

THE DIFFICULTIES YOUNG MEN HAVE TO CONTEND WITH

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September 5, 1955

Sec' EE "Feb-56"

"It was toward the end of the year 1817 that a few gentlemen, then beginning life, impressed by what they themselves felt were the difficulties young men had to contend with in gaining the knowledge requisite for the diversified practice of engineering, resolved to form themselves into a society."

That was the beginning of the organized engineering profession as we know it today. A few young men impressed with the difficulties that young men had to contend with in becoming engineers in a professional sense formed the Institution of Civil Engineers one hundred and thirty-eight years ago.

Such in fact is the basis for all organization - to overcome difficulty and to gain an objective. To overcome the physical, mental, financial, social limitations of one individual or many individuals working alone.

What were some of the difficulties aspiring young engineers had to contend with in 1817? For most of them there were no schools available. No books, no literature, no access to the few scattered individuals who had gained some knowledge and experience in building roads, bridges, ~~sxxx~~ structures and a few crude engines then known. Such books as existed were costly and hard to come by. Few had the opportunity to apprentice themselves to the masters who had experience to share. By organizing themselves into a society, however, they could share their books and form a library. They could invite experienced

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men to ~~x~~ meet with them and instruct them. They could share their experience among themselves and multiply and record their knowledge in the transactions and records of their meetings so the pattern of engineering organizations were set. <sup>#</sup> In 1884, when AIEE was founded, the picture was the same. A group of relatively young men, conscious of ~~difficulties~~ the difficulties they had to contend with in advancing their knowledge of the new wonder electricity, formed an organization. They collected a library, shared and recorded their knowledge and experience and <sup>sought</sup> ~~xxx~~ out and learned from all who could teach them.

The difficulties young men had to contend with in the field of electricity were the same in 1884 as those of the civil engineers in 1817. There was a growing body of knowledge and science scattered unrecorded, unpublished, and so far as these young men were concerned, unknown. Maxwell had done his major work in electromagnetic theory thirty years before the founding of AIEE but so far as we have any evidence it was completely unknown to the electricians and telegraphers who founded the Institute.

Through their organized efforts, however, knowledge grew and multiplied and was recorded and published and ~~x~~ this had a lot to do with the coming of the electrical age in which we live today. What are some of the difficulties young men have to contend with today and



what can AIEE do about them? Maybe one of the difficulties the young student of electrical engineering has to contend with is that he isn't aware that he has any difficulties to contend with. There is certainly no lack of text books, literature, experts anxious to instruct him, advisers anxious to guide him and recruiters anxious to hire him. Outside of the fact that he ~~x~~ occasionally meets up with a professor who expects him to do some work, the young man seeking to be an electrical engineer apparently has no difficulties to contend with.

On the other hand, this abundance of literature and educational opportunities <sup>is</sup> something of a difficulty in ~~themselves~~ <sup>itself</sup>. In the first place, it means discrimination and care in the use of one's time so that what is ~~most~~ significant, what is most important, fundamental, basic, and valuable shall not get lost in the volume of detail available ~~so that~~ the one commodity that is no more abundant today than it was in 1884 or in 1817 ~~or any other time~~ is time. The same sixty minutes make an hour, the same twenty-four hours a day, the same seven days a week. One of the real difficulties that the young engineer has to contend with today is in the wise selection of the things that he will give this precious commodity to.

Another difficulty that young ~~men~~ have to contend with is the making of decisions early and important. In the simpler days of 1884 <sup>the</sup> a number of ~~opportunities~~ <sup>work</sup> opportunities opened to a man, relatively limited. ~~and he~~ did what he could and what he had a clear, compelling desire to



do ~~within~~ within rather narrow limits. Today one has to be eternally alert to the advance notices of opportunity. I find that driving on our muliple lane highways calls for close attention to those warning signs that tell you in advance to get into a certain lane if you expect to make a certain turn. More than once I have failed to heed these signs or I have been behind a truck when passing them and I suddenly find myself faced with the need to turn right or left when I am driving in the left or right lane so the opportunity passes and I am likely to spend a frustrating fifteen or twenty minutes trying to get around the over-passes and under-passes and clover-leafs back on to the main highway so I can get in the proper lane to make the ~~the~~ turn that I want to make. The young man in high school and in college too, for that matter, discovers that he needs prerequisite<sup>s</sup> to take desired courses, he needs entrance requirements to get into the course he wants to take, he needs high grades to go to graduate school and another list of qualities, including good academic standing, to be offered the better opportunities in the way of jobs. This is one of the difficulties young men have to contend with. Another among the difficulties that the modern young man has to contend with and overcome in his effort to become a real engineer is the heavy and increasing demand of his curricula program as a result of the expansion of science and technology which may, if he is not careful, serious<sup>ly</sup> encroach on his time and his will to contemplate deeply the meaning of what he is ~~a~~ doing and the purposes to which he intends to give his future.



