

Frankenstein

by

Mary Shelley



Mary Shelley



- Mary Shelley was born on August 30, 1797, in London.
- She was the daughter of philosopher William Godwin and Mary Wollstonecraft.
- Mary Shelley was taught at home by her father.
- When she was seventeen, Mary eloped to France with Percy Bysshe Shelley.
- Mary and Shelley spent the summer of 1816 in Switzerland, and were neighbors to Lord Byron.
- It was during this time that she began writing *Frankenstein*.
- The writing of *Frankenstein* took place at Villa Diodati on the banks of Lake Geneva



Just a Competition

- In the summer of 1816, Mary, Percy , Byron and Polidori were lodging on the Swiss Alps.
- Unseasonable rain kept them trapped inside their lodgings.
- To pass time Byron decided to make a competition and see who could write the best ghost story.
- Mary won the prize.



Mary and Percy

- From the «Preface» of 1831 to the novel, we understand a lot about the relationship between the two:
- “My husband...was from the first...that I should prove myself **worthy of my parentage,**”
- “He was for ever inciting me to obtain literary reputation”
- “Have you thought of a story? I was asked each morning..(by Shelley)
- “Many and long were the conversations between Lord Byron and Shelley, to which I was a devout but **nearly silent listener.**”
- “At first I thought but of a few pages of a short tale; but Shelley urged me to develop the idea at greater length”.
- “But for his incitement, it would never have taken the form in which it was presented”



The Premise – Creation of Man

- Shelley's story did not come out of nowhere.
- *“They (Shelley and Byron) talked of the experiments of Dr. Darwin... Perhaps a corpse would be re-animated; galvanism had given token of such things: perhaps the component parts of a creature might be manufactured, brought together, and endued with vital warmth.”*
- Scientists and physicians of her time explored life and death through experiments with lower organisms and human anatomical studies.
- Someone attempted to resuscitate drowning victims, and experiments using electricity to restore life to the recently dead.



Plot



- Robert Walton, an explorer, tells how he has met Victor Frankenstein in the Arctic after earlier having seen a 'gigantic figure' crossing the ice.
- Victor tells of his childhood and his caring family, particularly of his love for his foster sister Elizabeth. His mother dies of fever just before he leaves to study at university.
- While at university, Victor's interest in science becomes an obsession. Victor uses dead bodies to experiment on and creates a monster made of body parts. He is immediately disgusted by the thing he has created and abandons it.
- Victor's brother William is murdered and Justine Moritz, a family servant, is executed for it.
- However, Victor believes the Monster is to blame after witnessing it at the scene of the murder.



- The Monster and Victor meet on the Glacier of Montanvert in the Alps. The Monster tells the story of how it has survived and of the time it has spent becoming educated.
- The Monster asks Victor to admit responsibility for his actions and show some sympathy. He also pleads with Victor to build a female companion. Victor agrees.
- Victor finds a remote spot in the Orkneys where he begins to construct the female creature but suddenly, realising the consequences of what he is doing, he tears it to pieces.
- The Monster, who has followed Victor, is enraged and in revenge kills Victor's best friend, Henry Clerval.
- Victor and Elizabeth marry, but Victor finds his new wife dead at the hands of the Monster.
- He vows to hunt the creature down.
- In Walton's last letters, back in the Arctic, Frankenstein dies and the Monster, still miserable, heads off, probably to its own death.





INFLUENCES *AND* LITERARY PARALLELS



- The myth of Prometheus → Frankenstein is an example of overreacher.
- Rousseau → The Monster is a noble savage.
- Locke → The Monster's self-awareness and his education.
- Gothic stories read by Mary and Percy B. Shelley.
- S. T. Coleridge's poem : "*The Rime of the Ancient Mariner*" → both the novel and the poem are stories of a crime against nature.



Frankenstein: The Modern Prometheus

- The full title of Mary Shelley's novel is *Frankenstein; or the Modern Prometheus*.
- So it shouldn't come as a surprise that Mary Shelley was influenced by the Greek Mythology tale of Prometheus.



Prometheus



- Prometheus was said to be the wisest of all the Titans.
- In the form of fire Prometheus is credited with bringing mankind knowledge and enlightenment.
- He stole fire from the Gods of Mount Olympus.
- For acting against the decree of the Gods, who wanted to keep the power of fire to themselves, Prometheus was harshly punished.
- He was chained to a rock to have his liver eaten out every day by an eagle.
- Every night his liver would grow back.
- This was to be his punishment for all of eternity.



The Birth of the Creature

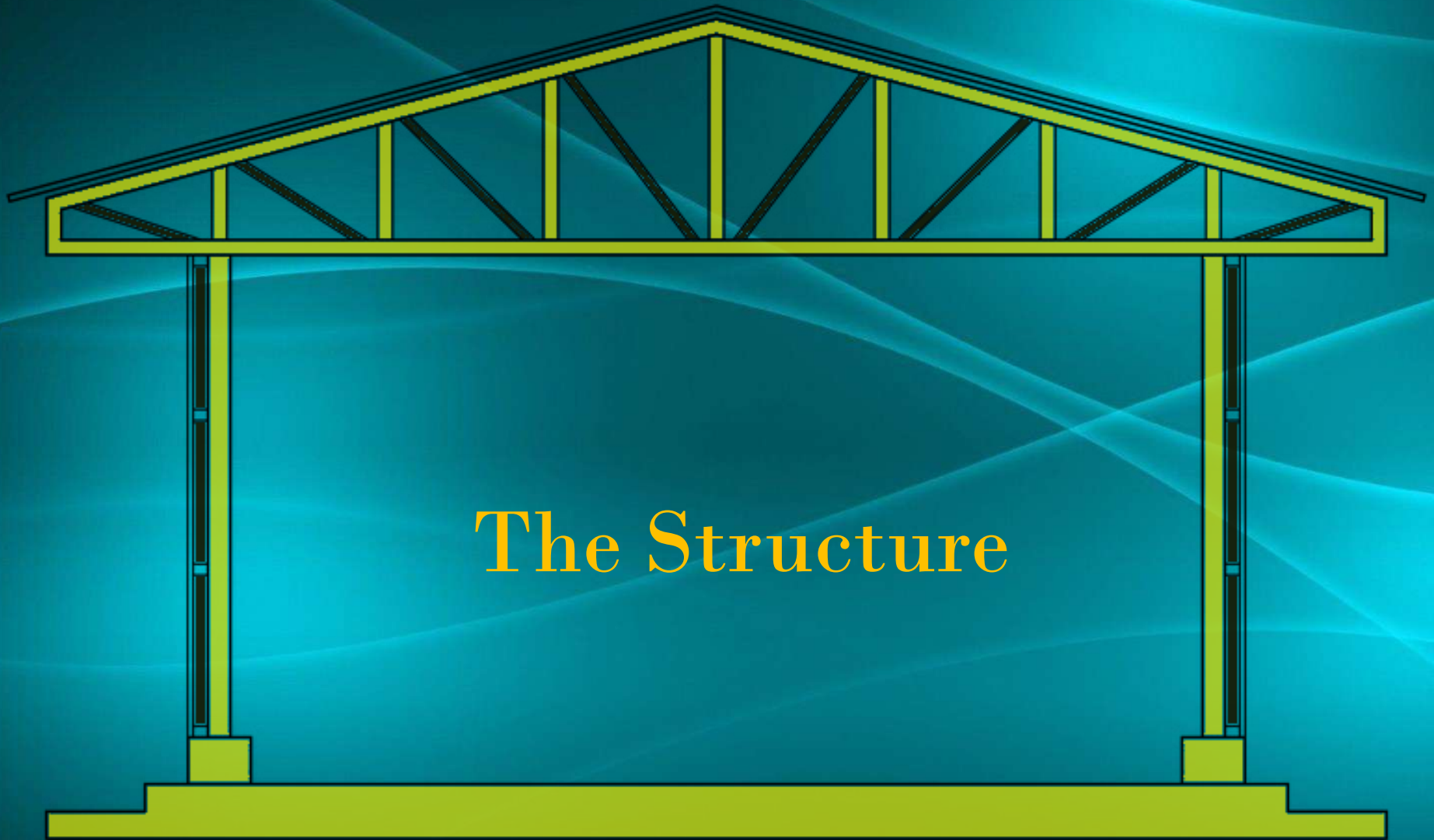
- It was on a dreary night of November that I beheld the accomplishment of my toils. With an anxiety that almost amounted to agony, I collected the instruments of life around me, that I might infuse a spark of being into the lifeless thing that lay at my feet. It was already one in the morning; the rain pattered dismally against the panes, and my candle was nearly burnt out, when, by the glimmer of the half-extinguished light, I saw the dull yellow eye of the creature open; it breathed hard, and a convulsive motion agitated its limbs.
- How can I describe my emotions at this catastrophe, or how delineate the wretch whom with such infinite pains and care I had endeavoured to form? His limbs were in proportion, and I had selected his features as beautiful. Beautiful! Great God! His yellow skin scarcely covered the work of muscles and arteries beneath; his hair was of a lustrous black, and flowing; his teeth of a pearly whiteness; but these luxuriances only formed a more horrid contrast with his watery eyes, that seemed almost of the same colour as the dun-white sockets in which they were set, his shrivelled complexion and straight black lips.



The different accidents of life are not so changeable as the feelings of human nature. I had worked hard for nearly two years, for the sole purpose of infusing life into an inanimate body. For this I had deprived myself of rest and health. I had desired it with an ardour that far exceeded moderation; but now that I had finished, the beauty of the dream vanished, and breathless horror and disgust filled my heart. Unable to endure the aspect of the being I had created, I rushed out of the room and continued a long time traversing my bed-chamber, unable to compose my mind to sleep.

At length lassitude succeeded to the tumult I had before endured, and I threw myself on the bed in my clothes, endeavouring to seek a few moments of forgetfulness. But it was in vain; I slept, indeed, but I was disturbed by the wildest dreams. I thought I saw Elizabeth, in the bloom of health, walking in the streets of Ingolstadt. Delighted and surprised, I embraced her, but as I imprinted the first kiss on her lips, they became livid with the hue of death; her features appeared to change, and I thought that I held the corpse of my dead mother in my arms; a shroud enveloped her form, and I saw the grave-worms crawling in the folds of the flannel.





The Structure



- The story is told through three intertwined stories:
 - Captain Robert Walton's letters home to his sister bookend the story
 - The narrative related by Victor Frankenstein to Captain Walton is in between the letters
 - The Creature's story is central in the novel



**Walton's narration to his sister Margaret Walton Saville
(chapters 1-10)**

**Frankenstein's narration to Walton
(chapters 11-17)**

**The Monster's narration to Frankenstein
(chapters 18-24)**




Walton Shows us the Moral

- Parallel situation between Walton and Frankenstein
- Each has a solitary nature, feels largely self-educated, is obsessed with his 'quest' and suffers from hubris
- Frankenstein's narrative warns Walton of the price payable for egocentric obsessions



The Creature's Story

- This communicates a number of views and values
 - Uses religious/philosophical ideal that man is essentially good – the creature is like Satan, the fallen angel
 - His passionate responses to nature are typically Romantic (literary era)
 - Isolation and loneliness are no good spiritually (much like when Frankenstein isolates himself with his science)
 - Social prejudices the  Monster as an outcast.



"You must create a female for me with whom I can live in the interchange of those sympathies necessary for my being. This you alone can do, and I demand it of you as a right which you must not refuse to concede."(...)

"I do refuse it," I replied; "and no torture shall ever extort a consent from me. You may render me the most miserable of men, but you shall never make me base in my own eyes. Shall I create another like yourself, whose joint wickedness might desolate the world. Begone! I have answered you; you may torture me, but I will never consent."

