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MAN AND THE MACHINE.

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IN May last there was held in the city of New York the annual meeting of an Association popularly known as C. A. I. L.* This Society is made up of the friends of working people of various callings and professions and of both sexes, and includes also representatives of various classes of working men and women. The meeting was wholly informal, and indeed explicitly social in its character; and after a simple but excellent supper there were informal speeches from various guests and others who were more or less representative of the interests represented by the Association.

It was my privilege to be one of these speakers, and it was not unnatural that one addressing such a gathering should be moved to call attention to the "interests" of those who labor, in a somewhat wider view of them than that word might ordinarily suggest. The interests of working men and women concern not alone their wages or housing, their hours or their food. And so I attempted to point out those just considerations which ought to influence not only the employers of labor, but all those who have it in their power, in any degree, to modify the conditions

* The Church Association for the Advancement of the Interests of Labor.

under which people work to-day, growing out of the nature of those conditions as peculiar to our own generation. This line of remark led me to refer to what has aptly been called the "Industrial Revolution" of the last and the present century, and to the great changes it has brought about; to sketch briefly the condition of the handicraftsman of earlier times—his domestic relations to his employer, the intimate and almost filial character of a workman's life as part of a great household, in which he ate below the salt, but often ate at the same table with his employer; and our modern conditions, under which he was often personally unknown to his employer, designated by a number, working in a "gang," and hired or dismissed usually without the smallest reference to any personal or domestic circumstances in the case. I recognized that a laborer, before the present century, was often hard driven, poorly fed, and worse housed; but pointed out that his individuality had more habitual recognition, and in many cases kindly and more or less fraternal consideration. Passing from this branch of the subject, I referred also to the enormous change in the circumstances of the working man growing out of the introduction of machinery, and pointed out how inevitable was the tendency of the increased employment of machinery to *mechanicalize* the workman. It was in view of such considerations, I urged, that such sympathetic interest in the circumstances, as well as the legal and economic rights of working men, appeared to have a just claim upon everybody who had regard to the "eternal equities," and felt any obligation for the well-being of his fellow-men.

Almost immediately after saying the few words which I have thus epitomized, I left the country for an absence of some months; but I had hardly touched the shores of a foreign land before I was followed by reports of my informal address, which for ingenious and grotesque inaccuracy have hardly had a parallel anywhere,—I do not think I could state the case more strongly—in the columns of a sensational press.

I have not the slightest intention of undertaking to correct them here. My own rule in such cases has long been invariable. Some day the innocent people who allow themselves to be beguiled into correcting newspaper misstatements will learn that that weakness of misrepresented people is one of the reasons that

prompt the unscrupulous authors of those statements to make them. The personal element in modern newspapers is the mustard that gives to the whole vulgar dish, to many appetites, its chief relish. Sensible people will refuse to furnish it.

But I refer to the matter now in order to call attention to the immense mischief which is wrought by modern journalism, in such a connection as this, with regard to interests that are vastly more important than those of any individual. The deluge of excerpts, to which I have referred, included a multitudinous variety of criticisms of every kind upon statements which I had never made, and which any sane person, one would suppose, must know that it was impossible that I could have made—since they imputed to me opinions which could only be excusable in a lunatic. These criticisms proceeded from manufacturers, employers of labor, journalists, men of letters, clergymen, and other critics who could not easily be classified. No one of these persons had ever taken the trouble to verify the statements they criticised; and in the case of ministers of religion, especially, they furnished a curious and painful illustration of the way in which the demoralization of the pulpit has attended upon that of the press. The preacher, apparently, cared as little as the journalist for the *facts* in the case. What he wanted for his Sunday harangue was a sensational point of departure, and where he found it, or what was its value as something having any foundation in fact, was a matter of profound indifference to him.

Now, we talk of a sound public opinion as a foundation of the well-being of the state. But it is certainly a question of some importance,—how is such a public opinion created? Public opinion is not alone the opinion of scholars, statesmen, journalists, clergymen and the like. It is the opinion of that great mass of the people, whose diffused intelligence and accurate knowledge are in civic matters our only hope. But what is to be expected of it if it is fed habitually by misinformation, by exaggerated, sensational and irresponsible statements? Much is said in these days about the suppressed discontent and irritation which exists between classes,—not on one side alone, but on both sides. It is time that the question was asked: Who is responsible for it, and how may such a malign influence be restrained and chastened?

