organized concern to equal or better these average figures since an average always includes low as well as high figures.

After reading and listening with a great deal of interest to this tantalizing paper and comparing the experiences contained therein with my own in the department store field, I feel tempted to ask: Is Mr. Reilly giving a complete story of results?

He calls our attention to the fact that 56 per cent of the expenses of the department store are in salaries and wages, and many large department stores number their employees by the thousands. Every management engineer knows that in most lines of work, savings in personnel costs by scientific research, standardization and control, of from 10 to 50 per cent are quite within the range of possibilities, yet he doesn't even give us old timers the satisfaction of saying, "I told you so! I knew it would work in department stores as well!"

I do not presume that the Retail Research Association makes any pretense of developing scientific management in the stores of its members, but I believe it necessary, since this paper has been delivered before the Taylor Society and will be printed in its BULLETIN, to utter a word of caution lest someone should misunderstand. Such things as the following cannot be dignified by the term of scientific management, and I do not believe Mr. Reilly intended to give that impression.

1. Hiring new people at lower wages. Scientific Management stands for high wages and low production costs.

2. Changing from men to women workers to reduce wage expense. Scientific management requires that the worker shall be scientifically fitted to the job. In some cases it has been shown that women were better fitted for the work than men, but one gets the impression that the dominating motive is to get cheaper help.

3. Happy ideas, machinery and other labor-saving devices are not necessarily scientific and as a matter of fact usually are not. They exist in many of the most poorly-managed companies. It is the manner of devising the method that determines whether or not it is scientific.

Mr. Reilly says that on the various things mentioned, four stores reported savings of $100,000; that is, $25,000 each. One single store that I am familiar with by the application of the scientific methods made a saving of several times Mr. Reilly's aggregate and I know that they did not complete the job.

Knowing department store managers as I do, I have a sympathetic knowledge of the difficulties that Mr. Reilly's workers must have encountered; but also knowing Mr. Reilly's work as I do, I cannot help but feel that he is not giving a complete story of results.

It would have been interesting and helpful had the author of the paper given us a description of his methods of investigation; for instance, his methods of measurement of the output of non-selling workers. If any department store manager will make such measurements in the proper way, he will discover possibilities of saving much larger than shown in this paper.

Neither has he told us anything about his control methods, though I have no doubt he could give us some interesting material there. My experience is that most department stores have little conception of what scientific control can do for them. They usually have highly specialized accounting and expense reports, but how many have output reports based upon scientific standards or standard units?

On standardization he is more profuse in his illustrations; they look good, but for some reason the savings are not as great as I should have expected. Also, he has spoken only of standardization as applied to materials. It is possible to make great savings by applying the same principles to policies, methods, equipment, tools, and so on.

I wish to emphasize the difference between the exchange of statistics and information concerning methods which have "grown up," and real scientific experiment to determine the one best way. In my paper before this Society printed in Vol. 7, No. 1 of the BULLETIN of the Society, I said, "Scientific management may be briefly described as the application of the highest degree of coordination and control on the basis of scientifically determined standards of policies, materials, equipment, tools and methods." Scientific management therefore does not consist of copying the methods—even the best methods—of other institutions. The exchange of ideas is a very wholesome practice and department stores are exceedingly mindful of this fact. I know of no other institutions that are so liberal in the giving of information, or willingness to take advantage of it. But while this is a step in advance of the old practice of secrecy, it cannot and should not replace experimental research work. In the paper mentioned I described, for instance, a very complete test of bookkeeping machines. Previous to making this test the company concerned had studied a report issued by an organization of department stores, which listed the machines which were most frequently used, and in addition had sent one of their representatives on an extended tour of the country to inspect machines in use. As a result of the tour the company decided upon one make of machine; but our test, which extended over a period of six weeks, showed that this machine was the third best, and that by purchasing the machine with the best record, which had previously not even been considered as a "dark horse," there was a possible saving of $20,000 the first year.

Another example that might be cited. An analysis of the trucking of merchandise from the elevators to the delivery room showed that because of the layout it was necessary to truck a large percentage of merchandise 900 feet each trip. Scientific analysis enabled us to cut this to 100 feet.

The opening of mail was performed by sales clerks who were unemployed in the morning. There were twenty of these workers and the work was very inefficiently done. By standardizing the task and employing workers permanently, utilizing their time the balance of the day on other work, the mail was much more satisfactorily opened with two people.

In another case it was necessary to move the Accounts Payable Department from one location to another. In studying the possibility of making this move it was discovered that the room assigned was not large enough to accommodate the desks. An abnormally large desk was used and we found by analysis that the reason for this was large books of account. Further analysis of the unit of space, the ledger sheet, showed that the book could be reduced 60 per cent in size by reducing the page 60 per cent in size. The smaller books made smaller desks possible, and this again made it possible to get the desks into the new room assigned.

Scientific research on the question of complaints showed that these could be reduced to an astonishingly low number by analyzing the causes of these complaints and applying the remedy. In one case over 1000 complaints a month were entirely eliminated by this sort of detail analysis. This meant not only the elimination of the cost of handling the complaints, but the elimination of the loss of good will.

By analysis of the records of workers throughout the entire establishment, it was learned that many errors could be eliminated by better training.

Mr. Reilly mentions a study of routes to determine whether or not packages were economicaly delivered. There are very diverse possibilities for performance along this line. Exchange of information will give little more than the facts that some people deliver packages for $.15, and others for as high as $.40, whereas scientific analysis of the problem will uncover the following conditions:

1. Most routes have not been determined by a careful study of the territory and therefore involve much useless traveling.

2. Wagons leave with only a partial load when a better distribution would give all a full load.

3. Merchandise is not properly dispatched, and some drivers lose two or three hours of their working time every day waiting at the store.

A scientific analysis of the packing methods of almost any department store will show the possibility of eliminating 25 to 30 per cent of the expense.

As Mr. Reilly has shown us, department stores are full of waste and the cost of retail distribution can be very greatly reduced. While improvement through the exchange of information is a good beginning, it behooves progressive stores to establish at once a real scientific research department, not as an exchange bureau, but one which will by analysis and experiment investigate each problem in terms of its particular conditions. It is practically impossible to exchange information on delivery problems in different cities with any hope of accomplishing satisfactory results. Conditions in each town are different from those in other towns.

Scientific management requires a new viewpoint. Those department stores that are satisfied to be as good as the average cannot appreciate this viewpoint, but any who have made an effort to determine the possibilities of scientific research will not rest satisfied until they have determined the one best method under particular circumstances, for the one best method will so far exceed the average method as to leave the average store far in the background.

Dr. Person in his admirable paper last night predicted an era of intense competition. This intense competition is at present being felt by the department stores and the effort to improve it is largely in the hands of the merchandise managers. A very large percentage of the expense, however, is on items which are ordinarily not under the control of the merchandise manager, and these items offer a great virgin field for research. The Retail Research Association has made a good beginning, but let us hope it is not the end. The first stage in the betterment of industrial methods is comparative study of existing methods; but the final stage is that scientific experimentation which discovers the best possible methods.