"You are in the wrong," replied the fiend; "and instead of threatening, I am content to reason with you. **I am malicious because I am miserable.** Am I not **shunned and hated by all mankind**? You, my creator, would tear me to pieces and triumph; remember that, and tell me why I should pity man more than he pities me? You would not call it murder if you could precipitate me into one of those ice-rifts and destroy my frame, the work of your own hands. Shall I respect man when he condemns me?



The Creator's responsibility

- Victor Frankenstein's result of his arrogant defy to the laws of nature had produced a horrible, hideous creature .
- He had cruelly sentenced it to eternal misery and loneliness.
- The monster is, in fact, rejected twice:
 1. **by human beings**, thus becoming a social outcast,
 2. **by his own creator**, who despises him not only for his ugliness, but also because he is the reminder on earth of his mortal limits.
- Victor declines the moral implication of his act towards his creation.
- The monster will strenuously try to nail him to his responsibilities of maker till the end, when he eventually kills him.
- The monster is the unfortunate expression of an imperfect creator.



Blake's Doubt

- *Tyger! Tyger! Burning bright*
 - *In the forest of the night*
 - *What immortal hand or eye*
 - *Could frame thy fearful symmetry?*
- If the Tiger stands for fear, destructive power, evil, why did God make it?
- To make us suffer?
- Did our creator have a plan or are we just the imperfect product of an experiment like Frankenstein's creature?



KEY IDEAS



KNOWLEDGE

- Victor seeks knowledge for his own reasons
- Does not consider the consequences
- Walton is a similar character to Frankenstein, just not as dangerously progressed
- Victor focused on Alchemy before going to his university and learning about new sciences



EDUCATION

- Romantics favored a ‘natural’ education through reading and adventures, providing self-growth, rather than a formal education in schools.
 - Walton is self-educated: “*my education was neglected, yet I was passionately fond of reading.*”
 - The Creature learns from the DeLacey’s non-formal schooling



PARENTHOOD/FAMILY

- Mary lost her mother early
- Elizabeth's mother died early during childbirth
- Victor does not care for the Creature he 'parented' (Victor is the real monster – he neglects his own 'child')
- Critiques the notion of the individual, of solitariness and introversion, which at the time was being expressed positively



GENRE



Gothic

- The Gothic novel (mid 18th – mid 19th) is distinctive for its fascination with the horrible, the repellent, the grotesque and the supernatural
- Emphasis on emotion
 - Gothic art and architecture was intended to have a magical or preternatural effect on the viewer
 - The Gothic building was the perfect setting for a story intended to terrify or otherwise overwhelm the reader
 - Dangerous natural settings were employed (exploring the Pole)



Gothic - characters

- Characters have a chronic sense of apprehension and the premonition of impending (but unidentified) disaster
- The Gothic world is the fallen world,
- Characters live in fear and alienation,



Gothic setting

- Action tends to take place at night or in a sunless environment
- Some motifs of typical Gothic fiction include
 1. images of death;
 2. revenge;
 3. a family curse;
 4. the Doppelganger;
 5. demonic possession;
 6. masking/shape changing;
 7. madness
- These motifs and settings are prevalent throughout the novel



Gothic themes

- *Frankenstein* centred around:
 - Thirst for knowledge
 - Scientific overreaching
 - Forbidden knowledge and the mysteries of life
- The emphasis in *Frankenstein* is on psychological terror
- The scientific experiment implies that the masculine aspect of reproduction can only reanimate the dead, and by nature alienate family.
- It is the feminine and nurturing aspect of reproduction that would have saved the Creature from his lonely life.



Romantic

- Preference for grandeur, the picturesque, the sublime, passion and extraordinary beauty as opposed to completion and proportion (i.e. rugged landscape).
- The Creature is moved by the power of the natural world.
- Frankenstein and Walton seek to subjugate nature.
- The natural world reflects the danger and trauma of the emotional worlds of the characters.



Modern Topics



- The use of knowledge for good or evil
- The invasion of technology into modern life
- Treatment of the poor or uneducated
- The power of nature in the face of unnatural events
- Nature vs. nurture
- The cause of social prejudices





This is
The End



Chapter 11

‘It is with considerable difficulty that I remember the original era of my being; all the events of that period appear confused and indistinct. A strange multiplicity of sensations seized me, and I saw, felt, heard, and smelt at the same time; and it was, indeed, a long time before I learned to distinguish between the operations of my various senses. By degrees, I remember, a stronger light pressed upon my nerves, so that I was obliged to shut my eyes. Darkness then came over me and troubled me, but hardly had I felt this when, by opening my eyes, as I now suppose, the light poured in upon me again. I walked and, I believe, descended, but I presently found a great alteration in my sensations. Before, dark and opaque bodies had surrounded me, impervious to my touch or sight; but I now found that I could wander on at liberty, with no obstacles which I could not either surmount or avoid. The light became more and more oppressive to me, and the heat wearying me as I walked, I sought a place where I could receive shade. This was the forest near Ingolstadt; and here I lay by the side of a brook resting from my fatigue, until I felt tormented by hunger and

thirst. This roused me from my nearly dormant state, and I ate some berries which I found hanging on the trees or lying on the ground. I slaked my thirst at the brook, and then lying down, was overcome by sleep.

‘It was dark when I awoke; I felt cold also, and half frightened, as it were, instinctively, finding myself so desolate. Before I had quitted your apartment, on a sensation of cold, I had covered myself with some clothes, but these were insufficient to secure me from the dews of night. I was a poor, helpless, miserable wretch; I knew, and could distinguish, nothing; but feeling pain invade me on all sides, I sat down and wept.

‘Soon a gentle light stole over the heavens and gave me a sensation of pleasure. I started up and beheld a radiant form rise from among the trees.* [*The moon] I gazed with a kind of wonder. It moved slowly, but it enlightened my path, and I again went out in search of berries. I was still cold when under one of the trees I found a huge cloak, with which I covered myself, and sat down upon the ground. No distinct ideas occupied my mind; all was confused. I felt light, and hunger, and thirst, and darkness; innumerable sounds rang in my ears, and on all sides various scents saluted me; the only object that I

could distinguish was the bright moon, and I fixed my eyes on that with pleasure.

‘Several changes of day and night passed, and the orb of night had greatly lessened, when I began to distinguish my sensations from each other. I gradually saw plainly the clear stream that supplied me with drink and the trees that shaded me with their foliage. I was delighted when I first discovered that a pleasant sound, which often saluted my ears, proceeded from the throats of the little winged animals who had often intercepted the light from my eyes. I began also to observe, with greater accuracy, the forms that surrounded me and to perceive the boundaries of the radiant roof of light which canopied me. Sometimes I tried to imitate the pleasant songs of the birds but was unable. Sometimes I wished to express my sensations in my own mode, but the uncouth and inarticulate sounds which broke from me frightened me into silence again.

‘The moon had disappeared from the night, and again, with a lessened form, showed itself, while I still remained in the forest. My sensations had by this time become distinct, and my mind received every day additional ideas. My eyes became accustomed to the light and to perceive objects in their right forms; I distinguished the insect from the herb, and by degrees, one herb from another. I found

that the sparrow uttered none but harsh notes, whilst those of the blackbird and thrush were sweet and enticing.

‘One day, when I was oppressed by cold, I found a fire which had been left by some wandering beggars, and was overcome with delight at the warmth I experienced from it. In my joy I thrust my hand into the live embers, but quickly drew it out again with a cry of pain. How strange, I thought, that the same cause should produce such opposite effects! I examined the materials of the fire, and to my joy found it to be composed of wood. I quickly collected some branches, but they were wet and would not burn. I was pained at this and sat still watching the operation of the fire. The wet wood which I had placed near the heat dried and itself became inflamed. I reflected on this, and by touching the various branches, I discovered the cause and busied myself in collecting a great quantity of wood, that I might dry it and have a plentiful supply of fire. When night came on and brought sleep with it, I was in the greatest fear lest my fire should be extinguished. I covered it carefully with dry wood and leaves and placed wet branches upon it; and then, spreading my cloak, I lay on the ground and sank into sleep.

‘It was morning when I awoke, and my first care was to visit the fire. I uncovered it, and a gentle breeze quickly

fanned it into a flame. I observed this also and contrived a fan of branches, which roused the embers when they were nearly extinguished. When night came again I found, with pleasure, that the fire gave light as well as heat and that the discovery of this element was useful to me in my food, for I found some of the offals that the travellers had left had been roasted, and tasted much more savoury than the berries I gathered from the trees. I tried, therefore, to dress my food in the same manner, placing it on the live embers. I found that the berries were spoiled by this operation, and the nuts and roots much improved.

‘Food, however, became scarce, and I often spent the whole day searching in vain for a few acorns to assuage the pangs of hunger. When I found this, I resolved to quit the place that I had hitherto inhabited, to seek for one where the few wants I experienced would be more easily satisfied. In this emigration I exceedingly lamented the loss of the fire which I had obtained through accident and knew not how to reproduce it. I gave several hours to the serious consideration of this difficulty, but I was obliged to relinquish all attempt to supply it, and wrapping myself up in my cloak, I struck across the wood towards the setting sun. I passed three days in these rambles and at length discovered the open country. A great fall of snow had

taken place the night before, and the fields were of one uniform white; the appearance was disconsolate, and I found my feet chilled by the cold damp substance that covered the ground.

‘It was about seven in the morning, and I longed to obtain food and shelter; at length I perceived a small hut, on a rising ground, which had doubtless been built for the convenience of some shepherd. This was a new sight to me, and I examined the structure with great curiosity. Finding the door open, I entered. An old man sat in it, near a fire, over which he was preparing his breakfast. He turned on hearing a noise, and perceiving me, shrieked loudly, and quitting the hut, ran across the fields with a speed of which his debilitated form hardly appeared capable. His appearance, different from any I had ever before seen, and his flight somewhat surprised me. But I was enchanted by the appearance of the hut; here the snow and rain could not penetrate; the ground was dry; and it presented to me then as exquisite and divine a retreat as Pandemonium appeared to the demons of hell after their sufferings in the lake of fire. I greedily devoured the remnants of the shepherd’s breakfast, which consisted of bread, cheese, milk, and wine; the latter, however, I did

not like. Then, overcome by fatigue, I lay down among some straw and fell asleep.

‘It was noon when I awoke, and allured by the warmth of the sun, which shone brightly on the white ground, I determined to recommence my travels; and, depositing the remains of the peasant’s breakfast in a wallet I found, I proceeded across the fields for several hours, until at sunset I arrived at a village. How miraculous did this appear! the huts, the neater cottages, and stately houses engaged my admiration by turns. The vegetables in the gardens, the milk and cheese that I saw placed at the windows of some of the cottages, allured my appetite. One of the best of these I entered, but I had hardly placed my foot within the door before the children shrieked, and one of the women fainted. The whole village was roused; some fled, some attacked me, until, grievously bruised by stones and many other kinds of missile weapons, I escaped to the open country and fearfully took refuge in a low hovel, quite bare, and making a wretched appearance after the palaces I had beheld in the village. This hovel however, joined a cottage of a neat and pleasant appearance, but after my late dearly bought experience, I dared not enter it. My place of refuge was constructed of wood, but so low that I could with difficulty sit upright in it. No wood, however, was

placed on the earth, which formed the floor, but it was dry; and although the wind entered it by innumerable chinks, I found it an agreeable asylum from the snow and rain.

‘Here, then, I retreated and lay down happy to have found a shelter, however miserable, from the inclemency of the season, and still more from the barbarity of man. As soon as morning dawned I crept from my kennel, that I might view the adjacent cottage and discover if I could remain in the habitation I had found. It was situated against the back of the cottage and surrounded on the sides which were exposed by a pig sty and a clear pool of water. One part was open, and by that I had crept in; but now I covered every crevice by which I might be perceived with stones and wood, yet in such a manner that I might move them on occasion to pass out; all the light I enjoyed came through the sty, and that was sufficient for me.

