

UNEMPLOYMENT AND MACHINERY

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I

IN much of the popular discussion relating to mechanical progress and unemployment there is an element of serious error as well as of unwarranted pessimism. The error arises very largely from a failure to see beyond the direct and immediate consequences of such progress to the consequences that are indirect and more remote—and frequently more significant. The pessimism is a natural result of this restricted and necessarily defective view.

It is true, of course, that mechanical progress causes a large amount of unemployment. Each year thousands of workers, many of them skilled and with long trade experience, lose their jobs because of improvements in machine technology, and in many instances the period of enforced idleness stretches over many months. Physical suffering and mental distress, accompanied by dissatisfaction, unrest, and bitterness, often ensue. Social loss, due to inactive and possibly deteriorating labour power, invariably follows. It is clearly evident that technological unemployment, the name given to this type of involuntary idleness, constitutes a serious social problem. It would be extremely foolish for one to dismiss it as a matter of little account, or to assume an attitude of complacency towards it. On the other hand, however, it would also be foolish to exaggerate its seriousness. And yet this appears to be a rather common tendency at the present time. The following examples of recently expressed opinions on the subject will help to bear out the validity of this assertion.

Not long ago the celebrated Dean of St. Paul's stated in a newspaper interview that, if he were dictator, he would "get rid of a few million men and their families whose jobs have disappeared through labour-saving machinery." His way of disposing of these individuals would be through a scheme of state colonization: the establishment of hundreds of self-supporting and self-contained villages and communities in Canada, South Africa, and Australia.

If what the Dean says concerning the disappearance of jobs through labour-saving machinery were true, and if his policy were

adopted at once and continued through the coming years—to be consistent this would have to be done, as there is no reason for expecting a halt in mechanical advancement—the British newspapers on a certain day in the year 2,000 might contain an item reading somewhat as follows: “The population of the British Isles, according to the recent census, is now 12,409,115. The great decrease in numbers during the last seventy years has been due chiefly to the continuous introduction of new types of machinery and the consequent movement of the superfluous population to self-sufficing communities in the Dominions”. By the year 2,100 the population would perhaps be down to 5,000,000.

Apparently Dean Inge believes that labour-saving machinery permanently reduces the number of employment opportunities. A similar belief was recently expressed in a prominent American monthly by a writer, presumably the editor, who asserted that “Our machines and our science of management have made us so efficient that there is no longer enough work to go around”. On reading this statement, one cannot help thinking of the future when our machines will be much more intricate, automatic, and productive; and when our science of management, which at the present time is far from being perfect, will be vastly improved. If there is not enough work to go around now, there will be much less fifty years from now, that is, if the editor’s conclusion is correct. Perhaps one half of the working population will then be unable to secure jobs, and will have to be supported by generous relatives and friends or by the State. Certainly this is a condition which one cannot contemplate with indifference and equanimity. It is a condition, however, that is purely illusory.

There is no reason for thinking that we have already reached, or shall ever reach, a point where there is a permanent insufficiency of work. Anyone holding such a belief clearly misunderstands the nature of human wants, and fails to comprehend the significance of an elementary economic principle known as “Say’s Law.” If once we realize that in the long-run the demand for goods is the supply of goods—and this is Say’s law stated in simple terms—we are not likely to subscribe to any belief in a permanent shortage of jobs.

Perhaps it was fear of such a shortage, however, that prompted an Ontario mayor to recommend, in his inaugural address, that legislation be passed compelling manufacturers to dispense with machinery and to use more men. This recommendation reminds one of the drastic measures adopted by the Erewhonians for overcoming the pernicious effect of the machines. Perhaps someone will next suggest that we imitate them. Let us destroy all the

machinery that has not been in existence for more than two hundred and seventy-one years, and prohibit all further improvements and inventions "under pain of being considered in the eye of the law as labouring under typhus fever," which we shall regard as "one of the worst of all crimes." Incidentally, it might be pointed out that if this were to be done—a most fantastic notion, to be sure—not only would the present standards of living decline to a starvation level, but a considerable part, possibly a quarter or more, of the present population of the world would not be able to subsist at all, even though the length of the working-day were increased to fifteen hours.

