Editorial

THE NEW ENGINEERING STUDENT.

Canadian universities open this week under conditions that are considerably less turbulent this year than last, but under the influence, nevertheless, of the ravages of war upon men, money and mental activity. The effects are well illustrated in the industries which depend upon these essentials. A year of war has likewise made itself felt in the universities. There are some vacant chairs in the assembly rooms of the staff, and in the corridors the handclasps of senior years are not as frequent or as merry. Many classmates are in the trenches, others are in training and there are those who have bravely and unhesitatingly answered the last call for their King and country—as others still must do. The seats of learning have responded nobly for the defence of the Empire, and the student of yesterday who is a common soldier in the trenches to-day, is making a sacrifice that, under conditions other than those of war, the country could not well afford.

The new engineering student must recognize at once that his responsibilities are considerably greater than those of his recent antecedents at the university. The war has given a new aspect to many things connected with college life, and also to the engineering career he proposes to follow. There has been a universal inception of military training and lectures. With a view to preparedness the student should take full advantage of this extra burden borne by his senior confréres. It is an induced activity which, for the time being, supplants in large measure the athletic side, so essential for the development of men of sound judgment and agile minds, as well as of health and strength. In addition, the military work curtails to some extent the normal periods of technical study and application. Obviously, greater attention on the part of the student is necessary to countermand this encroachment upon a curriculum already overcrowded.

It is very important, also, that the student of to-day prepares to meet a new order of things in Canada when the war is over. What is behind the veil of circumstance arising out of the war is hard for him to conjecture, but he may be assured that it has deeply affected industrial and engineering activities, and that there will necessarily be a readjustment when hostilities cease. It is to his own interest, therefore, to keep abreast with current events and tendencies, to keep informed of the trend of industrial progress. He must become familiar with the extent and practice of engineering in Canada, the principles it involves, the methods by which it is applied, and, in addition, acquaint himself with a volume of information hardly a part of, but tributary to, the acquirement of a well-balanced engineering education.

Every student of our engineering schools, before he advances far in his course, should begin a careful collection of engineering reports, public documents, catalogues, etc. These should not be laid aside for possible future demand, as they soon become out-of-date. Nor should they be considered other than subservient to his text books and engineering periodicals; but they should receive his attention and careful perusal, as they will be found of advantage in the serious business of associating present studies with engineering.

Finally, it must be remembered that there are many requirements attached to the training of a successful engineer. A university course is a good stepping stone, but the mistake should not be made of regarding it as the whole process.

STANDARD RATING OF CONCRETE MIXERS.

Up to the present time there has never been any standard method of rating batch mixers. Some mixer manufacturers rate their machines by their capacity in mixed concrete, while other manufacturers rate them by their capacity in loose unmixed material. It is a well-known fact that a mixer having a batch capacity of 8 to 9 cubic feet of unmixed sand, stone and cement will hold only about 6 cubic feet of mixed concrete per batch. For this reason the term three, four, or nine-foot mixer has never had any real, definite significance.

In the United States the National Association of Mixer Manufacturers, at their August meeting, took steps toward remedying this difficulty by adopting a resolution providing for the uniform rating of batch mixers. This resolution provides that the members of the association in future catalogues and circulars shall specify the capacity of their mixers as "size of wet, mixed batch," and not otherwise. The resolution further provides that the dry, unmixed capacity of a mixer may be approximated as one and one-half (1½) times the wet, mixed batch, assuming the use of cement, sand and one and one-half (1½) inch crushed stone, with 1¾ gallons of water per cubic foot of mixed concrete. The members of the association further agreed not to use the dry batch rating in their correspondence, advertising, etc., unless the standard wet batch rating were used also and with equal prominence.

This is a step that should prove beneficial to all contractors, mixer manufacturers, and everyone, in fact, connected with the concrete and cement industry. A contractor can now arrive at a real comparison between mixers—not only in price but in capacity. This would have been much more difficult without the aid of a standard rating such as the above.

BENCH-MARK FOR GEODETIC SURVEYS.

The standard bench-mark adopted by the Geodetic Survey of Canada consists of a copper bolt, three-quarters of an inch in diameter and four inches long, stamped on the end with the letters "G.S.C., B.M." (Geodetic Survey of Canada, Bench-mark). The bolt is sunk horizontally in rock or masonry so that only the circular end is visible; the number of the bench-mark is stamped on this end as well as the letters mentioned above, and a horizontal chisel line is cut, upon which the elevation is taken. At certain points concrete bench-mark piers have been built; these project from six inches to one foot above the ground and extend below the frost line; the copper bolt upon which the elevation is taken is placed horizontally as in other cases, and is about nine inches below the top of the pier.