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FREDERICK ENGELS

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Now we know where Bastiat learnt his lesson,[a] I nearly said his "Schmalz".

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[a] The German phrase used by Marx here contains the word *Fett* (English, fat), making a word play with the name Schmalz (fat or grease).— *Ed.*

FREDERICK ENGELS

[SYNOPSIS OF VOLUME ONE OF *CAPITAL* BY KARL MARX[180]]

Chapter IV

PRODUCTION OF RELATIVE SURPLUS-VALUE[a]

1. THE CONCEPT OF RELATIVE SURPLUS-VALUE

For a given working day, surplus-labour can be increased only by reducing the *necessary* labour; this can in turn be obtained—apart from lowering wages below value—only by reducing the value of labour[-power], that is, by reducing the price of the necessary means of subsistence. (Pp. 291-93.) This, in turn, is to be attained only by *increasing the productive power of labour, by revolutionising the mode of production itself.*

The surplus-value produced by lengthening the working day is *absolute,* that produced by shortening the necessary labour-time is *relative* surplus-value. (P. 295.)

In order to lower the value of labour[-power], the increase in productive power must seize upon those branches of industry whose products determine the value of labour-power—ordinary means of subsistence, substitutes for the same, and their raw materials, etc. Proof of how competition makes the increased productive power manifest in a lower commodity price. (Pp. 296-99.)

The *value* of commodities is in *inverse ratio* to the productive power of labour, as is also *the value of labour-power,* because it is determined by the value of commodities. *Relative surplus-value,* on the contrary, is *directly proportional* to the productive power of labour. (P. 299.)

The capitalist is not interested in the *absolute* value of commodities, but only in the *surplus-value* incorporated in them.

[a] This chapter corresponds to Part IV of the 1887 English edition (Chapter XII.—The Concept of Relative Surplus-Value, Chapter XIII.—Co-operation, Chapter XIV.—Division of Labour and Manufacture, Chapter XV.—Machinery and Modern Industry).—*Ed.*

Realisation of surplus-value implies refunding of the value advanced. Since, according to p. 299, the same process of increasing productive power lowers the value of commodities and increases the surplus-value contained in them, it is clear why the capitalist, whose sole concern is the production of exchange-value, continually strives to depress the exchange-value of commodities. (*Cf.* Quesnav,[a] p. 300.)

Hence in capitalist production, economising labour through developing productive power by no means aims at shortening the working day—the latter may even be *lengthened.* We may read, therefore, in economists of the stamp of McCulloch, Ure, Senior and *tutti quanti,* on one page *that the labourer owes a debt of gratitude to capital for developing the productive forces,* and on the next page that he *must prove his gratitude by working in future for 15 hours instead of 10.* The object of this development of productive forces is only to shorten the *necessary labour* and to lengthen the labour for the capitalist. (P. 301.)

2. CO-OPERATION

According to p. 288, capitalist production requires an individual capital big enough to employ a fairly large number of workers at a time; only when he himself is wholly released from labour does the employer of labour become a full-grown capitalist. The activity of a large number of workers, at the same time, in the same field of work, for the production of the same kind of commodity, under the command of the same capitalist, constitutes, *historically and logically, the starting point of capitalist production.* (P. 302.)

At first, therefore, there is only a *quantitative* difference compared to the past, when *fewer* labourers were employed by one employer. But a modification takes place at once. The large number of labourers already guarantees that the employer gets *real average labour,* which is not the case with the small master, who must pay the average value of labour[-power] none the less; in the case of small shops, the inequalities are compensated for society at large, but not for the individual master. Thus the *law of the production of surplus-value* is fully realised for the individual producer only when he produces *as a capitalist,* and sets many labourers to work at the same time—hence *from the outset average social labour.* (Pp. 303-04.)

[a] F. Quesnay, *Dialogues sur le commerce et sur les travaux des artisans.*—*Ed.*

Moreover: economy in means of production is achieved through large-scale operation alone, less transfer of value to the product by constant capital components arises solely from their joint consumption in the labour process of many workmen. That is how the *instruments* of labour acquire a social character before the labour *process* itself acquires it (up to this time merely similar processes side by side). (P. 305.)

