Many engineers face problems in associating themselves as professionals in an industrial environment. Such problems are complex and of real concern to management. Their solution should therefore be a positive activity of both professional and technical engineering societies. The engineer can do much about improving his image to management and his profession, by adhering to a six-step technique for framing a "do-it-yourself" self-improvement program. This procedure, outlined in this article, should be given serious consideration by every engineer in-industry regardless of his length of service.

Improving your value to management

by Sydney M. S. Dunn

Numerous achievements of the engineering profession are acclaimed daily by press, radio, and T.V. Tributes are paid to engineers' contributions to the Gemini flight program, the changing skylines of our cities, and the ingenious prosthetic devices creating useful lives out of hopeless cripples and those afflicted with terminal illness. It is small wonder that the public and management become puzzled as to why the engineer is apparently so frustrated and appears concerned with his status as a professional.

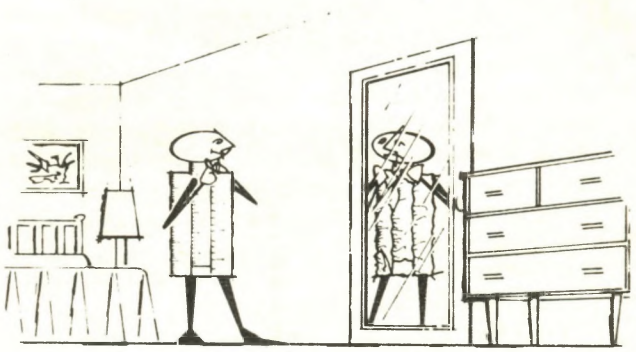
The answer is quite obvious; the average engineer in industry cannot honestly and logically identify himself with these achievements. It is difficult to "self-identify" when most of his work is devoted to clarification of drawings or "idiot-proofing" fixtures so that some assembler cannot possibly put things together backwards. It becomes hopelessly difficult to "self-identify" when he finds that the same assembler takes home pay checks (with overtime) greater than his own.

These dissatisfied and frustrated engineers almost invariably blame "management" for their problems. They say that management doesn't recognize or adequately satisfy

- —The need for professional development.
- —The need for proper evaluation of the engineer's contributions.
- —The need for appreciation of the engineer as an individual and human being.
- —The need for training in and communication of management's own thinking.

If one further examines the engineer's frustration, it becomes evident that the dissatisfaction stems largely from a "lack of fulfillment of professional expectations". The engineer feels that he is not accorded the authority, recognition, and prestige to which he believes himself entitled by his training, contributions, and responsibilities. He also feels that he is not properly recognized as a professional in the community.

A universal complaint from such an engineer is "management doesn't understand my professional work, no matter what I do". This is true to a great extent, but this lack of understanding is a communication failure that probably lies with any engineer who continues either to deal with an uncomprehending management on his own engineering terms, or petulantly retreats from this management. The burden of proof is on the engineer. He must translate his profession into management terms, since these are the only terms that really count; in fact, technical or professional terms should never be a factor at management level. It is dealing with management on any other basis that creates the "management doesn't understand me" attitude.



"DO-IT-YOURSELF"
-IN 6 STEPS-

It is quite evident that only the engineer can do something about it. What can management do? Listen and decide. Hopefully, management's decisions will continue to be based on what a good engineer says well.

Management expects each engineer to help in two areas of its concern: 1—In providing quick solutions to problems affecting the immediate profitability of

the enterprise. 2—In developing himself as a professional, thus the engineer becomes a full-fledged asset to management by providing sound counsel and imaginative concepts which helps perpetuate the enterprise in long-range terms. To accomplish these two tasks, the engineer must broaden his concept of his role in industry.

HOW MANAGEMENT EVALUATES THE ENGINEER

Management uses six special attributes to evaluate a professional employee. Although too many managers give these yardsticks little or no publicity, they assume that their engineers are continually aware of them.

1—Consider your employment as a career.

When hiring an engineer, management prefers one who first, has carefully considered all factors affecting the job decision, and second, who is ready to make his career with the company. Only with such a relationship can an engineer contribute substantially to the growth and success of that company.

An engineer should expect to spend his first two years in a sort of internship, thoroughly learning the company's business as it is reflected in his day-to-day job. Before a man's individual talents can be properly utilized by the company, he must become integrated into the organization. While this transition is taking place, the company is not making a profit; if anything, it is losing money on its investment. All too frequently, a newly hired engineer approaches his job with a chip on his shoulder. He wants promotions, greater responsibilities, and major changes in procedures *immediately*. If the job does not work out his way, he begins looking elsewhere.

2—Establish your place on the management team.

The engineer must develop empathy for the "whole" problem and communicate well with all people involved. Engineers are usually well trained in the orderly process of thinking. They learn to accumulate facts, to arrange and analyze them correctly, and to base conclusions and decisions on their findings. This approach is instinctive with them. However, they generally underestimate the importance of such intangibles as attitudes, emotions, prejudices, and traditions. As a consequence, they have difficulty in dealing with those things that cannot be solved by logic alone, and they have problems where teamwork is needed.

