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THE ONWARD SWEEP OF THE MACHINE PROCESS

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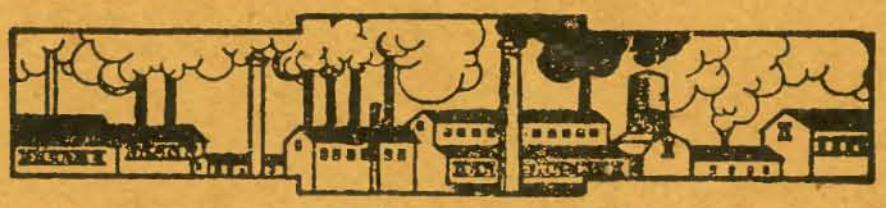

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The Onward Sweep of the Machine Process.

By Nils H. Hanson.

In the good old times, when the machine was just beginning to come in to do the work done by the human hand, it happened something like this:

The Past.

Mr. Jones is a shoemaker employing one hundred men. Mr. Smith owns another factory employing the same number of men. In both these factories the shoes are made by hand. No machines are used. Every bit of leather is cut by hand, and every stitch made by hand. All polishing is done by hand, and one man makes the whole pair of shoes. He takes the piece of leather, cuts it, sews it, puts it together, and finishes the shoe. He gets hold of more leather and makes another pair, and so another and another. He keeps it up, fitting, nailing, sewing, and brushing pair after pair.

There are no big factories. Most work is done in small shops, and by individuals, one or two or a few men perhaps being hired. This holds good not only in the process of making shoes, but also in other lines of work. We see the dressmakers and the tailors sitting sewing clothes by hand, with a few men or women helping them, besides some apprentices learning the trade.

In these days there is no machinery at all. We hear no factory whistles blow; no trains send their shrieks

through the mountains; no street cars clang; and no trucks rumble along loaded with the necessities of life. Transportation is done by horse teams. Everything is done on a small scale. Most stores are small mixed stores, about the size of the country grocery of modern times.

A Change.

But while everything is going on so slowly, and the people are living quietly, there comes the invention of machinery. Someone, for example, saw it was easier to turn a rock with a bar than by hand. He began to figure whether or not that couldn't be used to a larger degree in different walks of life. The idea spread out and like wildfire it seems to be apparent most everywhere at once. Instead of the old horse-back methods, stages, and the slow transportation, trains are beginning to run and the factory whistle blows.

Instead of making shoes by hand the machine comes in to do the greater part of the work. And, to use the illustration we started with, Mr. Jones, having a trifle more cleverness than his rival, installs some machinery. He rubs his hands with delight on finding that with the machine he won't need more than half of the men he now employs. The machines in his factory, he lays off fifty of his men, because he can now get as much work done by fifty as before by a hundred hands. Also he can make his shoes cheaper than can that other fellow, Smith. He can put down the price of shoes and still be able to pay for all the machinery he has bought. So he sells his shoes at a lower price, and gains more customers. Smith sees this, begins to scratch his head, and finally decides that in order to keep up in competition he also has got to install machinery. So Smith buys some machines and lays off about half of his men also.

Mr. Jones and Mr. Smith both have now installed machinery, which, put together, displaces one hundred men. With fifty men each they are able to make just as many

pairs of shoes a day as they used to do with a hundred, and to sell their product cheaper and still make more profit.

The Result.

So we see that those two shoemakers alone lay off one hundred men. Each one still has fifty men working for, say, $2 a day. As time passes and the one hundred men outside can't find any work—because machinery is coming in rapidly in other branches of work also, and consequently men are being laid off everywhere—some of these fifty who used to work for Smith come to him and say: "Mr. Smith, I want some work. I've got to live; I've got a wife and some kids depending on me, and we've got to live somehow. If you'll only give me a chance to work again, I'll work for 25 or 50 cents less a day than I used to."

Smith's face begins to shine, because now he sees a chance to make more money yet. He sees a chance of cutting the wages. So after he has his scheme worked out he walks over to some of those working for him, saying: "Boys, I have a proposition to make. I've got to have this work done cheaper; I can't pay you more than $1.50 a day, and I can't use anybody who won't work for that."

This causes some of the men working for him to quit. As they leave, Smith opens the window, waves his hand to some of those fifty he laid off when the machines came along, and tells them if they want to work for $1.50, all right; if not, he can't use any of them. Some of them are already so hungry they eagerly shout at the top of their voices that they will work for $1.25 a day, if only given a chance.

Over in Jones' shop the same thing is happening. So now we have the wages down to $1.50 and $1.25, and still more men are outside ready soon to work for a dollar a day. Then something happens: Someone gets an idea into his head that if that keeps up, pretty soon they

won't get any wages at all. So he proposes that, in order to uphold their interests, those outside the factory get together with those working in the factory.

And thus we have a union in embryo. The men begin to realize that if they want to live they will have to get together, all of them, and by so doing force their employers to pay them something for their work.

The Master's Method.

The above may not be exactly as it did happen, when the machinery came, but it is an illustration that holds good in general.

Since that time machinery has been improved; instead of the small individual workshop we have today the modern factory employing thousands of men and women. But the conditions created by the first machines still exist —although today we don't see the slaves in fifties or hundreds only outside the working places, but by the thousands, hundreds of thousands, and millions. Today they are standing outside the shops, factories, mills and mines, the same as the fifty, where the first machine factory whistle blew. And as machinery began to become dominant in society, those owning this machinery began to form organizations also, till today we have the employers' organizations—the trusts and the merchants' and manufacturers' associations. Since the time when the first machines made the workers get together they have kept on getting together—and they are still at it.