We have now reached a point where the very existence of millions of individuals is dependent upon the presence of highly efficient industrial methods, upon an abundance of tools and machinery, and upon extensive specialization, both geographical and operational. It is ridiculous even to think of going back to the productive methods used in the days of our forefathers. The wheels of mechanical progress cannot be turned backwards without disastrous results.

What does this fact suggest? Simply that we should candidly recognize the true nature of the situation, and should make the proper adjustments to it. Rather than placing the blame for so many of our troubles upon mechanical progress, it would be better to place it upon our own negligence in adapting our thinking and our legislation to the changes that such progress has brought about. Time devoted to lamenting the deleterious effects of "the machine" could be spent much more profitably in advocating the adoption of effective means for overcoming them.

II

Mechanical progress is a pluralistic phenomenon, with a multitude of causes and a wide variety of consequences. It would be presumptuous to attempt to discuss all these, or even the most important of them, in the course of a brief article, and no such attempt will be made. None of the causes will be given attention; and of the consequences only one, the displacement of labour, will be considered.

When a brick-making machine is invented which can produce 40,000 bricks a day, compared with an approximate output of 450 by one man using hand methods; when a mechanical conveyor for unloading ships is brought into use which, with four men, can do as much work as one hundred men were able to do using hand

trucks; when a razor-blade-making machine is constructed which, with a single operator, can produce as many blades in a given time as five hundred men using hand methods; when a huge steam shovel is built which can excavate as much earth as two hundred unskilled workers—when technological changes such as these occur, it is inevitable that a large number of workers lose their jobs.

During recent years the amount of this displacement has undoubtedly been very large. It would be incorrect, however, to attribute all, or even a large part, of the present unemployment to recent technological changes. The world is suffering chiefly from cyclical unemployment just now, not from technological. The present depression has been caused very largely by the various factors responsible for the more or less regular periodic fluctuations in business activity, and by factors which either directly or indirectly grew out of the World War. It is true that technological improvements have made some contribution towards the seriousness of the depression, and it is also true that such improvements have helped to make possible a type of economic system in which rhythmic movements in business activity seem to be inevitable. However, we would have had a depression about this time even if the extraordinary developments in machine technology during the last decade had not taken place. Moreover, we shall undoubtedly have another serious one some time about 1940, with perhaps a number of minor ones in the meantime. This is not intended to be an expression of economic fatalism, but simply a prophecy which will likely turn out to be true, and for this reason: suitable control devices for regulating production and more closely co-ordinating it with consumption will not be adopted in the near future.

It is not beyond human ingenuity to devise means which will greatly reduce the amplitude of cyclical swings in business activity, and which will thus cut down the volume of unemployment. Reputable economists have long been suggesting and advocating the adoption of measures which would have this very effect. But the unpractical nature of many of our so-called "practical business men," ignorance and indifference on the part of the general public, and international distrust and animosity prevent the adoption of their recommendations.

This situation will not be changed very rapidly. Foolishly, we shall continue to listen to politicians who promise to accomplish wonders by raising tariff walls. Naively, we shall talk about reducing the length of the working-day as the way to cure unemployment, when such a policy, unless it is accompanied by an increase in the daily productivity of industry, will reduce the size of the

national income and likely lower the living standards of the masses. Dogmatically, we shall insist on the desirability of maintaining wage rates during a time when prices are falling, without recognizing the fact that inflexible wage rates may increase the amount of unemployment.

With the continued advocacy of ineffective or inadequate policies for dealing with business fluctuations, and with the formidable opposition of individuals who fear, with or without reason, that the proper policies would be to their personal disadvantage, it is certain that periodic business depressions with severe unemployment will be with us for some decades to come. During the years between these depressions there will continue to be unemployment, much of it technological in nature. We are never wholly free from unemployment. Even during the busiest of times part of our working force is involuntarily idle. According to statistical data supplied to the Dominion Bureau of Statistics by trade unions in Canada, in no month during the period from 1920 to 1930 inclusive did the monthly percentage of unemployment in the unions reporting fall below two. For most months it was much higher.

During the coming years the yearly average of unemployment may decrease, but this will not likely happen unless private and governmental effort is exerted towards this end. In fact, in the absence of such effort, or in the absence of a sufficient amount of it, there is a likelihood that it will increase.

