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ARMY INDUSTRIAL COLLEGE.  
Washington, D.C.

(Course, 1926 - 1927)

THE WORK OF THE BUREAU OF LABOR STATISTICS.

Lecture

by

Doctor E. Stewart.

November 26th, 1926.

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INTRODUCTORY REMARKS - COL. I.J. CARR, S.C.

Gentlemen.

When we consider industry in connection with our planning for war procurement, the question of adequacy and mobilization of labor immediately presents itself. Our facilities, power and transportation, are fixed, where is our labor? The assurance of adequate supply of labor to plants allocated for war work is essential to a well formed plan.

Through our collaboration with the Federation of Labor we can make definite plans but there is also a vast supply of labor that is not controlled by the Federation.

We are also interested in knowing the present relative capacity of the individual workman as compared with former years.

We are very fortunate this morning in having Doctor E. Stewart, Chief of the Bureau of Labor Statistics, with us. He is charged with the duty of gathering a tremendous amount of information which will be of interest to us. He has kindly consented to come down here, and I take great pleasure in presenting Dr. Stewart.

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THE WORK OF THE BUREAU OF LABOR STATISTICS.

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Colonel Carr and Officers of the Army Industrial College.

The information available in the Bureau of Labor Statistics of interest for the purpose of this convrence may be summarized as follows

Wholesale Prices and Wholesale Price Index.

We are, at the present time, gathering wholesale prices on five hundred and twenty-eight (528) series, four hundred and four (404) of these enter into the index. For the series not entering into the index, for which we have prices, there are no satisfactory weights. Hence they cannot be indexed. The primary value of this material (to the Army) is in measuring the purchasing power of appropriations for a given thing, for we have - although we do not always print them - an index for each item as well as for various groups of items and for all articles combined.

The obverse of this picture is the purchasing power of the dollar by which you can very readily measure the adequacy of your appropriations for any given thing. Manifestly the purchasing power of the dollar depends on which you intend to purchase, and a general statement of the purchasing power of the dollar is simply another way of measuring price. For instance, in August 1920, when

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the purchasing power of the dollar measured in all commodities was \$0.43, the purchasing power of the dollar if you wished to buy coke was \$0.16. In other words, our figures show what you can get for your dollar as applied to four hundred and four (404) articles at this time, and in the course of a few months this number will be increased to five hundred (500) or more and these will be incorporated in a new index.

Retail Prices.

Our retail prices refer principally to food items and are weighted according to our family budgets. In 1923 we visited twelve hundred and six (1206) families in ninety-two (92) sections of the country and from them determined the number of pounds of pork, number of dozen of eggs, quarts of milk, etc., the average family uses, and our retail price was weighted by these figures of consumption. These figures are used by us in our cost of living studies. We can give you the retail prices on forty-three (43) articles of food in fifty-one (51) cities monthly.

Cost of Living.

This study is just what the term implies and is a study of the retail prices of commodities used in the household based on the quantity consumption found to exist in 1918. These prices are recurrent studies and are re-applied to the weights every six months, and to be more specific, in June and December of each year. The retail prices of food are collected monthly.

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Wages and Hours of Labor.

The Bureau makes biennial studies of wages as determined from the payroll in a very large number of industries. It is not deemed necessary to go into a detailed list.

Another angle of our work on wages is the study of trade union wage agreements. This covers a very much larger number of people, because a single wage agreement may cover tens of thousands of men and it does not involve copying any payrolls to get it. Our most recent trade union survey covered eight hundred twenty-four thousand, three hundred thirteen (824,313) men in seventy-four (74) trades and distributed over sixty-six (66) cities.

Perhaps here is as good a place as any to stop to tell you that some of the most important pieces of work we do are special things. They are done once and then it is over with. For instance, in this application of trade union wages, I put a man on the question of the number of trades and various occupations of the United States. This was done in 1923. My purpose in doing it was entirely different from what your purpose would be in using it. I did it to get the ratio of accidents to occupations in various industries, but the report itself shows, for instance, that there are seven hundred forty thousand, five hundred and twelve (740,512) construction or building carpenters in the United States, forty-five thousand, five hundred twelve (45,512) carpenters in the wood working establishments, making a total in the population of seven hundred eighty six thousand, and fourteen (786,014) carpenters in the United States. Now apparently that is pretty vague but on the

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other hand another study shows that there are three hundred seventy-six thousand, four hundred (376,400) members of the carpenters union in the United States. The headquarters of that union are in Indianapolis. A telegram to the Secretary of the International Carpenters' Union would bring you, in an hour, a statement as to where the bulk of the union carpenters who are idle could be picked up in almost no time. We do not know, in the same sense, where the non-union carpenters are. We know in a general way that Los Angeles, Detroit, etc., are centers of non-union carpenters. The vast number are in the small towns where there are only five or six non-organized men. We have this information for all occupations. We can tell you how many there are, how many organized, and where the center of the organization is located. I take it that this information would be of considerable interest to you.

