who, by their loose disregard of correct rules, show that they are sluggish in the acquirement of the knowledge so essential to engineers. This is to be regretted, in view of the vast amount of property and number of lives entrusted to their care.

I am sorry to have to say that too often when I try to point out to engineers the necessity of qualifying themselves for their calling, the effort is met with the old, old question regarding the relative merits of theoretical and practical engineers; or, the comparative value of theory and practice. The practical engineers, who have no theoretical knowledge, scoff at theorists; and the latter sneer at the former.

Now, it requires but little experience on the one hand, and not much study on the other, to show that each are equally important. Both parties should know that "theory and practice" make perfect; and the man who has these two combined will excel in whatever he may undertake to do. Therefore, let me impress upon you as engineers to combine theory with practice, and prove the one by the other. This object may be attained by devoting a portion of our time to study and self-culture. And this association has been organized for this very purpose, and is spreading itself all over the Dominion in order to stretch forth a helping hand to the engineers whose early training has been neglected, and who are now debarred from the advantages of a good education. And, let me say, such engineers need have no cause for despondency, because the extra exertion and effort required to educate himself will confer advantages of their own which a school life cannot develop.

Of course there may be men in this calling, as in all others, who will fail, however much they may try to accomplish in the way of educating themselves. Still, the effort will do them good. This failure arises from the fact, that though morally all men may be equal, intellectually they never can be. Consequently, the ability of men to educate themselves varies in proportion to the amount of natural intelligence they possess.

Study gives quickness of apprehension; enables a man to profit by the recorded experience of others; develops a power of appreciation and concentration; enforces exactness and accuracy, and, if properly directed, teaches us to classify facts, make proper deductions, and reason correctly.

The knowledge acquired from books and engineering journals is of great value to the engineer, as without it he can never be fully qualified for his duties. He will be lacking in certain information which can only be obtained from them, and owing to the want of which he is almost sure to be narrow-minded, and slow to receive new ideas, or estimate the value of old ones. Such persons, if occupying positions of authority, are apt to be intolerant of other people's opinions, and to assume that all knowledge begins and ends with themselves. They over-estimate their own ability. They are apt to be self-conceited—a quality which too many, in every walk of life, possess—mistaking it for an independent spirit.

Another expression I often meet with is, "I am no book-engineer" now; this expression betrays their ignorance of the manner in which some of the most valuable books on engineering originated. These books were written by engineers of experience, who wished to advance their profession, and thought that if their successors could commence their studies where they left off, and have the benefits of their experience, that they might be able to advance and improve still further, leaving the benefit of their experience again to posterity, and so the art would advance with the ages—as much information may be had from the works they have left us in a few weeks' time as from many years of observation and trial.

I find in my travels among engineers in the country, that one drawback to their advancement is: the lack of *books and papers on engineering. They do not appear* to know what books to get and where to get them. And, if more associations were started and properly conducted, it would be a help to engineers. I have the honor to belong to one of these associations, and I suppose it to be a fair sample of the other associations—if not a little better.

Now, we have an educational night every other week, and at these meetings the time of the association is *never* taken up by *useless discussion* that results in some officer or member getting up and resigning his office, or saying he will never enter the room again while brother so and so is in the room. I say nothing of this kind ever happens in our meetings, there is nothing but brotherly love and good feeling—each willing to bear with each other's shortcoming. And then the educational part is so instructive to those who are not so far advanced in arithmetic.

Now, a great deal has been said about examinations of engineers and license laws: and as an examiner I wish to say that there are more difficulties to be overcome in the impartial execution of the law than appear at first sight. In the first place, it is difficult for a man to determine with any certainty the ability of an engineer by any theoretical examination alone, and *I like to have the candidate show his ability by practical* demonstration. Another point is that it is very difficult for a stranger to judge a man's qualifications as an engineer, with any degree of certainty, in comparison with those who are in daily intercourse with him; and I feel that, in order to produce beneficial and satisfactory results, the examiners must be theoretical, practical, painstaking men, who have performed all the duties of an engineer.

It is quite common to find men who have had charge of engines for 15 or 20 years who can only take second or third-class certificates, simply because they are of limited education, and could only imperfectly express what they knew; while others, who could furnish no possible evidence of ever having had charge of an engine and boiler, and who did not possess any of the qualifications so essential to an engineer, obtained first-class certificates, because they were theorists and good mathematicians.

It is quite common to find blatant individuals who have no reputation for ability, sobriety and industry, parading first-class certificates, which they obtained because they had abundance of assurance; while many practical and unassuming men are almost afraid to apply for a certificate, lest they should be degraded to a *third or fourth-class engineer; while theorists and* mathematicians should have their due meed of merit, it would be unjust so far as awarding certificates is concerned, to place them above men who, although possessing only a limited education, had shown by years of industry, truthfulness, and successful pursuits of their calling, that they were perfectly reliable in every respect.

Another point I wish to touch on is, that I often find that after a man has been recognized as an engi-