The most depressing fact that confronts one who is trying to interpret to each other men or classes that are at issue, is the immense sub-stratum of ignorance and prejudice that exists on both sides, and that is found on examination to be the result of persistent misinformation ; of facts torn from their connection, or partially stated ; of bitter, or scornful, or inflammatory words, spoken often by those who represent no one but themselves, and that are flung abroad in displayed type, or with sensational expansion of editorial comment, to be the spark that anew kindles social resentments or inflames class hatreds. We are facing to-day a whole group of grave questions, of real difficulty, of extreme delicacy often, and almost as often of almost entire novelty. They grow out of conditions that, until the present century, never had an existence, and they are complicated by perplexities which what we call our industrial progress does not diminish, but often greatly complicates. In such a situation, what the hour waits for is a cool temper, restrained speech, a judicial hesitancy in flinging about loose opinions, and a wide knowledge of a very wide range of facts. Under these circumstances the swift imputation of motives, the ready inference of malign intent, the exaggerated descriptions whether of the heartlessness of one class or of the malignity of the other, to which we are frequently treated, is precisely as mischievous as the act of the anarchist or incendiary who drops bombs or petroleum about the streets or homes in which his neighbors live. That we have become so far wonted to it as we have ; that the mischief of it appears so little to concern or to alarm us, is itself an element of danger that has constrained me to refer to the matter here.

On the occasion to which I referred at the opening of this paper, I was striving to say some words to bind men together—the more favored classes in intelligent sympathy with those whose lot is that of unremitting labor, the hardships of which have unquestionably been greatly increased, often, by those modern conditions under which labor has to be performed. In illustration of this point I referred, as has already been indicated, to the purely mechanical and unintelligent character of much that is required of a working man in serving or feeding some great mechanism, and pointed out that the utter monotony of it must needs account for the intemperate reaction from such monotony, of which one sometimes heard. These temperate and,

as I venture to think, timely words have been widely heralded as a denunciation of the employment of machinery in manufacture and an unreserved condemnation of it in connection with our modern industrial life. It is not necessary, I hope, that I should disown so absurd a misrepresentation. Any one of even the most limited intelligence cannot fail to perceive the enormous gains in convenience, comfort, and luxury from the application of machinery to the arts. But no great gain of such a character is without cost, in many ways and of many kinds. The cost to the individual who works at a handicraft is real and serious, and it is concerning this that we need to recognize the present situation and to do what we can to ameliorate it.

The case is admirably stated by Mr. Whately Cooke Taylor, in his work *The Modern Factory System*, in terms so true and temperate that I cannot refrain from quoting them :

“This type of industry is new in the world. In all previous modes of labor (including the earlier factory systems) all the processes were performed by means of manufacture proper ; either, that is, by the ‘fitting together (by human hands) of partial products made independently,’ or by the conducting them through ‘a series of connected processes and manipulations,’ with or without the aid of more or less simple machines and tools. In the present instance it is the processes themselves that are performed by the machines, and the human hands that only assist them. It is machine industry ; not industry merely aided by machinery. A weaving establishment of 200, 2,000, or 5,000 years ago (say in England, Greece, or Egypt) would equally well afford an example of the first type, and the same general description of what occurred be fairly applicable. The yarn, spun independently with a simple tool, a distaff—or a simple implement, a spinning wheel—is fitted to the loom as warp and weft, and woven on that more complicated implement into a web. But it is not woven by it. The shuttle is passed back and forward or in and out by hand. Adam Smith’s celebrated description of pin-making as practised in his day furnishes a good illustration of the second category. ‘One man draws out the wire; another straightens it; a third cuts it; a fourth points it; a fifth grinds it at the top for receiving the head; to make the head requires two or three distinct operations; to put it on is a peculiar business; to whiten the pin is another; it is even a trade by itself to put them into the paper; and the important business of making a pin is, in this manner, divided into about eighteen distinct operations, which in some manufactories are all performed by distinct hands.’ Here the finished product is the result of a ‘series of connected processes and manipulations,’ all manual, and directed under a common superintendence to a definite end. But compare now these proceedings with the same or similar ones all performed by machinery; or rather let us return to textile industry for the comparison. The warp and weft both spun *by*, not merely *with* machinery, are by machinery wound on the shuttle and the beam, and being conducted to a proper place, are then again by a machine wrought into the web. The

