CORRESPONDENCE.

[This department is a meeting-place for ideas. If you have any suggestions as to new methods or successful methods, let us hear from you. You may not be accustomed to write for publication, but do not hesitate. It is ideas we want. Your suggestion will help another. Ed.]

ENCINEER'S EDUCATION.

Sir,-I have read with interest the article headed Matriculation Standards in your issue of February 21st, and as a graduate of the School of Applied Science would like to express my opinion of the solution of an engineer's education. Is the School of Science turning out engineers? Let me tell my experience. On receiving my diploma in the Department of Civil Engineering I applied for work, and stated as my standing in the profession that I was a graduate of the School of Science. Some engineers asked if I had any experience and offered me a position as chainman, while others wanted to know if I could make tracings, and would give me a position as draughtsman. My School of Science diploma was a joke to them all. My education had cost several hundred dollars, and I had spent the most of my twenty-one years in school, so to be offered a position at thirty dollars a month was rather discouraging. I did not find enployment as transet or level man that summer, so hired as chainman and topographer on a survey in the fall. I soon realized my position and started to educate myself in engineering, the mathematical course I received at the School of Science helped me very much, but I could not see the application of the vast amount of theory I had accumulated in the lectures. If I had taken my School of Science course over after I had a year or two experience I would have received twice the benefit, and

would have been able to at once put my studies into practice. Matriculation standards do not appeal to me to be the whole solution of the problem. It would be as well for a student to finish his mathematical course in arithmetic, algebra, euclid, and plain trigonometry before he leaves the high school, this would permit the lecturer to apply these subjects in the solution of scientific problems, and lessen the work of the university staff where the student now attends lectures in algebra and trigonometry. But while the solution of these scientific problems may be perfectly clear from a mathematical standpoint, they mean nothing to the student who does not see their application, and the high standing on entrance to the school does not help him. A student may go through his course with honors, and after he graduates he fails to make an engineer because he cannot apply the theories. It is not the honor men that make the best engineers. Young engineers should have practical experience while their education is in progress. specific matriculation examination for entrance to the School After passing the of Science, the student should get employment for at least a year as chainman, rodman, or any junior position in connection with engineering work, where he will receive experience in the life of an engineer, and this would create an ambition for the for the solution of problems, which he cannot yet understand. This 1 This break in his school life will make him feel the more serious serious side of his education, and he will commence his new Studies Studies with increased interest and energy. If he finds during this year of trial he does not care for the profession, or that he that he is not strong enough for the outdoor life, it is then the prothe proper time for him to change his course, for he will never many never make an engineer. I heard graduates say that they had no idea the life of an engineer was so unsettled. They had visions visions of a city engineer's office but it did not materialize. Over half Over half of the students that enter the School of Science do not know the students that enter the school of science do not know and are not physically fit for the life that is before them.

Toronto, March 17th, 1908.

Yours, F. F. Clark.

TURNOUT PROBLEM.

Sir,-B. A. R. asks solution of accompanying diagram. Webb (p. 279) shows that the increase in lead due to curvature is only 11/2 inches.



This makes lead 72.13+.15=72.3.

Distance P F to E C=99.2-72.3=26.9.

The curve of siding would probably be lined in by eye, but should we desire to run centres we can find degree and length of curve by calculating perpendicular distance of P F to tangent of siding produced.

The angle of curve is known, being I of 26.9 ft. of 12° curve + frog angle, a total of 9° 36'.

With these as data we find curve to be a 7° 14', with a length of 132.2 ft.

March 24th, 1908.

Yours, A.

CONCRETE SIDEWALKS.

Sir,-I notice in your issue of March 20th a set of specifications for sidewalks as adopted by the Convention of the National Cement Users' Association at Buffalo; also a letter from a town engineer enquiring what should be good specifications for concrete walks.

While I have every respect for their specifications an 4 will admit that standard practice demands a bottom layer and top layer, still I have obtained excellent results with the following specifications, and would prefer to use them altogether.

Foundation .- Foundation shall consist of one inch of well tamped cinders or gravel.

Concrete Walks .- The concrete walks shall be four inches in thickness, and shall be composed of one part by volume of approved Portland cement, two parts by volume of clean, sharp river sand, and four parts by volume of screened river gravel, size 1/4 inch to 1 inch. Said concrete shall be mixed rather wet, and immediately after being put in place shall be tamped with a wooden tamper of approved size, and then immediately afterwards floated with a wooden float. The gravel has now disappeared, and is a considerable distance under the surface, and at the proper time said surface, which consists of mortar 1:2, shall be troweled and marked in the usual way. The rails at the sides are to be dressed on the inside, and after the concrete has been put in place, a spade or shovel shall be worked along the edge two or three times so as to give the four-inch face a smooth, neat appearance, and which will leave sufficient mortar 1:2 to round off the edges of walk in the usual way. The joints in walk shall be cut with a sharp thin steel plate, and sufficient sand added to make a good joint. It shall then be troweled over and re-cut and finished in the usual manner.

The result is a walk which has no separating layers, but is in one solid mass, and is much stronger and more durable. As some of our walks have been down now for 8 or 10 years, and the markings are not yet worn off, it will be a very long time before any gravel ever shows on the surface, and if it does, it will then wear very slowly. One of the best samples of concrete walks that I have noticed, is a walk on Woodward Avenue, Detroit, which has gravel showing in the top layer.