THE ENGINEER PERSONALITY

By DR. CHARLES E. GOSHEN

TRADITIONALLY, people have tended to attach certain personality characteristics to the members of various professions. For example, the artist is alleged to be a dreamy, impractical, unaggressive sort of person. The banker is commonly pictured as being primarily a conservative type of person. The lawyer is known as an argumentative character. The truck drivers, stevedores and steel workers are seen as rough-and-ready. The plumber is supposed to be forgetful and the house painters are described as heavy drinkers. These commonly held opinions about the relationship between occupation and character traits have considerable validity, with, of course the exceptions found in any generalizations. The Strong Vocational Interest Test is a statistically established bit of evidence to support this assertion. By the same methods of sampling, it can also be demonstrated that some occupations do not show any consistent trend as far as personality traits are concerned. An example of this is the business man, who does not typically fall into any particular personality category.

The engineering profession is one area of human endeavor wherein there is a very high consistency insofar as the character traits which its members have in common are concerned. In other words, there exists an "engineer personality." As with all the other typical personalities in various occupations, it must be kept in mind that it is not the occupation itself which determines the personality, but rather it is the type of personality which chooses the occupation in question. In other words, the engineer already had his particular set of personality traits before he became an engineer. For those who have personnel problems in dealing with engineers, it may be of help to become informed of the knowledge which a practicing psychiatrist has obtained about the engineer. The description which follows will be of a "typical" engineer, which can be used as a yardstick in sizing up an individual engineer.

THE engineer's most obvious characteristic is his precision, his meticulousness, his attention to detail and accuracy, or his perfectionism. Another striking quality is his intelligence. Once we get to know an engineer better we appreciate that his intelligence tends

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to be used in a very specialized way. There is a very obvious lack of broadness in point-of-view, so that the superior intelligence he has is restricted to a narrow field, with the result that he is likely to know a great deal about a little bit, but knows only a little bit abou' the world at large. Specifically, we find that what he knows a lot about is mechanical principles and what he knows little about is human principles. His success in mastering mechanics tends to lead him farther away from achieving competence in dealing with people. Characteristically, for example, he builds an airplane which is too complicated for a human being to fly. Because of his confidence in dealing with mechanical principles, he tends to apply them to people, with inevitable failure in achieving a successful relationship with people. His understanding of physical laws, with their predictability, leads him to expect the same kind of predictability in people.

He seems to exhibit an enormous need to "be right." Actually, when we get to know him we find he is primarily interested in trying to avoid being criticized for being wrong. As a result, he demonstrates an outstanding sensitivity to criticism. He is perpetually looking for and finding criticism, much of which is his own invention, inasmuch as he tends to interpret as criticism what others would interpret in some other way.

His pride, his self-esteem hinges on his success or failure in avoiding criticism. This leads to his going away from people more. It also leads to his not taking credit for his success, for he is not really interested in achieving success, but is actually primarily concerned with trying to avoid blame for failure.

As a device to forestall criticism or control from other people, he tries to "jump the gun" by criticising or controlling others before they do it to him. In other words, he assumes that in his relationships with others someone must necessarily be the boss, and rather than be the victim of someone else's control, he tries to control others. As a result he becomes the dominating husband and father, and the critical supervisor.

Very often his own supervisors are also engineers who use similar standards. They do as he does in respect to the fact that they misjudge meticulous attention to detail, punctuality and precision to be evidence of dependability. As a result, his supervisors tend to give him responsibility for other people, and then he assumes his characteristic critical attitude toward those under him. This leads to disharmony, resentment and competitiveness with resulting low morale and inefficiency in the organization.

Perhaps the greatest fallacy made in judging a typical engineer is to use the most extreme examples of

these mechanical rigid personality traits as reason for promoting an engineer to a position where he supervises other engineers. If there is one kind of person which an engineer is most likely to render ineffective when he supervises it is another engineer. The engineer's tendency to be critical, unappreciative and exacting of others is most likely to sabotage the efforts of a person who like himself, has this typical, brittle sensitivity to criticism. This problem presents a difficult personnel dilemma in industry, where, naturally, engineers tend to be in the same department working within a heirarchy of engineers.

Another dilemma presented by the engineer personality lies in the fact that these personality traits tend to interfere in a serious way with the very jobs for which engineers are trained and hired to do. The engineer is most useful to his organization when he has new ideas and develops them in collaboration with other new ideas. Engineering problems today are generally too complex to permit of their solution by a single person, but they must necessarily be solved through the cooperation of many specialists. However, the engineer's fear of taking a chance with a new idea based on his dread of failure and criticism often prevents him from coming up with the new ideas his organization needs. His difficulty in collaborating with others stands in the way of his developing ideas with the cooperation of others. His exacting demand for accuracy (or, rather, his fear of inaccuracy) tends to make his ideas impractical.

On the whole, it can be said that the very personality traits which lead an individual to choose engineering as a career and which lead to his acquiring the technical training required for his job tend to become the very obstacles which stand in the way of an effective utilization of his talents.

OBVIOUSLY, the most important question to raise in connection with this discussion is "what can be done about the problem?" The ideal solution would be to wait until this type of person acquired the training necessary to be an engineer, then change his personality so that he can use the training. Here, again, we are opposed by one of the characteristic traits of the engineer. If there is any single group of people who are most likely to present a solid front against making a change in themselves, it is the engineers. Their fear of admitting a fault is the obvious obstacle which they present against making a change. Over and above this, however, their very socially acceptable mastery over the mechanics of their profession tends to blind them to the need for change. The success they have in one aspect of their skills tends to convince them that they are capable of comparable success in dealing with people. When they do not meet with this success, they avoid taking their responsibility for it, but tend to pass it off as due to other people's stupidity.

Although the ideal solution is worth working toward, it is probably more practical to focus attention on methods which are compromises with the ideal. The following suggestions might be offered in that direction:

1. To incorporate within an organization of engineers an individual or small group of people whose gifts include a knowledge of the human factors involved in any organizational set-up for the purpose of taking up the slack left by the engineers' lack of experience. A kind of buffer arrangement could be established whereby the engineers would deal with each other in an atmosphere of human interchange which would be supervised by an individual skilled in handling human relations.

2. To select personnel for supervisory positions on the basis of their knowledge of people rather than on their technical skills. In other words, the ideal supervisor would be one who is able to get the best out of the engineers under him rather than one who is the best engineer himself. Other provisions would need to be made for rewarding the personnel who are primarily engineers other than through promotions to supervisory positions. In the same way, in the field of medicine, the group of physicians who are in administrative positions in hospitals are primarily administrators, rather than primarily medical specialists.

3. To conduct actual training programs within the organization to help the engineers learn more about "human engineering." This would require both precept and example to carry out.

4. To gear the choice of technical personnel to different standards than those commonly employed.

5. To encourage those people in the organization who really have new ideas rather than employing the usual critical approach to new ideas.

6. To recognize that, in a field where the greatest premium is placed on the worth of new ideas, the milieu necessary for their growth and development is freedom from restriction, even when this can be done only at the expense of current protocol.