'connected processes' are still there, but they are no longer 'manipulations.' Nay, if this machine does its work badly and the yarn breaks, it is not the weaver who detects the fault, but the machine that informs *him*. By an ingenious contrivance a bell is rung, the loom stops, and all that is left for human faculties to perform is the common place operation of tying the broken ends together. Is this machinery aiding human labor or human labor aiding machinery? It is clearly the latter; it is *machine industry*; a different thing from anything that had yet been known, one of the special characteristics of modern industry, and among other forms of it, of the modern factory system. The full significance of the change thus introduced in labor is not yet understood, nor can any adequate exposition of it be attempted here. It is clearly a much larger question than is involved in the rise or fall of any particular factory system, for it obviously affects forms of labor lying altogether outside it. But the difference made in the position of the factory worker is fundamental. In earlier factories the human element was the supreme one; under the modern system that supremacy belongs to the machine."*

Precisely. And the question for all right-minded people is: How far shall this supremacy be allowed to extend? It is idle to pretend that this domination of the machine in the life of the working man can long obtain without affecting that in him which is of incomparably more value than anything that the machine can produce. In fact, in this connection the testimony of those who can speak with a technical knowledge and wide experience to which I can make no claim is substantially conclusive. Says Hobson in his *Evolution of Modern Capitalism*: †

"Though the quality of intelligence and skill applied to the invention, application, and management of machinery is constantly increasing, practical authorities are almost unanimous in admitting that the proportion which this skilled work bears to the aggregate of labor in machine industry is constantly diminishing. Now, setting on one side this small proportion of intelligent labor, what are we to say of the labor of him who, under the minute subdivision enforced by machinery, is obliged to spend his working life in tending some small portion of a single machine, the whole result of which is continually to push some single commodity a single step along the journey from raw material to consumptive goods?

"The factory is organized with military precision, the individual's work is definitely fixed for him; he has nothing to say as to the plan of his work or its final completion or its ultimate use. 'The constant employment on one sixty-fourth part of a shoe not only offers no encouragement to mental activity, but dulls by its monotony the brains of the employee to such an extent that the power to think and reason is almost lost.' ‡ The work of a machine tender, it is urged, calls for 'judgment and carefulness.' So did his manual labor before the machine took it over. His 'judgment and carefulness' are now confined within narrower limits than before. The responsibility of the worker is greater, precisely because his work is narrowed

* "The Modern Factory System." W. C. Taylor, pp. 75-77.

† "The Evolution of Modern Capitalism," by J. A. Hobson.

‡ D. A. Wells, "Contemporary Review," 1883, p. 392.

down so as to be related to and dependent on a number of other operatives in other parts of the same machine with whom he has no direct personal concern. Such realized responsibility is an element in education, moral and intellectual. But this gain is the direct result of the minute subdivision, and must therefore be regarded as purchased by a narrowing of interests and a growing monotony of work. It is questionable whether the great majority of machine workers get any considerable education, from the fact that the machine in conjunction with which they work represents a huge embodiment of the delicate skill and invention of many thousands of active minds; though some value may be attached to the contention that 'the mere exhibition of the skill displayed and the magnitude of the operations performed in factories can scarcely fail of some educational effect.*' The absence of any true apprenticeship in modern factories prevents the detailed worker from understanding the method and true bearing even of those processes which are closely linked to that in which he is engaged. The ordinary machine tender, save in a very few instances, *e. g.*, watchmaking, has no general understanding of the work of a whole department. Present conditions do not enable the 'tender' to get out of machinery the educational influence he might get. Professor Nicholson expresses himself dubiously upon the educational value of the machine. 'Machinery of itself does not tend to develop the mind as the sea and mountains do, but still it does not necessarily involve deterioration of general mental ability.†' Dr. Arlidge expresses a more decided opinion. 'Generally speaking, it may be asserted of machinery that it calls for little or no brain exertion on the part of those connected with its operations; it arouses no interest, and has nothing in it to quicken or brighten the intelligence, though it may sharpen the sight and stimulate muscular activity in some one limited direction.'‡

The writer from whom I have just quoted furnishes, in the same discussion, a very striking illustration of these words in connection with the work of railway engineers:

"A locomotive superintendent of a railway was recently questioned as to the quality of engine-driving. 'After twenty years' experience, he declared emphatically that the very best engine-drivers were those that were most mechanical and unintelligent in their work, who cared least about the internal mechanism of their engine.¶' Yet engine-driving is far less mechanical and monotonous than ordinary tending of machinery.