‘Having thus arranged my dwelling and carpeted it with clean straw, I retired, for I saw the figure of a man at a distance, and I remembered too well my treatment the night before to trust myself in his power. I had first, however, provided for my sustenance for that day by a loaf of coarse bread, which I purloined, and a cup with which I could drink more conveniently than from my hand of

the pure water which flowed by my retreat. The floor was a little raised, so that it was kept perfectly dry, and by its vicinity to the chimney of the cottage it was tolerably warm.

‘Being thus provided, I resolved to reside in this hovel until something should occur which might alter my determination. It was indeed a paradise compared to the bleak forest, my former residence, the rain-dropping branches, and dank earth. I ate my breakfast with pleasure and was about to remove a plank to procure myself a little water when I heard a step, and looking through a small chink, I beheld a young creature, with a pail on her head, passing before my hovel. The girl was young and of gentle demeanour, unlike what I have since found cottagers and farmhouse servants to be. Yet she was meanly dressed, a coarse blue petticoat and a linen jacket being her only garb; her fair hair was plaited but not adorned: she looked patient yet sad. I lost sight of her, and in about a quarter of an hour she returned bearing the pail, which was now partly filled with milk. As she walked along, seemingly incommoded by the burden, a young man met her, whose countenance expressed a deeper despondence. Uttering a few sounds with an air of melancholy, he took the pail from her head and bore it to the cottage himself. She

followed, and they disappeared. Presently I saw the young man again, with some tools in his hand, cross the field behind the cottage; and the girl was also busied, sometimes in the house and sometimes in the yard.

‘On examining my dwelling, I found that one of the windows of the cottage had formerly occupied a part of it, but the panes had been filled up with wood. In one of these was a small and almost imperceptible chink through which the eye could just penetrate. Through this crevice a small room was visible, whitewashed and clean but very bare of furniture. In one corner, near a small fire, sat an old man, leaning his head on his hands in a disconsolate attitude. The young girl was occupied in arranging the cottage; but presently she took something out of a drawer, which employed her hands, and she sat down beside the old man, who, taking up an instrument, began to play and to produce sounds sweeter than the voice of the thrush or the nightingale. It was a lovely sight, even to me, poor wretch who had never beheld aught beautiful before. The silver hair and benevolent countenance of the aged cottager won my reverence, while the gentle manners of the girl enticed my love. He played a sweet mournful air which I perceived drew tears from the eyes of his amiable companion, of which the old man took no notice, until

she sobbed audibly; he then pronounced a few sounds, and the fair creature, leaving her work, knelt at his feet. He raised her and smiled with such kindness and affection that I felt sensations of a peculiar and overpowering nature; they were a mixture of pain and pleasure, such as I had never before experienced, either from hunger or cold, warmth or food; and I withdrew from the window, unable to bear these emotions.

‘Soon after this the young man returned, bearing on his shoulders a load of wood. The girl met him at the door, helped to relieve him of his burden, and taking some of the fuel into the cottage, placed it on the fire; then she and the youth went apart into a nook of the cottage, and he showed her a large loaf and a piece of cheese. She seemed pleased and went into the garden for some roots and plants, which she placed in water, and then upon the fire. She afterwards continued her work, whilst the young man went into the garden and appeared busily employed in digging and pulling up roots. After he had been employed thus about an hour, the young woman joined him and they entered the cottage together.

‘The old man had, in the meantime, been pensive, but on the appearance of his companions he assumed a more cheerful air, and they sat down to eat. The meal was

quickly dispatched. The young woman was again occupied in arranging the cottage, the old man walked before the cottage in the sun for a few minutes, leaning on the arm of the youth. Nothing could exceed in beauty the contrast between these two excellent creatures. One was old, with silver hairs and a countenance beaming with benevolence and love; the younger was slight and graceful in his figure, and his features were moulded with the finest symmetry, yet his eyes and attitude expressed the utmost sadness and despondency. The old man returned to the cottage, and the youth, with tools different from those he had used in the morning, directed his steps across the fields.

‘Night quickly shut in, but to my extreme wonder, I found that the cottagers had a means of prolonging light by the use of tapers, and was delighted to find that the setting of the sun did not put an end to the pleasure I experienced in watching my human neighbours. In the evening the young girl and her companion were employed in various occupations which I did not understand; and the old man again took up the instrument which produced the divine sounds that had enchanted me in the morning. So soon as he had finished, the youth began, not to play, but to utter sounds that were

Frankenstein

monotonous, and neither resembling the harmony of the old man's instrument nor the songs of the birds; I since found that he read aloud, but at that time I knew nothing of the science of words or letters.

'The family, after having been thus occupied for a short time, extinguished their lights and retired, as I conjectured, to rest.'

THE GENERATOR:

WHAT IS A GENERATOR?

IT IS A DEVICE THAT CONVERTS MECHANICAL ENERGY INTO ELECTRICAL ENERGY THROUGH ELECTROMAGNETIC INDUCTION. THE INDUCTION STATES THAT IF A CONDUCTOR IS MOVED IN A MAGNETIC FIELD, THE ELECTRIC CURRENT WILL FLOW IN THE CONDUCTOR.

WHAT IS MADE OF?

IT CONSISTS OF A LOOP OF WIRE (FASCIO DI CAVI), CALLED "ARMATURE" PLACED BETWEEN THE NORTH AND THE SOUTH OF A MAGNET (THE FIELD). THE ARMATURE ROTATES TO PROVOKE AN ELECTROMAGNETIC FORCE IN THE LOOP. AT THE END IT IS CONNECTED TO SLIP RINGS IN AC GENERATOR OR TO A SPLIT RING (THE COMMUTATOR) IN DC GENERATOR.

THESE RINGS ROTATE WITH THE ARMATURE AND THEY ARE CONNECTED TO THE EXTERNAL CIRCUIT THROUGH BRUSHES. AT THE SIDES OF THE LOOP TH EMF CAUSES A CURRENT TO FLOW THROUGH THE LOOP.

THE MOTOR:

A MOTOR TRANSFORM ELECTRICAL ENERGY INTO MECHANICAL ENERGY WITH AN ELECTROMAGNETIC REACTION.

MOTOR ARE CLASSIFIED IN AC OR DC MOTORS.

AC MOTORS: THE CURRENT IN THE ARMATURE CHANGES POLARITY MOVING IN BOTH DIRECTIONS. IT IS ADVANTAGEOUS FOR ELECTRIC TRANSMISSION. AS TO PREVENT THE SPARKLING BETWEEN BRUSHES, THE ALTERNATORS ARE BUILT WITH A STATIONARY ARMATURE. THE GENERATED CURRENT MAY BE SINGLE-PHASE, THREE-PHASE.

DC MOTORS: THESE MOTORS NEED A COMMUTATOR TO PRODUCE DIRECT CURRENT. WHEN THE ARMATURE TURNS, THE COMMUTATOR CHANGE POSITION WHEN THE CURRENT REVERSE THE DIRECTION. THEY ARE USED AT LOW VOLTAGE TO PREVENT SPARKLING. MODERN DC GENERATORS USE DRUM ARMATURE, WITH A LARGE NUMBER OF WINDINGS, CONNECTED TO A COMMUTATOR. THIS ALLOWS A CONSTANT AMOUNT OF CURRENT.

THE MOTOR: STRUCTURE

A motor consists of an ARMATURE (rotor) that is an electromagnet made by wires around a metal coil and of a stator (PERMANENT MAGNET). The ARMATURE has a SHAFT with a COMMUTATOR that provides the two connections for the coil of the EMT. Two pieces of metal, the BRUSHES, conduct the current to the COMMUTATOR.



LIVING IN THE PAST

VICTORIAN CHILDREN AT WORK



Victorian Britain

Queen Victoria ruled the United Kingdom of Great Britain and Ireland for more than 63 years. The period of her reign was from 1837 to 1901 and is known as the Victorian Age. During this time the United Kingdom became the largest empire ever! Our Queen ruled a quarter of the World's population and a fifth of earth's land.

At this time there were huge developments in science and technology as well as daily life. Manchester saw massive population growth, while London's population doubled, Manchester's trebled! With this came the demand for work.

Children at Work

For hundreds of years children had worked. But with the increased demand for work during the Victorian era and industrial revolution came more and more demanding roles for children to fulfill. Many were used as cheap labour. Working long hours, children were often treated badly. Children started work as young as four or five years old. A young child could not earn much, but even a few pence would be enough to buy food.

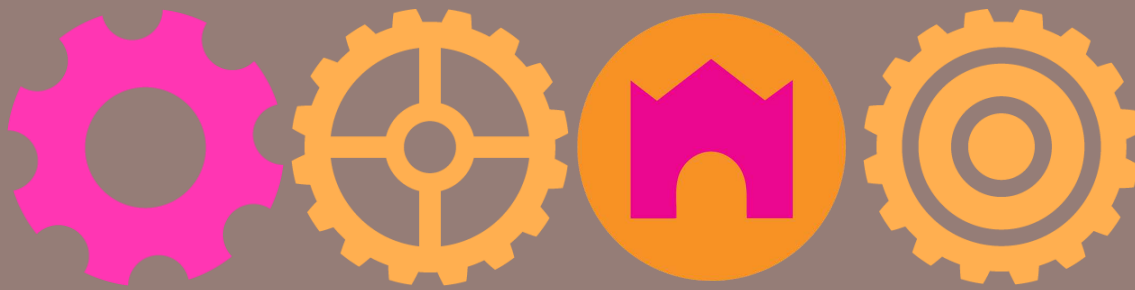
Why did children go to work?

Many Victorian children were poor and worked to help their families. This was not unusual during these times and not seen at all as cruel. You had to work to receive money and people thought work was good for children. The industrial revolution created new jobs, in factories and mines. Many of these jobs were at first done by children, as it was cheaper to pay a child than an adult.

What jobs did children do?

Children worked on farms, in homes as servants, and in factories. Children provided a variety of skills and would do jobs that were as varied as needing to be small and work as a scavenger in a cotton mill to having to push heavy coal trucks along tunnels in coal mines. There were so many different jobs! Boys went to sea, as boy-sailors, and girls went 'into service' as housemaids. In towns and cities, you might have been a chimney sweep or a crossing boy, sweeping the roads clean of horse dung from the horse and carriage. Others worked on the streets, selling things such as flowers, matches and ribbons. Children considered themselves to be lucky if they received an apprenticeship in a trade, the not so lucky ones worked on farms or helped with the spinning. With the development of industry came new jobs, and it was normal to use children for work that adults couldn't do, crawling underneath machinery or sitting in coal mines to open and close the ventilation doors.





LIVING IN THE PAST

VICTORIAN CHILDREN AT WORK

Coal Mines

Coal was the main source of power. The coal mines were dangerous places where roofs sometimes caved in, explosions happened and workers got all sorts of injuries. There were very few safety rules. Cutting and moving coal, which today is done by machines, was done by men, women and children. The younger children often worked as ‘trappers’ who worked trap doors within the ventilation shaft. They sat in a hole hollowed out for them and held a string which was fastened to the door. When they heard the coal wagons coming they had to open the door by pulling the string. This job was one of the easiest in the mine but it was very lonely and the place where they sat was usually damp and draughty. Older children might be employed as ‘coal bearers’ carrying loads of coal on their backs in big baskets. ‘Drawers’ would pull truck-loads of coal to the pit surface using heavy chains attached to their waist.

The coal industry in Tameside was at its height in the mid-nineteenth century, with the main centres being in Ashton-under-Lyne, Denton, Dukinfield and Hyde. However, mining declined rapidly in the second half of the nineteenth century because they had either been worked out or had become unprofitable. By 1906 only the Denton and Ashton Moss Colliery remained. Denton mine closed in 1929 while Ashton Moss survived until 1959.

As the coal industry expanded in the eighteenth century the problems of flooding and poor ventilation made it difficult to mine at great depths. However, in the early nineteenth century, improvements in technology allowed mines to go deeper.

