

geometry and drawing cover, perhaps, a larger field than any other subjects, from practical geometry, drawings of constructions in all trades, the setting out of carpenter and joiners' work (some of which is necessarily indicated) drawings for pattern makers for machinery, up to free hand, ornament and design, and even architecture. Thus this subject illustrates, in a way, the importance of a thoroughly qualified instructor.

Another very important point to which a Board of Management must be thoroughly alive is, that having satisfied themselves with the *qualifications* of the teaching staff, they ascertain from time to time that the teachers are making progress themselves and keeping abreast of the times. It is very easy for an instructor in any subject to "get into a groove" or even to become careless in the preparation of his lectures; the problems he propounds must be progressive and must carry with them important lessons; and again these problems must be suited to the various stages at which the students have arrived. A problem may be in every respect a very excellent one, but if it goes beyond the instruction given, or does not come up to it, it is valueless, for in the one case the student will work it out with the greatest ease as belonging to a stage he has passed, or in the other, it will be a waste of time for him to puzzle over something about which he has not as yet received full instruction. It has been said that the guarantee against failure, in this respect, on the part of the instructor would be, that the students would themselves complain that they did not obtain that which they found of necessity to them. But it must be remembered that the majority of students, probably, would not have sufficient ability to detect any weakness of this kind in the teacher, and few would like to take upon themselves the responsibility and the great unpleasantness of making a complaint. The consequence would be, that one or two, who felt this, but did not see how to help themselves would leave, while the majority would remain and waste their time under the impression that they were progressing. Examinations of students to ascertain their progress would not mend matters or be a sufficient guarantee in the matter. This work of keeping the instructors up to the mark would, we suppose, devolve upon the two experts in technical education. These two experts are Prof. Galbraith and Dr. R. B. Orr, and we find their names head the list of the "School Management Committee." In these two gentlemen we think the public have a thoroughly satisfactory guarantee in this particular.

One point which concerns the public generally more perhaps than any other, and vitally concerns the institution itself, is the salaries paid to the instructors. The suggestion of reduction of question of salaries is now occupying the attention of the Board of Management. Every institution in its infancy, to be a success, must be carried on on the most economical principles consistent with the objects to be attained. An institution of the kind in question requires a large number of appliances for the execution of its work, as well as competent instructors, and the instructors must necessarily be hampered in their work without a sufficiency of appliances. When the appropriation for the work of the school is limited, it becomes a nice question as to what proportion shall be spent in salaries and what in the purchase of appliances, having first deducted from the appropriation the current expenses, such as rent, fuel, light, etc., etc. It seems to us that the subject has not received the attention it deserves at the hands of the board of management, and that the principle in force in the technical school of Toronto is an easy one of disposing of a difficult question, but that it is open to question as to whether it is very fair to the instructors themselves or altogether judicious in view of the limit of the appropriation. We do not for a moment agree with undervaluing the services of qualified teachers, but the point is one of utilizing the funds to the utmost advantage. Out of an appropriation of \$7000, \$4000 is divided equally among the eight instructors, no difference being made between one who has to spend a large amount of time in necessary preparation of his lectures and one whose subject being practically book work, does not need much time for preparation—between one whose subject is endlessly progressive, and one whose subject is by very nature, a limited science. In the first place \$500 seems a large sum for an instructor who having the whole day for earning his livelihood, puts in say three nights a week for about six months of the year, and has little or no preparation to make for his class work at the school. But it does not seem too much for one who has to put in five nights a week for the same time, and has to spend two or three hours a day besides in preparation, even if he is an expert, and thoroughly posted on his subject.

In this institution the principle is that the work of instruction is to be divided up as equally as possible among the eight instructors, and if one has more than he can do in one subject, he must get the assistance of one whose time is not so fully occupied, so that the time of each shall be equally employed and all receive the same remuneration. But is there not a weakness here? The expert in one science is not likely to be an expert in another. If the instructor in drawing had too much on his hands, he could hardly obtain assistance from the expert in chemistry, or the expert in chemistry from the teacher of mathematics. While we do not advocate the reduction of salaries as an all round principle, no less volens, we think that there would be a decided gain to the institution if the matter were regulated in a rather more practical manner than at present.

