

# 399 CANDIDATES RECEIVE DEGREES AT GRADUATION

(Continued from page 2)

classic writings had to give place in considerable measure to such teaching. **Outlines Moral Standards** At Commencement time it is common practice to make addresses to graduates giving moral advice and suggestions to the graduate for their future guidance. What I shall say to you in this respect will be very brief, a mere generalized summary of the wisdom of the ages; rules of conduct that should be forever in force. Without going into details, such advice may be epitomized as follows. Set for yourself high ideals and keep them. Be true to your God, of whom all Nature is the expression. Be honest and fair to others; that is, put yourself in their place, and deal accordingly. Seek the truth always—prove it, have faith in it. The Truth shall make you free. Preconceived notions may be false; keep an open mind. I shall not attempt to elaborate upon these simple principles; all others arise out of them. In speaking to engineers especially, it may be pardoned if I refer briefly, but with emphasis, to certain qualities which tend to their success. The young engineer should be guided by a laudable ambition to excel in his profession, he should not merely drift.

**Qualities Needed by An Engineer** He should meet adversity bravely, as a spur to greater effort. If the work he finds at first is not just what he would like, let him never the less do it faithfully and honestly. It ought to be something worth while. One can learn

much in the process. Besides a certain self confidence or self reliance, an engineer should have initiative; constructive ideas are always in demand and bring their reward. Such qualities, as well as that of alertness, and the power of close observation, fortunately are cultivatable by practice. He should be able to shoulder responsibility, which means that he must possess courage, fortitude, patience, and be capable of hard work and self denial. He must understand the viewpoint of those under him.

**Attitude Toward Subordinates** Best leaders are those who can put themselves in the place of the followers. One who cannot usually fails. The ability to do a thing one's self is the high road to success in winning respect and getting others to execute one's plans. The engineer must have patience with those who seem less endowed than himself. They may even be able to teach him something. There is such a thing as intuitive knowledge or aptitude. All men are not created equal in capacity. It is a common fallacy to imagine that faults of inheritance can be wholly made up by a favorable environment. Faraday's guesses have been said to be nearer the truth than the calculations of many of his contemporaries.

**Must Form Mind Pictures First** But of all the qualities of a trained mind the one most valuable to the engineer, as also to the artist and musician, and in fact to any one who may be called upon to do creative work, is a vivid imagination, tempered, of course, by discretion. It enables him to form a mental image of a thing, as completed, and assists him to predict results in advance. The artist sees mentally his picture of design, before giving it actual form. He is most successful who can best reproduce that ideal in the execution of his work. The musician ideally hears his composition, before performing or recording. So the engineer must picture in his mind the result he aims to secure, the plan to follow. Even in drawing a contract he must imagine the effect of possible modifications of circumstance, and provide for them.

**Engineer's Works Must be Flawless** Engineering projects sometimes fail because of some unrecognized or insufficiently estimated obstacle, like the proverbial "screw loose somewhere" in the inventor's model which wouldn't work. The lawyer may lose his client's case and be not blamed. The doctor may not cure or save the patient, he is not responsible, but the engineer whose work does not succeed on test is lost. The architect whose edifice sinks because of an unknown quack and layer is held to account.

**Panama Canal Example** Such was the case in the magnificent conceived project of the Panama Canal under the French of the last century. Despite the wonderful efforts made, the project failed because there was a special type of mosquito on the isthmus, the stegomyia mosquito. For years the construction work was a gamble with death; the latter holding most of the trump cards. Only after the Spanish American war and the noble deeds which brought to light the yellow fever germ and its carrier together with the means of limiting its deadly work, was it possible, under the American regime, to guard the labor from the dread disease and finish the construction of a work which now stands as the highest type of many forms of engineering achievement combined, medical sanitation, civil, mechanical, electrical. But without the discovery of the germ carrier and its deadly relation to human life, and the steadfast application of preventive measures, the construction of the Canal would have failed under the American regime, as it did under the French, in fact, so far as it went, the work of the French engineers was well done, and much more of it done than is generally known. Besides, it was pioneer work, from which much was learned to help guide the later work. Many other examples could be cited of the failure of projects, owing to some unknown condition of a seemingly small importance. It behooves the engineer, then, to be cautious, to be wary, to take into account all possible variation of circumstance that may affect his work. His reputation for reliability will largely depend on his attitude in this respect. Often there is a painful need of data, which either does not exist, or is inaccessible; and the absence of which is fatal.

**Need of More Research Work** Future advance in engineering science will necessarily depend upon research, and the consequent steady acquisition and application of new knowledge. One of the most inspiring things about an engineering career will be the continual progress as science understandable by him, the new vistas, theoretical and practical which are constantly opening to the view of the progressive student. Note for example, the seemingly unlimited possibilities in wireless transmission, following the creation of thermionic amplifiers, the thermionic engineering of the future. It may soon be that a station in Paris, London, or Washington will talk to the whole world, and that an instrument small enough to be installed in one's study may permit us to hear what is said.

