

for more effective application in industry. If industry should establish its own technical schools and require of the young people who enter them an education in the public schools whose object would be to give general information concerning social processes and problems, and develop the inherent capacities of intelligence and adaptability, then perhaps our workers would be better prepared for competent self-expression in work and enjoyable and profitable self-expression outside of working hours.

WITH respect to Mr. Pound's conclusions concerning the influence on the individual worker of mechanized, repetitive, specialized and standardized processes, we are not convinced. We believe he draws general conclusions from the exceptional case. Mr. Feiss, in discussion of Mr. Pound's address, challenges several of these generalizations. He challenges the assumption that there has been, since the days of household industry and of the small factory, a decline in the conditions of well-being and of happiness of the worker. The worker commands more with the proceeds of a shorter working day than with the proceeds of an earlier longer working day. He also challenges the statement that repetitive and specialized operations are necessarily monotonous and subversive of individual initiative and self-expression. In general the repetitive operation which becomes automatic is less exhausting physically and mentally than the operation which requires constant attention in order to meet the unforeseen next element in the operation. The operation which is repetitive and automatic is performed by the subconscious self, leaving the conscious self free for other things. He also challenges the assumption that the repetitive and automatic operation cannot in itself be made a skilled operation and correspondingly interesting. That is one purpose of scientific management in seeking the "one best way" and teaching the operator the why and how of it.

IN the discussion by Whiting Williams this last point is brought out clearly in the illustration of the job of the locomotive fireman. The fireman demonstrated to Mr. Williams that his job was a skilled one, and that the success of the locomotive driver depended upon the excellence of the fireman's performance. It was a joy to him to do it well. As this pleasure in the job developed, monotony tended to disappear. Mr. Williams presented the point of view that every operation, no matter how apparently simple, no matter how appar-

ently repetitive and automatic, has its elements of skill and of interest for the worker, provided these elements are brought out and made clear to him. The elements of skill give the opportunity for initiative, self-expression, comparative excellence of performance and personal interest in work. The problem is one, then, not of accepting something believed to be inherent in specialized, repetitive operations, but of avoiding something believed not to be inherent in such operations. It is a problem of good management, pure and simple; of management's accepting the responsibility of leading in the search for the one best, most skillful way of performing an operation, of selecting and assigning workers to operations in accordance with their capacities for skill, and of teaching them when assigned the best way, the why and how of it, its relation to all other operations, and to the efforts of the enterprise as a whole. There is nothing new in this—it is good Taylor doctrine—but it is not practiced in conventional management.

WE believe, therefore, that there remains to be proved the assumption by Mr. Pound and other writers, that monotony, fatigue and absence of the opportunity for initiative and self-expression are inherent in most modern technical processes. There should be a serious, competent investigation of that problem which will positively confirm or disprove the assumption. There are two fundamental questions to be answered by such an investigation: What are the operations which are monotonous, fatiguing and subversive of initiative and self-expression under conventional methods of management? Which of these operations must remain in that class under the method of management which discovers and specifies the elements of skill in each operation and teaches these to the worker. On the other hand, we believe that the feeling of "insecurity on the job" and the wage received for the job have a profound influence on the mind of the worker and are the primary causes of his discontent. Given a secure job, a just share of the income from productive activity, a knowledge of the elements of skill in an operation and an opportunity to manifest individual skill, we believe that workers would not complain about the monotony and fatigue of their occupations any more than do the executive, the farmer, the lawyer, the teacher, the merchant and the dentist.

NEXT MEETING—NEW YORK, NOV. 23-25

MILLS AND MINDS¹

SOME OBSERVATIONS ON THE INFLUENCE OF SPECIALIZATION AND REPETITIVE PROCESSING ON THE MINDS OF WORKERS

By ARTHUR POUND²

TO invite a writer to come down here from Michigan to talk to engineers seems to me to be rather the triumph of hope over experience, because you have probably had enough experience with writers to know that though they may write like angels, they talk like poor "Pol," as Sheridan said of Goldsmith.

There was a time when I dreamed of being an engineer. Our old family doctor—one of those family doctors in the good old days who always took a proprietary interest in anything he had assisted in bringing into the world—sort of picked me out for an engineer; but when I was a lad in high school, I went once into the north woods and came back with some of the Paul Bunyan stories. All through the north woods Paul Bunyan is what you might call the hero of the lumber camps. If anything wonderful happens, Paul is the hero; in fact, they hire men to amuse the lumber jacks by telling them Paul Bunyan's stories; and, as I always had an active imagination, I made up some of my own stories. In one of them this Paul was sent one day for a copper kettle—to bring it back through the woods. Passing through the woods he was attacked by mosquitos, and with rare presence of mind he turned the kettle upside down and crept under it. Whereupon the mosquitos began to bore. Presently their bills began to come through the kettle, and, again with rare presence of mind, Paul took his hand-axe off his belt, and as the bills came through, he clamped them one after another inside the kettle. Presently he felt the tug of the kettle, and then the kettle went up in the air with the mosquitos. The other boys said that Paul traded his kettle for a bottle of hooch.

Another famous Paul story of the Northwest that I brought back and told the doctor was that one damp

¹An address delivered at a meeting of the Taylor Society, Philadelphia, March 17, 1922.

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morning Paul was told to take a team with a load of logs, and the only harness he could find was a fresh rawhide harness. He loaded his logs and drove his team away, but you know how rawhide stretches. The harness stretched and stretched but didn't move the logs. When he arrived with the team they asked him where the logs were. His reply was, "Hitch this harness to a tree and the logs will come in." They did so, and presently the sun came out and dried the rawhide so that it tightened up and in came the logs.

I told these stories to the family doctor, the one who wanted me to be an engineer; whereupon he said, "My boy, you will never make an engineer; engineering is an exact science; an engineer cannot deceive even himself." So, on his advice I became a newspaper man. For twenty years I have been living and working in factory towns, in Indianapolis, Detroit, Grand Rapids, and in Pontiac and Flint, Mich.,—all of them towns pretty much alike. And you know how it is with a newspaper man; he has to keep his mind and his office open to all comers. I do not think there is any sort of product of the public schools that I have not been close to, worked with, hired and fired. There is hardly any sort of man in industry that I have not heard through to the end of his string, and some of them are very long indeed, particularly if they have got something they want to put over. I have been reporter, editor and manager of printing plants and newspaper properties. I have hired and fired, and been hired and fired. I have negotiated on either side of the council table. I have had enough experience in business to have made me a business man if I could have assimilated it. I have chased the payroll around the block both ways, to get money due and to get money from creditors to pay money due. And that is an experience without which no one can claim a knowledge of business. But I have remained a newspaper man. That is or ought to be something quite different.

Business men have to be specialists, engineers have