At first the shoemaker stood alone, competing with the other shoemakers. Then came the organizing of these "shoemakers" or shoe manufacturers, in order to uphold their interests. Today no shoes, or very few, are made by hand. They are mostly made in big factories, employing thousands of men and women. Not one of these workers could make a whole pair of shoes if he tried to. Everything is specialized; each worker does one little part of the whole, then it goes to the next, and so on down the line. The human being gets so used to his

movements that his body becomes formed accordingly—he becomes a living mechanism of production.

The Skilled Man—The Molder.

Of late years machinery has been installed rapidly. There isn't one line of work which cannot be done, to some extent at least, by machines. Take the molder's trade for instance. No molder of 25 or 30 years ago dreamed that there would ever be any machines doing molding. He knew that it required the sensitive touch of the artist to finish a mold; he knew that the sand had to be just so hard, and never did he think that a dead thing, a machine, could pack the sand just right. But today there are foundries having machines which ram the sand for more than fifty men. Five men can do more work with these machines than could sixty by hand. Everything fits together, and there is hardly a sensitive touch by the human hand needed any more. The sand is shoveled in (in some foundries the sand comes down from above and no shovel is needed, either); the flask is put on a "gumper" (name of one kind of machine used for heavy work), the molder turns a handle, and the machine gives a jerk which packs the sand together; the molder counts the jerks and, what would perhaps have needed all day to do by hand, takes only a couple or a few seconds to perform with the machine.

And there are dozens of different molding machines. Some small ones, used on bench work, make one mold every minute. So this trade, which used to take (and is still SUPPOSED to take, of course) three or four years to learn, can now be picked up in a few days, a few weeks or few months at the limit. Now in case the molders go out a few unskilled can soon be broken in to do the work. As old molders usually say: "Nowadays they bring him in at seven in the morning and at ten he is a molder." Of course there is still some molding that requires skill, but it is getting less every year and will soon be a thing of the past. And so it is in

every line of work. "The machine of wood and iron is taking the place of the machine of flesh and blood."

When the machines first appeared, the workers began to organize in small bodies—just big enough to fight the small masters of those days. As these masters began to get bigger, it was a natural consequence that the workers' organizations had to get bigger also. And as the employers began to organize to get control, not only of one shop or a few shops, one town or a few towns, but of the industries from coast to coast, from one land to another, the workers saw that the only way to fight them would be by organizing on the same lines as they did. Therefore the workers' organization grew from the small one to the big body of men—with units in every part of the country and with similar organizations seeking to form an international.

In the beginning, when the masters were only partly organized, an organization of the workers by craft was apparently sufficient to safeguard their interests. Within the limits only of each separate trade or craft these unions organized (and still organize) the workers; each one of these unions pulled each in its own direction, and solidarity of labor was an impossibility.

Another thing was that the masters got together in big industrial organizations; it began to be hard for the craft unions to cope with the situation—and so the industrial union was born. In this union all the workers in any industry stand together side by side, and strike together so as to completely stop the production of the shop or of the entire industry, when strikes are necessary.

Unfortunately, we still have the craft organization, as well as the contract system. The workers are split up, so that when the miners, for instance, go on strike in one place or one part of the country other "organized" miners in other parts of the country are working overtime to fill the orders. They have signed a "contract" with the employers (a piece of paper which "binds" them together, though it never binds the employers), so they can't

help each other or get unity of action. But there are thousands of workers who are beginning to realize that they have nothing in common with the employer they are working for. While the craft unions (the American Federation of Labor) says that the workers must organize to get a "fair share" of what they produce, the industrial organization (the Industrial Workers of the World) says that the workers must organize to get all they produce. The I. W. W. also says: "The workers made the machines, and the workers run the machines; therefore, by God, the machines should also belong to the workers."

The Future.

The number of those making millions out of the hides of the workers is increasing, at the same time as the number of those starving is increasing. In 1861 there was only one millionaire in the United States; today there are over 40,000 of them, with a good many owning hundreds of millions.

The number of parasites is increasing constantly and at the same time the bread lines are getting longer and larger. No longer are there individual shoemakers, or fifty or a hundred men only thrown out of work—but today we have the whole of organized society, with its murderous institutions, jails, pens, militia, armies and navies, pitted against the men and women who are closed out because of modern machinery. In order to change this and to do away with the misery, injustice and degradation caused by this grinding "civilization," the workers must organize on such lines that they can all stand together and meet the organized masters with a union just as widely, well, and powerfully organized as is their enemy's; and thus, by tying up ALL THE INDUSTRIES at once, change the whole to a better world—a world of the workers.

That is what the workers of all ages have been after —a better world. No one knows the suffering better than the slave himself, and therefore it must be he who must free himself from the lash of the masters. Noth-

ing can be stronger than the working class, when all the workers are properly organized; when they all stand together, the same as the masters do today. And none are higher and better than the ones who produce everything needed in sustaining life.

The machines are today used to enslave the workers, while they could be used to help the workers and society as a whole. Practically all inventions and everything worth while are made by the workers; and as soon as they wake up to the fact that everything—machines, industries and all should belong to those only who produce, and who do useful labor—then they need not suffer any longer, because then the machine—the real organizer—will be a blessing to the human race, instead of a curse as it is today.

Then will come the time about which poets all through the ages have dreamed; the time which broken-hearted, sweating toilers, men and women, have suffered for; the time which the Industrial Workers of the World is fighting for, and will fight for until the workers come to their own, and the master and the slave shall have disappeared from the earth.

Industrial Efficiency and Its Antidote.

By T. Glynn.