Did you know? At 640 metres, Astley Deep Pit in Dukinfield was the deepest mine in the country at the time it was dug.

Did you know? The Mines Act was passed by the Government in 1842 forbidding the employment of women and girls. Later it became illegal for a boy under 12 to work down a mine.

Did you know? The average wage in the 1850s was about 15 shillings (75p) a week. Many children got just 5 shillings (25p) a week, or less.





LIVING IN THE PAST

VICTORIAN CHILDREN AT WORK

Mills

While thousands of children worked down the mine, thousands of others worked in the cotton mills. The mill owners often took in orphans to their workhouses; they lived at the mill and were worked as hard as possible.

Cotton mills were dangerous places to work. Mills were also hot, humid, dusty and extremely noisy. With little ventilation, cotton dust caused eye infections, breathing problems and stomach complaints. Workers spent long hours tending fast moving machinery which resulted in many serious accidents.

Children were especially at risk. Children as young as seven years old could be found working fourteen hours a day in the region's mills. Being small and nimble, they were given dangerous jobs such as climbing underneath moving machinery to remove any cotton pieces that had fallen below - this role was called being a 'scavenger'. They spent most of their time at the machines with little time for fresh air or exercise. Even part of Sunday was spent at the mill cleaning machines. There were some serious accidents where children lost their hair when it was caught in the machine, hands could be crushed and some children were killed when they went to sleep and fell into the machine.

During the 1800s Tameside emerged as one of the most important textile producers in the world. The industrial revolution saw hundreds of large, steam-powered cotton mills spring up across the borough's nine towns. Raw cotton was shipped in from the United States where it was woven into cotton cloth. The finished cloth was then exported to markets across the globe.

The textile industry was the biggest employer in the region. By 1861 a third of the population in Ashton-under-Lyne was directly employed in textiles. In Stalybridge the figure was even higher. Often whole families worked in the mills and their livelihood depended on the state of the cotton trade.

The textile industry was vulnerable to trade depressions. The Cotton Famine of 1861-1864 was the worst of these, when the supply of raw cotton from the United States was cut off during the American Civil War. Many local mills closed, and cotton workers and their families lost their livelihoods. The industry slowly recovered in the 1870s and began to expand again. However, after the First World War, cheap imports began to destroy local textile production. The industry continued, but by the 1960s the region had lost its role as 'Clothier of the World'.





LIVING IN THE PAST

VICTORIAN CHILDREN AT WORK



Farm Work

Eighteenth century farms in Tameside were devoted almost entirely to dairy, beef or sheep farming. Corn, hay, and root crops were grown for animal feed, although local farmers also kept a few pigs and chickens and grew other crops for their own use or to sell at market. Many farmers topped up their income by hand loom weaving or hatting.

As Tameside became industrialised, more and more people left farms to work in towns. But farming was still important and the growing population needed feeding. There were advances in technology, including improved breeds, better drainage and the introduction of chemical fertilisers. Market gardens were established on Ashton Moss to produce fruit and vegetables for the region's towns.

Poor families who lived in the countryside would also send their children out to work. There would have been many roles and duties, both for adults and children. Some of the children's roles included guarding the animals, sowing and picking potatoes and other crops, as well as taking the livestock to market. They would fill sacks and collect firewood. As they became young adults they would have more physical tasks, including ploughing the fields. During harvest time everyone had to work together to get the job done.

Seven and eight year olds could work as bird scarers, out in the fields from four in the morning until seven at night, stopping briefly for a lunch of bread and sometimes they would receive cheese. For tea they would have bread again or potato and if they were lucky they might have some bacon.

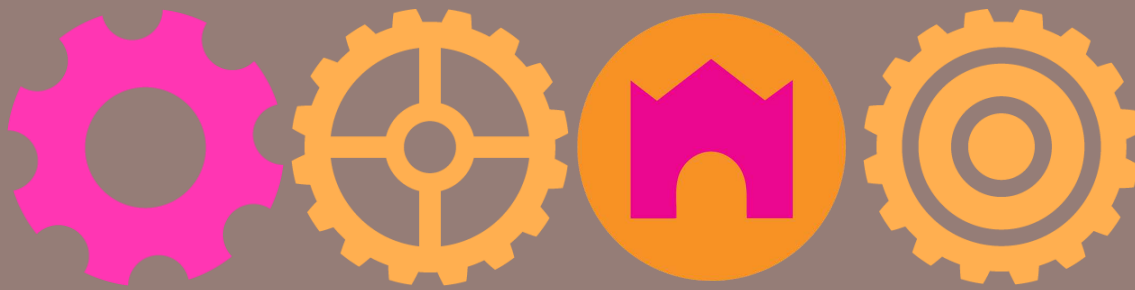
Service

All upper class houses had several servants, and most middle class households would have at least one or two. In 1871 over 4% of the population was employed 'in service', the majority of them being women. Roles included butler, housekeeper, valet, footman, lady's maid, house maids, under housemaids, laundry maid, cook, kitchen maids, scullery maid, house boy, coachman, groom and stable boy.

Servants were ranked in importance with each having their own skills and duties. Children's main roles would be the house maid, under house maid, laundry maid, kitchen maid, scullery maid, house boy and stable boy.

The main duties of the house maid were cleaning, cleaning, cleaning. First thing, the breakfast room, boudoir and drawing room needed to be cleaned; they would also iron the newspaper so it was nice and crisp for the master of the house to read during breakfast.





LIVING IN THE PAST

VICTORIAN CHILDREN AT WORK

While the family ate breakfast the house maid's attention would be on the bedrooms; opening windows, turning and making the beds, chamber pot to be emptied, floors wiped, and woodwork dusted. The rugs were taken out and shaken, mirrors polished, the grate and irons cleaned. They also had weekly duties which would include cleaning windows, washing ornaments, polishing furniture, cleaning the stairs, landing and corridors, mending linen, taking down curtains then shaking and rehangng, cleaning rugs and cushions.

Quote: "I start work promptly at 5:00 in the morning and work all day till 9:00 at night. That's 16 hours! We are not allowed to talk, sit or look out of the window whilst we work. The only day off from work I get is on Sundays, when we have to go to church." **Girl aged 9**

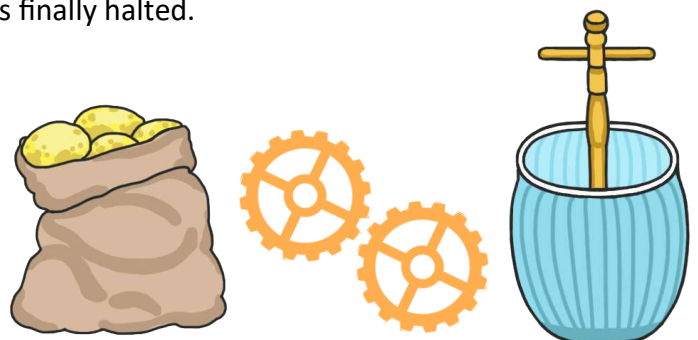
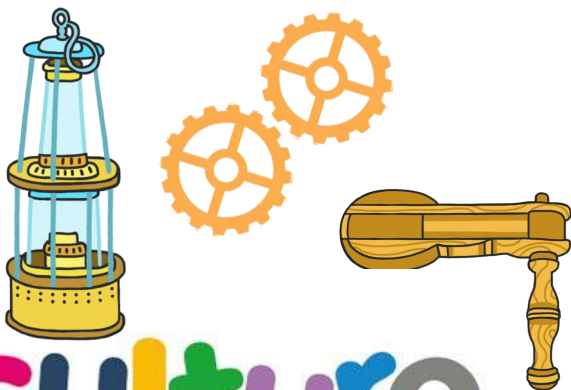
Did you know? John and George Mayall from Mossley started working from the age of seven in a woollen mill in Uppermill. By 1876 they ran Britannia Mill in Mossley, the largest privately owned cotton spinning firm in the world. John Mayall lived at Highfield House and his brother George built a beautiful hall called 'Whitehall' later to become the home of his son Edmund and family. Both households would have had a host of servants to help them with their day to day life.



Changes for the better

It took time for the government to decide that working children should be protected by laws as many didn't see anything wrong with the idea of children earning their keep. They felt parents had a right to send their children out to work. People worked hard to persuade the public that it was wrong for children to suffer health problems and to miss out on schooling due to work.

Legislation was gradually introduced during the nineteenth century to limit child labour. In 1844 the 'Half Time System' was introduced, ensuring that children spent half of each working day at school. But it was not until the early twentieth century that child labour was finally halted.



culture

Tameside

Tameside
Metropolitan Borough



HAZARDS OF ELECTRICITY

The primary hazards associated with electricity and its use are:

- **SHOCK.** Electric shock occurs when the human body becomes part of a path through which electrons can flow. The resulting effect on the body can be either *direct* or *indirect*.
 - **Direct.** Injury or death can occur whenever electric current flows through the human body. Currents of less than 30 mA can result in death. A thorough coverage of the effects of electricity on the human body is contained in the section of this module entitled *Effects of Electricity on the Human Body*.
 - **Indirect.** Although the electric current through the human body may be well below the values required to cause noticeable injury, human reaction can result in falls from ladders or scaffolds, or movement into operating machinery. Such reaction can result in serious injury or death.
- **BURNS.** Burns can result when a person touches electrical wiring or equipment that is improperly used or maintained. Typically, such burn injuries occur on the hands.
- **ARC-BLAST.** Arc-blasts occur from high-amperage currents arcing through air. This abnormal current flow (arc-blast) is initiated by contact between two energized points. This contact can be caused by persons who have an accident while working on energized components, or by equipment failure due to fatigue or abuse. Temperatures as high as 35,000°F have been recorded in arc-blast research. The three primary hazards associated with an arc-blast are:

- **Thermal Radiation.** In most cases, the radiated thermal energy is only part of the total energy available from the arc. Numerous factors, including skin color, area of skin exposed, type of clothing have an effect on the degree of injury. Proper clothing, work distances and overcurrent protection can improve the chances of curable burns.
- **Pressure Wave.** A high-energy arcing fault can produce a considerable pressure wave. Research has shown that a person 2 feet away from a 25 kA arc would experience a force of approximately 480 pounds on the front of their body. In addition, such a pressure wave can cause serious ear damage and memory loss due to mild concussions.

In some instances, the pressure wave may propel the victim away from the arc-blast, reducing the exposure to the thermal energy. However, such rapid movement could also cause serious physical injury.

- **Projectiles.** The pressure wave can propel relatively large objects over a considerable distance. In some cases, the pressure wave has sufficient force to snap the heads of 3/8 inch steel bolts and knock over ordinary construction walls.

The high-energy arc also causes many of the copper and aluminum components in the electrical equipment to become molten. These "droplets" of molten metal can be propelled great distances by the pressure wave. Although these droplets cool rapidly, they can still be above temperatures capable of causing serious burns or igniting ordinary clothing at distances of 10 feet or more. In many cases, the burning effect is much worse than the injury from shrapnel effects of the droplets.

- **EXPLOSIONS.** Explosions occur when electricity provides a source of ignition for an explosive mixture in the atmosphere. Ignition can be due to overheated conductors or equipment, or normal arcing (sparking) at switch contacts. OSHA standards, the National Electrical Code and related safety standards have precise requirements for electrical systems and equipment when applied in such areas.
- **FIRES.** Electricity is one of the most common causes of fire both in the home and workplace. Defective or misused electrical equipment is a major cause, with high resistance connections being one of the primary sources of ignition. High resistance connections occur where wires are improperly spliced or connected to other components such as receptacle outlets and switches. This was the primary cause of fires associated with the use of aluminum wire in buildings during the 1960s and 1970s.

