

**Karl Marx,  
*Capital, Volume I,*  
Chapter 10,**

**Section 4  
Day and Night Work. The Relay System**

Constant capital, the means of production, considered from the standpoint of the creation of surplus-value, only exist to absorb labour, and with every drop of labour a proportional quantity of surplus-labour. While they fail to do this, their mere existence causes a relative loss to the capitalist, for they represent during the time they lie fallow, a useless advance of capital. And this loss becomes positive and absolute as soon as the intermission of their employment necessitates additional outlay at the recommencement of work. The prolongation of the working-day beyond the limits of the natural day, into the night, only acts as a palliative. It quenches only in a slight degree the vampire thirst for the living blood of labour. To appropriate labour during all the 24 hours of the day is, therefore, the inherent tendency of capitalist production. But as it is physically impossible to exploit the same individual labour-power constantly during the night as well as the day, to overcome this physical hindrance, an alternation becomes necessary between the workpeople whose powers are exhausted by day, and those who are used up by night. This alternation may be effected in various ways; e.g., it may be so arranged that part of the workers are one week employed on day-work, the next week on night-work. It is well known that this relay system, this alternation of two sets of workers, held full sway in the full-blooded youth-time of the English cotton manufacture, and that at the present time it still flourishes, among others, in the cotton spinning of the Moscow district. This 24 hours' process of production exists to-day as a system in many of the branches of industry of Great Britain that are still "free," in the blast-furnaces, forges, plate-rolling mills, and other metallurgical establishments in England, Wales, and Scotland. The working-time here includes, besides the 24 hours of the 6 working-days, a great part also of the 24 hours of Sunday. The workers consist of men and women, adults and children of both sexes. The ages of the children and young persons run through all intermediate grades, from 8 (in some cases from 6) to 18. [60]

In some branches of industry, the girls and women work through the night together with the males. [61]

Placing on one side the generally injurious influence of night-labour, [62] the duration of the process of production, unbroken during the 24 hours, offers very welcome opportunities of exceeding the limits of the normal working-day, e.g., in the branches of industry already mentioned, which are of an exceedingly fatiguing nature; the official working-day means for each worker usually 12 hours by night or day. But the over-work beyond this amount is in many cases, to use the words of the English official report, "truly fearful." [63]

"It is impossible," the report continues, "for any mind to realise the amount of work described in the following passages as being performed by boys of from 9 to 12 years of age ... without coming irresistibly to the conclusion that such abuses of the power of parents and of employers can no longer be allowed to exist." [64]

"The practice of boys working at all by day and night turns either in the usual course of things, or at pressing times, seems inevitably to open the door to their not unfrequently working unduly long hours. These hours are, indeed, in some cases,

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not only cruelly but even incredibly long for children. Amongst a number of boys it will, of course, not unfrequently happen that one or more are from some cause absent. When this happens, their place is made up by one or more boys, who work in the other turn. That this is a well understood system is plain ... from the answer of the manager of some large rolling-mills, who, when I asked him how the place of the boys absent from their turn was made up, 'I daresay, sir, you know that as well as I do,' and admitted the fact." [65]

"At a rolling-mill where the proper hours were from 6 a.m. to 5 1/2 p.m., a boy worked about four nights every week till 8 1/2 p.m. at least ... and this for six months. Another, at 9 years old, sometimes made three 12-hour shifts running, and, when 10, has made two days and two nights running." A third, "now 10 ... worked from 6 a.m. till 12 p.m. three nights, and till 9 p.m. the other nights." "Another, now 13, ... worked from 6 p.m. till 12 noon next day, for a week together, and sometimes for three shifts together, e.g., from Monday morning till Tuesday night." "Another, now 12, has worked in an iron foundry at Stavely from 6 a.m. till 12 p.m. for a fortnight on end; could not do it any more." "George Allinsworth, age 9, came here as cellar-boy last Friday; next morning we had to begin at 3, so I stopped here all night. Live five miles off. Slept on the floor of the furnace, over head, with an apron under me, and a bit of a jacket over me. The two other days I have been here at 6 a.m. Aye! it is hot in here. Before I came here I was nearly a year at the same work at some works in the country. Began there, too, at 3 on Saturday morning — always did, but was very gain [near] home, and could sleep at home. Other days I began at 6 in the morning, and gi'en over at 6 or 7 in the evening," &c. [66]

Let us now hear how capital itself regards this 24 hours' system. The extreme forms of the system, its abuse in the "cruel and incredible" extension of the working-day are naturally passed over in silence. Capital only speaks of the system in its "normal" form.

