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Taylor never wrote an article on cost accounting, although he worked out a precise and revolutionary system of cost accounting as a part of his general system of management. He came to consider the data for cost summaries as a by-product of his management routine, and the cost summaries themselves as a mechanism of that routine. He did not value highly cost data which did not flow currently and automatically out of operating routine, and which did not result in cost summaries which appeared promptly enough to influence current detail plans and control. It should be noted that he located cost accounting in the planning room, not in the accounting department.

BUT we set out to say something about the subject-matter of the Horwitz-Wembridge-Hutkin article, and have gone off at a tangent. That article is a clean-cut exposition of statistical control of operations in a plant employing some 1100 people. It shows what sort of statistical control has become possible for a plant of that size, at a moderate cost, as a result of the invention and perfection of sorting, tabulating and computing devices. One small unit can now do what formerly required a large, prohibitively expensive unit. It shows that statistical summaries can be "ground out" promptly enough to yield information in time to appraise current progress, and detect and correct operations which are not proceeding in accordance with plans. This particular paper does not discuss, but a reading between the lines shows, that back of the mechanical statistical operations must lie control of operating conditions, correct analysis of these conditions into all their elements, classification and valuation, and standards. Statistical control is not derived from the collection of casual data, but from the collection of data the nature of which has been determined in advance. Determination of the nature of those data requires precise and detail analysis of the conditions of operations, the establishment of operating standards and of a control which maintains those standards; and the data themselves must be capable of summarization in terms of these standards.

THE paper by Mr. Brown, describing the organization and the management methods of the Corona Typewriter Company, inspired an unusual amount of questioning and discussion at the November meeting. We imagine that the printed paper will be as stimulating to the reader. It is an over-all description of the organization and management of a medium-sized plant which makes a single assembled product, but also contributory to that makes for assembly stock some 450 different parts fabricated with precision, all together involving nearly 2500 operations. The manufacture of the parts and of the assembled product has been brought, to a remarkable degree, to the status of continuous-process manufacture. It is a point of view of the company that it has a moral obligation to give its people opportunity for continuous employment. There is involved, then, in the management of this plant the entire range of general and detail problems involved in good management: a calculated quantity of sales; policy and methods which produce that quantity of sales; schedules of production, over-all and by departments; research and establishment of standards; precise control through planning, scheduling and inspection; adequate but not superfluous inventories; every detail matching every other detail. There has been evolved a system of management which is model scientific management. It is a plant worth visiting.

WE are happy to be privileged to present a paper concerning the work of the Retail Research Association—pioneer in associated research in the field of retail store management. Since its modest beginning some ten years ago it has grown, under wise advisory and executive management, into a strong institution of great service to its members. It has been one of the forces to inspire outside its own membership inquiry into methods of management in retail distribution. There is no field of enterprise in which there are greater opportunities for betterment and economy of management, to the advantage of individual distributing concerns and of consumers. The spread between the fabricators' prices of commodities and the prices which the final consumers have to pay is one of the facts which is worrying consumers—and one on which consumers are focusing attention. The problem will be attacked through public agencies and through the establishment of public mechanisms of distributive management; but we are of the judgment that moral responsibility for and the understanding necessary for the solution resides in the distributors.

## STATISTICAL COMPILATION: SOME OF ITS USES AS A FUNCTION OF SCIENTIFIC MANAGEMENT<sup>1</sup>

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IN former years, and not so very long ago at that, organizations of all kinds, in the manufacture of metals, in the production of chemical products, in the making of soaps, in fact in nearly every field of productive activity, were throwing into the waste heap vast quantities of materials which had apparently served their full purpose and were of no further use. Today many of these same waste materials are being used in the production of by-products, valuable to the community and profitable to the producer. This utilization of what was formerly a complete waste has of course resulted in lessened cost of manufacture, increased profit and frequently has meant the difference between failure and success.

This paper proposes to deal with another class of materials which are necessary to produce certain essential products, but which, after performing their primary function, are all too frequently thrown into the waste heap, when by the use of proper methods they could be turned into valuable and profitable by-products.

The materials to which I refer are figures. It can hardly be disputed that any present-day manufacturing and selling organization, any one, that is, that makes any pretense whatever to the use of modern methods, must have at its disposal certain figures without which it cannot function. Certainly it has a payroll. Equally certainly it has orders from its customers, factory orders to put its products into work, a record of the materials and supplies withdrawn from stores and put into process, a record of the performance of the factory or production organization in turning out the product. In all probability it has on file details of the individual employees, such as their age, sex, residence, former employment, and other such information as is ordinarily furnished by the applicant for a job.

These figures, as I have stated, are available to all of us; but the question is: Do we make the best possible use of them? In using them for their original purpose, do we turn out the best possible product? And when they have fulfilled that purpose, do we convert them into valuable and profitable by-products, or do we throw them into the waste heap, bury them in the files and never refer to them again?

In our organization we have had the experience, which I have no doubt is common to all concerns, of irregular but frequent requests, by administrative and higher executive officials or by outside agencies, for information involving a special and laborious search through the files. The objectionable features of such procedure are many. First is the embarrassment to the division called upon to furnish this information, caused by diverting the activities of one or more of its clerks from their regular jobs. Next is the obvious duplication of effort involved. For example, today we have to furnish the information for a questionnaire from the Department of Labor and two clerks are assigned to dig out the data. Tomorrow or next week we have a request by one of the managers for a special report. Had we only known it at the time we could have obtained the information necessary for this report at the same time that we secured the data for the questionnaire, and with little or no additional effort. Now we again have to take the clerks away from their jobs for a number of hours and set them at digging into the files once more. Furthermore, the information is frequently inaccurate, as it is obtained in a hurry and usually by persons not especially adapted to the work.

In order to eliminate these objectionable features, and at the same time to make the desired information more readily available, we have organized what we call our statistical division, in which we have included all functions formerly engaged in furnishing regular or special statistical information. This division acts as a clearing house through which pass all the figures referred to above; payrolls, stores issues, work started,

<sup>1</sup> A paper presented at a meeting of the Taylor Society, New York, Nov. 23, 1922.

<sup>2</sup> Of the Planning Department, the Statistical Division and the Methods Division, respectively, of The Joseph & Feiss Company, Cleveland.