Heat is developed in an electrical conductor by the flow of current at the rate I^2R . The heat thus released elevates the temperature of the conductor material. A typical use of this formula illustrates a common electrical hazard. If there is a bad connection at a receptacle, resulting in a resistance of 2 ohms, and a current of 10 amperes flows through that resistance, the rate of heat produced (W) would be:

$$W = I^2R = 10^2 \times 2 = 200 \text{ watts}$$

If you have ever touched an energized 200 watt light bulb, you will realize that this is a lot of heat to be concentrated in the confined space of a receptacle. Situations similar to this can contribute to electrical fires.

EFFECTS OF ELECTRICITY ON THE HUMAN BODY

The effects of electric shock on the human body depend on several factors. The major factors are:

1. Current and Voltage
2. Resistance
3. Path through body
4. Duration of shock

The muscular structure of the body is also a factor in that people having less musculature and more fat typically show similar effects at lesser current values.

Current and Voltage

Although high voltage often produces massive destruction of tissue at contact locations, it is generally believed that the detrimental effects of electric shock are due to the *current* actually flowing through the body. Even though Ohm's law ($I=E/R$) applies, it is often difficult to correlate voltage with damage to the body because of the large variations in contact resistance usually present in accidents. Any electrical device used on a house wiring circuit can, under certain conditions, transmit a fatal current. Although currents greater than 10 mA are capable of producing painful to severe shock, currents between 100 and 200 mA can be lethal.

With increasing alternating current, the sensations of tingling give way to contractions of the muscles. The muscular contractions and accompanying sensations of heat increase as the current is increased. Sensations of pain develop, and voluntary control of the muscles that lie in the current pathway becomes increasingly difficult. As current approaches 15 mA, the victim cannot let go of the conductive surface being grasped. At this point, the individual is said to "freeze" to the circuit. This is frequently referred to as the "let-go" threshold.

As current approaches 100 mA, ventricular fibrillation of the heart occurs. Ventricular fibrillation is defined as "very rapid uncoordinated contractions of the ventricles of the heart

resulting in loss of synchronization between heartbeat and pulse beat." Once ventricular fibrillation occurs, it will continue and death will ensue within a few minutes. Use of a special device called a de-fibrillator is required to save the victim.

Heavy current flow can result in severe burns and heart paralysis. If shock is of short duration, the heart stops during current passage and usually re-starts normally on current interruption, improving the victim's chances for survival.

Resistance

Studies have shown that the electrical resistance of the human body varies with the amount of moisture on the skin, the pressure applied to the contact point, and the contact area.

The outer layer of skin, the epidermis, has very high resistance when dry. Wet conditions, a cut or other break in the skin will drastically reduce resistance.

Shock severity increases with an increase in pressure of contact. Also, the larger the contact area, the lower the resistance.

Whatever protection is offered by skin resistance decreases rapidly with increase in voltage. Higher voltages have the capability of "breaking down" the outer layers of the skin, thereby reducing the resistance.

Path Through Body

The path the current takes through the body affects the degree of injury. A small current that passes from one extremity through the heart to the other extremity is capable of causing severe injury or electrocution. There have been many cases where an arm or leg was almost burned off when the extremity came in contact with electrical current and the current only flowed through a portion of the limb before it went out into the other conductor without

going through the trunk of the body. Had the current gone through the trunk of the body, the person would almost surely have been electrocuted.

A large number of serious electrical accidents in industry involve current flow from hands to feet. Since such a path involves both the heart and the lungs, results can be fatal.

Duration of Shock

The duration of the shock has a great bearing on the final outcome. If the shock is of short duration, it may only be a painful experience for the person.

If the level of current flow reaches the approximate ventricular fibrillation threshold of 100 mA, a shock duration of a few seconds could be fatal. This is not much current when you consider that a small light duty portable electric drill draws about 30 times as much.

At relatively high currents, death is inevitable if the shock is of appreciable duration; however, if the shock is of short duration, and if the heart has not been damaged, interruption of the current may be followed by a spontaneous resumption of its normal rhythmic contractions.

Summary of Effects

We can sum up the lethal effects of electric current as follows:

- Current flow greater than the "let-go" threshold of an individual may cause a person to collapse, become unconscious and can result in death. The current flow would most often have to continue for longer than five seconds. Although it may not be possible to determine the exact cause of death with certainty, asphyxiation or heart failure are the prime suspects.
- Current flow through the chest, neck, head or major nerve centers controlling respiration may result in a failure of the respiratory system. This is usually caused by a disruption of the nerve impulses between the respiratory control center and the respiratory muscles. Such a condition is dangerous since it is possible for the respiratory failure to continue even after the current flow has stopped.
- The most dangerous condition can occur when fairly small amounts of current flow through the heart area. Such current flow can cause ventricular fibrillation. This asynchronous movement of the heart causes the hearts' usual rhythmic pumping action to cease. Death results within minutes.
- When relatively large currents flow through the heart area, heart action may be stopped entirely. If the shock duration is short and no physical damage to the heart has occurred, the heart may begin rhythmic pumping automatically when the current ceases.
- Extensive tissue damage, including internal organ damage due to high temperatures, occurs when very large currents flow through major portions of the body.
- There are recorded cases of delayed death after a person has been revived following an electrical shock. This may occur within minutes, hours or even days after the

event has occurred. Several assumptions for such delayed effects are:

- internal or unseen hemorrhaging
- emotional or psychological effects of the shock
- aggravation of a pre-existing condition

In many accidents, there is a combination of the above effects, or additional effects may develop after the initial accident, thus making an accurate diagnosis quite difficult.

Please, Sir, I want some more

from *Oliver Twist* Charles Dickens, 1838

WARM UP

- 1 **Oliver Twist** was the first English novel with a child protagonist. Do you have your own favourite book, TV series or film with a child protagonist? What do you like about this character?

Glossary

- copper** large container for food
pauper very poor
the short commons small amount of shared food
gruel food made of oats (*fiocchi d'avena*) cooked in water or milk, which poor people ate in the past
grace a prayer said before a meal
whisper to speak very quietly
wink to close and open one eye quickly to communicate something or show that something is a secret or joke
nudge to push someone gently, usually with your elbow, in order to get their attention
reckless not worrying about the possible dangerous results of your actions
temerity audacity
gaze to look at someone for a long time
astonishment complete surprise
cling to hold someone or something tightly
blow a hard hit
ladle a large deep spoon with a long handle
pinion to hold someone's arms very tightly so that they cannot move
shriek to make a very high loud sound
beadle an officer in British churches in the past

When British school children hear the name "Oliver" they immediately remember the famous quote "Please, Sir, I want some more!" *Oliver Twist* is an orphan who grows up in a "workhouse". In 1834 a lot of English towns opened workhouses for poor people without a job or a house. Abandoned children, disabled people, old and sick people and unmarried mothers also lived in those terrible places. In the extract you are going to read, Oliver famously asks for more food.

The evening arrived, the boys took their places. The master, in his cook's uniform, stationed himself at the copper; his pauper assistants ranged themselves behind him; the gruel was served out; and a long grace was said over the short commons. The gruel disappeared; the boys whispered to each other, and winked at Oliver; while his next neighbours nudged him. Child as he was, he was desperate with hunger, and reckless with misery. He rose from the table; and advancing to the master, basin and spoon in hand, said, somewhat alarmed at his own temerity:

"Please, Sir, I want some more."

The master was a fat, healthy man; but he turned very pale. He gazed in stupefied astonishment on the small rebel for some seconds; and then clung for support to the copper. The assistants were paralysed with wonder; the boys with fear.

"What!" said the master at length, in a faint voice.


"Please, Sir," replied Oliver, "I want some more."

The master aimed a blow at Oliver's head with the ladle; pinioned him in his arms; and shrieked aloud for the beadle.

(Chapter II)



► DIGGING INTO THE TEXT

2  **1.186** Read and listen to the text. Underline words or phrases which help the reader to understand what life was like in a workhouse.

3 Choose the correct answer to the following questions.

- 1 What does Oliver's gesture tell you about his personality?
 - a Oliver is afraid of the master and his assistants.
 - b Oliver is brave. He is a kind of leader for his mates.
- 2 From the reactions we can understand that Oliver's gesture
 - a was very common among children in the workhouse.
 - b surprised all the protagonists of the scene.
- 3 What do you think will happen to Oliver after this episode?
 - a Oliver will be punished.
 - b Oliver will lead a revolt to get better conditions.



► WHAT'S IT ALL ABOUT?

Oliver Twist is the story of an orphan who grows up in a workhouse. After escaping from the workhouse Oliver goes to London where he joins a gang of criminal children. It is the beginning of a life of crime and danger. In the end a wealthy man (actually his grandfather) rescues him but the rest of the gang are not so lucky.

4 Read the quotes (1-3) from different parts of the book and match them to the main themes (a-c) of the novel listed below.

- a poverty and its bad effects on society
- b crime as a consequence of poverty
- c the power of benevolence: it can destroy evil in society

1 “So they established the rule, that all poor people should have the alternative (for they would compel nobody, not they,) of being starved by a gradual process in the house, or by a quick one out of it.”

2 I tell you again, it was badly planned. Why not have kept him here among the rest, and made a sneaking, sniveling pickpocket of him at once?

3 “Oh! for God's sake let me go!” cried Oliver; “let me run away and die in the fields. I will never come near London; never, never! Oh! pray have mercy on me, and do not make me steal. For the love of all the bright Angels that rest in Heaven, have mercy upon me!”

5 **PERSONAL RESPONSE** List the things you think all children need to be safe and healthy. After creating your own list share your ideas with a classmate and agree on a common list.

Filmophilia

So far there have been more than 400 films and TV adaptations based on Dickens's works. No other novelist has been adapted for the screen so often. His works have even inspired the Muppets in an adaptation of *A Christmas Carol*.

Oliver Twist is the novel with the most films. There is also a musical adaptation, *Oliver!* (1968). In 2005 Roman Polanski directed a famous film adaptation of *Oliver Twist*.



6 Look at the film poster of Polanski's *Oliver Twist* and answer the following questions.

- 1 What can you see in the background of the poster? And in the foreground?
- 2 Where do you think the scene takes place? In a town or in the countryside?
- 3 What is Oliver doing? What do you think has just happened to him?
- 4 He looks ... (you can choose among: relaxed – worried – scared – tired – happy – shy)

Use your answers to write a short paragraph about the film poster.

▶ THE CHARACTERS' GALLERY

Charles Dickens is one of the greatest champions of childhood. Some of the most famous child characters can be found in the following works by Dickens:

- ▶ *A Christmas Carol* (1843): **Tiny Tim** is a sickly little boy who walks with a crutch. He will die if his family cannot find the money to buy medicine and better food.
- ▶ *David Copperfield* (1850) tells the story of the title character and protagonist of the novel. **David Copperfield** was born six months after his father's death. After his mother remarries, his stepfather treats him cruelly, then sends him to a boarding school. David's mother dies when he is still a child and his stepfather sends him to work in a factory.
- ▶ *Great Expectations* (1860) tells the story of the unfortunate life of **Pip Pirrip**, an orphan being raised by his cruel older sister and her generous husband. It also tells about **Estella**, herself an orphan adopted by Miss Havisham.

7 Read the information above about some child characters in Dickens' works. What do they have in common with Oliver?

▶ THE BOOK AND ITS TIME

Charles Dickens used the story of *Oliver Twist* to draw attention to the numerous social problems of his time. In particular, Dickens uses *Oliver Twist* to speak against the workhouse and the treatment of the poor during this period. At the time, being poor was a crime: poor people had to be punished for this.

8 What was it like in a workhouse? Fill in the text with the words given. There are two extra words.

husbands • children • worked • hands • hungry • prisons • separated • parents • scarce • cutlery • meet • workhouse

The buildings looked like ¹.....
 In a workhouse women were ²..... from all men, including their ³..... Husbands, wives and ⁴..... all lived in different parts of the workhouse. They couldn't ⁵..... even in the common areas. People of all ages, including children as young as 4 or 5 years old, ⁶..... from early in the morning till late in the evening. People ate meals in silence, and there wasn't any ⁷..... – they used their ⁸..... These meals were dull, tasteless and so ⁹..... that people called them “a slow process of starvation” (people were always ¹⁰..... as in the extract you have just read).