The continuance of technological unemployment, the type in which we are especially interested, will not be due to any permanent shortage of jobs. It is to be noted, however, that the rapidity with which available jobs are filled, the rapidity with which displaced workers are re-absorbed into industry, may be lessened if wages become more rigid and if the general price level continues to decline.

Rigidity in wage rates frequently causes employers to economize in the use of labour. Wages are really a price, and if the price is too high, purchases will be restricted, just as in the case of commodities. It is not to be concluded, therefore, that labour should be treated like an ordinary commodity. But it should at least be realized that if wages are held at a point which employers think is unjustifiably high, the volume of unemployment may be increased by the employers substituting capital for labour.

In recent years wages have become increasingly inflexible—not wages alone, however—with the result that the re-establishment of “balance”, when once our economic system has become unbalanced, is retarded. This does not mean, of course, that the way to bring back prosperity when once it has left us is to reduce

wages indiscriminately. But it does mean that a more rapid adjustment of wages in accordance with the value productivity of labour, and also a more rapid adjustment of other inflexible prices, would expedite recovery.

The immediately potential value productivity ("marginal productivity", to use a term commonly employed by economists) of the various classes of labour making up the country's total working force declines during a time of falling prices, and if wage-rates are kept arbitrarily high by those in employment, the number able to get jobs at the current wages will likely be decreased. In other words, the volume of unemployment will likely be increased. If the value productivity could be raised sufficiently high by the elimination of wasteful industrial methods, etc., it would not be necessary to lower wages. But when prices are declining, it is extremely difficult to increase the value of the hourly output of labour. Nevertheless, every effort should be made to do so, since the size of the wage-cut required would thereby be reduced.

If during the coming decades we are to experience a declining general price level, as we did during the latter part of the nineteenth century, the ratio of years of depression to years of prosperity will increase. The studies of Dr. Thorp relating to price levels and business activity demonstrate the truth of this statement. With a larger number of lean years the process of labour re-absorption will be seriously impeded, and the amount of technological unemployment will be increased.

If, however, wage-rates do not become more rigid, if the general price level does not move downward, and, finally, if the rate of mechanical change does not increase, the volume of technological unemployment is not likely to grow. It would be unreasonable for us to assume that there is going to be a continually growing body of unemployment due to an increasing scarcity of jobs caused by technological improvements. For over a century industrial technique has been undergoing very great changes, and yet there is no proof that permanent unemployment has resulted. Neither is there any evidence to prove that such changes will have that effect in the coming years.

While technological improvements cause a large amount of temporary labour displacement, they at the same time make possible a higher standard of living, as well as a larger amount of leisure time. The extent to which leisure may be increased, or, in other words, the extent to which the length of the regular working-day may be decreased, is dependent in large part, however, on the height to which our material standards of living are raised. If

the present standards continued to exist, the four-hour day would be realized sooner than if the standards were raised. Professor Carver some years ago ventured the opinion that we could already have the four-hour day if we were willing to live to-day as our people lived in 1876, with the same material comforts that they had.

The achievement of the four-hour day will not automatically abolish unemployment, however. Cyclical, technological, and the other types of unemployment can occur with a four-hour day as with an eight-hour day or a twelve-hour day. It is futile to look upon a reduction of working-hours as a satisfactory permanent device for dealing with unemployment. Short hours, accompanied by the spreading of work, is a very desirable temporary policy, but as a permanent one it has little, if anything, to commend it; that is, as a policy for dealing with unemployment. Samuel Gompers declared back in the eighties—and his statement represents a belief which appears to be widely held at the present time—“The answer to all opponents to the reduction of the hours of labour could well be given in these words: ‘That so long as there is one man who seeks employment and cannot obtain it, the hours of labour are too long.’” But this statement is incorrect except as it relates to a temporary situation, and also with the exception of a rather unlikely theoretical possibility, the remoteness of which makes its discussion needless.

A reduction in the hours of labour can be supported, however, on other grounds. It is a desirable end in itself, even though it is an ineffective means for curing the disease of unemployment. To change a few words in a statement that Sir William Beveridge has made with regard to high wages, one can say that a shorter working-day is among the many good things for which there are better arguments than the bad argument that it will cure unemployment.