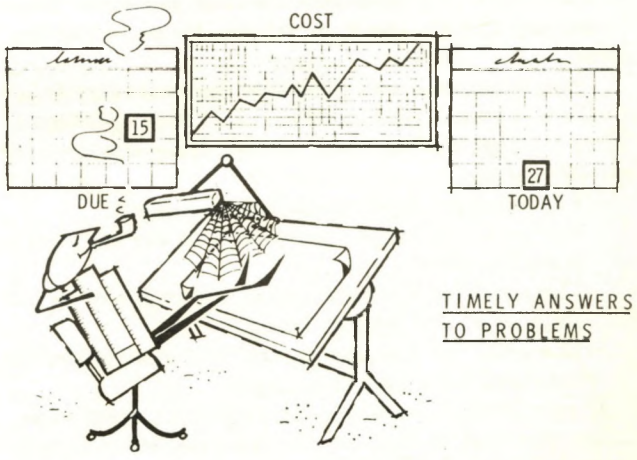
To gain acceptance and contribute effectively as a member of the management team, the engineer must regard himself and comport himself as a businessman and a member of management. He must concern himself with all aspects of the company and create opportunities to learn more about its non-engineering functions and problems. Too many management people feel that the average engineer demonstrates more interest in doing a job in a certain way (just because it suits *his* criteria) than in considering all the factors which govern a company's business, its operation, and its profitability.

The engineer must also guard against the pitfalls of group psychology. Engineers tend to draw strength and support from each other, differentiate themselves from other employees, seek special recognition and privileges, and even confine their social contacts to other engineers. If the engineer doesn't watch himself, he begins to enjoy a type of "technical snobbery" expressed in terms of jargon. Too often he draws away from management, subsequently finding it difficult to understand over-all objectives of the business and management's expectations of him as an employee as well as a professional.

Therefore, the engineer must develop a reputation for taking a positive interest in the problems of management people in all other major departments of the company as well as just his engineering department buddies. He must make an effort to communicate his thoughts effectively to non-engineering members of management.

3—Give timely answers to problems, even if these answers are less than perfect.

The systematic approach to problem solving causes many difficulties for the engineer when he deals with management. Too many engineers are reluctant to take risks or even *suggest* risks based on purely business assumptions. Engineers generally demand a whole series of proofs and often refuse to make any decision before reviewing *all* facts which have any bearing on the problem at hand. As a result, engineers too often fail to make timely decisions and thus have difficulty in meeting timetables. They may make better decisions this way, but they fail to realize that a prompt decision is often better than one which is completely accurate but useless because it is too late. It might be well for every engineer to have this facetious slogan pinned on the wall by his desk: "The completely engineered product is already obsolete!"



4—Give your wholehearted support to management once a basic decision is made.

The scale of values that management uses in decision-making is not the same as that followed by an engineer in recommending a project for

management approval. Management must be concerned with the entire span of functions—marketing, production, service, financial return, management performance, and others. It must integrate them all to assure that the objectives of the company are achieved.

To the engineer, management decisions sometimes seem to be based on opinions rather than on the type of logic to which engineers have been disciplined in their formal training. Management expects the engineer to develop this recommendations logically and ethically, rather than making suggestions that he thinks will be approved. Because he is a specialist, management wants him to apply all his skill, knowledge, and judgment to the solution of the problem at hand. Management alone must decide.

The engineer is a catalyst in the management process. How he performs this important, though sometimes relatively anonymous job is significant to management, to himself, and to all those who are inevitably affected by the decisions he influences. The process is sometimes painfully slow and more often is frustrating, but it is a part of the price to be paid by an engineer developing his professional status in industry.

5—Be aware of engineering profit leaks.

There are real problems of waste which originate in engineering functions. For instance, engineers have been known to engage in pitched battles with sales or production people to determine not what is best for the company, but, rather, who is right. Profit leaks exist where any appreciable time, energy, or money is spent on objectives contrary to current objectives of the company. An engineer often becomes too readily fascinated with the many techniques and new hardware in his chosen field. When this fascination becomes more important than the projects of management, profit is leaking.

The engineer must decompartmentalize himself and not only welcome but invite the exposure of his work, his systems, and his methods to the constructive criticism of other talents and functions within his company. He must overcome the very human reaction that, because he was exposed in his college days to nearly all the techniques which are not specialties of other departments, he should have all the answers himself. He unconsciously resents any help from outside his own engineering department. This attitude, of course, is the very antithesis of management teamwork and profit improvement approaches.

6—Demonstrate your personal growth as a professional.

The engineer should demonstrate growth not only on the job, but formally as well. If the company sponsors self-improvement programs, management has the right to expect each engineer to exploit them fully. If there are no such programs, it is up to the engineer to attack and plan his own professional future just as intelligently as he would attack a company problem.

This attitude of the professional—the attitude of one pursuing a career—is something that management expects of each engineer. It involves formal study and active participation in technical and professional societies.