Messrs. Naylor & Vickers, steel manufacturers, who employ between 600 and 700 persons, among whom only 10 per cent are under 18, and of those, only 20 boys under 18 work in night sets, thus express themselves: "The boys do not suffer from the heat. The temperature is probably from 86° to 90°.... At the forges and in the rolling mills the hands work night and day, in relays, but all the other parts of the work are day-work, *i.e.*, from 6 a.m. to 6 p.m. In the forge the hours are from 12 to 12. Some of the hands always work in the night, without any alternation of day and night work.... We do not find any difference in the health of those who work regularly by night and those who work by day, and probably people can sleep better if they have the same period of rest than if it is changed.... About 20 of the boys under the age of 18 work in the night sets.... We could not well do without lads under 18 working by night. The objection would be the increase in the cost of production.... Skilled hands and the heads in every department are difficult to get, but of lads we could get any number.... But from the small proportion of boys that we employ, the subject (*i.e.*, of restrictions on night-work) is of little importance or interest to us." [67]

Mr. J. Ellis, one of the firm of Messrs. John Brown & Co., steel and iron works, employing about 3,000 men and boys, part of whose operations, namely, iron and heavier steel work, goes on night and day by relays, states "that in the heavier steel work one or two boys are employed to a score or two men." Their concern employs upwards of 500 boys under 18, of whom about 1/3 or 170 are under the age of 13. With reference to the proposed alteration of the law, Mr. Ellis says: "I do not think it would be very objectionable to require that no person under the age of 18 should work more than 12 hours in the 24. But we do not think that any line could be drawn over the age of 12, at which boys could be dispensed with for night-work. But we would sooner be prevented from employing boys under the age of 13, or

even so high as 14, at all, than not be allowed to employ boys that we do have at night. Those boys who work in the day sets must take their turn in the night sets also. because the men could not work in the night sets only; it would ruin their health.... We think, however, that night-work in alternate weeks is no harm. (Messrs. Naylor & Vickers, on the other hand, in conformity with the interest of their business, considered that periodically changed night-labour might possibly do more harm than continual night-labour.) We find the men who do it, as well as the others who do other work only by day.... Our objections to not allowing boys under 18 to work at night, would be on account of the increase of expense, but this is the only reason. (What cynical naïveté!) We think that the increase would be more than the trade, with due regard to its being successfully carried out, could fairly bear. (What mealy-mouthed phraseology!) labour is scarce here, and might fall short if there were such a regulation." (*i.e.*, Ellis Brown & Co. might fall into the fatal perplexity of being obliged to pay labour-power its full value.) [68]

The "Cyclops Steel and Iron Works," of Messrs. Cammell & Co., are concocted on the same large scale as those of the above-mentioned John Brown & Co. The managing director had handed in his evidence to the Government Commissioner, Mr. White, in writing. Later he found it convenient to suppress the MS. when it had been returned to him for revision. Mr. White, however, has a good memory. He remembered quite clearly that for the Messrs. Cyclops the forbidding of the night-labour of children and young persons "would be impossible, it would be tantamount to stopping their works," and yet their business employs little more than 6% of boys under 18, and less than 1% under 13. [69]

On the same subject Mr. E. F. Sanderson, of the firm of Sanderson, Bros., & Co., steel rolling-mills and forges, Attercliffe, says: "Great difficulty would be caused by preventing boys under 18 from working at night. The chief would be the increase of cost from employing men instead of boys. I cannot say what this would be, but probably it would not be enough to enable the manufacturers to raise the price of steel, and consequently it would fall on them, as of course the men (what queer-headed folk!) would refuse to pay it." Mr. Sanderson does not know how much he pays the children, but "perhaps the younger boys get from 4s. to 5s. a week.... The boys' work is of a kind for which the strength of the boys is generally ('generally,' of course not always) quite sufficient, and consequently there would be no gain in the greater strength of the men to counterbalance the loss, or it would be only in the few cases in which the metal is heavy. The men would not like so well not to have boys under them, as men would be less obedient. Besides, boys must begin young to learn the trade. Leaving day-work alone open to boys would not answer this purpose." And why not? Why could not boys learn their handicraft in the day-time? Your reason? "Owing to the men working days and nights in alternate weeks, the men would be separated half the time from their boys, and would lose half the profit which they make from them. The training which they give to an apprentice is considered as part of the return for the boys' labour, and thus enables the man to get it at a cheaper rate. Each man would want half of this profit." In other words, Messrs. Sanderson would have to pay part of the wages of the adult men out of their own pockets instead of by the night-work of the boys. Messrs. Sanderson's profit would thus fall to some extent, and this is the good Sandersonian reason why boys cannot learn their handicraft in the day. [70] In addition to this, it would throw night-labour on those who worked instead of the boys, which they would not be able to stand. The difficulties in fact would be so great that they would very likely lead to the giving up of night-work altogether, and "as far as the work itself is concerned," says E. F. Sanderson, "this would suit as well, but — " But Messrs. Sanderson have something else to make besides steel. Steel-making is simply a pretext for surplus-value making. The smelting furnaces, rolling-mills, &c., the buildings, machinery, iron, coal, &c., have something more