The economy in the means of production is to be considered here only in so far as it cheapens commodities and thus *lowers the value* of labour [-power]. The extent to which it alters the ratio of surplus-value to the *total capital* advanced $(c+v)$ will not be considered until Book III.[186] This splitting up is quite in keeping with the spirit of capitalist production; since it makes the working conditions confront the worker independently, economy in the means of production appears to be a distinct operation, which does not concern him and is therefore detached from the methods by which the productivity of the labour-power consumed by the capital is increased.

The form of labour of many persons, methodically working together and alongside one another in the same production process or in related production processes, is called co-operation. (P. 306.) (*Concours de forces.* Destutt de Tracy.[a])

The sum-total of the mechanical forces of individual workers differs substantially from the *potential* mechanical *force* developed when many hands *act together* at one time in the same undivided operation (lifting of weight, etc.). Co-operation, from the very start, creates a productive power that is, in and of itself, a *mass power.*

Furthermore, in most productive work, *mere social contact* creates a *spirit of emulation* which raises the individual efficiency of each, so that 12 workers turn out more work in a joint working day of 144 hours than 12 workers in 12 distinct working days, or one worker in 12 successive days. (P. 307.)

Although many may be doing the same or similar things, the individual labour of each may still represent a different phase of the labour process (chain of persons passing something along), whereby co-operation again saves labour. Likewise, when a building is started from several sides at once. The combined worker, or collective worker, has hands and eyes before and behind and is, to a certain degree, omnipresent. (P. 308.)

[a] A. L. C. Destutt de Tracy, *Traité de la volonté et de ses effets,* Paris, 1826, p. 80.—*Ed.*

In complicated labour processes co-operation permits the special processes to be distributed and to be done simultaneously, thus shortening the labour-time for manufacturing the whole product. (P. 308.)

In many spheres of production there are *critical periods* when many workers are needed (harvesting, herring catches, etc.). Here only co-operation can be of aid. (P. 309.)

On the one hand, co-operation *extends* the field of production and thus becomes a necessity for work requiring great spatial continuity of the working arena (drainage, roadbuilding, dam construction, etc.); on the other hand, it *contracts* the arena by concentrating the workers in one work-place, thus cutting down costs. (P. 310.)

In all these forms, co-operation is the specific productive power of the combined working-day, social productive power of labour. The latter arises from co-operation itself. In systematic joint work with others, the worker sheds his individual limitations and develops the capacities of his species.

Now, wage-labourers cannot co-operate unless *the same capitalist* employs them simultaneously, pays them and provides them with instruments of labour. Hence the scale of co-operation depends upon *how much capital a capitalist has.* The requirement that a certain amount of capital be present to make its owner a capitalist now becomes the *material* condition for the conversion of the numerous fragmented and independent individual operations into one combined social labour process.

In a like manner, capital's *command* over labour was up to now only the formal result of the relation between capitalist and labourer; now it is the *necessary prerequisite* for the labour process itself; the capitalist represents precisely combination in the labour process. In co-operation, *control* of the labour process becomes the *function of capital,* and as such it acquires specific characteristics. (P. 312.)

In accordance with the aim of capitalist production (the greatest possible self-expansion of capital), this control is at the same time the function of the greatest possible exploitation of a social labour process, and hence involves the inevitable antagonism between exploiter and exploited. Moreover, control of proper utilisation of the instruments of labour. Finally, the connection between the various workers' functions lies *outside them,* in capital, so that their own unity confronts them as the *capitalist's authority,* as an outside will. Capitalist control is thus *twofold* (1. a social labour process for producing a product; 2. a process of expansion of capital), and in its

form *despotic*. This despotism now evolves its own peculiar forms: the capitalist, just relieved from actual labour himself, now hands over immediate supervision to an organised band of officers and non-coms, who themselves are wage-labourers of capital. In *slavery*, the economists count these supervision expenses as *faux frais*,[a] but in capitalist production they bluntly identify control, so far as it is conditioned by exploitation, with the same function, so far as it arises from the nature of the social labour process. (Pp. 313, 314.)