If indications count for anything, Australia is shortly going to be quite up to date in the science of exploitation. Though local exploiters have never exhibited any other tendencies than those characteristic of their class throughout the world in this respect, still their economic experts and politicians, Labor and Liberal alike, would appear to be of the opinion that there are a few tips on the "scientific" management of labor which their Australian paymasters would do well to study. So the various State Governments have jointly agreed to import a gentleman from U. S. A., "the land of the free and the home of the slave," where the art of wringing the last ounce of surplus-value out of the worker's hide has of late years made more progress than in any other country in the world.

The subject of "Industrial Efficiency" was briefly dealt with in a recent issue of "Direct Action" in reply to an article which appeared on the subject in the Sydney "Sun," but as the matter is evidently going to develop into something more than a "pious wish" on the part of the master class and their press, a more detailed explanation of the manner in which "scientific management" works out, so far as the worker is concerned, is necessary.

Perhaps one could not do better in this respect than

quote the following extract from an article on the subject in the Sydney "Morning Herald" of June 19:

After pointing out that in "an ideal state of things the savings effected would be distributed between all three," capitalist, wage-worker, and consumer, the writer lets the cat out of the bag, so far as the capitalist system being "an ideal State" is concerned, by informing us that: "At the Bethlehem Steel Works wages were increased 60 per cent in this way. The new system of work here raised the output of iron per man from 16 to 59 tons, and the aggregate wages bill, despite the increase in the rate, was cut down by about $80,000 per annum. The net result, as Hobson points out, was in this case all in favor of the employers."

Whoever "Hobson" may be, it was scarcely necessary for him to point out such a very obvious fact. As we are not given the value of the total wages, or the value of the aggregate output, it is impossible in this case to determine the rate of surplus value (the proportion of profits to wages) realized by the employers; but, nevertheless, it is clear that if the rate of wages increased by 60 per cent (which, by the way, may be taken with the proverbial grain of salt), and the aggregate wages decreased by $80,000, somewhere in the neighborhood of 50 per cent of the workers formerly employed went to swell the "capitalist reserve army," the unemployed.

This is, as a matter of fact, how every scheme for intensifying exploitation, whether it be euphoniously called "scientific management" or any other name, must eventually, by the natural laws of capitalist production, work out.

Let us assume that the total social capital advanced in wages for a given period be equal to 100. If, in the process of production, values equal to 200 are produced we have a rate of surplus value equal to 100 per cent. (We leave aside the consideration of the value of the raw material, etc., as such value is always incorporated

in the new product, and, therefore, in the long run, costs the capitalist nothing.)

Now if, by "scientific management" or other schemes for increasing the intensity of labor, the total values produced are increased to 250, we have still the same result, so far as the material position of the worker is concerned, only the rate of surplus-value, or, to put it more boldly, the rate at which he is robbed, has increased by 50 per cent.

The capitalist plea for Industrial Efficiency therefore, at best, merely amounts to saying to the worker: "The more you allow me to rob you, the more of the proceeds of the robbery I will be enabled to pay you." If, however, values equal to 200 are only needed to supply the solvent demand, we have the same result as that pointed out by the "Herald" scribe in the case of the Bethlehem Steel Works. Hand in hand with the increase in the intensity of labor goes unemployment, with the starvation and misery which follows in its train. And yet we have "economists" who pretend that the education of the working class is their first desire, and politicians of every stripe, informing us that the salvation of the workers lies in increased efficiency!

It may be contended that, as in the case of the Bethlehem Steel Works, the workers actually employed benefit by increased wages. Even assuming this to be the case, what of it? The position of the working class as a whole, is more insecure, more unstable, more parlous than ever. Competition for jobs grows more keen, unemployment becomes intensified in all spheres of industry, and wages ultimately fall, in consequence, to their former level.

II.

The capitalist system of production is conditioned upon three essentials: First, the value of the raw materials, wear and tear of machinery, etc., must be incorporated in the new product; in the second place, the laborer must reproduce the value of his own wages, and,

thirdly, a surplus over and above the value of the capital advanced by the capitalist for the aforementioned requisites. Unless these conditions are fulfilled, we have not the capitalist system of production, but some other; consequently, when we hear reformers, politicians and Labor leaders wailing for "industrial efficiency first, and then a more equitable distribution of wealth," the cry arises either from ignorance of the economic laws underlying capitalism, or from a desire on the part of those who know better to lead the workers into economic quagmires.

It must be obvious at once that any method for increasing surplus value by increased efficiency, longer hours of labor, new inventions, etc., must be welcome to the capitalist; but what is not so apparent, and what the economic apologists of the capitalist system like to conceal, is that such increases have no internal relation whatever to the laws governing wages.

Labor-power being a commodity, its value, like all other commodities, is determined by its cost of production, and, being somewhat inseparable from the laborer, its value, therefore, is based on the minimum of the physical means of subsistence. It may rise above this minimum, according to the standard of social development, the degree of organized resistance to exploitation, or it may fall below, as in times of industrial depression, when unemployment is rife, and when, as frequently happens, the workers starve, not because of "decreased efficiency," but for the very opposite reason, that the markets are glutted with the products of their labor. What must be borne in mind is, and it is fully confirmed by the industrial history of capitalism, that the means of subsistence is the determining factor, the starting point from which all fluctuations in wages must be explained, and not as our "Industrial Efficiency" experts would have us believe, from the total product of the laborer.

Here it might be expedient to ask these advocates of efficiency a pertinent question or two.

If it is a fact that wages are determined by the pro-

ductivity of the laborer, why is it that in the last half-century, when the productiveness of labor by new discoveries and inventions, has been increased a hundredfold, when with the modern means of transportation and communication, the natural resources of what our forefathers called "the ends of the earth" have been brought within helloing distance, so to speak, of the great centers of European population—why is it that the great mass of workers are still getting but the bare means of subsistence and living in constant dread of the bread-line? Or, to make the question easier for our local "economists," why is it, as the figures of the Commonwealth Statistician show, that the Australian worker is receiving today a smaller proportion of his product than ten years ago, despite the fact that, as shown by the same statistics, the laborer's productivity has increased enormously?