▶ THE LANGUAGE OF BOOKS

Charles Dickens is one of the most popular writers of English literature and one of the most influential in the English language. With his numerous works he helped to spread new words and new meanings. Apart from words, phrases and slang expressions Dickens used names to evoke a character's personality. Some of his characters' names have entered the dictionary. Here are some examples:

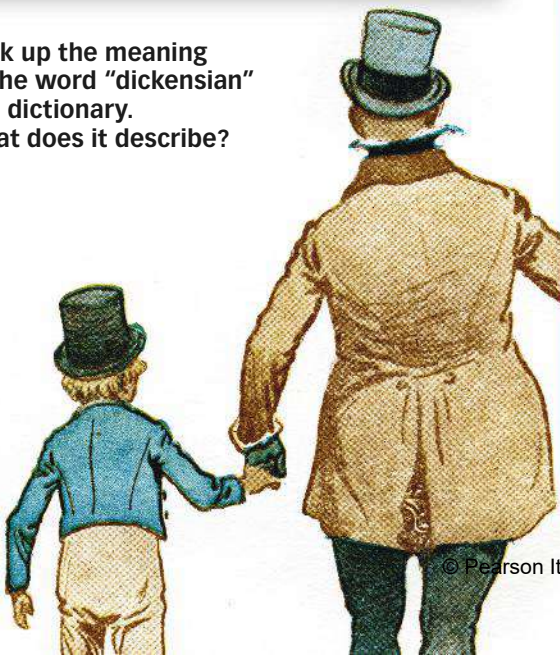
- ▶ **Scrooge** in *A Christmas Carol* is a character who hates spending money but learns how to be generous. Now the word refers to someone who hates spending money.
- ▶ **Fagin** is a character in the book *Oliver Twist*. Fagin is the leader of a group of young thieves, who collect and then sell the objects that they have stolen. The term is now used to describe a person who teaches crime to others.
- ▶ If you are **Pickwickian** you are like Samuel Pickwick in *The Pickwick Papers*: jovial, naive and generous.

- 9** The names of Dickens' characters often hold clues to their personality. Read the dictionary definition for "twist" and comment on the name given to the young protagonist of the novel.

TWIST noun [countable]

an unexpected feature or change in a situation or series of events: a new/cruel/unexpected/strange etc twist; the robbery took a deadly new twist as the robber pulled out a gun; an unexpected twist in the plot

- 10** Look up the meaning of the word "dickensian" in a dictionary. What does it describe?



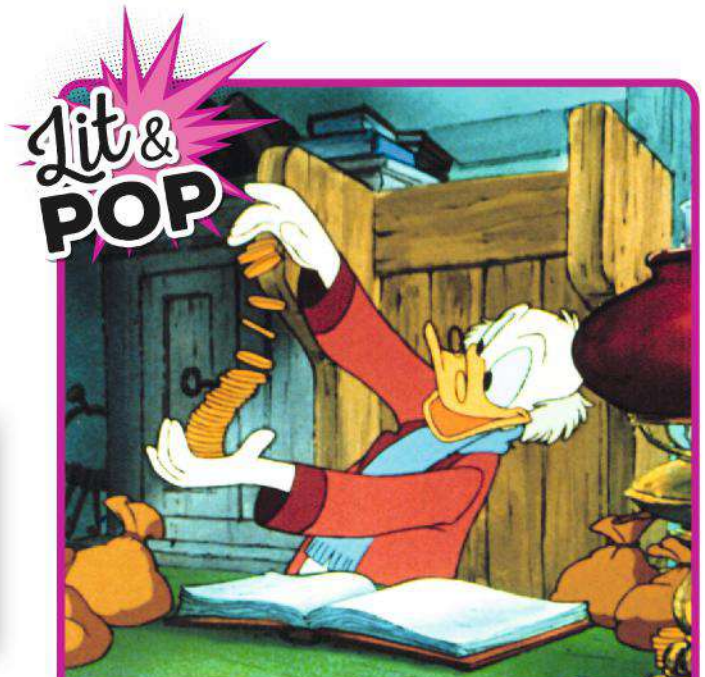
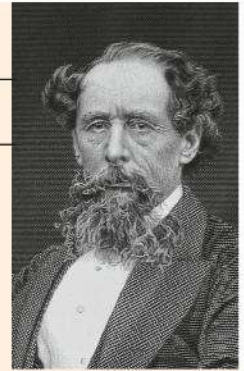
▶ Let's meet the author

Charles Dickens (1812-1870)

Charles Dickens was born in England into a very modest family. When he was 12, his father was sent to prison for debt and Dickens was obliged to work in a factory to help his family. He worked there for three years. The conditions were very bad. He never spoke of that experience, even to his own wife.

He started to write as a journalist. His first successful book was *The Pickwick Papers* in 1837, the year Queen Victoria came to the throne.

Dickens wrote a lot during his life: he wrote novels, hundreds of short stories and non-fiction works. He wrote plays, thousands of letters and edited two journals. He is buried in Poets' Corner in Westminster Abbey.



- ▶ **Scrooge McDuck**, or **Uncle Scrooge**, made his first appearance in a Donald Duck comic in 1947. He is Donald Duck's wealthy uncle. He is one of the richest and stingiest ducks in the world. He was named after Ebenezer Scrooge from *A Christmas Carol* (1843) a novel by Charles Dickens.
- ▶ In Chatham, England, you can go to **Dickens World**, the only Charles Dickens-themed amusement park in the world. Attractions include a replica Victorian schoolhouse and you can buy gruel at a stand, too.
- ▶ Charles Dickens is so popular that he has appeared on the **British £10 note**.



Oliver Twist (1837–39)

Childhood in the Victorian age was generally a cruel experience. A lot of children from poor and working-class backgrounds who escaped an early death were obliged either to work in factories and mines, or as domestic servants and chimneysweep^s. Others became criminals. Some government acts, like the Ten Hours Act (1847), tried to improve children's working conditions by limiting the hours worked by women and children to ten per day. Victorian literature played an important role in the sentimental portrayal of childhood. Dickens was obsessed with children, whom he presented as either innocent or corrupted by adults. At the beginning, they live through a negative situation but later rise to happy endings. The writer's nostalgia for the innocence of childhood is a critique of the oppressions associated with the world of adults.

London life

The most important setting of the novel is London, which is depicted at three different social levels. First, the parochial world of the workhouse is revealed. The inhabitants of this world, belonging to the lower-middle-class strata of society, are calculating and insensible to the feelings of the poor. Second, the criminal world is described, with pickpockets and murderers. Poverty drives them to crime and the weapon they use to achieve their end is violence. They live in dirty, squalid slums in a permanent state of fear and generally die a miserable death. Finally, the world of the Victorian middle class is presented. In this world, there live respectable people who show a regard for moral values and believe in the principle of human dignity.

The story

Oliver Twist first appeared in instalments in 1837 and was later published as a book. The novel reflects the economic insecurity and humiliation Dickens experienced as a child. The name 'Twist', though it is given to the protagonist by accident, represents the outrageous reversals of fortune that he will experience.

Oliver Twist is a poor boy of unknown parents; he is brought up in a workhouse in an inhuman way. He is later sold to an undertaker as an apprentice, but the cruelty and the unhappiness he experiences with his new master cause him to run away to London. There he falls into the hands of a gang of young pickpockets, led by the Artful Dodger and trained by the elderly Fagin, who try to make a thief out of him, but the boy is helped by an old gentleman. Oliver is eventually kidnapped by the gang and forced to commit burglary; during the job, he is shot and wounded. It is a middle-class family that adopts Oliver and shows kindness and affection towards him at last. Investigations are made about who the boy is and it is discovered he has noble origins. The gang of pickpockets and Oliver's half-brother, who paid the thieves in order to ruin Oliver and have their father's property all for himself, are arrested in the end.



1–2 Scenes from 'Oliver Twist', a film directed by Roman Polanski in 2005.



The world of the workhouse

Dickens attacked the social evils of his times, such as poor houses, unjust courts and the underworld. With the rise in the level of poverty, workhouses run by parishes spread all over England to give relief to the poor. However, the conditions prevailing in the workhouses were appalling. Their residents were subject to hard regulations: labour was required, families were almost always separated and rations of food and clothing were small and poor. The idea upon which the workhouses were founded was that poverty was the consequence of laziness and that the terrible conditions in the workhouse would inspire the poor to improve their own conditions. Yet the economic dislocation of the Industrial Revolution made it impossible for many to do so, and the workhouses did not provide any means for social or economic advances. Furthermore, as Dickens points out, instead of alleviating the suffering of the poor, the officials who ran workhouses abused their rights as individuals and cause them further misery.

2 ANSWER these questions about *Oliver Twist*.

- 1 What was childhood like in the Victorian age?
- 2 What does Dickens's nostalgia for an innocent childhood stand for?
- 3 What does *Oliver Twist* fictionalise?
- 4 Where is Oliver brought up?
- 5 Who eventually kidnaps Oliver?
- 6 Who adopts Oliver?
- 7 What is discovered at the end of the novel?
- 8 What is the setting of the novel? Which social classes are depicted?
- 9 What were Victorian workhouses like?
- 10 What did Dickens criticise about this social institution?

GLOSSARY

undertaker becchino
pickpockets borseggiatori
kidnapped rapito
burglary furto con scasso
half-brother fratellastro



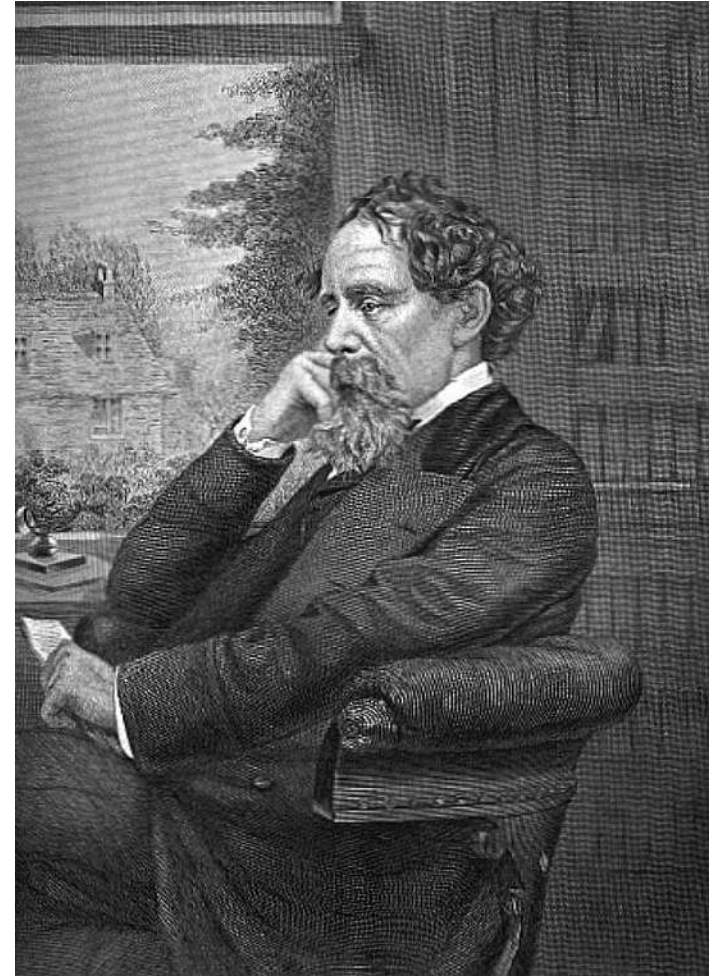
Charles Dickens

William Powell Frith, *Portrait of Charles Dickens*, London Victoria and Albert Museum.