The supreme command of industry becomes the attribute of capital, just as in feudal times the supreme command in war and in the law-courts was the attribute of landed property. (P. 314.)

The capitalist buys 100 individual labour-powers, and gets in return a combined labour-power of 100. He does *not* pay for the combined labour-power of the 100. When the labourers enter the combined labour process, they already cease to belong to themselves; they are incorporated in capital. Thus the *social productive power of labour* appears as the *productive power immanent in capital*. (P. 315.)

Examples of co-operation among the ancient Egyptians. (P. 316.)

The natural co-operation at the beginnings of civilisation, among hunting peoples, nomads, or in Indian communities, is based: (1) on common ownership of the means of production; (2) on the natural attachment of the individual to the tribe and the primeval community.—The sporadic co-operation in antiquity, the Middle Ages, and in modern colonies is based upon direct rule and violence, mostly slavery.—Capitalist co-operation, on the contrary, presupposes the free wage-labourer. Historically, it appears in direct opposition to peasant economy and the independent handicrafts (whether in guilds or not), and in this connection, as a historical form peculiar to, and distinguishing, the capitalist production process. It is the first change experienced by the labour process when subjected to capital. Thus, here at once: (1) the capitalist mode of production presents itself as a historical necessity for the transformation of the labour process into a social process; (2) this social form of the labour process presents itself as a method of capital to exploit labour more profitably by increasing its productivity. (P. 317.)

Co-operation, as considered so far, in its *elementary* form, coincides with production on a large scale, but it does not constitute a fixed form characteristic of a particular epoch of capitalist production, and it still exists today, when capital operates

[a] Overhead costs.—*Ed.*

on a large scale without division of labour or machinery playing an important part. Thus, although co-operation is the basic form of the whole capitalist production, its *elementary* form reappears, as a particular form, alongside its more developed forms. (P. 318.)

3. DIVISION OF LABOUR AND MANUFACTURE

Manufacture, the classic form of co-operation based upon division of labour, prevails from about 1550 to 1770.

It arises:

(1) Either through the throwing together of different crafts, each of which performs a detail operation (e.g., vehicle building), whereby the individual craftsman in question very soon loses his ability to pursue his *whole* handicraft, on the other hand doing his detail work so much better; and thus the process is converted into a division of the whole operation into its component parts. (Pp. 318, 319.)

(2) Or many craftsmen doing the same or similar work are united in the same factory, and the individual operations, instead of being performed successively by one worker, are gradually separated and done simultaneously by several workers (needles, etc.). Instead of being the work of one craftsman, the product is now the work of a union of craftsmen, each of whom performs only a detail operation. (Pp. 319, 320.)

In both cases its result is a *production mechanism whose organs are human beings*. The work retains a *handicraft nature*; each detail process through which the product goes must be performable *by hand*; hence any *really scientific analysis of the production process is excluded*. Each individual worker is completely chained to a detail function *because* of its handicraft nature. (P. 321.)

In this way labour is saved, as compared to the craftsman, and this is increased still more by transmission to succeeding generations. Thus the division of labour in manufacture corresponds to the tendency of former societies to make a trade hereditary. Castes, guilds. (P. 322.)

Subdivision of tools through adaptation to the various partial operations—500 kinds of hammers in Birmingham. (Pp. 323-24.)

Manufacture, considered from the standpoint of its *total* mechanism, has two aspects: either merely mechanical assembly of independent detail products (watch), or a series of related processes in *one* workshop (needle).

In manufacture, each group of workers supplies another with its

raw material. Hence the basic condition is that each group **produces** *a given quantum in a given time*; thus a continuity, regularity, uniformity and intensity of labour of quite a different kind are created than in co-operation proper. *Thus here we have the* **technological** *law of the* **production process:** *that the labour be socially necessary labour.* (P. 329.)

The inequality of the time required for the individual operations stipulates that the different groups of workers be of different *size* and number (in type founding: four founders and two breakers to one rubber). Thus manufacture sets up a mathematically fixed ratio for the quantitative extent of the separate organs of the collective worker, and production can be expanded only by employing an additional multiple of the whole group. Moreover, only after a definite level of production has been reached does it pay to make certain functions independent: supervision, transporting the products from place to place, etc. (Pp. 329, 330.)