Of course these gentry, whose hearts are overflowing with good intentions (?) towards the working class will tell us that things should not be so, that there is "room for improvement in the distribution of wealth," that "nobody sympathizes with the position of the workers more than I do," etc., etc.; but all this is merely equivalent to saying that Capitalism should not be Capitalism; that the capitalist system of production should not bring along its own natural laws; but the workers do not benefit by this insufferable hypocrisy and patronage. As well might they regret the tendency and danger of a smoldering volcano to work havoc among the adjacent inhabitants as soon as a certain degree of heat has been reached. Pious vaporings about an "ideal state of things" and what the worker "ought to get" won't alter facts.

III.

It is sometimes contended that every increase in the employer's profits increases his available capital, and, therefore, enables him to give employment to more wage-laborers, but this plea, as already indicated, is merely a case of robbing Peter to pay Paul. There is another

aspect of the question, however. With the development of the Trust, production, in accordance with the economic demand, is more and more being regulated, always keeping in mind, of course, the solvent demand. As the Trust develops, therefore, there will be an increasing tendency to convert only that portion of the products of labor into capital which is actually needed to supply the economic requirements of society; hence, every increase in the intensity of labor, every method for increasing the total product, "industrial efficiency," in a word, which is so dear to the hearts of our exploiters, will have the very opposite effect to that claimed for it, as a lesser quantity of that portion of capital advanced as wages will be required.

So far as those spheres of industry are concerned, in which the Trust has not yet found a footing, the future of the worker is no less precarious—assuming, of course, that the little schemes of the capitalist class and their efficiency experts are allowed to come to maturity. The history of the capitalist system affords many illustrations of how blind competition among capitalists, with the resultant phenomenon of over-production, affects the economic and social well-being of the workers.

Marx throws a flood of light on this question of over-production in his third volume of "Capital" in dealing with the cotton crisis in Lancashire following the year 1860. Many authorities state that more cotton goods were produced in that year than were absorbed by the world's markets in the following three. As a result, over 50 per cent of the workers were thrown out of employment; those actually employed were obliged to offer themselves for any wages the manufacturers in their benevolence offered, 4 or 5 shillings ($0.96 or $1.20) per week being considered something above the ordinary; young girls left the factories because they could not earn as much as one shilling per week, and begged to be taken into the charitable institutions. One factory inspector reported that "had information concerning self-acting

minders, that is to say, men who operate a few self-actors, who had earned 8/11 ($2.14) after fourteen days of full employment, and their house-rent was deducted from this sum. The manufacturer returned one-half of this rent to them as a gift." Marx parenthetically remarks, "how generous!" Thousands were obliged to accept employment on relief work at "a bare ordinary charity sum," those being lucky enough to obtain such work getting the magnificent wages of from 5 to 12 shillings ($1.20 to $2.88) per week, this last mentioned amount only being given to men with families of eight!

"It was," says Marx, "in a way, a golden age for the manufacturers, for the laborers had either to starve or work at any price profitable for the bourgeois. The Assistance Committee acted as watch-dogs. At the same time the manufacturers, in secret agreement with the Government, hindered emigration as much as possible, either for the purpose of having their capital, invested in the flesh and blood of the laborers, ready at hand, or of safe-guarding the squeezing of rent out of the laborers."

To what does all this point? Unmistakably to the fact that every minute worked by the cotton operatives. over and above the time actually required to reproduce their wages, every time a worker hastened across the floor of the factory when he might have walked more leisurely, every time a machine was oiled, when it ought to be allowed to run hot, every device of the capitalist for improving efficiency, but hastened the coming of the time when the workers should find themselves on the street corner, the unpitied wretches of a system that rewards them for their industry by starving them.

"But," someone will say, "this was in the sixties." Capitalism has not changed its nature since. Whatever restraint may have been placed on the Beast since those days—and it does not amount to much—his natural tendency is still to run amuck, and the advocates of "efficiency" are just the gentlemen who desire the workers

to slacken their hold on the reins. Besides, if it were necessary, numerous occurrences of late years could be given as an example of the effects of over-production, its demoralizing effects upon the condition of the working class. The reader probably will doubtless recall some instances in which he himself was perilously near the bread-line after the boss had informed him "the job was finished" or "times were slack." Enough has been said to show that where competition reigns in production, every wail for industrial efficiency on the part of the master class and their satellites is at bottom but a cry for more profits, and should sound a note of warning to the workers if an increased proportion of their numbers is not to be dumped on the human scrap-heap.

IV.

To the student of economic development, this loudly manifested anxiety of the capitalist class for productive efficiency comes as no surprise. The rapidity with which Japan, South America and other hitherto backward countries, have entered into the arena of capitalist production is, wherever industry is not internationally trustified, engendering an ever keener competition for markets between the capitalists of the various countries, and the kudos will naturally gravitate towards that country where efficiency has reached the highest pitch; in other words, the country where "scientific management of the human factor," as the "Herald" expresses, has increased the rate of surplus value above all others.

Unfortunately, in Australia statistical returns give us but a bare indication of what that rate may be in this country. The figures for the manufacturing industries in 1913, for instance, tell us (and it must not be forgotten that the statistician is more or less dependent upon the good faith of the manufacturers) that the value added in the labor process to the materials of production was 65 millions, and the total wages paid 33 millions. At first glance this would indicate a rate of surplus value of approximately 100 per cent. But the

capital advanced as wages may not have been one-fifth of 33 million pounds. It depends, among other things, upon the turn-over.

