonald Laboratory of Chemistry and Mining Engineering, at McGill College, Montreal, the other day: "These walls," said he, referring to the noble building now complete through the munificence of Sir Wm. C. McDonald, "furnish the convincing proof that the Canadian public is becoming alive to the necessity for providing adequate means for the theoretical and practical study of the sciences upon which the chemist, the mining engineer and the metallurgist must depend.

"When one who has been making a special study of education in mining engineering and metallurgy for a quarter of a century, under conditions closely allied to those at this university, is honored by a place upon this platform, he may be forgiven if he ventures a few words of advice. Rogers, when he founded the Massachusetts Institute of Technology, laid the corner-stone in chemistry, physics and mathematics. About the year 1880, Huxley asserted, in a presidential address, that the foundation of modern scientific education lay in the above three subjects. This is certainly true in the training of the mining engineer and the metallurgist.

"Having the foundation laid, in what other directions must we proceed? Clearly, the student must hear about the earth's crust as taught by mineralogy, geology, and paleontology. He must study drawing, mechanics, surveying, machinery, the various operations of mining, ore dressing, assaying and metallurgy. In regard to language, history, literature, and political economy, each school must decide for itself, whether it will somewhat sacrifice the scientific side to make a broader man, or will devote its whole strength upon the purely scientific side, allowing the rest to take care of itself. We in Boston have chosen the former course.

"The use of laboratories in such a course is two-fold: First, the practical work is the beacon which guides the mind in the lectures. The experience must come first. The acquisition follows easily and naturally. A student, who has concentrated ore upon a jig, or smelted ore in a blast furnace, when he subsequently listens to lectures, is simply adding more facts to his experience. On the other hand, the student who listens to lectures upon subjects entirely outside of his experience, can gain but a very imperfect idea of those subjects. He has no experience upon which to build. If we would teach a boy to swim, we do not begin by giving him a lecture on flotation and the effects of blades upon water. We put him in the water and let him try for himself. As soon as he has a nucleus of experience, which can gather knowledge of facts, then we may tell him how to learn to swim. The lecture is the storehouse, and the mind must previously be awakened to the use of the stores."

"Secondly, the student gets practice in putting professional questions to the practical test, and in reading the answer in the results of those tests. Ore dressing and metallurgy cease to be lists of abstract rules, and become fields full of interesting problems waiting to be solved. The student soon learns that in case of failure, it is not the machine that is at fault, but the man who ran it; he learns that he must depend upon himself, and when he has reached that point, the real struggle for the highest attainment in knowledge and experience has made its beginning.

"In regard to size of apparatus, it

should be as small as will afford real work and yield real results. If students spend their strength in handling tons of ore, (it matters not whether they are or are not accustomed to manual work), they have not energy left for the day's lessons.

"Commercial work in a school may be good and it may be bad. Good, in that it keeps the teachers in touch with the vital questions of the day; bad, if so much of it is undertaken as to distract them from teaching, which is their first interest; bad, if the results are used to float mining stock on the market, or if the name of the university is attached to documents claiming to show its endorsement of processes, either good or bad."

SOUTH AFRICAN IMPORTS.

The Consular Reports of the United States contain from time to time many items which our exporters might well keep their eye upon. For example, Consul General Stowe wrote from Cape Town the other day that there were imported into South Africa for the first six months of 1898, the following domestic animals: Horses, 1,717; mules, 570; oxen, 551; sheep, 2,568; cows, 42; poultry, 872. These are for breeding purposes, except the mules and horses. The same official reports that the imports of bicycles and parts of same into all parts of South Africa, with the exception of Lourenco Marquez, in Portuguese territory, for the six months ended June 30th, 1898, were to the value of £121,689 (\$592,200), of which the United States furnished £16,959 (\$82,531). The United Kingdom stands first, the United States second, and Germany third in the amount of imports.

The Consuls evidently have their eyes open, and inform their Government of the trend of trade. We find Consul Brush, of Clifton, writing to Washington that Canada's intelligent efforts toward enlarging her export trade with Great Britain have resulted in large gains. For the single month of October, 1898, he says, the returns of exports to Great Britain show an increase of \$1,600,000 over the exports for the corresponding month of 1897.

