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Problems Confronting The Graduating Engineer

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INTO a troubled economic world there come, regularly, trained men from the educational institutions. In the usual case the educational period starts at six years of age and requires sixteen or more years for completion, to the stage exemplified by the engineering graduate. This amount of training is still far from the balanced education now becoming more common since graduate work has been included with its more rigorous mental activity. It should, however, provide a groundwork upon which to build for the future.

Usually the education has been obtained at a sacrifice on the part of all concerned. The parents provide from their funds; the student his time, energy, and effort; the teachers their interest; and the community its funds, either directly or otherwise. Consequently, this education is, or should be, worthwhile if it is to justify the effort and possessions of so many. We might inquire as to the value of this transaction in all its phases. We should know whether a false economic place has been made for this thing called education. In these times in which we live we have many reasons for looking well into our affairs and weighing the values carefully.

Education may be considered condensed experience. Literally, the drawing out process is one of creating experience in a definite manner. The reason back of all this is that this experience has an economic value if the process of education has been directed into the proper channel. We have reason to anticipate that this concentrated experience will provide, for the trained, a larger portion of the things of value in life at any given age than can be expected by the untrained. The process in itself does not confer any inherent right for this larger portion, and whether the return comes depends almost entirely upon the ability of the individual.

The means of communication in all forms should be an important item in the affairs of the young man making his contacts with the world. A statement that has caused the writer considerable trouble for the varied interpretations is the following—*people are more important than things*. With the inanimate we cannot communicate; with the animals we may communicate but so much is lost in the transfer that little may be expected along this line. With the living, thinking people we can communicate, and should at every opportunity for but an infinitesimal part of the storehouse of one human mind can be made the possession of another human mind.

Without means of communication it is impossible for the new engineer to determine where he has a place;

he can never create in the minds of others the desire or reason to give to him that which he desires. The opportunities present very largely limit themselves to such fields as he finds it possible to interchange ideas, efforts and values with other human beings. The ability to produce depends as much on the power to communicate to another the fact that something can be done as to the actual accomplishment. A very famous New York policeman is said to have gotten his job by a dramatic exhibition of tossing huge stones in Central Park, probably breaking the law, but the evidence of great strength attracted the officers whose duty it was to stop any such antics, and they proposed that so hearty a man ought to be a member of the force and use his strength in a sensible manner.

Industry at this time has a peculiar problem. For years it has been engaged in the production of articles for mankind. During that time there has been the tendency to focus on the problem of things. More individual items at lower cost with wider distribution was the ultimate end. The means to obtain this end has been the study of the article being made, and, to a lesser degree, the people who make it and used it. During the period involved there were students who did not make things but who studied people and the affairs of the people. These students arrived at certain conclusions, and whether these conclusions can be agreed upon makes little difference. We have the very definite fact that their conclusions have been accepted by a large group of the people of the world.

Industry needs men who understand industry and people, to present to the population of the world facts concerning this tangled affair of production of things by people for themselves or others.

If the young engineer is to establish for himself an opportunity for service and accomplishment he has an immediate problem. He must communicate the facts concerning his affairs to another group who, either innocently or wilfully, maintain the attitude that the engineer and his group have had an improper place in the affairs of our nation.

The greatest opportunity existing for the new engineer is to alter the situation now existing that our affairs need less of engineering. There was never a time when we needed more and better engineers than today, but, as engineers, we must teach more people to understand that need.

What opportunities are offered at this time for the new engineer? They are certainly limited, and often

to the extent that much doubt exists as to the advisability of having spent years and money to obtain engineering education. Openings are difficult to obtain; the new man faces severe restrictions against his entry into any existing group. Such has always been the case with those rare exceptions when there is an unbalanced condition which seems to demand immediate placement of men of limited experience. It is not natural for the new man to have an opening made for him, and in any balanced economy it will never be an easy process to locate that opening which is so desired.

There are large aggregations of capital in the hands of private owners which require the services of trained men in order that they be properly handled. There are established industries which are changing, new industries which are starting, and development work and management of the accumulations of value that are used in production.

In the established industries the way of progress may be more routine, but the fundamental need is there. To these established industries will usually go men whose temperament is agreeable to the more settled manner of life.

To the new industries will go those men who are of the explorer type. They realize that life has many uncertainties, but when they have a routine of work ahead which is known they become restless. To the new industry also goes the man, who in another age would have sailed a cargo ship over an unknown sea, calm in his confidence that somehow he could cope with anything which could arise, and equally sure that he could gain for himself more than the settled fellow who remained at home.

To the development work turns the new engineer who has the desire to establish in detail a new invention. This type seldom follows the invention into the industry stage. His field is in the early effort, before the sharp pinch of economics of producing to meet competition develops. Such men find satisfaction and quite often handsome return in such work as carrying through the early stage the new inventions now seriously discussed as a menace to our civilization. Probably no group

of engineers now employed has a less selfish viewpoint as to the general welfare of our people than this group.

The young engineer should select, after consideration, the general field for which he feels he will be fitted. He must then study the people engaged in that field and determine how best to communicate to them his desire to become a part of their affairs. There are at the present time opportunities in the railroad field for men qualified in the construction of the new light equipment for transportation. There are opportunities in the steel industry for men who acquire an experience in the production of the simple steel products, and broaden the markets for steel by showing new fields of application. There are opportunities in the fields of chemistry for men who can assist in the development of varied products, particularly the organic materials. Airplane construction in this country is expanding and will utilize a number of men in design and a large group in operation. Electrical construction and use is increasing and the end is not in sight either as to present use or new developments.

The new engineer who desires a place in the affairs of industry should, as earlier stated, study the means of communication. All possible means for transferring his ideas to others should be developed. His opportunities will in a very large measure depend upon his ability to either receive from others their ideas and wishes or communicate his thoughts to them.

We are useful in this world only when we serve people in a proper manner. The opportunity for the new engineer is bounded by his ability to be given the opportunity to serve until his training has become sufficient to direct the affairs of others. This will require time, and during the early period no better advice can be given than to study how to make other people understand the value of your peculiar abilities. Your success will largely depend upon your ability to communicate with those with whom you are associated, either directly or otherwise.

EDITOR'S NOTE—*This is the first of a series of articles written by prominent Ohio State Engineering graduates. We hope to get an article from some graduate of each department.*