Like the reduction in the length of the working-day, the substitution of hand labour for machinery, the policy that the mayor has suggested, can be supported as a temporary measure, although the arguments for it are not nearly as strong. Resort to such a substitution, however, constitutes a most sorry comment on our ability to organize and carry on production. The substitution of inefficient for efficient methods! If it is cheaper to do a job by using a machine rather than doing it by hand, why not use the machine, and with the money thus saved increase private and social wealth in other ways? The additional volume of production would provide employment opportunities, and in the end we would be better off than if we had adopted, intentionally, inefficient methods.

Reducing the length of the working-day or substituting hand labour for machines will not take us very far in our quest of satisfactory means for dealing with technological and other kinds of unemployment.

III

That suitable policies for reducing the volume of technological unemployment and for mitigating its evils should be adopted, will hardly be questioned by anyone who looks at the matter from a social point of view. The impartial observer will at once realize that those who have been forced into idleness through technological improvements have been victimized by changes from which society benefits. Consequently, he will readily admit that society has an obligation resting upon it to relieve their distress and assist them in getting back into employment.

These tasks could be left solely to private industry, and there may be some individuals—*laissez-faire* extremists—who think that this would be desirable. But would it be desirable? Would the amount of involuntary idleness caused by technological improvements be reduced to the minimum? Would adequate provision be made for those who were not immediately re-employed? To answer these questions, it will be necessary to consider various policies that private employers could adopt, and then to ask how extensively they would adopt them voluntarily.

Private employers could regulate the introduction of new machinery in such a way as to reduce the actual amount of labour displacement. Instead of installing the new machinery spasmodically, they could introduce it more or less gradually. This does not mean that the quantity of new machinery installed over a period of years would be smaller than if no such policy had been adopted. Indeed, if it did mean this, such a policy would be of very doubtful value. It might possibly result in stationary, or even declining, living standards. If this practice of regulation were widely adopted, the volume of technological unemployment would be appreciably decreased, since the secular growth in the volume of their business would enable many employers to give employment to some of their workers who would otherwise have to be let out.

Employers could also train the displaced workers for other jobs. This would reduce the amount of their labour turnover, and would enable them to retain the services of trustworthy workers. Such a training, or re-training, programme would involve some expense, but the expenditure would likely prove to be a good investment.

To those of their workers for whom they could not provide employment, the employers could pay a dismissal wage; that is, they could give them a lump sum at the time of their leaving. This practice is a truly commendable one, and has been followed by a number of progressive employers in the United States. It is also a practice that is growing. If its growth would continue with sufficient rapidity, the unfavourable results of mechanical progress would be greatly reduced.

From the employers' standpoint there are a number of benefits to be derived from adopting these policies. If the workers, instead of being in fear of losing their jobs through technological changes, are given some assurance that they will either be kept in employment or be given a dismissal wage, they will be better satisfied, will be less opposed to the introduction of improved machinery, and will co-operate more closely with their employers. The feeling of security will perhaps cause some workers to be careless and lazy, but these could easily be discharged. The type of security suggested is that which favours the capable and conscientious worker, and not the inefficient and indifferent one.

It is clear that private industry *could* do a great deal both in reducing the amount of technological unemployment and in relieving the distress that it causes. But the important question is: What will private industry do voluntarily? A careful analysis of the situation will compel one to conclude that it will not do much. As long as the desire for profits is uppermost in business, as long as many businesses are operating at or near the margin of financial loss, and as long as business failures are numerous, it is irrational to expect any large percentage of employers to adopt the policies that have just been suggested. Moreover, even if a large number of employers did agree to introduce their new machinery gradually, to train displaced workers and shift them to other jobs, and to pay a dismissal wage, it is altogether likely that often they would fail to carry out the policies on a satisfactory scale.

Private industry will not deal with the problem of technological unemployment in any adequate manner; hence there is need for governmental action. What should be the nature of this action?

In the first place, the Government (or Governments) could arrange a suitable re-training programme for the purpose of equipping the displaced workers for other occupations. In this undertaking the co-operation of employers would be eminently desirable, in fact almost indispensable. The assistance of the Employment Service of Canada would also be very desirable. The Service, with its offices spread over the country and with its intimate contacts

with the country's numerous labour markets, would be in a position to give valuable assistance in carrying on this work of industrial re-training. It would also be able to aid in an extensive programme of vocational guidance. And this, it is to be observed, is closely related to the problem of technological unemployment. If young workers can be kept from entering occupations that are declining because of technological improvements, or because of any other changes, the amount of unemployment will be lessened. An extensive programme of vocational guidance will, moreover, make a particularly valuable contribution to solve one of Canada's population problems, that of occupational congestion. When once we become acquainted with the nature of this problem, and when we have launched a genuinely ambitious programme for dealing with it, we shall find that destitution has been largely eliminated and that poverty has been greatly reduced.