THE ANTHRACITE SITUATION.

The January letter of the Anthracite Coal Operators' Association says, in part:

"During the past month there has been a fair degree of activity in the market, owing to the few days of cold weather. The movement has been simply for immediate demand, as few of the retail dealers were carrying sufficient stock to enable them to meet even a temporary pressure for deliveries.

"The conditions at the close of the month are wholly unsatisfactory. While there is some talk of an advance in prices in January, everyone admits that if anything of this kind is attempted, its results will appear on paper alone, and have no effect upon sales in the market. Indeed, it is questionable whether any action, which might be taken, even that of radically reducing the output, would have any effect upon prices until after the spring months have been passed. While the market cannot be said to be demoralized, it is thoroughly disorganized, and whatever effort is made to bring it into shape will be slow in accomplishment.

"What will be the outcome of the whispered plans for the better adjustment of these matters cannot be foretold. Thus far, they are no more tangible than were those of last year, and unless they develop into something which is unquestionably stable, they can safely be disregarded. It is true that the various in-

terests realize far more clearly than ever before the urgent need of some controlling plan, but there has been no revision in either the scale of confidence, which each interest has in the other, or in the total absence of all confidence in one particular interest; and until these things are changed, no plan, method or arrangement, as to tonnage and prices, will be permanent."

Referring to the trade conditions in 1898, the letter, continues:

"The year now closed has been one of serious disappointment to the anthracite producers. At its commencement there were good reasons for believing that the various interests would make a consistent and continuous effort to regain some of the ground lost in previous years. . . . But, after six months' of patient gestation and painful labor, the result was an abortion. The course followed in July effectually ended all belief in or hope for an improvement; since, through the action of only one interest, the market was demoralized beyond hope of recovery during the remainder of the year. The most careful study of the situation failed to reveal any adequate reason for such conduct, but the results arrived promptly and have since been in painful and constant evidence. Until July, prices were improving slightly, and the tone of the market growing stronger, but in that month there began a decline which has continued steadily downward.

QUEBEC STATISTICS.

The report of municipal returns or statistics for the Province of Quebec, gives, by counties and parishes, the statements of their statistics compiled by the various counties of the province for the year 1897. These show that in the entire province, outside of the cities of Quebec and Montreal, the number of residents is 1,037,295, of whom 531,877 are taxpayers. The number of acres of land appraised is 32,130,845, the estimated value of taxable real estate, \$247,164,127.29; the estimated value of non-taxable real estate, \$35,945,614.84; municipal receipts, \$3,093,922.65½; payments, \$2,662,082.21; assets, \$6,050,144.50, and liabilities, \$8,123,606.40.

The report of the Commissioner of Public Works, for the Province of Quebec, shows that there are 3,377 miles of railway in operation in the province. It also shows the following amounts to have been paid in land and cash subsidies: Quebec, Montmorency and Charlevoix, \$15,191.15; East Richelieu Valley, \$50,000; Great Northern, \$125,253; Baie des Chaleurs, \$9,555.71; Montreal and Lake Maskinonge, \$11,375. The province holds to the credit of the Hereford, Great Northern and Baie des Chaleurs railways, \$773.64, \$7,356.62, and \$1,443.41, respectively, in all \$9,573.67. The obligations of the Government towards railways, due partly on December 31st, 1898, and partly on December 31st, 1899, amount to \$970,633.

—Mr. J. Buntzen, Vancouver, manager of the British Columbia Electric Railway Company, has been making extensive enquiries into the various methods employed in handling parcels by the street car systems of various cities. His object has been to hit upon a plan capable of being successfully worked on the interurban line between New Westminster and Vancouver. As a result he has decided to adopt the system in vogue in San Francisco, and in the new terminal buildings, in both cities, provision will be made for a news and cigar stand. The clerk or proprietor of the stand will have entire charge of the parcels branch, and he, and not the company, will be responsible for the proper working of the scheme.