Combination of various manufactures into a united manufacture also occurs, but as yet it always lacks real technological unity, which arises only with machinery. (P. 331.)

Machines appeared in manufacture at an early date—sporadically—grain and stamping mills, etc., but only as something subordinate. The chief machinery of manufacture is the *combined collective worker,* who possesses a much higher degree of perfection than the old individual craft worker, and in whom all the imperfections, such as are often necessarily developed in the detail worker, appear as perfection. (P. 333.) Manufacture evolves differences among these detail workers, SKILLED and UNSKILLED, and even a complete hierarchy of workers. (P. 334.)

Division of labour: 1) general (into agriculture, industry, shipping, etc.); 2) particular (into species and subspecies); 3) in detail (in the workshop). The social division of labour also develops from different starting points. 1) Within the family and the tribe the natural division of labour according to sex and age, plus slavery through violence against neighbours, which extends it. (P. 335.) 2) Different communities according to location, climate, and level of culture, turn out different products which are *exchanged where these communities come in contact.* (P. 49.) Exchange with strange communities is then one of the chief means of breaking off the natural association of the community itself through further development of the natural division of labour. (P. 336.)

Division of labour in manufacture thus presupposes a certain degree of development of the social division of labour; on the other hand, it develops the latter further—as in the territorial division of labour. (Pp. 337, 338.)

For all that, there is always this difference between social division of labour and division of labour in manufacture that the former necessarily produces *commodities,* whereas in the latter the detail worker does *not* produce commodities. Hence concentration and organisation in the latter, scattering and disorder of competition in the former. (Pp. 339, 341.)

Earlier organisation of the Indian communities. (Pp. 341, 342.) The guilds. (Pp. 343-44.) Whereas in all these there exists division of labour in *society,* the division of labour in manufacture is a *specific creation of the capitalist mode of production.*

As in co-operation, the functioning working body is a *form of existence of capital* in manufacture as well. Hence the productive power arising from the combination of labours appears as the *productive power of capital.* But whereas co-operation leaves the individual's mode of working on the whole unchanged, manufacture revolutionises it, *cripples* the worker; unable to make a product independently, he is now a mere *appendage* of the capitalist's workshop. The intellectual faculties of labour disappear as far as the many are concerned, to expand in scope for the one. It is a result of the division of labour in manufacture that the labourers *are confronted* with the intellectual faculties of the labour process as *the property of another and as a ruling power.* This process of separation, which begins as early as co-operation and develops in manufacture, is completed in large-scale industry, which separates science as an independent productive force from labour and presses it into the service of capital. (P. 346.)

Illustrative quotations.[187] (P. 347.)

Manufacture, in one aspect a definite organisation of social labour, is in another only a particular *method of begetting relative surplus-value.* (P. 350.) Historical significance precisely in this.

Obstacles to the development of manufacture even during its classical period are limitation of the number of unskilled workers owing to the predominance of the skilled; limitation of the work of women and children owing to the men's resistance; the insistence on the LAWS OF APPRENTICESHIP up to recent times, even where superfluous; continual insubordination of the workers, since the collective worker as yet possesses no framework independent of the workers; emigration of the workers. (Pp. 353, 354.)

Besides, manufacture itself was unable to revolutionise the whole of social production or even merely to dominate it. Its narrow technical basis came into conflict with the production

requirements that it had itself created. The machine became necessary, and manufacture had already learned how to make it. (P. 355.)

4. MACHINERY AND LARGE-SCALE INDUSTRY

a. Machinery as Such

The revolution in the mode of production, starting in manufacture with labour-*power,* here starts with the *instruments* of labour.

All fully-developed machinery consists of 1) the motor mechanism; 2) the transmitting mechanism; 3) the machine tool. (P. 357.) The industrial revolution of the eighteenth century started with the *machine tool.* What characterises it is that the tool—in a more or less modified form—is transferred from man to the machine, and is worked by the machine under the operation of man. At the outset it is immaterial whether the motive *power* is human or a natural one. The specific difference is that man *uses* only his *own organs while the machine can, within certain limits, employ as many tools as demanded.* (Spinning-wheel, 1 spindle; jenny, 12 to 18 spindles.)

