

Mr. Hunt in which the agency financing a research project reserves to itself all right of publication and property rights in all material and data secured during the progress of the work. It is impossible to discuss this point adequately here and now, but I would suggest that the question of exclusive rights of this sort must vary with circumstances and that such a contract should ordinarily be signed by the research director only when protective reservations are included.

Mary van Kleeck.¹ Mr. Hunt has made a three-fold contribution in this paper: (1) he has recorded procedure in one phase, namely, the time schedule, in seven studies; the lack of such a record of procedure in investigations is at present handicapping the study of methods; (2) he has based his analysis upon comparisons between different studies, which again suggests an interesting approach to problems of method; (3) he has directed attention toward the need for setting up standards of procedure in surveys and in research.

The time schedule, however, does not seem to me to be the best phase to choose first for comparison. The attempt to apply it to these seven studies demonstrates the need for a prior analysis of the different steps in the process before comparison of the time element is made. The studies selected are taken as examples of reconnaissance studies, which by analogy with the terminology of topographical and mining reconnaissance are defined as preliminary examinations or surveys. Not all of them seem to me to have been conceived as preliminary studies. The investigations of the Coal Commission, for example, were evidently designed to cover the whole field rather than to make preliminary surveys. Not only do the studies differ in this regard, but they are also very different in the eight stages which Mr. Hunt has used as the units for comparison of the time element. For example, "E," the field of laboratory work, was radically different in the investigation of the coal industry as compared with the studies of the Committee on the Business Cycle.

Perhaps most serious of all is the lack of tests of the final product based upon the setting up of clear standards of performance, without which it is not possible to judge of the effectiveness of the

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time schedule in any one study or to make a comparison of the time phase in the different studies. Was it desirable to complete the field work in the study of waste in industry in two months, and was that schedule more effective than the eight months credited to field work in the study of business cycles and unemployment, and just what was the significance of the recorded change in policy which prolonged this period beyond the six months required for actual fact finding? We cannot answer the question or appraise the significance of the time consumed in successive stages unless we have some such measurement of the effectiveness of the total task. Measurement by time is, of course, familiar in industry, and I would not be understood as not recognizing its importance in the procedure of investigation. In industry, however, time measurements require, first, the breaking up of procedure into comparable stages and, second, measurement of performance.

May I suggest the point at which it seems to me comparable analyses of surveys must begin, namely, in a discussion of the methods of defining the problem giving rise to the survey? The starting point of any scientific inquiry is the formulation of questions growing out of a specific problem for which a solution is sought. Entering into the definition of the problem is a whole network of factors, including the purpose to be achieved, the circumstances in which questions are sought, the place where action must take place or the persons who must act, and the places where information is to be found. All of these factors enter into the definition of the problem; and in turn as procedure and definition of objectives grow out of the preliminary set-up of the problem, the time schedule is worked out as a corollary of the procedure adopted. When Mr. Adams urges preliminary surveys which shall not be too definitely scheduled as to time or budget or scope, he is urging, it seems to me, a very important method of defining the problem for the subsequent survey.

Consider, for example, the work of the United States Coal Commission, of which Mr. Hunt has outlined the time schedule. The problem of the coal industry had been forced upon the attention of the country by a strike. Material had been available for years in reports of the United States Geological Survey and through studies which showed the main outlines of the problem as one

of industrial organization to make productive capacity meet effective demand. Excessive productive capacity had already been shown to be at the root of conflicts, the average number of days of mine operation having been recorded by the Geological Survey for thirty years as only 214 a year in the bituminous industry. Congress, in appointing the Commission and appropriating money, apparently gave it wide powers as to the kind of information which it might secure. Was it therefore necessary that the Commission should secure all the facts specified, or might it have been possible for it to have defined its problem as one of searching for solutions rather than compiling information? Was it, for example, necessary to take from the payrolls the earnings through twelve months of 660,000 miners, when the important fact of irregular employment was already clearly indicated in the statistics of mine operation, and what was needed was the working out of a possible plan of action? It is safe to say that the analysis of the experience of a comparatively small group of men in the industry, including operators and miners, would have been sufficient to have clarified the essential problems toward which the Coal Commission needed to direct its work. Mr. Hunt's time schedule indicates that because so much time was spent on the accumulation of innumerable facts, the time left for digesting the material—the important stage in the working out of solutions of the problem—was compressed to a minimum.

May it not be possible to arrive at certain underlying principles regarding the definition of problems in terms of objectives which will give us the basis upon which to make comparisons of the effectiveness of various procedures and thus enable us to build a better methodology in social research?

May I here emphasize Mr. Hunt's plea for the setting up of standards in social research? I see it as a compelling task for all those interested in scientific management. Is scientific management perhaps at the stage where physics was in the 90's? I heard a physicist recently recall his experience as a young man carrying forward his studies in Germany, when the men who were leaders in the science seemed to believe that the great discoveries had already been made and that it remained merely to apply them. This man saw no challenge in that situation; so he decided to enter the law, feeling that there was more work to be done there than

in physics. Immediately thereafter, the Roentgen ray was discovered, and the physicists since then have been having their past discoveries superseded and their work transformed into ever more subtle and difficult problems of discovery.

Are there not signs that scientific management must learn to apply its own science to the more subtle and difficult problems of human relationships which we are coming to see as the science of management? How much do we know, for instance, on the moot question of financial or non-financial incentives and the whole problem of developing and conserving the creative power of the workers in highly developed forms of modern industry? Or again, how shall we learn to measure the relation between production and consumption? We have heard it said today that modern industry, with its tremendous capacity for production, can succeed only if the capacity for consumption be increased. Are there, however, limits to increasing the capacity for consumption? What method shall be set up to answer that question? If there be limits, then it is a question whether constantly increasing output should be the objective of scientific management. The field of discovery is as yet vague, but its vital importance is increasingly shown. We need to find the methods for making the discoveries.

Closure

I am very grateful for this able discussion of my paper. Mr. Adams' suggestion concerning civic surveys parallels closely the intensive planning which preceded such economic and social surveys as some of those which I have cited. To my mind time is of the essence in a reconnaissance. So that I find myself in disagreement with Mr. Fitch and Miss van Kleeck in so far as they question the importance of the time element. With Mr. Cooke I completely agree. The work of the Coal Commission was a reconnaissance because it was ordered by Congress to sweep together in less than a year, as a basis for future policy making, facts under a number of heads. The studies were preliminary, not definitive. The Commission had no such discretionary powers as Miss van Kleeck's comment might suggest. Mr. Fitch makes an important point in calling for inclusion of a description of method in all reports, and too much emphasis cannot be placed on planning and control, as Mr. Bowen points out.