Let us take a simple illustration: I invest a capital of £200 in productive industry, £100 for raw material —the further consideration of which is immaterial for the present argument—and £100 as capital reserved for wages. Assuming the capital is turned over four times a year, and that the value added in the labor process, as in Australian manufactures, exceeds wages by 100 per cent, at the end of three months I realize the total capital advanced as wages, with an additional value of £100. The process is repeated in the second, third and fourth quarters of the year, at the end of which, with a smile of complacency at my munificence, I hand the Government official, whose business it is to collect such data, a return bearing the items, "wages paid, £400," "value added by manufacture, £800." The figures are duly published in the capitalist press, and the wages bill is exclusively dwelt upon to the exclusion of all else; the workers are castigated for "trying to cripple industry," and leading articles and speeches on "Industrial Efficency," if the same wages are to be maintained, are the order of the day. I wink the other eye, for deep down in the business department of my capitalistic heart I know that the total capital advanced by me as wages did not exceed £100 at any period during the year, and the rate of surplus value was, therefore, in reality, not 100 per cent, but 400. I began the old year with a capital of £100 reserved for wages. I enter the new with the same capital, after all dead expenses have been met,. and a nice little bonus ungrudgingly handed over to me by the workers, who are duly grateful for my being so kind as to give them—work! They will be given "work" till eternity, provided they give me, as formerly, the product. Nay, I may also (provided the slave market is abundantly stocked, in case of trouble) take the tip of my "economic experts" and put the stop-watch and

cinematograph on their movements, in order that some of them may doubly appreciate the "benefits" of work when they find themselves unemployed as a consequence of my "scientific management."

Is not this the game that is being played before the workers' eyes at this moment? What is the solution? "One Big Union," replies some one. But One Big Union won't materialize in a day. *The antidote to the "Industrial Efficiency" cry lies in an immediate agitation for a shorter work-day, combined with the intelligent adoption of ca' canny, "go easy" and other methods of sabotage on the job. This is vitally necessary for all workers, irrespective of their beliefs as to methods of organization, political, religious or racial prejudices. The Surplus Value of the capitalist class must be curtailed, for its every increase strengthens the bonds of slavery. One Big Union alone can entirely strike off the shackles.*

The master class are fully alive to the situation, and, while they are at this particular juncture preying on the workers' credulity with the hypocritical cry of "no classes," they are insidiously and unscrupulously laying their plans for the prosecution of the class war with their usual brutal disregard for the workers' welfare. Let us remember, then, that devolution is possible in human society as well as evolution, that deterioration must as surely follow apathy as progress in our material conditions will follow intelligent agitation and action. "Scientific Management" must be met by "Scientific Sabotage" if the "Law of Progress" is not a law of which the boss is to be left a monopoly.

(Note.—Since the above was written, events brought about by the war indicate that the ruling class is determined to have "increased efficiency" in the workshop, even if it has to be enforced at the point of the bayonet.

The Munitions Act in England is a new move in this direction, and while the war may be the immediate cause of the introduction of this Act, there can scarcely be a doubt that if it becomes justified from the efficiency

standpoint, the principle of compulsion, which means no more nor less than industrial conscription, has come to stay in industry, so far as the master class is concerned.

All this goes once more to show what the I. W. W. unceasingly teaches, that the war against exploitation must of necessity in the future be carried out on the job. Every new move of the master class to increase the intensity of labor, and thereby the total product, calls for a counter move and new tactics on the part of the workers right where such products are created.

This is bound to raise a howl of execration from the efficiency experts; but the revolt of the South Wales miners at present in progress affords a striking illustration of the hypocrisy and falsehood of their economic teaching, showing conclusively that though the workers' output be ever so large, they have to fight stubbornly for every cent wrested from the rapacious hand of the class alone which benefits by efficiency.

This strike also shows that, despite the chloroforming propensities of war-mad jingoes, the instinct of the workers is, at bottom, correct, and affords a better criterion of what constitutes economic truth than all the theorizing of the spectacled "experts" who study the production and distribution of wealth, and the class struggle arising therefrom, from the comfortable depths of an arm-chair.

It is manifest that the war must cause a considerable shortage of labor-power in the market when peace is again restored, as compared with the previous supply. Every possible effort is therefore going to be made to get the last ounce of value out of the labor-power available, and that the master class is fully alive to the occasion the following cable from a recent issue of the "Sun" amply proves:—

SCIENCE IN INDUSTRY.
AN IMPORTANT MOVEMENT.
(Published in the Times.)

LONDON, Tuesday,

A Government White Paper outlines a scheme of

organising and developing industrial scientific research with the object of establishing a permanent body consisting of a Privy Council committee, with a small advisory council, the Privy Council committee to include the Lord President, the Chancellor of the Exchequer, the Secretary for Scotland, the Presidents of the Boards of Trade and Education, Lord Haldane, Mr. A. H. Dyke Acland, and Mr. Pike Pease.

The advisory council is to consist of the best scientific brains of the country, and its scope will be to promote and organise scientific research in trades and industry, particularly in regard to those suffering through inability to reproduce trade processes which are localized abroad, principally in Germany.

This is significant when judged in conjunction with the clamor for efficiency, now a daily feature in the capitalist press. A shining light of that pet organization of capitalists, known as the Workers' Educational Association, only recently let himself go to the extent of a third of a column in the Sydney "Herald," pointing out that the pensioning of "one-armed, one-legged, one-eyed and stiff-jointed soldiers," when they ought to be employed in industry, was a shameful waste of "productive energy."

There arises too a louder and bolder demand for female and child labor in nearly all branches of industry. The "Weekly Trade Report," the private organ of the Merchants' and Traders' Association of Australasia, not many weeks ago, for instance, brazenly declared that factory legislation must be thrust aside, that, whatever the unions may do, employers must be allowed to take advantage of "women, boys and girls who are willing (!) to work for low wages and long hours!"

