States. England has a great number of the highest engineering schools in the world. So has France. Germany was well advanced with engineering training before some of the other countries began to be serious about it.

But your university training will not make you an engineer. It will equip you to become an engineer—if the engineering spirit were born in you. By hard work and the application of the training you will here receive you will, I trust, all become engineers.

You are now, doubtless, realizing the difficulties surrounding "engineering as a profession." Eliminating all those engineers who share in the profits of their labors, it will be seen that it reduces the number to a comparatively small number of men—small as compared with the number composing the profession of law or medicine. Yet, it cannot be said that those eliminated are not engineers. On the contrary, they are engineers in every sense of the word, and they are so recognized by all the great national engineering organizations. Many of the leading ship builders, bridge builders and contractors are amongst the best engineers of the world, and they have and are occupying the topmost positions of honor in the engineering world.

The idea of a part of the engineers taking a stand shoulder to shoulder with the other professions is growing fast. Already a powerful movement is taking place in this direction, and it is interesting to note here that the indefatigable secretary of the only really professional organization of engineers was a member of the class of 1884. I refer to Eugene W. Stern, secretary of the American Institute of Consulting Engineers. Let me, in passing, call attention to the pre-requisites of membership with these professional engineers. A member must be at least 35 years of age, he must be actively engaged in the independent practice of the profession, he must be a full member of one of the great recognized engineering bodies, he must have a high character, he must have attained a degree of eminence in the profession, and he must not be engaged in contracting. When you come to realize the requirements for admission to any of the great recognized engineering bodies and add to that all the other stipulations that have been named, you will see that the standard set up by the American Institute of Consulting Engineers is one of which the engineering world should be proud. The membership is jealously guarded and, of course, it is not great in numbers. At present I think there are less than 70. This organization illustrates to some extent the difficulties surrounding "engineering as a profession." One is forced to conclude that "engineering" is too great and too comprehensive to ever be confined within the narrow limits of a "profession" in the same way as law and medicine. As it looks at present, we should associate ourselves with the recognized engineering bodies first and, later, if our choice take us in that direction, the Institute of Consulting Engineers. In the meantime study the work that the Canadian Society of Civil Engineers is doing.

As I look at the whole question that there are in this world two classes of people, the producer and the non-producer. At the bottom of the non-producers I place the real estate men and the speculators. At the top of the producers I place the agriculturist and the engineer. Between these extremes live all the other callings, and I shall leave you, each for himself, to place them according as they may, in your judgment, be producers or non-producers. Under our present social system the agriculturist must come first, because we must have food and clothing. Next in order in the world's progress is the engineer. The Indian in his native state, the Arab with his caravan has no need of the engineer. The farther we get from the primitive the greater the need of those who are able to apply to our use and convenience the great sources of power in nature. The marvelous advances of the last century are engineering advances. The other professions are older than engineering. Art is centuries old, yet it is a question if the art of to-day is on the same plane as that of Greece and Rome centuries ago. The grandest examples of the work of modern architects are based on the ancient orders, and the advances of architecture in modern times are due to the engineer in introducing steel skeletons and reinforced concrete. In surgery wonderful progress has been made within a lifetime, but the skill of noted surgeons was developed only through the medium of the engineer's handiwork in fine instruments and electrical appliances. The physician heals the sick and deals with individuals, while the engineer holds in his hand the health of towns, cities and nations. The preacher has no particular use for the engineer excepting as illustrations in sermons. The lawyer lives on the engineer's quarrels and on the relations which by his ingenuity he has set up between others. The teacher helps to prepare the embryo engineer for his admission into a cold-blooded world and promptly forgets him in the future pursuit of embryology.

It is the engineer who harnesses the Niagaras of the world to transform the night of our cities into noonday and to turn the wheels of commerce. It is the engineer who develops the mining and furnishes the metal with which he builds machines that by their ingenuity compel us to stand in awe and admiration. It is the engineer who produces the steel to form a network of highways over our continents and that makes possible the myriads of floating palaces on our oceans. It is the engineer who has abolished famine and pestilence. It is the engineer who has annihilated distance with his telegraph and his telephone. It is the engineer who has made possible the conquest of the air. It is the engineer who places in the hand of the president of a nation the power whereby he is able with a touch to remove from a point thousands of miles away a barrier of nature separating two oceans. It is the engineer who furnishes the worker in the golden west with the machines whereby millions of bushels of wheat are each year made ready to enter the hopper that the engineer has constructed. It is the engineer who has made Canada of to-day what she is.

In concluding, Mr. Francis referred to the foregoing generalities as being accomplished by the summation of the efforts of individuals, and he impressed upon the members of the society the necessity of upholding the high ideals of the engineering profession.

RAPID DAM CONSTRUCTION.

Near San Antonio, Texas, a concrete dam 164 ft. high, and having a crest length of 1,580 ft., was recently completed in 12 months. It contained 300,000 cubic yards of concrete, and forms part of an irrigation scheme for an area of about 60,000 acres. It has a spillway 1,200 ft. long, which delivers into an adjoining ravine. The delivery of the water involved the use of semi-circular sheet-metal flumes, one of which was supported on towers for a length of 1,500 ft., the greatest height being 95 ft.