The Next Problem in Engineering Education

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We have read very much in the past few years of the need for more engineers, so I shall not repeat the arguments here. Many of you have taken part in the very excellent programs designed to acquaint high school students with the opportunities in an engineering career, and I should first like to point out how successful these programs have been. This fact, I believe, is not generally realized. To use our own school as an example, enrollments during the past two years for the university as a whole have risen about 14 per cent, using the same standards of admitting only those among the upper 15 per cent of high school graduates. This rise reflects very nearly the increased birth rate at the end of the depression and the population growth of this area. During this same period, enrollment in engineering has increased about 50 per cent, and in electrical engineering 80 per cent. Although we do not break down the fields of interest further in the early undergraduate years, I believe the proportion of those interested in the microwave field is remaining nearly constant in spite of the competition from several newer fields.

Now that there is success in this first step of stimulating interest in engineering among new students, we must pass to the next one and ask, "What do we do with them?"

All who have thought about the problem know that we must be concerned with quality as much or more than quantity. If we start to measure our success by the number of engineering degrees compared with some carefully estimated quota, or with those from a competitor in the cold war, we are lost.

Our technology continues to become more complicated, and it is recognized that the quality and level of instruction must be improved. However, there exist many pressures toward downgrading, for as numbers of entrants increase, the difficulties of keeping a first-quality staff in the face of the fierce industrial competition also increase. This is of course not the fault of the industries, for they only recognize a real situation. Strictly speaking, it is up to the universities also to recognize it, even though it is difficult within the relatively inelastic educational budgets. The problem has been solved in a few schools, but I believe it is correct to say that in a majority of them, including many of the fine small ones, it is getting worse.

Both government and industry now help the universities in a very large way through sponsored research programs, fellowships, grants-in-aid, and cooperative programs. Many, in recognizing the seriousness of the problem, have felt that government and industry as a whole should do something more drastic, on a larger scale, and at once. If such emergency steps are taken, they must be taken with great wisdom so that the "shock wave" does not destroy the system it is planned to save. In any event the seriousness of the problem should be recognized and all possible solutions debated. We in schools will in the meantime need the continued support and advice from our friends in government and industry.