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Grimm and Andersen: Move Over

The book "The Demand and Supply of Scientific Personnel"* could be described as a modern fairy story if it were not such dull reading. In this book the authors attempt to prove that there has not been and there is not now a shortage of engineers. The same implication is made a little less clearly for chemical scientists. This conclusion seems little short of fantastic, at least to one in university teaching, where the corporate recruiters are so thick one can scarcely see the elms.

How can one explain the conclusions reached by these authors which are so obviously at variance with the common experience? Where did they go astray? It is our belief that they elected to define a shortage in an arbitrary way for which there is very little support and that they displayed a rather extensive ignorance of the engineering profession and how it is developing.

The authors express the opinion that "a shortage exists when the number of workers available (the supply) increases less rapidly than the number demanded at the salaries paid in the recent past." They then conclude that, since the salaries of engineers have declined in comparison with the wages of ordinary employees and the income of doctors and dentists, there is no shortage. This conclusion is so much open to criticism that one has difficulty in deciding just where to begin. First, this clearly assumes a free economy (and the authors admit this), but in this day of powerful labor unions and certain other associations it is naïveté in the highest degree to call this a free economy. The salaries paid any segment of the working population reflect many things, such as political pressure and geographical location, as well as demand. Second, the use of statistical data on one factor to establish a cause-and-effect relationship toward another factor is always dubious. The recent cigarette and cancer controversy is a case in point. Another example is the scholar who concluded that the great number of New Englanders in "Who's Who" was due to the stimulating effect of the New England climate. Those who live there are rather inclined to feel that such numbers were attained in spite of the climate. Third, the government data on salaries are themselves of doubtful value because they clearly include many people of subprofessional rank and because they seemingly exclude those very well-paid engineers who have become executives and managers. Fourth, probably the most acutely underpaid people at present are the school teachers and ministers; yet there is a considerable shortage of both.

It seems to this reviewer that shortages and salaries are two quite different things, particularly in the economy of our day, and that the relation between them is tenuous at best. One may take up engineering or teaching because of a love of the work without particular regard to the salary; man is different from a piece of copper, which will command a higher price when it is scarce. The emphasis on salaries leads the authors to make doubtful statements, dismissing contrary evidence. Thus, the fact that the demand for engineers in the help-wanted columns rose greatly from 1946 to 1950 is set aside because this "took place while relative earnings of engineers were not rising but falling."

The ignorance of the engineering profession exhibited by these authors stems largely from the government statistics. If one approaches statistics without imagination one will come up with some odd answers. The obvious flaw in these statistics and in the conclusions drawn from them is the inclusion of large numbers of subprofessionals. Thus, for example, the following percentages of workers in the various categories had *at most* 4 years of high school education (date 1950):

Chemical engineers	9.1%
Civil engineers	27.1%
Electrical engineers	26.5%
Mechanical engineers	31.8%
Chemists	21.6%

We chemical engineers may feel pleased at our position in this list, although it is interesting to note that there were seventy "chemical engineers" in the 14–19 age group according to this statistical source.

It is obvious that there has been included in these numbers a group of workers who could not possibly have been trained for engineering as it is now and as it will be in the future. This journal reports the most advanced work in chemical engineering, and the high school graduate who could digest it would be singular indeed. But the research work of today is the practice of tomorrow; the future will require of our engineers higher and higher degrees of intellectual training and competence. It is this ignorance of the highly skillful nature of engineering which leads the authors into such statements as: "But there is no warrant for the assertion that a rising demand for scientifically trained personnel is part and parcel of modern industries . . ." (page 64) and "There is no reason to believe that this component of supply [nongraduate engineers, including even nonhigh-school graduates] will diminish rapidly in the near future" (page 87). These are pure statements of opinion based on inadequate study. A brief examination of the current literature in any engineering field would have convinced the authors that engineering and industry are tending to require more and more technical skills. And there is a shortage of men with such skills.

We can take at least one lesson from this book. There is a great ignorance of the nature of the engineering profession even on the part of the nominally well-informed. We should be wise to present our profession more effectively to the public.

H. B.

*By David M. Blank and George J. Stigler, National Bureau of Economic Research, Princeton University Press, Princeton, N. J. (1957).