So far, in the spinning-wheel it is not the treadle, the power, but the spindle that is affected by the [industrial] revolution—at the beginning man is still motive power and tender at the same time everywhere. The revolution of the machine tool, on the contrary, first made the perfecting of the steam-engine a necessity, and then also carried it out. (Pp. 359-60; also pp. 361-62.)

Two kinds of machinery in large-scale industry: either (1) co-operation of similar machines (POWER-LOOM, ENVELOPE-MACHINE, which combines the work of a number of detail workers through the combination of various tools), in this case technological unity already, through the transmission and the motive power; or 2) machine system, combination of different detail machines (spinning-mill). The natural basis for this is the division of labour in manufacture. But at once an essential difference. In manufacture every detail process had to be adapted to the *labourer;* this is no longer necessary here—the labour process can be *objectively* dissected into its component parts, which are then left to science, or to experience based upon it, to be mastered by machines.—Here the quantitative ratio of the several groups of workers is repeated as the ratio of the several groups of machines. (Pp. 363-66.)

In both cases the factory constitutes a *huge automaton* (moreover perfected to that stage only recently) and this is its adequate form.

(P. 367.) And its most perfect form is the *machine-building automaton,* which abolished the handicraft and manufacture foundation of large-scale industry, and thus first provided the consummate form of machinery. (Pp. 369-72.)

Connection between the revolutionising of the various branches up to the means of communication. (P. 370.)

In manufacture the combination of workers is subjective. Here there is an objective *mechanical* production organism, which the worker finds ready at hand, and which can function only through collective labour; the co-operative character of the labour process is now a *technological necessity.* (P. 372.)

The productive forces arising from co-operation and the division of labour cost capital nothing; the natural forces: steam, water, also cost nothing. Neither do the forces discovered by science. But the latter can be realised only with suitable apparatus, which can be constructed only at great expense; likewise the machine tools cost much more than the old tools. But these machines have a much longer life and a much greater field of production than the tool; they therefore transfer a much smaller portion of value, comparatively, to the product than a tool, and hence the *gratuitous service* performed by the machine (which does *not* re-appear in the value of the product) is much greater than in the case of the tool. (Pp. 374, 375, 376.)

Reduction in cost through concentration of production is much greater in large-scale industry than in manufacture. (P. 375.)

The prices of finished goods prove how much the machine has cheapened production, and that the portion of value due to the instruments of labour grows relatively but declines absolutely. The productivity of the machine is measured by the extent to which it *replaces human labour-power.* Examples. (Pp. 377-79.)

Assumed a steam plough takes the place of 150 workers getting an annual wage of £3,000, this annual wage does *not* represent *all the labour performed by them,* but only the *necessary* labour—however, they also perform *surplus-labour* in addition. If the steam plough costs £3,000, however, that is the expression in money of *all* labour embodied in it. Thus, if the machine costs as much as the labour-power it replaces, the human labour embodied in it is always *much less* than that which it replaces. (P. 380.)

As *a means of cheapening* production, the machine must *cost less labour than it replaces.* But *for capital its value* must be less than *that of the labour-power supplanted by it.* Therefore, machines that do not pay in England may pay in America (e.g., for stonebreaking). Hence, as a result of certain legal restrictions, machines that

formerly did not pay for capital may suddenly make their appearance. (Pp. 380-81.)

b. Appropriation of Labour-Power Through Machinery

Since machinery itself contains the power driving it, muscular power drops in value.—*Labour of women and children*; immediate *increase in the number of wage-labourers* through the enrolling of members of the family who had not previously worked for wages. Thus *the value of the man's labour-power is spread over the labour-power of the whole family,* i.e., *depreciated.*—Now four persons must perform not only labour, but also *surplus-labour* for capital that one family may live, where only one did previously. Thus the *degree* of exploitation is increased together with the *material* of exploitation. (P. 383.)