A great denouncer but not a social reformer

Dickens's life

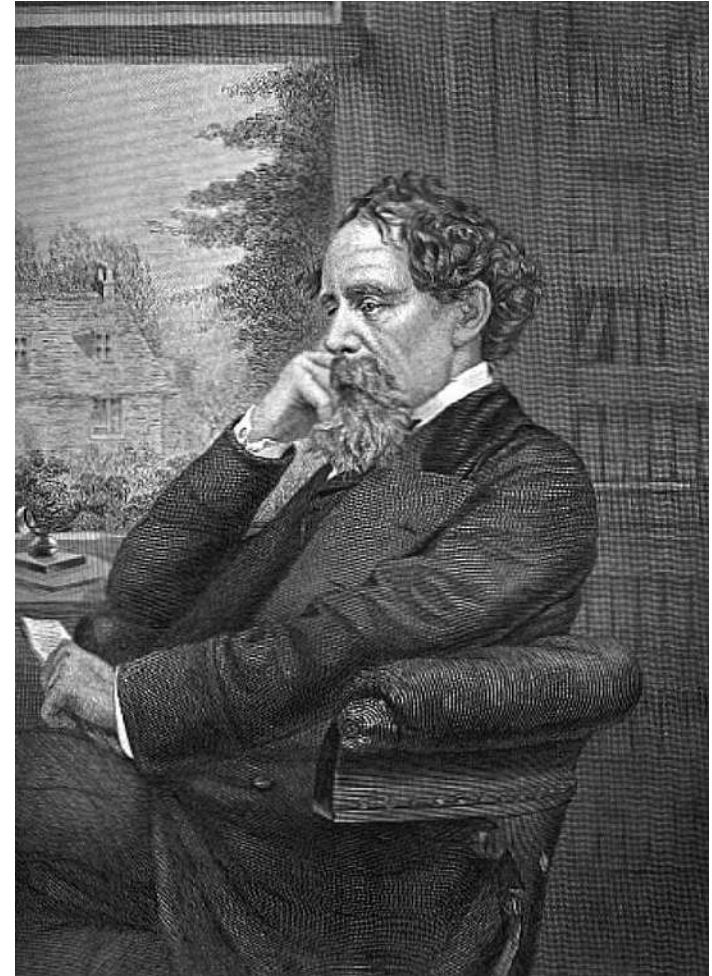
- Charles John Huffam Dickens was born in Portsmouth in 1812.
- Unhappy childhood: he had to **work in a factory** to stuck labels on bottles of shoe-polish at the age of **12** (his father went to prison for **debts**).
- At 14 he worked as a clerk in a legal office
- He became a **newspaper reporter** with the pen name **Boz**. In 1836 **Sketches by Boz**, articles about London people and scenes, were published in instalments.



Evert A. Duyckinck, *Charles Dickens*

Dickens's life

- Success with **autobiographical** novels, *Oliver Twist* (1838), *David Copperfield* (1849-50), *Little Dorrit* (1857).
- *Bleak House* (1853), *Hard Times* (1854), *Great Expectations* (1860-61) set against the background of **social issues**.
- Busy **editor** of magazines.
- Died in **1870**.



Evert A. Duyckinick, *Charles Dickens*

The setting of Dickens's novels

- Dickens was the **great novelist of cities**
- London is depicted at **three different social levels**:
 1. **the parochial world** of the workhouses → its inhabitants belong to the lower middle class.
 2. **the criminal world** → murderers, pickpockets living in squalid slums.
 3. **the Victorian middle class** → respectable people believing in human dignity.





River Irwell in Manchester flowing under Regent Road. The scum on the water is the consequence of the rivers being used as sewers,

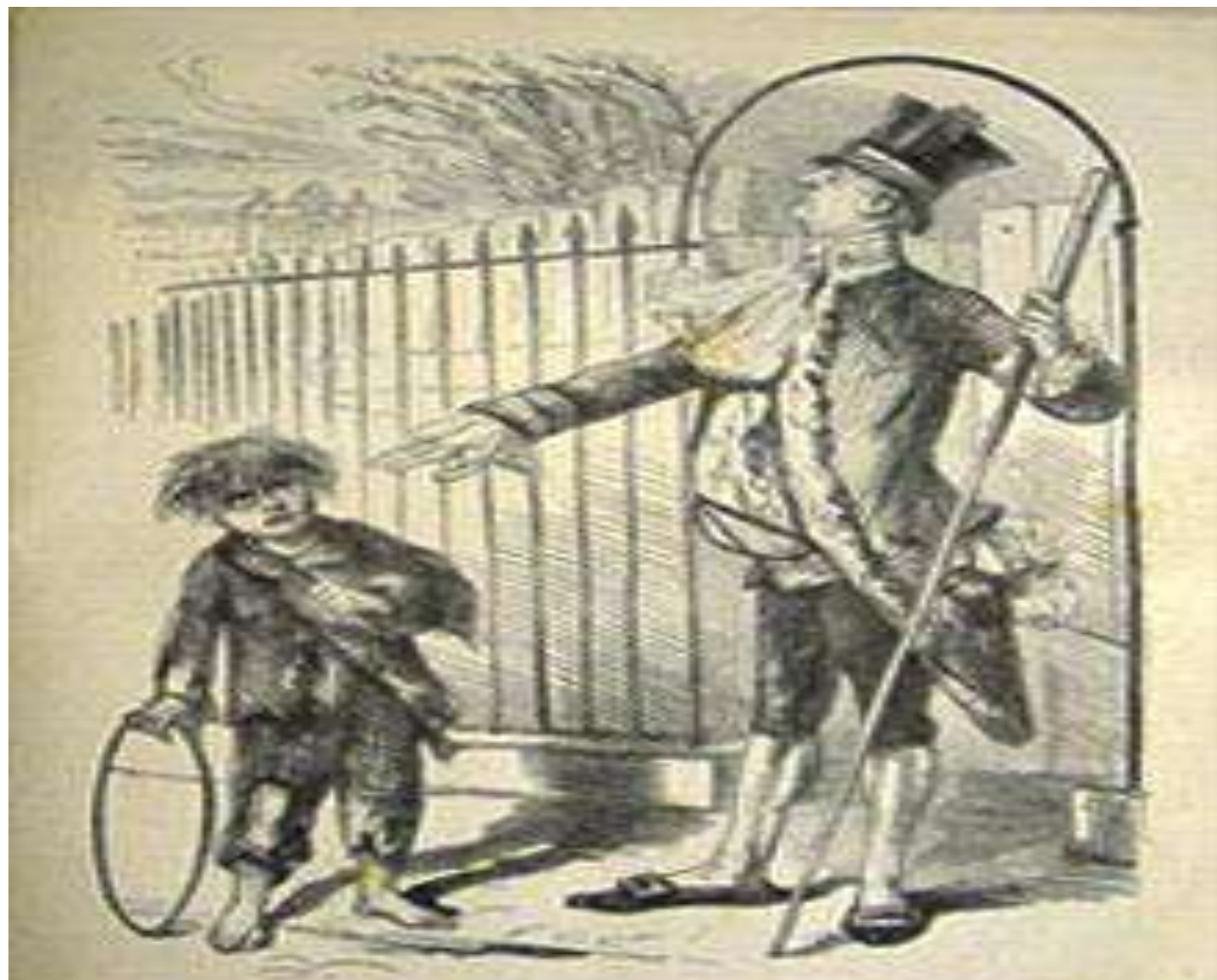


Jacob's Island: This was the place which Dickens called 'the filthiest, the strangest, the most extraordinary of the many localities that are hidden in London'. He spoke of the 'maze of close, narrow, and muddy streets, thronged by the roughest and poorest of waterside people. *Oliver Twist*.

the 18th-century realistic **upper middle-class world** was replaced by **Victorian society** in all its **variety**, its **richness** and its **squalor**.



An unfinished painting by R.W. Buss (1804-75) variously known as *A Souvenir of Dickens* and *Dickens's Dream*. Painted 1875. Charles Dickens Museum, London.



**ST. JAMES TURNING ST. GILES
OUT OF HIS PARKS**

Dickens's themes

- **Love** is the most important thing, the absence of it is the reason of the world's ills
- **God** in the humble and their simple virtue
- **Family, childhood** and **poverty** → the subjects to which he returned again and again.
- Dickens's **children** are either **innocent** or **corrupted by adults**.



A scene from Roman Polanski's *Oliver Twist* (2005)

Most of these children begin in **negative circumstances** and rise to **happy endings** which resolve the **contradictions** in their life created by the **adult world**.

Dickens's aim

His books highlight all the great **Victorian controversies**:

- **the faults of the legal system** (*Oliver Twist*)
- **the horrors of factory employment** (*David Copperfield, Hard Times*)
- **scandals in private schools** (*David Copperfield, Hard Times*)

- **the miseries of prostitution**
- **the Utilitarian Philosophy (Hard Times)**
- **alienation of the factory system (Hard Times)**
- **exploitation of women and children**
- **the appalling living conditions in slums (*Bleak House*)**
- **corruption in government (*Bleak House*)**

Dickens's style

- Realism he is a keen observer, full of details .
- Sentimentalism :He shows sympathy towards his characters and this gave an emotional quality to his writings. His prose is poetic in its emotions, its lyrical rhythm , its Romanticism and the appreciation of beauty even in humble places
- Morality, he reflects the moral attitudes of the British people. Crime must always be punished and virtue must always be rewarded
- Reporter's style, actions, vivid descriptions, violent actions, dramatic situations, picaresque details, simple similes and metaphors.
- Dramatist, he is a dramatist in the sense that he explores his characters through their actions and their speech, his analysis is much more external than internal

Humour

- Humour of exaggeration leading to caricatures
- humour of situation
- humour of personality,
- satire used for human hypocrisy
- His comic characters are endowed with common sense and with a certain philosophy of life , the writer looks at them with sympathy
- Often D's humour is mingled with pathos and he smiles "through his tears"

Dickens's style → very rich and original

The main **stylistic features** of his novels are:

1. **long list of objects and people.**
2. **adjectives used in pairs or in group of three and four.**
3. **several details, not strictly necessary.**
4. **Pathos, sometimes too exaggerated**

4. repetitions of the same word/s and/or sentence structure.

5. the same concept/s is/are expressed more than once, but with different words.

6. use of antithetical images in order to underline the characters' features.

7. exaggeration of the characters' faults.

8. suspense at the end of the episodes or introduction of a sensational event to keep the readers' interest.

7. *Oliver Twist* (1838)

- This *Bildungsroman* (an “education” novel) appeared in instalments in **1837**.
- It fictionalises the **humiliations Dickens** experienced during his childhood.



Etching by George Cruikshank of scene from *Oliver Twist* by Charles Dickens as Oliver asks for more food in workhouse.

