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Manpower Statistics

In writing or talking about manpower problems it is tempting to cite specific figures; they make one sound so much more authoritative. Yet the figures cited by one author do not always agree with those given by another, and an attempt to analyze the figures and to learn how they were developed frequently demonstrates that their foundations are very shaky indeed.

It is therefore a distinct service to all who are concerned with manpower matters to make carefully compiled statistical information generally available. The National Science Foundation has recently performed this service with the publication of *Scientific Personnel Resources*, a census-type handbook known to those who compiled it as "the fact book." It summarizes from many sources a wide variety of statistical information on the supply, utilization, and training of scientists and engineers in the United States. Many of the figures are estimates, and the error of estimate is frequently both unknown and unknowable. But the authors have collected their figures from a variety of sources, have checked and compared and analyzed with care and caution, and have produced a very useful reference source. *Scientific Personnel Resources* is now the place to look if one wants to know the percentage of physicists with Ph.D. degrees, the age distribution of mathematicians, the expected number of engineering graduates in 1960, the number of high I.Q. high-school graduates who do not go to college, or if one wants information on any of quite a large number of similar questions concerning scientists or engineers in general or those in a particular field. It is available from the Superintendent of Documents, Government Printing Office, and, for those interested in such figures, is the best half-dollar bargain on the current book market.

The Fund for the Advancement of Education has published a similar fact book about teachers (Bulletin No. 2, free). More limited in scope, it summarizes the available information on population and school attendance trends and on the current and prospective future supply of teachers for the schools of the United States.

The fact that many of the figures are estimates is not as great a handicap as a comparable lack of precision would be in some other fields. Any effort to deal with manpower problems gets one immediately into the area of public policy, and the outcome of one's efforts will be influenced by a variety of factors that cannot be predicted in an exact quantitative sense. In such a situation there is frequently but little difference between the value of reasonable estimates and more precise knowledge. As a matter of fact, many of the estimates can be shifted up or down to a considerable extent by changing one's definitions; to agree on the number of physicists in the country requires agreement on the definition of a physicist. Agreement on the number of physicists needed in 1965 would impose the further requirement that we agree on what we mean by *need*. No wonder estimates and forecasts of scientific manpower disagree.

This is not to say that statistical information is of no value. On the contrary, there are many ways in which it is useful to be able to compare 1955 with 1950, or 1940, or 1900, to compare physicists with chemists, to examine changing trends within a particular science, or to try to estimate a situation in 1965 if existing trends continue unaltered. In any such effort we can be grateful for the availability of carefully and comparably made estimates. The availability of such estimates, plus the realization of their limitations, should remove some of the confusion that has existed in discussions of scientific manpower problems. Future discussions can spend less time in trying to decide the facts of the case and more time in considering what can be done.—D. W.