

and, intelligence for more, in the cultivation of the soil, and the development of our resources. Scientific knowledge, and the neutral discipline acquired by the proper study of science, become daily more essential to the success of the farmer. The few small and rude manufactures of the past have increased to vast dimensions, and have completely changed in character. The attainment of success in them has been rendered more difficult by the novel machinery employed, by the adoption of more delicate scientific processes and by the growing taste of the people.

As the result of new discoveries in science, and of new inventions in the industries; occupations have greatly increased in numbers, while manufacturers have so increased in variety, as well as in extent, that they now give employment to a very large proportion of the population of the country. Both cheapness and excellence are essential to prosperity; and so there is an ever-growing demand for more technical knowledge and for greater deftness of hand and finer taste on the part of the producer.

It may be said in general, that the education of a people should always confirm to their necessities; that, as the conditions of the life change, the education of a people should undergo a corresponding change; it may be one degree of character or it may be a change involving both. The present is a time when those who have the shaping of popular education in the Dominion of Canada should consider anew the practical application of this simple truth.

In our next issue we will return to this most important subject, in which lies much of the future greatness of Canada and the rapidity of the development of its vast resources.

A PRINCIPLE WANTED.

Under the above heading, the *Ottawa Daily Citizen* makes some remarks on our leading article, which appeared in the November number of this MAGAZINE, on the responsibility of architects in respect to sanitary matters. The *Citizen* is of opinion that architects, builders and plumbers, can hardly be held responsible as to what "*is best to be done under all circumstances, when the teachers of sanitary science have not yet agreed on the best method for securing proper drainage and ventilation.*" Now it unfortunately happens that many of these teachers of sanitary science are mere theorists, and know very little of the result that would follow from the practical application of their ideas. The method of ventilation and drainage that would answer under certain circumstances, would be perfectly impracticable applied under different circumstances, and here it is that the architect, if competent, is the best judge how to act and should not be tied down to written rules. There are certain general principles, no doubt, which should never be severed from, and if these simple principles were carried out to the letter, we should have very little trouble, hereafter, with either the sewers, house drains or plumbing. But of what use is it spending immense sums upon drainage in the streets when almost every house drain admits the gasses of the sewer into the house, and the plumbing is defective?

Many City Councillors, as a rule, are full of sanitary theories, and delight in carrying them out to the detriment and cost of the inhabitants. If they attended more to the finances of a city and meddled less with the duties

of their engineers and inspectors, the public would be benefitted to a great extent. The old adage that "a little learning is a dangerous thing," is very applicable to members of municipal bodies, who too often take advantage of their position to carry out some crude sanitary idea to the detriment of the people. We know too well the cause of the greater part of all zymotic diseases, which carries off so many of our citizens, and that cause is nothing else than imperfect house drains and bad plumbing. No such fatality arises, as some suppose, from gases escaping up from drains through the catch basins in the street, or from gases escaping from ventilators through the roof and being driven back into open windows. Gases carried off in this way are so soon dispensed and diluted in the atmosphere as to be incapable of doing much harm. We venture to say that more foul gas is breathed into the lungs of a family in one night in winter in a house with leaky joints and foul drains (when the ventilators in the street are closed with ice and snow), than is inhaled during the whole year from gases escaping from catch basins and ventilating shafts into the street.

We can expect no remedy to the crying evil until the Government take up this most important subject, and put the sanitary condition of all large cities under the control of a Sanitary Commissioner, with full power to act independent of the control of officious meddlers in city corporations.

OUR ILLUSTRATED SHEETS OF TECHNICAL INSTRUCTION.

We desire to inform such of our subscribers who are mechanics, and for whose benefit and education these sheets will be furnished, that they can only be supplied to those who have paid their subscription in advance. As we are not aware of the trades of some of our subscribers who were on our subscription list previous to 1879, they will please notify to us what occupation they follow. No sheets will be furnished before the 1st February next.

IN consequence of the SCIENTIFIC CANADIAN being printed by the Lithographic process, the publishers are unable to reprint odd numbers required to make up broken volumes, except at a great expense. For the future, therefore, no back numbers will be kept on hand, or sent as samples. The publishers are not answerable for numbers lost through the post-office. They are always sent from our office properly addressed. The reason why some numbers occasionally are not received by subscribers is, because when asking for their letters they forget to enquire for magazines and papers, and after the papers are left in the pig-on-holes of the post-office for a week the corners get torn off and thus the address is lost.

THE heavy expense the publishers have been put to during the past year in collecting subscriptions in arrears, renders it necessary to charge \$2.25 per volume on all subscriptions not paid up before the 1st March next. The annual subscription is but a small amount, but if it will be a convenience to some mechanics to make their payments half yearly in advance, they can do so.