Volume of Employment.

We collect monthly statements on volume of employment, showing the number of men on the payroll and the volume of the payroll nearest to the 15th of each month. The report for October covers ten thousand, three hundred twenty-three (10,323) establishments employing three million, one hundred twelve thousand, six hundred eighty-nine (3,112,689) men and having a combined payroll of \$84,673,846.00. This is segregated by industries and shows which industries are taking on men and which industries are laying off men. This is segregated by geographical districts but not by cities.

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Efficiency of Labor.

We are also making a study of the output per one-man hour in terms of the unit of the industry. While this is given for the industry as a whole, the Bureau also has a very considerable volume of information on the subject of efficiency of plants. A few instances will serve to illustrate what I mean. In the manufacture of brick, for one, a vast majority of our brick plants are making brick today with precisely the same methods that were used in Egypt with Hebrew slave labor at the time Moses led the great brickyard strike. Contrasting two plants, one requires thirteen and one-half (13-1/2) hours of one man's time per thousand brick, another three point nine (3.9) hours. There is a brick making machine used in Chicago which shoots out forty-nine thousand (49,000) brick per hour, and if all the brick plants in the United States were as efficient as the best ones the industry could release sixty-six (66) percent of the men now engaged in the industry without reducing output. In the bituminous coal industry at least fifty (50) percent of the men engaged could be released without reduction of output. In boots and shoes, if all the plants were as efficient as the best ones, sixteen and two-thirds (16-2/3) percent of the men, if employed in the most efficient manner, could produce all the boots and shoes now produced. In other words, a plant now in existence gets twelve (12) pairs per man, per day, while other plants gets two pairs per man per day. Now in time of peace we are perhaps the most helpless, hopelessly inefficient, incompetent people on

earth, but in times of war there is no reason why that fellow who can only get two pairs of shoes per man per day should be making shoes, we could let the other fellow make all the shoes required. We are in a position to give you this information in a large number of industries - lumber, flouring mills, iron and steel, etc. Two (2) percent of the flouring mills of the United States now produce sixty-five (65) percent of the flour.

In time of war we may not stand for this wastage of men. In time of peace we are helpless. Of course the significance of this is that if the men were needed in time of war there is no reason why a plant which requires eleven hours of one man's time to make a ton of pig iron should be operated when a pig iron furnace can be built which requires but one hour and fifty-four minutes of one man's time. This is not theoretical, there are such furnaces now in operation.

I take it that it is not the intention here today to do more than mention the kinds of information we have, not to go elaborately into the details of what we assemble.

The Bureau does a very considerable amount of special work, some of which would be of value under the circumstances which we have met here today to discuss. Another special study which, after all, covers about the same ground is the number of each occupation per million of population. This is not so direct as the other study which gives actual number of occupation. In

1860 we had no automobile industry. Certainly it now shows increased efficiency. Take for instance the number of doctors. If you go into a city, especially if you have just graduated, you think there are more doctors than ever before and there is no place for one, but as a matter of fact there are fewer doctors in proportion to population than in 1850. The automobile enables the doctor to get around with more ease and more rapidity. He can do more than the doctor of 1850 could do on horseback. We have taken all the occupations and studies in the same way. For instance, I have an article which was printed in the Monthly Labor Review, showing the number of persons at specific occupations which exist in the population. There were, in 1920, eight thousand, three hundred ninety-four (8,394) carpenters and joiners per million of population, eight thousand and six (8,006) iron and steel workers, one thousand, three hundred seventy-two (1,372) physicians and surgeons per million of population, etc.

There is also a fund of information in the Bureau that has not been published and about the best thing I can say is that if, at any time, the War Department wanted any information in any way connected with the industrial conditions of the country, from any slant, it would be wise to ascertain what information we would be able to give on that point.

Now, Mr. Chairman, unless there are some questions to ask I can hardly say more. Our special work is pretty hard to describe because it runs up into the hundreds of thousands.

For instance, we have a man now studying the development

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in the Glass Industry. Last year the last hand-made window glass factory went out of business. Four or five years ago the hand-made window glass factories owned by companies and corporations had ceased to exist and the Union bought three hand plants and continued them on the cooperative plan. Last year they had to close their last factory after a loss of some \$25,000 because they can make more machine window glass now in seventeen weeks than they can sell. The only place where there are any hand-made bottles now is in one plant in Illinois, except ground stopper ware for perfume, which fills small orders where they cannot afford to set the machine. We now have a twelve-arm, six pick-up machine. If you let that machine run all the time it would fill the world with bottles in a short time. It is unthinkable. It is like the brick machine, forty-nine thousand brick per hour shooting out of one machine. With the automobile tire, the output per man has increased two hundred and seventeen (217) percent in the last five years. The workmen are not being abused. In a great many cases the workers are not working as hard as when they were doing half as much.

