

this circular piece can be cut for top and bottom, these pieces being sewed on to the top and bottom edges of the large sheet. Tanks can be covered in exactly the same way.

Sometimes it is desired to encase the tank or cylinder with woodwork. This makes by far the neatest job, though more expensive, and it causes a little trouble should it be necessary to open the reservoir under some circumstances. If it is decided to have a casing it is very important that the space between the woodwork and the reservoir be well filled in with some poor conductor of heat, such as cow hair (plasterers' hair), slag wool, or even dry sawdust answers very well when the casing can be filled from the top. If the casing is not "packed," with something it would be much better to be without it, as it would have a current of cold air passing up through it the same as explained with the general pipe casing just referred to.

If the hot water service pipes are carried up through the house without entering the general pipe casing mentioned, and it is proposed to incase them for the sake of appearance, this casing must also be packed for the reasons explained, but this is frequently neglected with the worst results, as the casing of pipes is frequently done for appearance sake only, the question of radiation not being considered.

Occasionally it is found practically impossible to carry the pipes up inside the house, in which case it becomes necessary to carry them outside. This is very objectionable, but where it cannot possibly be avoided the objections do not avail, but they must be guarded against. In the first place, the pipes must be incased, and the casing ought to be of fair size, so that 1½-inch of packing can be filled in between the woodwork and any of the pipes. The packing must fill the case tightly, and it is imperative that the casing be well and tightly secured to the wall, as should it get loose, the woodwork and the packing will come away from the pipes and leave them exposed.

When pipes are carried outside the packing is not only needed to prevent great waste of heat, but there is a danger to be guarded against in cold weather when the pipes are liable to be frozen and an explosion possibly ensue, as the only outlet for any steam that may be generated in the boiler is at the upper extremity of the expansion pipe, unless a safety valve is provided.



ART EDUCATION IN CANADA.*

By W. THOMSON.

In these latter days of the nineteenth century, when so much attention is being given the subjects of Protection, Free Trade, Reciprocity, or something to stimulate and advance commerce, it occurs to me that quite a reformation might be made in the art world. Art education elevates the people, aids commerce and brings wealth to the nation.

In Canada protection is needed from bogus art dealers, bogus art schools and bogus teachers. What are we going to do about this art education which just now is agitating our little circle? Are we going to leave it solely in the hands of the Government, to be controlled by the ministers who know not the first thing about art, and are therefore incapable of successfully conducting such instruction, or are we to have it done by a competent board and rely on public beneficence for support? But first I will describe where our failing and weakness lies. The first question that presents itself to our notice is, what is art education? Was there ever a more misconstrued question than this? To the vast majority it is nothing more than having their sons and daughters (especially daughters) learn how to "paint by hand," with the result that they are disgusted with themselves for having spent so much money to so little purpose, or, as in perhaps the majority of cases, so conceded in their belief in the wonderful attainments of their children as to be led to conclude that the limit of art education has been reached, and thus they remain ignorant of the necessity and usefulness of such education.

As for their sons becoming artists—No! No! Keep them away from it and poverty! This seems to be the general ideal of an art education in Canada, and it is by reason of this great misconception that we Canadians, with such grand possibilities, do not advance as we should. If we continue to disregard this branch of education, our industrial and commercial growth will be stunted.

But I have still faith to believe that the time is coming when this branch of education will be raised to its proper position, and have offered to it all the facilities and advantages necessary to its successful development.

Our Legislature must be approached and convinced by determined and practical arguments, that a different course to that of the present will have

to be pursued, as our experience, short as it is, has proved conclusively that the whole system is wrong and detrimental to the prosperity of the country commercially as well as artistically.

What does true art education mean to the country? Just now the attention of everyone is directed to our enormous hidden wealth in the shape of mines of gold, silver, nickel, copper, iron, etc., and I believe there is a possibility of our producing marble of an excellent quality, all in such quantities as to make the scientific world wonder. Our neighbors across the line look at us with envious eye, coveting the prize we thus hold. Even now we are discussing the advisability of closer trade relations with them, so that we can ship the ore over and let them do the rest. The idea is ridiculous, and shows our lack of art education and our commercial weakness. Hear what Christopher Dresser has to say on the subject: "A wise policy induces a country to draw to itself all the wealth that it can *without parting* with more of its natural material than is absolutely necessary. It is better thus to part with but little material and yet secure wealth, than it is to part with the material at a low rate either in its native condition or worked into coarse and low priced articles and become impoverished."