Formerly the sale and purchase of labour-power was a relation between *free persons*; now *minors or children* are bought; the worker now sells wife and child—he becomes a *slave-dealer.* Examples (pp. 384-85).

Physical deterioration—mortality of workers' children (p. 386), in industrialised agriculture as well. (GANG SYSTEM.[a]) (P. 387.)

Moral degradation. (P. 389.) Educational clauses and manufacturers' resistance to them. (P. 390.)

The entrance of women and children into the factory finally breaks down the *male worker's resistance to the despotism of capital.* (P. 391.)

If machinery *shortens* the labour-time necessary to produce an object, in the hands of capital it becomes the most powerful weapon for *lengthening* the working day *far beyond its normal bounds.* It creates, on the one hand, *new conditions* that enable capital to do so, and on the other, *new motives* for so doing.

Machinery is capable of perpetual motion, and limited only by the weakness and limitations of the assisting human labour-power. The machine that is worn out in seven and a half years, working twenty hours daily, absorbs *just as much surplus-labour* for the capitalist, **but in half the time,** as another that is worn out in fifteen years working ten hours daily. (P. 393.)

The moral depreciation of the machine—BY SUPERSEDING—is in this way risked still less. (P. 394.)

[a] Here means women and adolescents working in a group for wages.—*Ed.*

Moreover, a larger quantity of labour is absorbed *without increasing the investments* in buildings and machines; thus not only does surplus-value grow with a lengthened working day, but the outlay required to obtain it diminishes relatively. This is more important in so far as the proportion of *fixed* capital greatly predominates, as is the case in large-scale industry. (P. 395.)

During the first period of machinery, when it possesses a *monopoly* character, profits are enormous, and hence the thirst for more, for boundless lengthening of the working day. With the general introduction of machinery this monopoly profit vanishes, and the law asserts itself that surplus-value arises, not from the labour *supplanted* by the machine, but from the labour *employed* by it, that is, from the variable capital. But under machine production the latter is necessarily *reduced* by the large outlays. Thus there is an inherent contradiction in the capitalist employment of machinery: for a given mass of capital it *increases* one factor of surplus-value, its *rate,* by *reducing* the other, the *number of workers.* As soon as the value of a machine-made commodity becomes the regulating social value of that commodity, this contradiction comes to light, and *again drives towards lengthening the working day.* (P. 397.)

But at the same time machinery, by setting free supplanted workers, as well as by enrolling women and children, produces a *surplus working population,* which must let capital dictate the law to it. Hence machinery overthrows all the moral and natural bounds of the working day. Hence the paradox that the most powerful means of shortening labour-time is the most infallible means of converting the whole lifetime of the worker and of his family into available labour-time for expanding the value of capital. (P. 398.)

We have already seen how the social reaction occurs here through the fixing of the normal working day; on this basis there now develops the *intensification of labour.* (P. 399.)

At the beginning, with the speeding-up of the machine, the intensity of labour increases simultaneously with the lengthening of labour-time. But soon the point is reached where the two exclude each other. It is different, however, when labour-time is restricted. Intensity can now grow; in 10 hours as much work can be done as ordinarily in 12 or more, and now the more intensive working-day counts as *raised to a higher power,* and labour is measured not merely by its length of time, but by its intensity. (P. 400.) Thus, in 5 hours of necessary and 5 hours of surplus-labour, the same surplus-value can be attained as in 6

hours of necessary and 6 hours of surplus-labour at lower intensity. (P. 400.)

How is labour intensified? In **manufacture** it has been proved (note 159, p. 401), pottery, for instance, etc., that *mere shortening of the working day* is sufficient to raise productivity enormously. In *machine labour* this was far more doubtful. But R. Gardner's proof. (Pp. 401-02.)[188]

As soon as the shortened working day becomes *law,* the machine becomes a means of squeezing more intensive labour out of the worker, either by GREATER SPEED OR LESS HANDS IN RELATION TO MACHINE. Examples. (Pp. 403-07.) Evidence that enrichment and expansion of the factory grew simultaneously therewith. (Pp. 407-09.)

c. The Whole Factory in Its Classical Form

In the factory the *machine* takes care of the proper manipulation of the tool; thus the qualitative differences of labour developed in manufacture are here abolished; labour is *levelled out* more and more; at most, difference in age and sex. The division of labour is here a *distribution of workers among the specialised machines.* Here division is only between *principal workers,* who are really employed at the tool, and *FEEDERS* (this is true only for the self-acting mule, scarcely so for the THROSTLE, and still less for the CORRECTED POWER LOOM), in addition, supervisors, ENGINEERS and STOCKERS, MECHANICS, JOINERS, etc., a class only outwardly aggregated to the factory. (Pp. 411-12.)