Before I conclude I am tempted to say a few words about the quality of "originality." Some untrained and uninformed minds possess this attribute in a considerable degree. Unless tempered by sound judgment, sense of proportion, and adequate knowledge, the

## TRACK CAPTAIN WEBS

### "Mich" Bawden Plays Hero in Romantic Elopement

Garvin Bawden, track captain, president of the Junior Class, and, according to Technique 1921, the most popular Junior, brought Technology into the scareheads in all the Boston newspapers last Friday when the news of his elopement with Miss Helen Henderson of Reading was released. Miss Henderson was prominent in war work and is well known in amateur dramatic circles.

The wedding was hastily planned Wednesday evening, when a marriage license was secured from the Reading town clerk. A midnight automobile trip to the home of Judge Lummus of Lynn obviated the difficulty presented by the five day law.

Miss Henderson left her home Thursday with a suitcase which ostensibly contained her party dress which she was to wear at a dancing party after attending a ball game in the afternoon with Mich Bawden. In reality it contained sufficient clothing for the honeymoon trip. By prearrangement the pair met E. D. Ryer '20, former general manager of Tech Show, who was best man, and Dr. and Mrs. J. Harper Blaisdell, who were waiting with an automobile.

The party proceeded to the Epiphany Episcopal Church, Winchester, where the ceremony was performed by the Rev. Murray W. Dewart. The bride was unattended, and the witnesses were Dr. and Mrs. Blaisdell.

The marriage is the culmination of a romance which began several years ago at one of the proms.

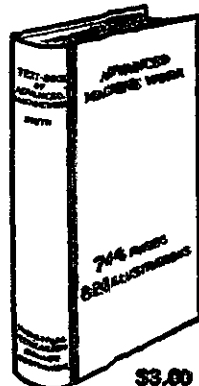
results may be erratic. The so called "crank" may be quite original in his ideas. There are inventions even in business methods, good, bad, and indifferent, according to the type of mind from which they emanate. Invention, however, in the engineering sense involves originality; but not that alone, if the results are to be of value. There is imagination more or less fertile, but with it a knowledge of what has been done before, carried perhaps by the memory, together with a sense of the present or prospective needs in art or industry.

**Value of Inventions** Necessity is not always the mother of invention. It may be prevision. As to value in invention, it is often said, and said truly that ideas are cheap, but those which are really novel, and which will bear the cost of developing them so as to return value for the effort involved, are rare. Not all apparently good ideas, even if new, are valuable or capable of commercial development. I speak thus of invention from a long and varied experience.

**Should Patent New Ideas** As young enthusiastic engineers, some of you may be led, sooner or later, into that field. It is a fascinating field, but there are many disillusionments; and as is the case with other pioneer work of blazing new trails, it is not always without great hardships. Shall an invention be patented, or donated to the public treasury? I have known some well meaning scientific men look askance at the patenting of inventions, as if it were a rather selfish and ungracious act, essentially unworthy. The answer is very simple. Publish an invention freely, and it will almost surely die from lack of interest in its development, it will not be developed, and the world will not be benefited by it, and if valuable, it will be taken up, developed into a business under the patent, and the world will reap the advantage. Incidentally, the original worker may be encouraged to further effort, and so supported in it as to devote to origination or invention at least a portion of his life's work. A manifest benefit to the world, if his ideas lead to production and general welfare. I assure you that there is an enduring satisfaction in having been the means, even in a limited degree, of providing lucrative employment for hundreds, if not thousands, of men. And this is the privilege of the engineer. Pioneer work of development and exploitation often demands large expenditure. We may note an instance of this in the production by Coolidge of drawn wire from the normal hard and brittle metal tungsten; a very costly development which is now universally applied in the modern incandescent lamps, with the consequent saving of millions of tons of coal annually.

**Congratulates Graduating Class** In conclusion, allow me to congratulate the graduating body on entering fields of work which under normal conditions are of vast expansion. Whatever your activities take, you will find much to do. The world needs the work of the trained engineer, the builder of structures, the administrators. You have yet to gain experience in the actual work and practice of your profession. You have been given the foundation on which to build. There has never been a time of more need for constructive ability. Our prodigal nation, and there is none more prodigal, needs the lessons of conservation, including hoarding of resources, effectiveness of labor, and of effort generally. Our practice in numerous instances are in direct contradiction thereto. There is too much lost motion, too much waste in our affairs. The engineer, whose training is directed to getting results with the least waste of time and energy, must help to bring the same principles into effect in the body politic. He is more than ever needed as a guide in national affairs. That man is not wise, who does not consult the expert in matters demanding special information not possessed by himself. An engineer should also be an example of a broad-minded citizen, interesting himself in all such activities as conduce to the welfare of his country and its people and the world.

In bidding you Godspeed on the intricate journey through life, may I ask you to cherish your "Alma Mater," for she will always deserve your loyalty and help. May you hold to the ideals set for you, and long be found by the friendships you have formed during the years just past.



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