

get out and get into the wound, and contaminate the air, as you know.

I think that represents the best practice today in modern surgery, and I think it is very analogous to what is done in our industrial establishments under scientific management.

The Chairman. Would not that be the same as if a job came into a shop, and you would select a molder to do the molding part, a machinist to do the machining part, and so divide that into the various lines that the men had to do? Is not that practically the same thing?

Mr. Taylor. I think not. I think this operation performed by eight or ten men, all cooperating, working as a team is very different from giving the molder one thing to do in one department by himself and the machinist another thing in another department.

The Chairman. Is not one of the elements of scientific management this possibility to divide it up so that the workmen will have the same operation to perform over and over again?

Mr. Taylor. That is just the same under scientific management as it is under the other types of management; neither more nor less. Under scientific management precisely the same principles of work are used in that respect as under the other types of management.

Naturally, for manufacturing shoes, under the modern way, under scientific management or any other management, the manufacture of shoes is divided into very, very many minute parts. I have a very high regard for Mr. Tobin, the leader of the shoemakers' unions of New England, and the other day he told me that in making an "upper" there were over 450 operations—in making the upper of a shoe, each one performed by a different man in a well-run shop.

Well, this is what now takes place under the older types of management, and that undoubtedly would continue under scientific management; and I do not think in that respect there is any difference between scientific management and the other, except this. And I want to emphasize this, Mr. Chairman—that under scientific management it becomes both the habit and pleasure of those people who are on the management side to try and help their men rise to the highest class of work for which they

are fitted. I say that deliberately. In our working right alongside of men who are friends, and warm friends, we can't help having the kindest feeling toward them, and wanting to develop them to do the highest class of work they are fitted for, and to finally get the highest practicable day's pay. This is characteristic of scientific management and is not the characteristic of the old type of management.

The Chairman. Does not scientific management undertake to show that a change from one part of the work to another part of the work, if they involve different operations, is a loss of time and consequently it is better, if possible, to have one man perform each of the operations?

Mr. Taylor. Mr. Chairman, what is true under scientific management in this respect is also true under all types of management. I think this tendency to training toward specializing the work is true of all managements, for the reason that a man becomes more productive when working at his specialty, and while it is deplorable in certain ways (there is no question about it, there are various elements in this specialization that are deplorable), still the prosperity of the world and the development of the world—the fact that the average workman in this day lives as well as kings lived 250 years ago—that fact is due to a certain extent to just this very specialization.

The Chairman. Is not the result of specializing that the workman does not secure a general knowledge of his trade, and consequently the number of men from which the best managers are recruited is limited—is not the result of that that there is a shortage of first-class managers?

Mr. Taylor. It is quite the reverse, Mr. Chairman. Under scientific management we are making 10 managers every day to one that is being made under the old type, and in order to prove this fact I am very glad that you brought up that matter, because I wish to ask your committee, Mr. Chairman, if I may be allowed, to present at least two witnesses before your committee who will testify to the fact that they first started in under scientific management at low wages and in unimportant positions; that they were gradually promoted under

the principles of scientific management until in each case each man rose to the highest position in the particular establishment in which he was and for which his abilities fitted him; and that while he was rising in this way his wages were increased—not in a small way, but to a large extent—and that after those men reached in the companies in which they were working the highest positions which it was possible for those companies to offer them, that the managers and owners of those companies then deliberately set out to find for these men better positions in which they could get better wages and still have a chance to progress in a larger field outside their own companies. I want to bring those men to tell you that themselves, because it illustrates just what I was trying to demonstrate, that the kindest relations exist between the management and the workmen. And that promotion is the rule, not the exception.

The Chairman. You do not mean to convey to the committee the impression that a kindly feeling has not existed between the same men and some other men—that it did not exist and could not exist until the advent of scientific management?

Mr. Taylor. Certainly not, but I wish to point out that that is a characteristic of scientific management and not a characteristic of the other, as you know. It is not a characteristic of the old type of employer to develop a very fine foreman and deliberately find employment for that foreman on the outside. It is quite the reverse. They are very anxious to keep those men to themselves, even though they keep them at lower wages than these men could get outside.

The Chairman. Would not the introduction of witnesses to show that under your system they had been promoted from low positions up to the higher and best and transferred at the suggestion and consultation of the employers to some other establishment—would that show that it was characteristic of that system?

Mr. Taylor. I beg your pardon?

The Chairman. I say if two men were brought here, for instance, to testify before this committee that they had under your system risen from the very lowest positions to the highest positions in the gift of their employer, and

then their employer had deliberately sought higher positions for them in some other concern—would that demonstrate that that is characteristic of your system?

Mr. Taylor. Mr. Chairman, if you could produce from a small company employing only a few men four similar instances of that kind of promotion in one year, and bring those people before this committee to testify to this fact, I say it would tend to show that this is characteristic of scientific management. In a small company working under our system and employing only about 100 workmen as many as four foremen in one year were found better positions on the outside, because they had reached the highest salary which that company was able to pay them, and because that company, wishing them well, found them something better on the outside.

The Chairman. Would not that show that it was characteristic of that particular employer, or would it show it was characteristic of the system?

Mr. Taylor. I say, Mr. Chairman, that so far as I know it is not characteristic of the older type of management and that it is characteristic of the newer type of management.

Thereupon, at 5 o'clock p. m., the committee adjourned until 8 o'clock p. m.

#### Evening Session

The committee met at 8 o'clock p. m., Hon. William B. Wilson, (chairman) presiding.

The Chairman. The committee will come to order, and Mr. Taylor will proceed with his statement.

Mr. Taylor. At the end of an answer which I made near the end of the last session today, I desire to have the following added: I may add that in the Tabor Manufacturing Company, which is the company to which I referred, before the introduction of scientific management, not a single foreman or leading man was ever promoted to a better position outside of the employ of the company, whereas in that company during the present year alone four of the leading men have been provided with outside positions because they had reached the apparent present limit of their promotion in the Tabor