Readjustment of Machinery - Different Processes.

I know of one plant, and I think this was published, that was making tin cans. It was a very large plant with a large floor space. They had a machine making sheets of tin which were piled on trucks and taken over to a machine to turn the edges, then wheeled around and around the plant. Over half of the employees were truckers. That company has now lined the machines up in

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order of process, put in a machine to carry the tin, discharged fifty (50) percent of their former employees, and increased the output one hundred (100) percent - with no one working as hard as before. Compare the question of output in this country with that of England. In England, I am afraid, we will have to admit the Unions have an idea the output must be in proportion to wages, and they slow up production accordingly. That is not true here. These enormous increases in output mean two things. First, you have an adjustment of your plant. Not ten years ago a certain firm advertised and boasted that the material in their plant travelled three and one-half (3-1/2) miles from the time it started until it finished. Now it travels fifty (50) feet. What has that to do with the situation? Take the tin can factory, for instance, where I know of the situation existing. The managers felt that the employees were getting interested in their jobs, that they, themselves, were not longer wasting the time of the men and women and were not trying to find the heaviest jobs they could to put on the employees. The work was easier, it created an enthusiasm among the employees, and a better feeling existed - a feeling which is gradually permeating all the industry.

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OPEN DISCUSSION - STUDENT OFFICERS.

QUESTION

How does the Federation of Labor view this proposition of increased efficiency of machinery where it tends to lay off, say forty percent, of the labor of the plant?

ANSWER

My answer to that is that the attitude of the American Federation of Labor has been gradually changing for a number of years. The trade unions of this country never, whole-heartedly at least, adopted the British Union idea, but for years have been changing gradually until at the Atlantic City Convention, a year ago, they came out and stated they would accept all forms of machinery and that wages should be based on production not on cost of living. Now, of course, to them it is the wage proposition. They insisted on abandoning the old idea that a man must get enough wage to live upon because of the accruing theory that he must not get more than enough. The American Federation today is on record, and so far as I know it is really true that they would postpone anything that undertook to stand in the way. They believe that production must be increased and wages follow that increase, so I think it is fair to say that the Federation, of course I do not speak officially except as I quoted from their records, is on record as being an entire sympathy and cooperation with increased output per man per hour.

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QUESTION

That is Mr. Ford's idea, is it not?

ANSWER

Yes. Six percent of the trade unions are working on a five day, forty hour week where production has increased to the point where they can produce all they can use in that time. The five day, forty hour week is coming. It is already here in a number of places. In New York the bakers have it, laundry workers in most cities except that they get Monday instead of Saturday. The five day, forty hour week is not revolutionary. It is coming as fast as it should and is coming more and more all the time.

QUESTION

I presume the percentage of unemployed is a controlling factor of the labor decision to accept increased machinery?

ANSWER

I don't know. They accepted it last year where there was less unemployment than before. Outside of Detroit, I know of no place where unemployment is a problem. Of course the situation of 1921 was a different problem.

QUESTION

Have you any statistics on substitution of female labor for male?

ANSWER

Yes, I think we have. The Women's Bureau, perhaps, has more recent figures than we have. I had an article just a little

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while ago on the trend of woman employment in the principal industries. It showed where the female labor was increasing or decreasing in old established lines of industry. Our figures are for old established lines, of course. We are just going into the radio business, for instance, and really do not have all the figures on that. The industry claims to be employing two hundred and sixty thousand (260,000) people while our figures show only one hundred and sixty thousand (160,000), but we can show you whether or not and where female labor is increasing in old line industries. Of course female labor is increasing in offices, stores, etc., rather than in cotton, wool, or old line industries. You ask what becomes of the men turned out of work. At the present time they are being absorbed by other industries such as the radio.

Let us touch upon another thing which is not a good sign to the keen mind - the cost of selling. More men are being used in the administrative, the selling end of the game, more stores are being started than the people can support. There is not an industry that cannot release from sixty-six (66) percent to ten or fifteen percent of its people without decreasing the output.

#### QUESTION

There is a very large unused capacity for production in the country. We measure the output of a concern by its output, but they can do more. Can you tell us something about that? It might be interesting in figuring our war load.

Handwritten initials and scribbles in the top right corner.

ANSWER

When I say that with out present equipment we can produce seven hundred million pairs of shoes, that figure is indicative of what the present plants could do with up-to-date equipment. At present the iron and steel industry which is in pretty good shape, with few exceptions, claims they are running at eighty-five (85) percent capacity and cannot run very long at that rate without over-production. In fact they could not run over three (3) months at eighty-five (85) percent if they measured capacity by what the plant could actually turn out. For example, if you put all blast furnaces on capacity in the Gary Plant, you would increase your output and release sixty-six percent of the men. Possible capacity is almost unthinkable. It is simply a question of bringing power plants up to the basis of the best ones and there will be capacity production.