The necessity for adapting the worker to the continuous motion of an automaton requires training from childhood, but by no means that a worker be any longer chained to one detail function all his life, as in manufacture. Change of personnel can take place at the same machine (RELAY SYSTEM), and because of the slight effort required to learn, the workers can be shifted from one kind of machine to another. The work of the attendants is either very simple or is taken over more and more by the machine. None the less, at the beginning, the division of labour dictated by manufacture persists traditionally, and itself becomes a greater weapon for exploitation by capital. The worker becomes a lifelong part of a detail machine. (P. 413.)

All capitalist production, in so far as it is not only a labour process but also a process for expanding the value of capital, has this in common that it is not the worker who makes use of the

conditions of labour, but *vice versa, the conditions of labour which make use of the worker*; but only through machinery does this perversion acquire technological, *palpable reality.* Through its conversion into an *automaton,* the instrument of labour *itself confronts the labourer,* during the labour process, *as capital,* as dead labour that dominates and sucks dry the living labour-power. Ditto the intellectual faculties of the production process as the power of capital over labour... The detail skill of the individual, pumped-out machine operator vanishes as a tiny secondary thing alongside science, the tremendous natural forces and social mass labour which are embodied in the machine system. (Pp. 414, 415.)

Barracks-like discipline of the factory, factory code. (P. 416.)

Material conditions of the factory. (Pp. 417-18.)

c or d. The Workers' Struggle Against the Factory System and Machinery

This struggle, existing since the origin of the capitalist relationship, first occurs here as a revolt against the machine as the material basis of the capitalist mode of production. Ribbon looms. (P. 419.) Luddites.[189] (P. 420.) Only later do the workers distinguish between the material means of production and the social form of their exploitation.

In manufacture the improved division of labour was rather a means of *virtually* replacing the labourers. (P. 421.) (Digression on agriculture, displacement p. 422.) But in machinery the worker is *actually displaced*; the machine competes with him directly. HAND-LOOM WEAVERS. (P. 423.) Likewise India. (P. 424.) This effect is permanent, since machinery continually seizes upon new fields of production. The self-dependent and estranged form that capitalist production gives the instrument of labour as against the labourer is developed by *machinery* into a thorough *antagonism*—hence now the labourer's revolt first against the instrument of labour. (P. 424.)

Details of the displacement of workers by machines. (Pp. 425, 426.) The machine as a means of breaking the workers' resistance to capital by displacing them. (Pp. 427, 428.)

Liberal political economy maintains that the machine, displacing workers, at the same time releases capital that can employ these workers. On the contrary, however, every introduction of machines *ties up* capital, diminishes its *variable* and increases its constant components; it can, therefore, merely *restrict* capital's

capacity for employment. In fact—and this is what these apologists[190] also mean—in this manner not capital is set free; but *the means of subsistence* of the displaced workers are set free; *the workers are set free from the means of subsistence,* which the apologist expresses by saying that *the machine sets free means of subsistence for the worker.* (Pp. 429-30.)

This further developed (*very good for "Fortnightly"*[191]) (pp. 431-32): the antagonisms inseparable from the capitalist employment of machinery *do not exist for the apologists, because they do not arise out of machinery as such, but out of its capitalist employment.* (P. 432.)

Expansion of production by machines directly and indirectly, and thus *possible* increase in number of workers hitherto employed: miners, slaves IN COTTON STATES, etc. On the other hand, displacement of Scotch and Irish by sheep to suit the requirements of the woollen factories. (Pp. 433, 434.)