to do than transform themselves into steel. They are there to absorb surplus-labour, and naturally absorb more in 24 hours than in 12. In fact they give, by grace of God and law, the Sandersons a cheque on the working-time of a certain number of hands for all the 24 hours of the day, and they lose their character as capital, are therefore a pure loss for the Sandersons, as soon as their function of absorbing labour is interrupted. "But then there would be the loss from so much expensive machinery, lying idle half the time, and to get through the amount of work which we are able to do on the present system, we should have to double our premises and plant, which would double the outlay." But why should these Sandersons pretend to a privilege not enjoyed by the other capitalists who only work during the day, and whose buildings, machinery, raw material, therefore lie "idle" during the night? E. F. Sanderson answers in the name of all the Sandersons: "It is true that there is this loss from machinery lying idle in those manufactories in which work only goes on by day. But the use of furnaces would involve a further loss in our case. If they were kept up there would be a waste of fuel (instead of, as now, a waste of the living substance of the workers), and if they were not, there would be loss of time in laying the fires and getting the heat up (whilst the loss of sleeping time, even to children of 8 is a gain of working-time for the Sanderson tribe), and the furnaces themselves would suffer from the changes of temperature." (Whilst those same furnaces suffer nothing from the day and night change of labour.) [71]

### Footnotes

[60] Children's Employment Commission. *Third Report*. London, 1864, pp. iv., v., vi.

[61] "Both in Staffordshire and in South Wales young girls and women are employed on the pit banks and on the coke heaps, not only by day but also by night. This practice has been often noticed in Reports presented to Parliament, as being attended with great and notorious evils. These females employed with the men, hardly distinguished from them in their dress, and begrimed with dirt and smoke, are exposed to the deterioration of character, arising from the loss of self-respect, which can hardly fail to follow from their unfeminine occupation." (l. c., 194, p. xxvi. Cf. *Fourth Report* (1865), 61, p. xiii.) It is the same in glass-works.

[62] A steel manufacturer who employs children in night-labour remarked: "It seems but natural that boys who work at night cannot sleep and get proper rest by day, but will be running about." (l. c., *Fourth Report*, 63, p. xiii.) On the importance of sunlight for the maintenance and growth of the body, a physician writes: "Light also acts upon the tissues of the body directly in hardening them and supporting their elasticity. The muscles of animals, when they are deprived of a proper amount of light, become soft and inelastic, the nervous power loses its tone from defective stimulation, and the elaboration of all growth seems to be perverted.... In the case of children, constant access to plenty of light during the day, and to the direct rays of the sun for a part of it, is most essential to health. Light assists in the elaboration of good plastic blood, and hardens the fibre after it has been laid down. It also acts as a stimulus upon the organs of sight, and by this means brings about more activity in the various cerebral functions." Dr. W. Strange, Senior Physician of the Worcester General Hospital, from whose work on "Health" (1864) this passage is taken, writes in a letter to Mr. White, one of the commissioners: "I have had opportunities formerly, when in Lancashire, of observing the effects of nightwork upon children, and I have no hesitation in saying, contrary to what some employers were fond of asserting, those children who were subjected to it soon suffered in their health." (l. c., 284., p. 55.) That such a question should furnish the material of serious controversy, shows plainly how capitalist production acts on the brain-functions of capitalists and their retainers.

[63] l. c., 57, p. xii.

[64] l. c.. *Fourth Report* (1865). 58. p. xii.

[65] l. c.