One hears much at the present time concerning inequality in the distribution of wealth and income, but little about practicable means for reducing it. True, the use of the taxing power is advocated, and, within bounds, correctly advocated. But not enough attention is given to the great possibilities of an extensive system of vocational guidance and vocational education. If we could reduce by fifty per cent the number of individuals going into the low-paid occupations, inequality in wealth and income would be diminished, physical suffering due to unemployment would be curtailed since the workers would have a sufficient income from which to save for "a rainy day," and human welfare in general would be increased. The vital importance of properly allocating our labour resources is seldom fully realized.

In so far as governmental bodies exert control over industrial enterprises, and they do to a considerable extent in Canada, they, like private employers, could regulate the introduction of new machinery. They could also pay a dismissal wage.

An increase in the amount that the Federal Government grants each year to the provinces for the purpose of helping them to carry on their employment offices could very well be made. If the offices of the Employment Service had more funds at their disposal, they would be able to be of still greater assistance to workers who have been displaced by machinery, or who have become involuntarily idle for any other reason.

Finally, governmental action could be directed towards the establishment of a system of unemployment insurance. Such insurance may, with some reason, be looked upon as a confession of failure. But one should not conclude that it is therefore undesirable.

Our inability to eliminate unemployment should not prevent us from adopting other measures designed to help those for whom we cannot immediately supply jobs. Everything that is possible, and at the same time economically and socially desirable, should be done to reduce the volume of unemployment. But a realistic view of the situation will convince any open-minded person that unemployment will continue to be a serious problem in Canada for many years to come. It will not be solved in three days, in three years, or in thirty years. Technological changes will still be made, seasonal fluctuations in industry will still be present, the business cycle will not be entirely eliminated, our labour markets will not be perfectly organized.

Would it not seem wise, therefore, since we cannot do away with the unemployment, to make some provision for relieving the suffering that frequently goes along with it? The best way to do this is through a system of unemployment insurance. Such insurance will not work miracles, but it will produce very desirable results; it will not allay all discontent, unrest, and distress, but it will contribute to human happiness; it will not eradicate involuntary idleness, but, if a proper system is established, it will reduce its amount.

If the employers were compelled to pay all, or a very substantial part, of the insurance premiums, and if the premiums were so arranged that the employers who succeeded in reducing the volume of unemployment within their own plants paid a smaller amount into the insurance fund than those who were careless or indifferent with regard to this matter, who made little or no effort to stabilize their working force, the insurance system would be both ameliorative and preventive in nature.

Again, if benefits were not paid until the number of hours worked per week fell below, say, thirty-two, employers during a time of depression would be induced to spread out the available work rather than give it all to a fraction of their regular working force. This spreading of work, while it would not likely increase the total number of hours worked throughout the whole field of industry to any great extent, if at all, would be very advantageous in that it would enable a larger percentage of the populace to maintain a respectable standard of living, and at the same time it would prevent serious depletion of the insurance fund.

These are two of the many desirable features that should be embodied in a Canadian system of unemployment insurance. The other features are well known to students of the unemployment problem. While it is deplorable that unemployment reserves were

not set up in Canada during the years immediately preceding the present depression, it is fortunate that Canada has the opportunity of benefitting by the experience of those countries that did take the step. Profiting by the lessons they have learned, it would not be a difficult task to formulate an unemployment insurance plan suited to Canadian conditions.

If we are to reduce the human costs and increase the human gains of mechanical progress, it would be better to establish a system of unemployment insurance and adopt other measures, such as those that have been suggested, rather than to place obstacles in the way of such progress. The latter policy would inevitably hinder the raising of our living standards, and would thus be very undesirable.

Outside of unemployment insurance, the measures that have been discussed in the present paper would not make a very substantial contribution towards the handling of seasonal and cyclical unemployment. If we are to deal satisfactorily with these two types of involuntary idleness, it will be necessary for us to adopt more heroic measures.