

from different facts; disagreement as to what the facts are; disagreement caused by defects in the generalizing process; conflicts caused by differences in interpretation. Each has its appropriate remedy. It is our duty as rational beings, when we find ourselves in conflict with a fellow being, not to dissipate our energy in useless brainstorming, but to rationally classify the conflict as to type, attach the proper label and apply the proper remedy."

Does not this idea suggest that social research in industry may be more than a method of discovery confined to a research department, that it may be the motivating spirit and attitude of the organization?

Numerous other evidences of the interest of management in the social aspects of business could be cited, including articles in the Bulletin of the Taylor Society and in trade and engineering journals. It is a privilege to discuss the subject in this group because so many of you are now carrying on social investigation in your plants.

Scope of This Paper

The problem is so difficult that I have no hope of being able to say any final word on any phase of it. The purpose of this paper is simply to formulate the questions as they appear to an investigator who, in twenty-one years of continuous effort to get facts about human relations in industry, has never yet been able to dispense with interviews and to confine attention exclusively to data derived from records or documents or observation. What I have to say, therefore, is merely a series of notes growing out of experience. It has to do with the interview as an economist or a sociologist uses it. Engineers have also used it. All that can be accomplished in this presentation of the subject is to break up the problem into more manageable questions for inquiry, in the hope that there may be a keener consciousness of method on the part of all of us who are making studies of industrial relations, and a pooling of experience which will grow out of this renewed consciousness of method.

Contributions to the Problem

Much of the discussion of this paper grows out of the thinking of others who are substantially furthering the development of social sciences through the study of method. The Social Science Research Council, shortly after its organization in

1923, appointed a Committee on Methods of Research which is now planning an inquiry of considerable importance. The committee proposes to have an analysis made of methods used in outstanding investigations in the different branches of the social sciences. The Personnel Research Federation has had a committee on methods of research during the past year and is particularly interested in the problem of perfecting the interview. The Taylor Society has shown its interest not only in the program of this session but in other ways: the scientific method of approaching problems of management and administration, which the Society is organized to further, must by its very nature seek an application to studies of human relations. Examples of its application in the work of members of the Society, in its conferences and in its Bulletin will occur to all of you. Another group, which has contributed most perhaps to perfecting the method of the interview, is made up of the social case workers, notably Miss Mary E. Richmond, whose book, "Social Diagnosis," discusses this question. For the social case worker, the interview is part of a scheme of treatment and not a tool of research. But much of the discussion of method is applicable to either purpose.

Recent books and articles in which references are made to the interview are surprisingly numerous. A bibliography published in the *Journal of Personnel Research* last July includes no less than twenty-eight titles of books and fifty-one articles and pamphlets. Most of all, we owe a debt of gratitude to investigators who in the last twenty-five years have produced noteworthy research bearing upon human relations in industry. Each of these investigations has implicit within it a contribution to make to method. The difficulty is that the investigator has often been unconscious of his method or has not reported it. The task which awaits us now is to analyze the methods actually used and to test their value.

Place of the Interview in the Procedure of Investigation

If I were to attempt to formulate a thesis as the focus of our present discussion, it would be this: the interview cannot be appraised apart from standards of procedure for an investigation as a whole. At present no accepted standard of procedure exists. As a background for discussion of the inter-

view, may I venture to suggest what seem to me to be the indispensable elements in a valid piece of research? These are not outlined chronologically. In the actual making of an investigation, experiment is necessary and the procedure set up at the beginning must be kept flexible and modified as circumstances require. The subject selected in the beginning may have to be rephrased. Sources of information which at first seemed promising will be abandoned and new ones discovered. Questionnaires should be tried out and modified. Experimental tabulations of data may result in change in emphasis in every part of the inquiry. Nevertheless, assurance of validity of the findings must be sought in the procedure followed in the investigation, and it may be useful to analyze this procedure as follows:

a. *Definition of the subject of investigation.* That the subject must be defined would seem to be obvious. Yet a clear cut definition is often lacking in reports of social research. What should be the characteristics of the definition? I suggest that, to be appropriate for scientific inquiry, the subject must be a problem involving relationships between phenomena; it must be delimited, so that the available sources of information and the facilities for using them will cover the subject as defined; it must be concrete, not abstract,—a thing, not an idea. For example, according to this analysis, the effect of reduction of hours of work on output in Department A of Plant B is a problem for investigation; "private enterprise" is not. "What are the factors in the growth of the iron industry in the United States during the last sixty-five years?" is a manageable subject; "protection versus free trade" is not.

b. *The purpose of the investigation* must be determined. If the facts are to be used as the basis of managerial decision, the scope and method of the investigation will be affected by what one might call the limiting factors in the decision of the management. If the same problem (the effects of reducing hours of work, for example) be studied by a legislative commission seeking to determine the desirability of reducing hours by legislation, the scope and method of inquiry will be different.

c. *Units of measurement or standards of evaluation*

"Illustration from "Quantitative Analysis and the Evolution of Economic Science," *American Economic Review*, September, 1926.

tion must be selected and defined. For example, if the subject be the effect of fatigue upon industrial efficiency, a method of determining the presence and extent of fatigue must be chosen; and the measurement of efficiency must be set up. Obviously, the choice of several different types of measurement or evaluation will be influenced by the original definition of the problem and by the purpose of the inquiry.

d. *Relationships* must be established with groups and individuals involved in the situation studied. The establishment of these relationships is unique in the social sciences. It has far reaching effects upon the validity of the data obtained.

e. *Sources of information* must be analyzed and decisions reached as to the methods of utilizing them. Decision must also be made as to the size of sample for study within the variously defined groups of units. The importance of the interview will vary according to the abundance of other sources of information. For example, a plant thoroughly equipped with operating records will have data available which in a plant with less adequate operating records could only be obtained by interviews. In the present stage of inadequate development of records of industrial activities the interview is distinctly overworked. It may become a fine and necessary instrument for certain types of inquiry. When used as a substitute for another tool, which happens not to be available at the moment, it becomes a makeshift.

f. *Methods of procedure* (experiment, observation, interviews, statistical calculation, analysis of records) must next be studied and a working plan drawn up as to the kind of data to be expected from each of these sources and the methods which are suggested by these purposes. This analysis of methods of procedure will include the preparation of schedules, outlines of interviews and all the other working plans of the investigation. It should be emphasized, again, that final decision on methods cannot usually be reached at a particular stage of an investigation, but must be subject to modification through experiment and through changing circumstances.

g. *The process of study of the findings* is research in the true sense of the word. It is during this stage that illumination comes to the mind of the investigator and explanations of relationships emerge. Time does not permit any attempt to dis-