Machine production carries the *social* division of labour much further than manufacture did. (P. 435.)

c″ or e. Machinery and Surplus-Value

The first result of machinery: *increasing surplus-value* together with the mass of products in which it is embodied and on which the capitalist class and its hangers-on live, thus increasing the number of capitalists; new luxury wants together with the means of satisfying them. *Luxury production* grows. Likewise *means of communication* (which, however, absorb only little labour-power in the more developed countries) (evidence p. 436)—finally, the *servant class* grows, the *modern domestic slaves,* whose material is supplied by the *releasing* [of workers]. (P. 437.) **Statistics.**

Economic contradictions. (P. 437.)

Possibility of *absolute increase* in the mass of labour in one branch of business owing to machines, and the modalities of this process. (Pp. 439-40.)

Enormous elasticity, capacity for sudden extension by leaps of large-scale industry at a high degree of development. (P. 441.) Reaction upon the countries producing raw materials. Emigration owing to release of workers. International division of labour of the industrial and agricultural countries—periodicity of crises and prosperity. (P. 442.) Workers thrown back and forth in this process of expansion. (P. 444.)

Historical data on this. (Pp. 445-49.)

Displacement of co-operation and manufacture by machinery (and the intermediate stages, pp. 450-51). Also change in branches of industry not run on factory lines but in the spirit of large-scale industry—domestic industry, an outside department of the factory. (P. 452.) In domestic industry and modern manufacture, exploitation still more shameless than in the factory proper. (P. 453.) Examples: London print-shops (p. 453), book-binding, rag-sorting (p. 454), brick-making (p. 455). Modern manufacture in general. (P. 456.) *Domestic industry*: *lace making* (pp. 457-59), *straw plaiting* (p. 460). Conversion into factory production with achievement of ultimate limit of exploitability: *WEARING APPAREL* by the *sewing-machine* (pp. 462-66). Speeding-up of this conversion by extension of the compulsory Factory Acts, which put an end to the old routine based upon unlimited exploitation. (P. 466.) *Examples*: *pottery* (p. 467), lucifer matches (p. 468). Furthermore, effect of the Factory Acts upon irregular work, owing to the workers' irregular habits, as well as to seasons and fashions. (P. 470.) Overwork alongside idleness, owing to the seasons, in domestic industry and manufacture. (P. 471.)

Sanitary clauses of the Factory Acts. (P. 473.) Educational clauses. (P. 476.)

Discharge of workers merely because of *age,* as soon as they are grown up and are no longer fitted for the work, and can no longer live on a child's wages, while at the same time they have learned no new trade. (P. 477.)

Dissolution of the MYSTERIES and of the traditional ossification of manufacture and handicraft, by large-scale industry, which converts the production process into a conscious application of natural forces. Hence it alone is *revolutionary,* as against all earlier forms. (P. 479.) But as a capitalist form it lets the ossified division of labour *persist for the worker,* and since it daily revolutionises the former's basis, it ruins the worker. On the other hand, in this very thing, in this necessary change of activities of one and the same worker lies the requirement of his being as versatile as possible and the possibilities of the social revolution. (Pp. 480-81.)

Need for extending factory legislation to all branches not operated on factory lines. (P. 482 ff.) Act of 1867. (P. 485.) Mines (note, p. 486 ff.).

Concentrating effect of the Factory Acts; generalisation of factory production and thus of the classical form of capitalist production; accentuation of its inherent contradictions, maturing

of the elements for overturning the old society, and of the elements for forming the new. (Pp. 488-93.)

Agriculture. Here release of workers by machines is even more acute. Replacement of the peasant by the wage-labourer. Destruction of rural domestic manufacture. Accentuation of the antithesis between town and country. Dispersion and weakening of the rural labourers, whereas the urban workers become concentrated; hence wages of agricultural workers are reduced down to a minimum. At the same time robbing of *the soil*: the acme of the capitalist mode of production is the undermining of the *sources of all wealth*: the soil and the labourer. (Pp. 493-96.)[a]

[a] Here follows the title of the next chapter: Chapter V.—Further Investigations of the Production of Surplus-Value, and the manuscript breaks off.— *Ed.*

FROM THE PREPARATORY MATERIALS