

In the Roosevelt Administration it was no longer taught in many of the colleges. It was passe'. It has, in some places, come back into somewhat respectable favor today, but for a long period it was expunged.

On the other hand, one cannot suspend the law of gravitation, or any of the laws of relativity. So, if you will have in your mind that the poor fellow who is struggling with economics and the so-called behavioral sciences and who is therefore working in a field of intangibles, which are far more difficult to deal with, you can realize why it has been said that if you lay all the economists end to end they would reach no conclusion. They have not, as you well know!

Well, then, we now understand why a scientist is a scientist, how he is motivated, and what is peculiar about his lifetime discipline. You understand that the engineer is now not a scientist. He has suddenly become, like the economist, like the so-called behavioral scientist, a man who deals with men and their economic needs. He has to run factories that are made up of people. All people are different. No two are alike. For instance, a man may do remarkably well under one type of operation and yet he may fail entirely under another. But he is still a man, and the reverse may be true for another man. You cannot deal with the real applications of engineering as though it were a science. You must bring intuitive judgment to the building of a bridge. But it may be said that is a scientific problem. We know enough about the science of stresses and materials so that a man can design precisely a bridge and know what it will do. Sure. But, will it pay off the bond issue? Will it be good for 40 years or 50 years? Will the population growth be such that it has ultimately to be a double-level bridge when it was originally designed for a single one?

This is a typical engineers job. How will the population grow? What will the kind of vehicles be that will go over this bridge in 20, 30, or 40 years? They have not been thought of yet.

The scientist has no such problems. He does not have to make those kinds of judgments. He can only speculate hypothetically, but the engineer must use economic considerations and build into the product many intuitive judgments. This the engineer must do. So, the engineer's motivation is different and his education and training must be different. It would be just as wrong for a scientist to try to draw up an engineering curriculum as it would be for an engineer to decide precisely how a scientist should be trained in his own discipline.