One of the difficulties which young men have to contend with today is the easy error that having passed a certain number of courses and achieved a diploma he has gotten an education and is prepared to develop himself into the kind of man he wants to be. This leads, of course, to a high regard of those faculty~~x~~ members who make the process as painless as possible and who help to smooth the road to this piece of paper signifying that one is a bachelor of something or ~~h~~ other. Emerson once said, "Our chief want in life is ~~somebody~~ who shall make us do what we can." In later years, you usually find college alumnus remembering most gratefully the "tough" professor intending to forget the ones who make it easy and pleasant at the time.

One of the serious difficulties that young men have to contend with in getting an education ~~h~~ today is that the schools are crowded, the faculty is ~~heavy~~ heavily burdened, the curriculum is overloaded and the whole process is speeded up so that one does not so readily come in contact with those who will make him do what he can, who will ~~demand~~ demand of him the very best that he has to give and so shape his qualities for future success and usefulness.

The pace of our modern education and the need for sound technological training is so ~~ax~~ demanding and so necessary that it behooves young men today to do what civil engineers did in Great Britain in 1817 and what our own AIEE did in 1884 - organize to overcome some of the difficulties with which young men have to contend.



One of the ways to do this is through the Student Branch of AIEE. Here a man can, under the guidance of his Counselor, learn in the first place what can be achieved by organization. ~~How~~ How a group of young men can do for ~~themselves~~ themselves things that an individual cannot. How, indeed, an organization may overcome some of these difficulties with which young men have to contend. After all, the college itself is an organization of that kind. The difficulties faced by an ambitious, bright young man today who set out to educate himself would be pretty much prohibitive. He could buy all of the books, to be sure, but he couldn't afford to hire the tutors, ~~t~~ teachers, they just wouldn't be available. Where would he find the laboratory equipment, the instruction, the opportunities to live and work with his contemporaries. This can only be achieved, for practical purposes, by organization and so young ~~men~~ men join together into the student body of a college and by their cooperation and organization they get what none of them <sup>could</sup> ~~could~~ individually get otherwise.

So it is with the skills of organization itself. The ability to plan, and organize for the execution of these plans, carry them out, ~~evaluate~~ evaluate the results, correct mistakes, get the cooperation of others, ~~and~~ carry out projects. Here one could learn to find the help necessary to make cooperation effective. In an AIEE Branch you have to go out and get speakers. Bring in these men with experience to share with you, and you will be surprised, if you go about it right, how anxious they are to do that. Here one can develop his own powers of self-expression by giving papers and here one can also learn to listen, as well as talk.



Listening is something of an art in itself. So frequently in Committee Meetings, conferences and discussions, where plans are being made and ~~decisions~~ decisions are being cast, it is evident that most people are concentrating on what they themselves want to say and according the present speaker very little real attention. Sometimes I think this is the reason why it is so difficult to reach agreements because so few people listen thoughtfully to what the other fellow has to say.

Another difficulty that young men have to contend with is their own impatience that finds expression in lack of courtesy, lack of a real effort to hear and understand what is being said. Here the AIEE Student Branch can be very helpful, if courtesy and consideration on the part of the audience who take part is cultivated. So many thoughtless things are done to make a speaker wish that he hadn't gone to the trouble to visit a Branch of student organization of some kind. I remember one time I was talking to a very fine, highly selected group of young college men and I was impressed with the apparent anxiety that they showed to hear me. It seemed that they turned their heads in a way to present an ear directly to my voice and then it seemed curious that they should all be deaf in the same ear and that they should all be turning the same ear toward me. I followed the direction of their eyes and I ~~saw~~ saw that the next speaker was writing an outline of his talk on the blackboard behind me and he was getting all of the attention.



One of the difficulties young men have to overcome is the supposition that a good performance of any kind is an inspiration of the moment and a show of exceptional talent. It takes time to learn and to realize that any good job is based on practice and experience and preparation. The expert is the man who has done the job before, ~~x~~ or at least one so nearly like it that he is well prepared for the task at hand. A good speech, a good paper, a good performance, a well-run meeting, is a matter of planning and practice, scheduling and timing and cooperation in which everyone dependably performs as intended. This kind of practice and cooperation can be learned through the AIEE Branch.

It is said sometimes that there are just two ~~xx~~ classes of people. "Those who go ahead and do something and those who sit still and ask: 'Why wasn't it done the other way'?"

What I am trying to say that a Student Branch of AIEE can be and should be a valuable educational instrument to supplement and strengthen the technical curriculum of the electrical engineering college course. If it is used in this way it can be a tremendous help to young men seeking to overcome the difficulties with which they must inevitably contend to become real engineers.