Most executives believe that their professional men should be management-oriented and a source of management material. The engineer is expected to respond to the personal challenge of preparation for advancement, and, until the opportunity presents itself or is developed by his own initiative, to approach his duties with a professional attitude rather than that of a tradesman.

In addition, an engineer will be more effectively creative if he has occasion to do some routine work, particularly work requiring mechanical skills. Most executives cannot quite picture the engineer as a man who sits, puffing his pipe and thinking, while a staff of technicians stands by to await his pleasure. A profit-oriented company cannot afford to stockpile engineers.

SIX STEPS FOR SELF-IMPROVEMENT

Regardless of how long he has been in industry, every engineer can increase his worth to management. He can counter management's six-point measurement with this six-point program for self-evaluation:

1. Conduct a serious and critical self-evaluation of working habits and attitudes. The six "yardsticks" already discussed can serve as a basis for creating a personal check-list.

2. Write down admitted weaknesses, then rank them for corrective action.

3. Review and record, every day, that day's activities in the light of these weaknesses. (Do this for at least six weeks.)

4. Formulate a personal plan of corrective action and establish a reasonable timetable for achievement. (The word "reasonable" is used advisedly. Perhaps a one-year plan will suffice for broadening an engineer's perspective within a company; a minimum of a five-year plan is suggested for an attack on professional growth.)

5. Write a short progress report to himself every month.

6. Cultivate someone who can really help evaluate, objectively, his personal progress in overcoming self-admitted weaknesses and in achieving professional growth. This person could be a trusted confidant within his own company, or, preferably, a mature and trusted engineer who is active in the local chapter of his engineering society.

Setting up and carrying out a self-improvement program poses a formidable, but not impossible, task. Its rewards could be far-reaching. Suppose that 20% of the engineers in a given engineering department were to develop and implement their own self-improvement programs simultaneously! The drain on management's time in coping with engineers' frustrations would stop. More management time would be available for their engineers' positive needs—needs that are induced by the increased value of the contributions of these engineers to the profit potential and market penetra-

tion of the company.

The future of the engineer in industry was never brighter. Business decisions are becoming increasingly involved in complex technical concepts which are beyond the grasp of most manufacturing, marketing, and finance-oriented executives; these men and their business decisions cannot survive without competent engineering advice at the highest level. The need for good engineers of professional competence and with adequate business orientation is not diminishing; indeed, this will sustain a seller's market in this vital corporate resource and asset for the foreseeable future. The problems of the engineer in his transition from "intern" to "professional" in an industrial atmosphere are and will remain with us, always. The solution lies within the individual engineer himself in broadening his perspective as to his role in industry by making a conscious and extensive effort to understand and cope with his environment. Both management and technical societies can make positive and joint contributions towards aiding this engineer in making his own transition a speedier and less traumatic process.

The above article is a condensation of a paper "How Every Engineer Can Improve His Value", presented by the author at the Annual Meeting of the ASTME in Detroit, April 20, 1966. Sydney M. S. Dunn, Principal, A. T. Kearney & Co. Inc., Management Consultants, Chicago, Ill., is also a member of APEO.

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COMMITTEE REPORTS

REPORT ON CERTIFICATION AND THE NEW "ASSOCIATION OF CERTIFIED SURVEY TECHNICIANS AND TECHNOLOGISTS OF ONTARIO"

At the November 1965 meeting of the Council of Management a special committee was set up, to be known as the "Committee on Certification and Education of Survey Technicians". The committee was named as follows; - Pearce, Chairman, and Messrs. Hall, Marshall, Petzold, Ratz and R.A. Smith.

One of the duties of this special committee was to set up a process of certifying survey technicians by our Association, and to assist the technicians in obtaining their letters patent. The original direction for this action is engendered in a motion of the Annual Meeting of February 1965. Since that time the committee has drawn up three certification categories, namely - technician, senior technician and technologist. Appropriate educational qualification and experience allowance are prerequisites of certification, but as survey courses have previously not been available in Ontario, we have incorporated a grandfather clause for qualifying applicants.

At the annual meeting of our Association in February 1966 our membership approved a recommendation of the Council to implement a program of certification. A Certification Board has been set up consisting of Petzold as Chairman and Messrs. R. A. Smith, McBain, J.E. Jackson, Anderson and Kevi. The last two named are survey technicians. This board has met and studied the qualifications of many who have applied for certification. At the present time they have approximately 250 men who will meet the qualifying standard and will be presented to Council for certification.

On Monday October 24th of this year Council certified the following; - Anderson, Geneja, Rice, Pearce, Petzold and R.A. Smith. It should be noted that the last three men named are men holding a commission as land surveyors. These six men have now applied to the Lieutenant Governor to issue, by letters patent, a charter under The Corporations Act. The name of the corporation to be "Association of Certified Survey Technicians and Technologists of Ontario."

The objects of the corporation are; - (a), To advance the status and welfare of certified survey technicians and technologists; (b), To increase the knowledge, skill and proficiency of the members of the corporation; (c), For the objects aforesaid, to bring together in an association certified survey technicians and technologists in the