Workers would, therefore, do well to hearken to the masters' battle-cry, a cry for their sweat and blood, and

recognize that the real industrial struggles of the class war have yet to be fought. The vacillating and compromising policy of Trade Unionism will no longer suffice. A virile organization knowing no law but that of expediency, ready at all times and by the adoption of any means, to advance the interests of the working class, is an absolute necessity, if we are not to sink into a slavery more damnable than any that history knows of.—T. G.

The Diesel Motor.

By Barbara Lily Frankenthal

Day by day more of the work of the world is taken up by machinery. In a bulletin recently issued by the United States Government, it is estimated that four and one-half million factory hands of the United States turn out a product equal to the hand labor of forty-five million men.

This means that 90 per cent. of the work in the factories is done by machinery, or that one man, with the help of machines, is enabled to produce ten times more than he needs; in other words, to satisfy the wants of one man for one day, a factory worker requires only one hour, instead of ten, as he is working now. For whom does he work the remaining nine hours?

The bankers, brokers, merchants, soldiers and the whole gang of parasites do not produce one day's need in their whole lifetime; they make money, but do not create wealth. But, one might say, the capitalists furnish the machines. But it was the steel mill workers who did that. The capitalists keep them alive while they

are building the machines and then take the machines away from the workers, by power of police, if necessary.

But to come back to the story. A very large part of the machinery in use is driven by steam power, which means largely coal power, and both the getting and the burning of this coal involves a terrible waste of human labor.

First the coal is dug from the mines, where one-third of it is lost or left in such shape that it cannot be used. After being brought to daylight, it is shipped by railroads or ships, sometimes thousands of miles before it comes to the steam engine. Here it is shoveled and burned beneath the boiler to transform the water into steam, by which operation perhaps 90 per cent. of the heat escapes unused through the chimneys.

The steam is led into the cylinder to give the piston the to-and-fro movement through its expansive energy, thereby turning the power wheel. It so happens that ordinarily not more than five per cent. of the stored energy in the coal becomes available for human needs. Even the finest quadruple-expansion engines with all the modern devices for superheated steam, etc., to augment their capacity, do not use more than 15 per cent.

By far a greater advance is represented by the gas engines, in which, by first turning the coal into gas and then exploding this in the motors, more than double the amount of energy now becomes available. In the best types of gas engines the yield rises as high as 25 per cent.; and in Germany the residual products from turning the coal into gas far more than pay the cost of doing this, so that the gain is clear. But all this is commercially feasible only in the great manufacturing centers and the cities, and, consequently, the gas engine, in spite of the great saving it achieves, has yet but a restricted field.

For quite other reasons the same is true of the gasoline, benzine and similar motors such as are used in automobiles. Here the price of petrol is almost pro-

hibitive for commercial purposes and has become increasingly so with the enormous extension of the use of motor cars.

However, we are now on the eve of a new epoch in this line through the invention of Dr. Rudolph Diesel, the German engineer, who so mysteriously disappeared last October on his voyage to England.

It is now 20 years since Dr. Diesel published the first sketch of his remarkable theory and of the motor which was to realize his idea. The motor is simplicity itself. Every schoolboy knows that if air is compressed very sharply it becomes hot and can be used to explode powder, etc., in a tube. Dr. Diesel's plan was to use the stroke of the piston to compress a considerable volume of air into a very small space, so as to put it under a very high pressure; and at the instant the pressure reached a maximum, to force into this chamber a jet of vaporized oil. The compression was to be so high that the air would instantly ignite the oil and burn it under highly favorable conditions. It is a true burning, and not an explosion, as in the ordinary gasoline motor of the automobiles. His idea was taken up by some of the engine works in Germany, but it required fully four years to effect a commercial device. The superiority of the new motor was evident from the first. Actually it realized a full third of the theoretical heat energy of the oil, and this latter did not need to be gasoline or other expensive essence, but could be ordinary crude oil, such as comes out of the earth. The device is self-igniting, requires no auxiliary system and little or no attention.

It was soon found, however, that the new motor had to be made with exceptional care, and that, therefore, the cost of its development for commercial use was high. The fact that capitalists are not interested in progress as such, but in profit, explains why it is that. in spite of the great economies it achieves, the Diesel motor is now only becoming widely known.

In Germany, at the current price of crude oil, the

Diesel motor produces power at from a quarter to a half cent per horse-power-hour. In the United States the cost is rather less. This is far beyond the economy of any other form of engine, and four or five times cheaper than the ordinary steam engine. Its only concurrent is waterpower, and waterpower is not everywhere available, and often requires a heavy outlay that it may be utilized. Crude oil, on the other hand, may be shipped and stored much more easily than coal, and the supply of it is very large and widely distributed over the earth.

The escaping hot gas from the Diesel motor can be employed for heating, and the by-products which can be obtained from it will, it is estimated, under proper conditions, more than cover the cost of the original fuel, so that the Diesel motor promises to rival the waterfall in future as a producer of the world's power. Like the waterfall, it will, under the most favorable conditions, mean that the expense will be simply the fixed charges of a plant and the cost of maintenance.

It is already evident that the Diesel motor will largely displace steam and this will first make itself felt upon the ships, not merely because it realizes four or five times the power from the amount or volume of fuel, but it only occupies, together with the motor, about a quarter of the space required for a steam engine and its boilers and coal bunkers. This new motor has been successfully tried on railroad locomotives and experiments are under way with a view to introduce it for driving automobiles. Most of the leading engine works in Europe have taken up the construction of the Diesel motor in all sizes. A large number of middle-sized ships and various municipal power plants are already driven by it. In the United States a powerful company has just been organized for the purpose of constructing these motors, and the General Petroleum Company in California is going to erect a plant in San Franciso for the construction of motor

ships for the coastwise trade, which, of course, will force the owners of steamers to follow.