Men of the lowest degree of intelligence can dig clay, iron or copper, or quarry stone, but these materials if bearing the impress of mind are ennobled and rendered valuable, and the more strongly the material is marked with this ennobling impress, the more valuable it becomes. By way of illustration we will take, not our valuable ore, but a common piece of clay—every day clay—of which we have such an abundance on the streets of this fair city of ours. In the hands of one man it becomes a drain tile or a common, ordinary flower pot worth five cents a piece—twenty five or fifty cents a dozen—in the hands of another man it becomes a vase or a decorative piece of ornament, worth how much—fifty cents a dozen? No! sold by the piece from one dollar up to twenty; yes, fifty or one hundred. What caused its greater value? Education—art education. In the first instance the man was simply a machine working for a day's pay, without the application of any brain power. In the other he had an art education, and consequently his work was ten, aye, a thousand times more valuable to the country, both commercially and artistically. Thus you see the country retained that much more wealth by one person's education. Take as another illustration our iron ore. I have said that our American cousins are looking at it with a covetous eye. They see to what value they can put it; how they can increase its value a thousand fold, and send it back to us in beautiful and useful forms, charging us a hundred times more than they paid us for it. They are better educated artistically, spending enormous sums every year adding to the facilities for art education. The result is, they are enriched commercially while we are impoverished, simply because we think it folly and waste of money to have anything to do with art education.

Look at our manufacturing industries—stove manufacturers and iron workers generally; furniture manufacturers, carpet weavers, wall paper manufacturers, glass stainers, lithographic workers, silver plate, stone carvers, decorators, etc.—a small army of industries who feel the want of home education, for lack of which they have to pirate the designs of our Yankee cousins and adapt them to their own wares, whereas had their workmen the proper facilities for study and reference, things would be entirely changed. Valuable men as designers, modellers, etc., would be retained in our country; new and original designs would be produced which would command a higher money value and a larger market. But why go on enumerating details?

I now come to consider the means whereby we may reach the desired end, or in other words, what system we should to adopt to further encourage and improve this branch of education. Art teaching or education under the present system will never be a success, because the forms of entrance examinations are ridiculously wrong. The awarding of prizes, medals, and especially teachers' certificates, is a farce. It seems as though the standard of the schools is to be gauged by the large number of pupils who receive diplomas, whereas I believe that is the best argument that can be used against it, because the majority of teachers who have passed these examinations are entirely incapable of educating the young mind in *true* art principles, consequently the very first principles the pupil receives are wrong and tend to kill any germ of art instinct that may be in him. Couste, in his conversations on art, says in connection with the organization of Art Schools, that the elementary teaching which is of so much importance is usually confided to the least advanced amongst the teachers. This is a fatal error; no amount of diligence, however well directed, can make up for inexperience. It is not my intention to lay down any positive rules for the guidance and regulation of Art Schools, as I believe that should be done by a selected committee of qualified men, but merely to suggest a few qualifications that I think should be necessary.

In the first place, we must have a thoroughly qualified and enthusiastic board of directors who will have power to arrange classes, adopt their own rules and regulations for their guidance, and above all engage experienced teachers. I would also suggest the following general rules:—

That students be advanced from one class of work to another according to the personal judgment of the instructors without formal examinations.

A series of informal lectures should be given on various art matters, such as the history of the arts, technical processes employed in them, criticism upon decorative composition, anatomy.

That a certain number of free scholarships be established.

That the students be compelled to draw from the skeleton and the different bones composing it, as most of the principal bones show or suggest their form, and a knowledge of their natural size must be invaluable to the student.

Lastly, art students must have art food—intellectual, artistic nourishment.

* Abstract of paper read before the Toronto Art Students' League.