QUESTION

Have you any figures on efficiency of labor - say since 1914?

ANSWER

Only this - that our employment figures, taking into account all industries, indicate at least ten (10) percent. Assuming they are making as much output as in 1914, we know they are making more and employing fewer people, the efficiency per man is about ten percent in excess of 1914, although none of the industries studied actually showed as little as ten percent. Iron and steel show fifty percent and the lowest is slaughter and meat packing, in which there was sixteen percent. If the killing beds of the Big Four alone,

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abolishing all small killings, were to run eight hours a day, three hundred days of the year, we would not have cattle, sheep and hogs enough to keep them going. They would kill everything in existence in less than one year. After all, notwithstanding the howl that goes up from certain quarters, the only phase we need to fear is farm production, cattle, sheep and hogs particularly. There is no question but that in times of peace we are producing more wheat than we can use ourselves, that we, as a nation, are raising cotton, wearing silk, and have a lot of cotton we do not need. When you come down to rock bottom, the only place where there is danger of a shut-off because capacity can not be definitely extended is from the ground, as I see it.

QUESTION

I think you said that the number of employees on the farm had increased from twenty-five thousand in 1860 to thirty-seven thousand now. How do you account for that?

ANSWER

It does not show less efficiency on the part of the farmers. The trouble with the figures of 1860 is that we do not include negroes. It would sound different when I give 1870. In 1870 there were seventy-four thousand (74,000) laborers per million population.

QUESTION

In what fields have the restrictions on immigration affected the labor?

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ANSWER

I do not know what you mean by "affect". After all, it is the restriction on immigration that made the fellow line up his machines and convey his tin by a little belt instead of having forty truckers, the Hungarians, Poles, Italians, etc. We have now stopped wasting labor of that kind, we employ power to do its work. In other words, the hard drudgery that human beings should never have done is no longer done by human beings.

Invention followed the line of high wages. There was a printing machine invented in 1840, a perfectly good machine, and they could not sell it because you could hire a printer for \$12.00 per week and you could not afford to buy a machine. When printers commenced to get a dollar an hour the machine was used to do the work. When immigrants were paid fifteen cents an hour, twelve hours a day, and even as low as twelve and one-half cents an hour, \$1.50 for twelve hours work, there was no reason why this man should worry about the labor, but when he had to pay \$3.50 or \$4.00 per day he invented a new method which got rid of that labor. If you are speaking of the affect of labor in that sense, we no longer need the kind of people we got through Ellis Island because we do not work by the same methods. The vast majority of the increase per man power is in skill of man, by getting rid of the man who was a drag.

QUESTION

Have labor unions become stronger or weaker since the war?

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ANSWER

They went down very rapidly immediately after the war. From 1921 on there was a tremendous decrease, now there is an upward tendency, but they have not regained the strength they had during the war. There may be exceptions but this is true as a general proposition.

QUESTION

I would like to ask about improvements in equipment and methods in coal mining. I have understood that industry has been the slowest in adopting improvements for increasing production per man power.

ANSWER

That is true. The machines are in existence, the methods are well known, but very few plants are putting it in principally because, notwithstanding the price we have to pay for coal, the coal operators are not making much money - taking the industry as a whole. The biggest and best mines are using the improvements. There are ten hundred and fifteen (1,015) coal mines in the State of Illinois. Eighty-eight (88) of these mines, operating with their present equipment eight (8) hours a day, three hundred (300) days a year, will produce a million tons of coal more than they all produce. What is the incentive to putting in the best methods? It is precisely the same situation as that of cotton picking. I do not think there is a man in the United States who believes a cotton picker cannot be invented. It would not pay in practice,

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labor is so much cheaper than a machine.

QUESTION

Are the oil burning furnaces affecting the coal situation to any extent?

ANSWER

I think they are for various reasons - partly a mental attitude. I do not think it is any cheaper, in fact I know it is not as cheap, but the American people got mad at the last Anthracite coal strike and are putting in oil burners in their homes. There is an increasing use of oil for locomotives and steamship lines, and an enormous displacement of coal by oil for domestic use.

QUESTION

You mentioned the enormous differences in efficiency of some of the industries, as for instance the brick making machine. How can these other companies compete and exist? I should think the machines would put them out of business.

ANSWER

That problem is not exactly in the field of the Bureau of Labor Statistics. Now the Illinois Brick Company that owns these two or three machines, turning out forty-nine thousand brick an hour, are selling the brick at \$12.00 a thousand. How they can get \$28.00 a thousand for them in New York, I do not know. I think perhaps there is something involved there beside labor.