The limited space at command of the institution should make the matter of admission to its benefits, one of some considera-

tion. At present any applicant (unless something serious is known against his character for instance) is admitted. A youth may think it will do him good to attend certain classes and he applies for admission; he attends a few nights and "drops out"; another may find it a pleasant way of spending a few evenings a week, taking up much valuable time of the instructor, and learning nothing, or one may come to learn, for example freehand drawing, not for the purpose of improving himself at his trade, but simply as an accomplishment. Thus, the space being limited, these three would shut out others, worthy seekers after knowledge as a means of improvement in their trades, for whom we conclude the institution is primarily intended. Now that the two dollar deposit, originally demanded from an applicant is not required, there is absolutely no guarantee of serious intention on the part of the applicant. Some kind of enquiry should, we think, be made concerning the applicant before admission is granted, of a fuller scope than is supplied by the simple form of application.

There is one other point upon which we wish to touch, that is examinations. The institution, like all others in their youth, cannot be expected to produce in the short time that it has been at work, very great results, and the public should not be disappointed that experts are not turned out at the close of every term. The work is necessarily progressive, and a certain course must be taken (in some classes of two years duration), before the ground is covered. There are certain disadvantages perhaps in permitting each instructor to examine his own class, but there are many advantages, and on the whole this principle really has proved in the majority of institutions to be more satisfactory than the employment of "outside" examiners. The "outside" examiner is generally or should be necessarily an expert among experts, but he has no intimate knowledge of the students he has to examine. Consequently he looks over the work through which the students have waded in the term, concludes that they have reached a certain standard, and he possesses certain or if we may say so, stock or test questions, which, if every student was of the same mental calibre as his neighbor, would no doubt test their abilities very well. But in all classes, there are some students brighter than others, and some who cannot by any means grasp a subject so easily as others. Moreover every examiner knows that many a student fairly well posted in his subject and who has shown great diligence at his work may fail completely at an examination through nervousness or the inability to comprehend the exact meaning of the questioner; while it may happen and has happened that a student may be acquainted with the peculiarities of a particular examiner and come out with flying colours at an examination who really was not so well grounded as the former example. There is a difficulty here that is not easy to get over in the way of satisfying the public that the results of the work are commensurate with the appropriation. A certain amount of result may in some branches be seen, as for instance in the exhibition of drawings executed by students, but even this is not satisfactory, for if a student exhibits a beautiful drawing of an elaborate machine, the public cannot know from the drawing that the student has an accurate knowledge of the use and working of every portion of the machine. A knowledge of algebra and such sciences cannot be exhibited, nor can the result of a two years course of chemistry be practically demonstrated to the public mind. In this matter the public must trust to its representatives on the board of management. The duty of the public to themselves is to see that the best men for the positions are elected to fill these offices and the public may and should scrutinize carefully the work done and the attention given by each member of the board.

A visit to the institution satisfies us that so far as it is able to go, the lines upon which its work is based are very excellent. It is a school worthy of a much larger appropriation, but the foregoing suggestions with reference to improvement in management present themselves, and are worthy we think of investigation.

Our thanks are due to the very courteous reception we met with at the hands of Mr. Duff, and the pains he took to give us the fullest information concerning this valuable institution.

#### ONTARIO ASSOCIATION OF ARCHITECTS.

THE first of a series of public lectures to be delivered under the auspices of the Association was given by Mr. Grant Helliwell, in the School of Practical Science, Toronto, on the evening of Thursday, the 8th inst. The subject of the lecture was "Current Architectural Styles." The subject was treated in a most interesting manner, and illustrated by a stereopticon under the direction of Mr. C. H. C. Wright, Lecturer in Architecture in the School of Science.

In substance the lecture is embodied in the paper read by Mr. Helliwell at the recent convention of the Association, and printed in the present number of this journal. It was, however, considerably amplified and popularized as befitted the occasion.

The audience numbered between two and three hundred, but strangely enough the students and to some extent the architects also were conspicuous by their absence.

It is learned that a special autumn meeting of the Association has been decided upon. It will probably be held in September. It will not be a business meeting, but a meeting for instruction, for which an interesting programme of papers, etc., is to be provided.