"So far as the man follows the machine and has his work determined for him by mechanical necessity, the educative pressure of the latter force must be predominant. Machinery, like everything else, can only teach what it practices. Order, exactitude, persistence, conformity to unbending law—these are the lessons which must emanate from the machine. They have an important place as elements in the formation of intellectual and moral character. But of themselves they contribute a one-sided and very imperfect education. Machinery can exactly reproduce; it can, therefore, teach the lesson of exact reproduction, an education of quantitative measurements. The defect of machinery, from the educative point of view, is its absolute conservatism. The law of machinery is a law of statical order,

* Taylor, "Modern Factory System," p. 435.

† Cf. the comparison of conditions of town and country labor in Adam Smith's "Wealth of Nations," Bk I. Chap. x., part 2.

‡ "Diseases of Occupation," pp. 25-26.

¶ "The Social Horizon," p. 22.

that everything conforms to a pattern, that present actions precisely resemble past and future actions. Now the law of human life is dynamic, requiring order not as valuable in itself, but as the condition of progress. The law of human life is that no experience, no thought or feeling is an exact copy of any other. Therefore, if you confine a man to expending his energy in trying to conform exactly to the movements of a machine, you teach him to abrogate the very principle of life. Variety is of the essence of life, and machinery is the enemy of variety."*

With those words I am content to rest my case. There is no one who will read them who will not own the enormous strain that comes from the pressure of an unremitting monotony. It is to such a monotony that our modern industrial life increasingly tends; and it is to its effects, first upon the nervous system of men and women, and then upon their reasoning and imaginative powers, that the present unrest of the industrial classes is largely to be traced. It would seem as if it were the part of reason and of common humanity to recognize such facts, and to own the appeal which they make to those of us who have it in our power in any way to ameliorate these untoward conditions. The first obstacle to be faced is a profound and widespread indifference, based, I believe, upon a large ignorance of the facts, and a very superficial judgment as to any efforts that may have been made to modify them; and the other, of which I would that I had space to speak now, is that increased distance and ever-enlarging ignorance which, to-day and in this land, divide from each other those who are differently circumstanced. We are eating the fruits of an irresponsible prosperity, which has grown rich and luxury-loving with a fine indifference, too often, to the processes by which our wealth has been gained. What it has cost, what it is costing others, has, at the best, very little concerned us. But a day of reckoning will come; and the awakening of the privileged classes to conditions in the life of working people which they ought long ago to have recognized may easily be a very painful and costly one. Surely, a wiser and a nobler way will be to seek first to recognize and to own the conditions in our present industrial life that need bettering, and then to touch them with a wise, and generous, and fraternal hand.

HENRY C. POTTER.

* *The Evolution of Modern Capitalism*, p. 257.

IMMIGRATION AND THE EDUCATIONAL TEST.

BY PRESCOTT F. HALL, SECRETARY OF THE IMMIGRATION RESTRICTION LEAGUE.

A RECENT writer upon the immigration question * truly says that much as this question has been discussed pro and con, there has been "a noticeable lack of the one element which can give certainty to the argument and force to the conclusions." Of such facts, he adds, "as bear directly and strongly upon the problems involved there has been little use made." There are many facts of the greatest importance to the solution of this question which have not appeared prominently in previous discussion, but which cannot safely be dismissed with generalities. A few of them it is my purpose to present in this article.

In the first place the real question confronting us to-day is not whether immigration in general is desirable, or has benefited this country in the past, whether it shall be entirely suspended, or whether there are more or fewer inhabitants per square mile in the United States than in some foreign country. The practical question is: Are the laws at present upon the statute books accomplishing what they were intended to effect, and do they let in all desirable additions to our population, and exclude all undesirable elements?

If immigrants be undesirable the fact that there is land enough for many times the population which we now have in the United States would be generally conceded to be an inadequate reason for admitting them. All admit that this is so in the case of persons unable to support themselves, and therefore present or future paupers are in theory excluded by the present law. As to whether they are in fact excluded I shall have something to say in a moment.

* Mr. S. G. Crosswell, NORTH AMERICAN REVIEW, May, 1897.