Indeed, the development of the crude-oil and coal-tar industry has been so rapid that the running of a Diesel motor may become a source of profit sufficient to cover all charges, and will actually mean power without cost. Consider what this will mean when, at no distant day, nine-tenths of the work of the world will be done by machines operated free of expense!

What the Diesel Motor Means to the Unskilled Laborer.

Unskilled labor is synonymous with cheap manual labor. Why is it cheap labor? Because it is worth little? No, quite the contrary; all the brains of the world could not accomplish anything without the manual, executive labor. It is the creative part of work, while brain effort is the directive one. What is the use of a man that has superior brain and excellent ideas, but no arms to bring them into reality?

The low valuation of manual labor has no original basis. The workers, not having free access to either the sources or the means of production of wealth, are compelled to sell their labor power at the market price. The market price of any commodity is determined by the cost of production of that commodity, varying somewhat according to the relation of supply to demand. The market price of labor power is determined by the cost of production of that labor power, not by the production of that labor's product. Unskilled or manual labor is cheapest everywhere because there are so many who have a chance to do that kind of work, as there is nothing to learn. If so many had a chance to become lawyers, the municipal lodging houses would be besieged by lawyers. As to the cheapness of production, the labor power of the Diesel motor leaves everything far behind. A Chinese laborer in China receives about 10 cents for

a day's work, because it does not require more to keep him alive. One horse power of the Diesel motor turns out at least three or four times the amount of the work of the Chinese laborer for sixty minutes every hour and twenty-four hours every day, without grumbling, rest or sleep, and all this for 10 cents. All the "Diesel motor man" requires is a little oil for his stomach and a little bit of oil for his joints; he never strikes, nor does he care for holidays. This machine requires no food when out of work. In short, this is indeed a "willing and loyal" worker for the employer.

To give an idea of the fearful competition of the Diesel motor, one must imagine an invasion of hordes of strong and tireless men from an unknown country that are willing to work incessantly for twenty-four hours every day for about 10 cents. Wherever there is work done by a gang that possibly can be done by machine power, the "Diesel motor men" will take it away from the unskilled laborers, those extravagant gentlemen who ask a fair wage for a fair day's work.

To Firemen and Machinists.

Fireman? The Diesel motor will fire him. It has no use for firemen, no more than it has for coal-passers. A turn of the valve of the oil-supply pipe is all that is necessary to do away with the drudgerous work of the firemen and coal-passers.

The motor itself is so simple and so well regulated that trained machinists can be dispensed with. While they might be preferred, the number of their jobs will be greatly reduced. So, for instance, in the engine and boiler-rooms of these big modern ocean steamers about 300 to 400 coal-passers, firemen and machinists, are now employed. If Diesel motors are installed, thirty or forty machinists and helpers will be amply sufficient to run them.

To Coal Miners and Railroad Men.

Without going into details as to what extent the

world's output of coal will be affected by the advent of the Diesel motor as a power and heat-producing means, it is safe to say that coal miners will lose their best weapon in the struggle against the oppressing class by it.

When the Diesel motor has supplanted the steam engine of the private and municipal plants, also of railways and steamships, the necessity of coal will be no more of such an imperative nature as it is today. Coal will then occupy but a secondary position in modern industries.

Therefore, the future strikes of the coal miners will not have the same compelling strength and important consequences as they have at present. No more will it be possible to stop the country's railroads, to shut down factories and to cripple the world's commerce by tying up the steamships as it has been attained lately during the coal miners' strike in Great Britain.

The same is the case with the railroad men. A well-organized railroad strike has the same, if not a stronger, effect than a miner's strike; the coal is of no use in front of the mines, the railroad men must first bring it to the place where it is needed. The coal traffic is indeed the chief item of railroad transportation, at least this is so in the United States. Not even a combined strike of the miners and the railroad men will have a reasonable fraction of the fundamental effect that a strike of either has today. The reason for this is that the oil for the Diesel motors undoubtedly will be conveyed to the industrial centers and to the sea coast through pipe lines, as it is largely done nowadays.

To the Small Farmers and Farm Hands.

More power is spent through the plow than in all the factories in the world. The toil of turning the cultivated face of the earth once each year by the plow consumes more power than all the railways, street cars and automobiles combined. For every single acre of land, a man with plow and team must traverse a distance of

eight miles. In order to run the mechanism of the farms in the United States alone, it requires 20 million horses and mules. According to the United States Agricultural Department, a horse needs five acres yearly for keep, so that it necessitates 100 million acres to produce the motive power to run the farms. This is a larger area than is required for raising the country's crops of wheat, potatoes, rye and rice. On the other hand, the continuous rise in value of farm land does the rest to make a change for another source of motive power absolutely indispensable.

And the change is at hand. It is the tractor that will replace the horses and most of the farm hands and also squeezes out the small farmer. The onmarch of the farm tractor is so sudden and victorious that the United States census of 1910 did not bring out any statistical figures about it, while now the yearly output is more than 50,000 of these machines. They may be considered as having a combined working capacity of about twenty-five horses and ten men, which can be doubled if circumstances call for it.

The uses of the all-round tractor in the field, shop and barn are indeed numberless, and any intelligent farm hand can learn in a few hours to operate them. This tractor can do the plowing right behind the binder when it is too hot for the horses to do it, and, with a headlight, may be operated during the night. The plowing done by the tractor is not only better, but also one dollar cheaper per acre than it can be accomplished with horses. Besides, it can be used for seeding, harvesting, threshing, hay baling, hauling grain to the market, pumping water, road building, and so on. This wonderful adaptability of the tractor can be exploited to its full advantage, on big farms only, where there is enough work for it. On the other hand, it is too expensive for the small farmer to buy.