[66] l. c., p. xiii. The degree of culture of these "labour-powers" must naturally be such as appears in the following dialogues with one of the commissioners: Jeremiah Haynes, age 12 — "Four times four is 8; 4 fours are 16. A king is him that has all the money and gold. We have a king (told it is a Queen), they call her the Princess Alexandra. Told that she married the Queen's son. The Queen's son is the Princess Alexandra. A Princess is a man." William Turner, age 12 — "Don't live in England. Think it is a country, but didn't know before." John

Morris, age 14 — "Have heard say that God made the world, and that all the people was drowned but one, heard say that one was a little bird." William Smith age 15 — "God made man, man made woman." Edward Taylor, age 15 — "Do not know of London." Henry Mathewman, age 17 — "Had been to chapel, but missed a good many times lately. One name that they preached about was Jesus Christ, but I cannot say any others, and I cannot tell anything about him. He was not killed, but died like other people. He was not the same as other people in some ways, because he was religious in some ways and others isn't." (l.c., p. xv.) "The devil is a good person. I don't know where he lives." "Christ was a wicked man." "This girl spelt God as dog, and did not know the name of the queen." ("Ch. Employment Comm. V. Report, 1866 " p. 55, n. 278.) The same system obtains in the glass and paper works as in the metallurgical, already cited. In the paper factories, where the paper is made by machinery, night-work is the rule for all processes, except rag-sorting. In some cases night-work, by relays, is carried on incessantly through the whole week, usually from Sunday night until midnight of the following Saturday. Those who are on day-work work 5 days of 12, and 1 day of 18 hours; those on night-work 5 nights of 12, and 1 of 6 hours in each week. In other cases each set works 24 hours consecutively on alternate days, one set working 6 hours on Monday, and 18 on Saturday to make up the 24 hours. In other cases an intermediate system prevails, by which all employed on the paper-making machinery work 15 or 16 hours every day in the week. This system, says Commissioner Lord, "seems to combine all the evils of both the 12 hours' and the 24 hours' relays." Children under 13, young persons under 18, and women, work under this night system. Sometimes under the 12 hours' system they are obliged, on account of the non-appearance of those that ought to relieve them, to work a double turn of 24 hours. The evidence proves that boys and girls very often work overtime, which, not unfrequently, extends to 24 or even 36 hours of uninterrupted toil. In the continuous and unvarying process of glazing are found girls of 12 who work the whole month 14 hours a day, "without any regular relief or cessation beyond 2 or, at most, 3 breaks of half an hour each for meals." In some mills, where regular night-work has been entirely given up, over-work goes on to a terrible extent, "and that often in the dirtiest, and in the hottest, and in the most monotonous of the various processes." ("Ch. Employment Comm. Report IV., 1865," p. xxxviii, and xxxix.)

[67] *Fourth Report, &c.* 1865, 79, p. xvi.

[68] l.c., 80. p. xvi.

[69] l.c., 82. p. xvii.

[70] In our reflecting and reasoning age a man is not worth much who cannot give a good reason for everything, no matter how bad or how crazy. Everything in the world that has been done wrong has been done wrong for the very best of reasons. (Hegel, l.c., p. 249 )

[71] l.c., 85, p. xvii. To similar tender scruples of the glass manufacturers that regular meal-times for the children are impossible because as a consequence a certain quantity of heat, radiated by the furnaces, would be "a pure loss" or "wasted," Commissioner White makes answer. His answer is unlike that of Ure, Senior, &c., and their puny German plagiarists a la Roscher who are touched by the "abstinence," "self-denial," "saving," of the capitalists in the expenditure of their gold, and by their Timur-Tamerlanish prodigality of human life! "A certain amount of heat beyond what is usual at present might also be going to waste, if meal-times were secured in these cases, but it seems likely not equal in money-value to the waste of animal power now going on in glass-houses throughout the kingdom from growing boys not having enough quiet time to eat their meals at ease, with a little rest afterwards for digestion." (l.c., p. xiv.) And this in the year of progress 1865! Without considering the expenditure of strength in lifting and carrying, such a child, in the sheds where bottle and flint glass are made, walks during the performance of his work 15-20 miles in every 6 hours! And the work often lasts 14 or 15 hours! In many of these glass works, as in the Moscow spinning mills, the system of 6 hours' relays is in force. "During the working part of the week six hours is the utmost unbroken period ever attained at any one time for rest, and out of this has to come the time spent in coming and going to and from work, washing, dressing, and meals, leaving a very short period indeed for rest, and none for fresh air and play, unless at the expense of the sleep necessary for young boys, especially at such hot and fatiguing work.... Even the short sleep is obviously liable to be broken by a boy having to wake himself if it is night, or by the noise, if it is day." Mr. White gives cases where a boy worked 36 consecutive hours; others where boys of 12 drudged on until 2 in the morning, and then slept in the works till 5 a.m. (3 hours!) only to resume their work. "The amount of work," say Tremenheere and Tufnell, who drafted the general report, "done by boys, youths, girls, and women, in the course of their daily or nightly spell of labour, is certainly extraordinary." (l.c., xliii. and xliv.) Meanwhile, late by night, self-denying Mr. Glass-Capital, primed with port-wine, reels out of his club homeward droning out idiotically. "Britons never, never shall be slaves!"

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