The farm tractor was the missing link in the combination that made it possible to manage agriculture on a big

scale and along strictly capitalistic business lines. Therefore, every improvement of the farm tractor will strengthen and hasten the passing of the small farmer. According to the United States census of 1910 more than 30,000 small farms went out of business in the three best middle west states of Indiana, Illinois and Iowa, while the population of their rural districts showed a decrease of 255,002 persons during the time of 1900 to 1910.

Not only the capitalist's tractors do better, cheaper and quicker work, but also they stand in the barn without an extra expense during the winter or when out of work, while the small farmer's horses are eating their heads off.

All tractors now in use are driven by high-priced fuel, such as gasoline, kerosene, etc. The coming of the Diesel tractor, therefore, will further lessen the running expenses of the capitalist farm and thereby contribute to outdistance the small farmer more and more in his struggle for existence.

It is evident that many farm hands will lose their jobs as long as this kind of "progress" is going on.

Conclusions.

The foregoing lines give a clear instance of how the master class gains ground from the working class through one single invention. There come every day new inventions that have similar consequence to those of the Diesel motor. Almost every invention in machinery has as its purpose increased production with less human help, and that means a loss to the workers under present conditions.

In order to avoid complete annihilation or to make any headway at all, the working class must completely change its attitude in the class struggle against the masters. Up to the present time the workers have fought only when they were forced to do so. They strike or take drastic measures when the cost of living has gone up to such an extent that they cannot live on the prevailing wages, or

they cannot endure any longer the shameful working conditions.

In short, the workers have always been on the defensive to recover lost ground, so that after the fight they are in the same position as some time before the fight. The spirit of defense, however, is "Not to lose." That is all.

To go toward victory in the industrial revolution that is already in its beginning stage, the workers must embue their brains with the spirit of attack. That means, "To Win."

INSTRUCTIONS HOW TO ORGANIZE.

To secure a Charter of the Industrial Workers of the World, get the names of twenty actual wage workers. Those who make a living by working for wages.

All who sign the Charter Application Blank pledge themselves to be in accord with the principles of the I. W. W., as outlined in the Preamble.

The Charter fee is ten dollars. This covers the cost of all books and supplies needed to fully equip a Union of twenty-five members.

Dues paid by the Union to the General Organization, are fifteen cents per member per month.

If those who sign the Charter Application Blank are employed in the same industry, they will be chartered as an Industrial Union with jurisdiction over all wage workers employed in that industry. If the signers of the Charter Application are employed in two or more industries, they will be chartered as a Recruiting Union or as an Industrial Union of the industry in which a majority of those who signed the Charter Application are employed, with the understanding that they are allowed to take in members of other industries until they have a sufficient number to be chartered as an Industrial Union of the industry in which they are employed. Recruiting Unions are temporary organizations, formed for the purpose of having organizations to carry on the edu-

cational work necessary for the formation of Industrial Unions.

As soon as there are twenty members in a Recruiting Union who are employed in the same industry, they will be chartered as an Industrial Union of that industry.

The methods used in getting a Union started depends upon the circumstances in the locality where the Union is to be formed. You can call a meeting, advertising the same. If there are any among you who are able to explain the principles of the I. W. W., have them do so to those who attend the meeting.

After the explanation has been made, you can call upon all those present, who are in accord with the principles of the Organization, to come forward and sign the Charter Application. Or you can circulate the Charter Application among those with whom you come in contact, and explain the principles of the Industrial Workers of the World to them individually. If they desire to organize, have them sign their names and addresses on the Charter Application.

When you have twenty names, or more, you can notify them to attend the meeting, form a temporary organization by electing a temporary Secretary and Chairman. Collect the Charter fee from those who sign the Application, forward the same to this office, with the Application. The Charter and supplies will be sent to you at once.

In forwarding the Charter Application be sure to specify in what industry those who sign the Blank are employed, so we will know how to make out the Charter.

Trusting that the above will be of assistance to you in organizing your fellow workers, I am

Yours for Industrial Freedom,

WM. D. HAYWOOD,
General Secretary-Treasurer.

INDUSTRIAL WORKERS OF THE WORLD,
1001 West Madison Street,
CHICAGO, ILLINOIS.

THE I. W. W. PREAMBLE.

The working class and the employing class have nothing in common. There can be no peace so long as hunger and want are found among millions of working people, and the few who make up the employing class have all the good things of life.

Between these two classes a struggle must go on until the workers of the world organize as a class, take possession of the earth and the machinery of production, and abolish the wage system.

We find that the centering of the management of industries into fewer and fewer hands makes the trade unions unable to cope with the ever-growing power of the employing class. The trade unions foster a state of affairs which allows one set of workers to be pitted against another set of workers in the same industry, thereby helping to defeat one another in wage wars. Moreover, the trade unions aid the employing class to mislead the workers into the belief that the working class have interests in common with their employers.

These conditions can be changed and the interests of the working class upheld only by an organization formed in such a way that all its members in any one industry, or in all industries if necessary, cease work whenever a strike or lockout is on in any department thereof, thus making an injury to one an injury to all.

Instead of the conservative motto: "A fair day's wages for a fair day's work," we must inscribe on our banner the revolutionary watchword: "Abolition of the wage system."

It is the historic mission of the working class to do away with Capitalism. The army of production must be organized, not only for the every-day struggle with capitalism, but also to carry on production when capitalism shall have been overthrown. By organizing industrially we are forming the structure of the new society within the shell of the old.

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