Oliver Twist (1838)

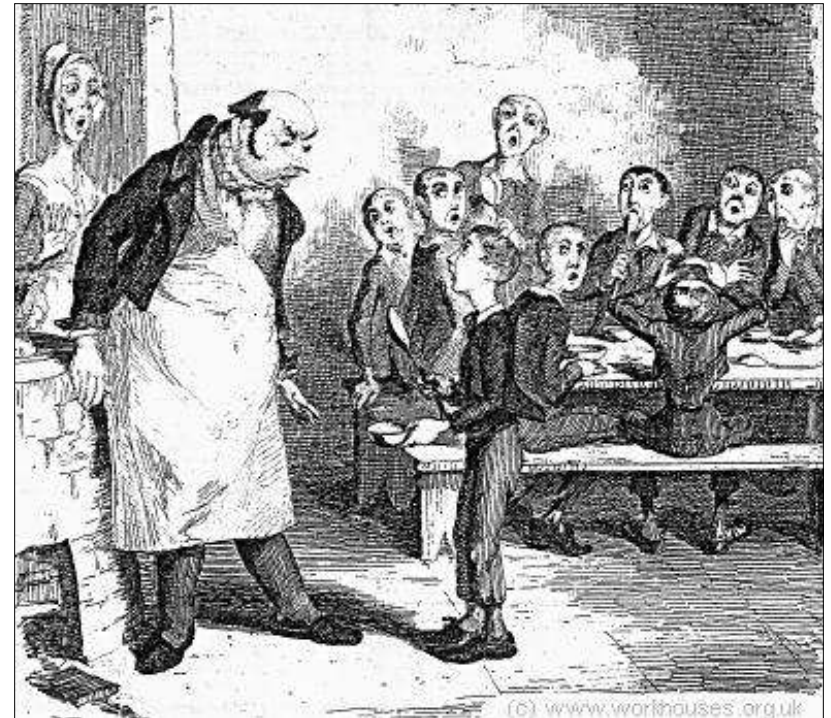
- The protagonist, **Oliver Twist**, is always **innocent** and **pure** and remains **incorruptible** throughout the novel.
- At the end he is **saved** by a well-to-do family.
- The setting is **London**.



Etching by George Cruikshank of scene from *Oliver Twist* by Charles Dickens as Oliver asks for more food in workhouse.

Oliver Twist (1838)

- Dickens attacked:
 - a. the **social evils** of his times such as **poor houses**, **unjust courts** and the **underworld**.
 - b. the world of **the workhouses** founded upon the idea that poverty was a consequence of laziness.
 - c. **the officials of the workhouses** because they **abused** the rights of the **poor** as individuals and caused them **further misery**.



Etching by George Cruikshank of scene from *Oliver Twist* by Charles Dickens as Oliver asks for more food in workhouse.



David Copperfield (1849-50)

This novel is the **most autobiographical** of all Dickens's novels.

In the preface the novelist wrote:

“... like many fond parents, I have in my heart a favourite child. And his name is **David Copperfield**”.



Advertisement for *David Copperfield* by Charles Dickens, 1884.

8. *David Copperfield* (1849-50)

- **Narrative technique** → a “Bildungsroman”; the protagonist, David, functions also as narrator.
- **The characters** → both realistic and romantic, characterised by a particular psychological trait.
- **Atmosphere** → a combination of realism and enchantment.



Advertisement for *David Copperfield* by Charles Dickens, 1884.

8. *David Copperfield* (1849-50)

- **Themes:**
 1. the **struggle of the weak** in society.
 2. the great importance given to **strict education**.
 3. **cruelty to children**.
 4. the **bad living conditions** of the poor.



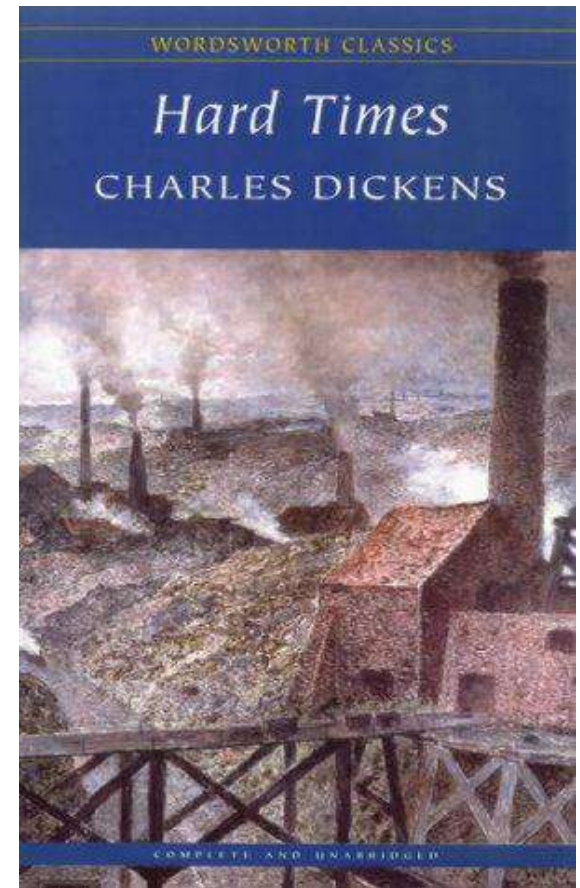
Advertisement for *David Copperfield* by Charles Dickens, 1884.

Hard Times (1854)

It is a “denunciation novel” → a powerful **accusation** of some of the negative effects of industrial society.

The setting → **Coketown**, an imaginary industrialised town.

Characters → people living and working in Coketown, like the protagonist **Thomas Gradgrind**, an educator who believes in facts and statistics.



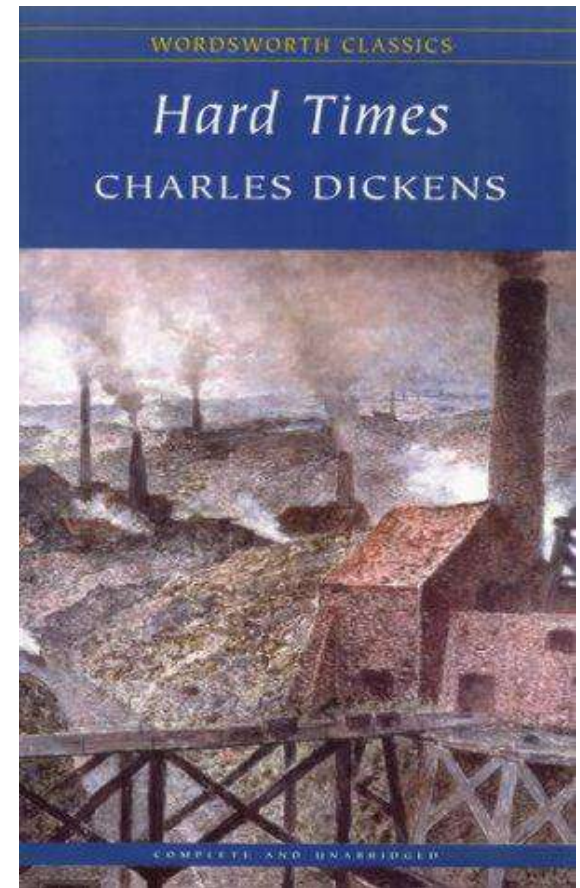
A contemporary edition of *Hard Times*

Hard Times (1854)

Themes:

1. a critic of **Materialism** and **Utilitarianism**.
2. “**Squareness**” represents the aridity of this materialistic philosophy.
3. The title of the first chapter is “**Murdering the innocents**”, this stresses Dickens ‘s feelings towards this doctrine. These men are destroying the real essence of a child: Imagination..
4. a **denunciation** of the **ugliness** and **squalor** of the **new industrial age**.
5. the **gap** between the **rich** and the **poor**.

Aim → to illustrate the **dangers** of allowing people to become **like machines**.



A contemporary edition of *Hard Times*



HARD TIMES.

BOOK THE FIRST. SOWING.

Thomas Gradgrind Apprehends His Children Louisa and Tom at the Circus



what Tom saw "through a hole in a deal board" of the equestrian Tyrolean flower-act



"It Would Be A Fine Thing To Be You, Miss Louisa!" said Sissy



"Louisa, My Dear, You Are the Subject Of A Proposal of Marriage That Has
Been Made To Me."



"I Only Entreat You To Believe, My Favourite Child, That I Have Meant To Do Right"

DICKEN'S LIMITATIONS

- His plot lacks real organic unity and often too full of unlikely events
- His characters are often superficially portrayed, all good or all bad, he shows a lack of real psychological insight.
- His sentimentalism and pathos are often excessive
- His comic scene sometimes exaggerated so they become grotesque rather than really comic
- His tragic scenes too melodramatic, this diminishes the impact on the reader

MERITS

- A great Artist in dialogues, able to hold the interest in his stories
- Powerful imagination, a great number of incidents and situations
- His characters cover a large range of people
- His plots, in spite of their faulty organization, can hold the reader's attention till the end
- The style is fluent and effective
- His occasional use of symbolism is striking



International
Labour
Organization

unicef 
for every child



CHILD LABOUR

GLOBAL ESTIMATES 2020, TRENDS AND THE ROAD FORWARD



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United Nations Children's Fund (UNICEF)

Data and Analytics Section
Division of Data, Analytics, Planning and Monitoring
3 United Nations Plaza, New York, NY 10017, USA
Telephone: +1 212 326 7000
Email: data@unicef.org

International Labour Office

Fundamental Principles and Rights at Work (FUNDAMENTALS)
Route des Morillons 4, 1211 Geneva, Switzerland
Telephone: + 41 (0) 22 799 6862
Email: childlabour@ilo.org

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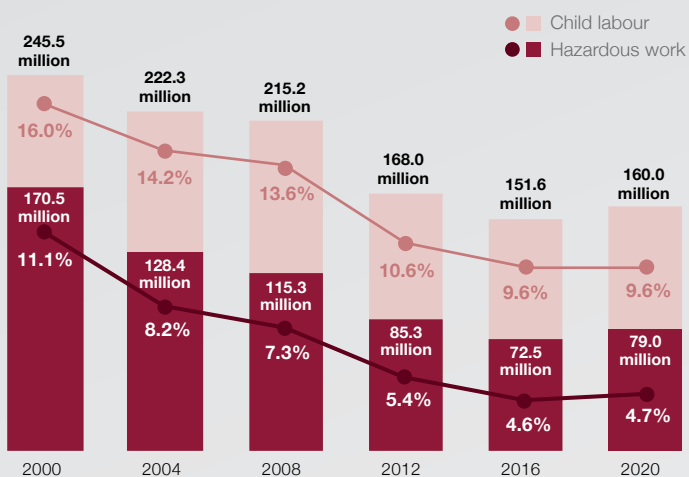
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Child labour at a glance

Trends

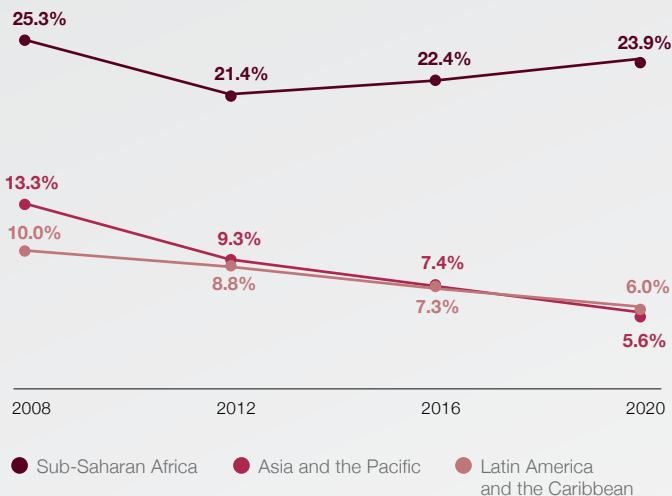
Global progress against child labour has stalled since 2016

Percentage and number of children aged 5 to 17 years in child labour and hazardous work



Asia and the Pacific and Latin America and the Caribbean have seen steady progress on child labour since 2008; similar progress has eluded sub-Saharan Africa

Percentage of children aged 5 to 17 years in child labour, by region

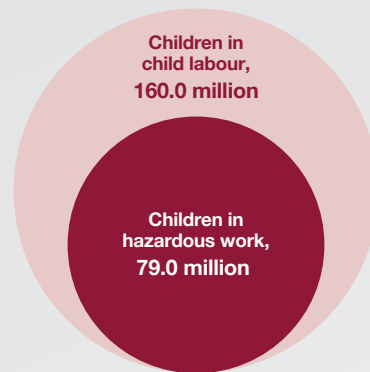


Notes: The figure shows regional groupings used for ILO reporting. Comparable historical data prior to 2016 were not available for other regions.

Current situation

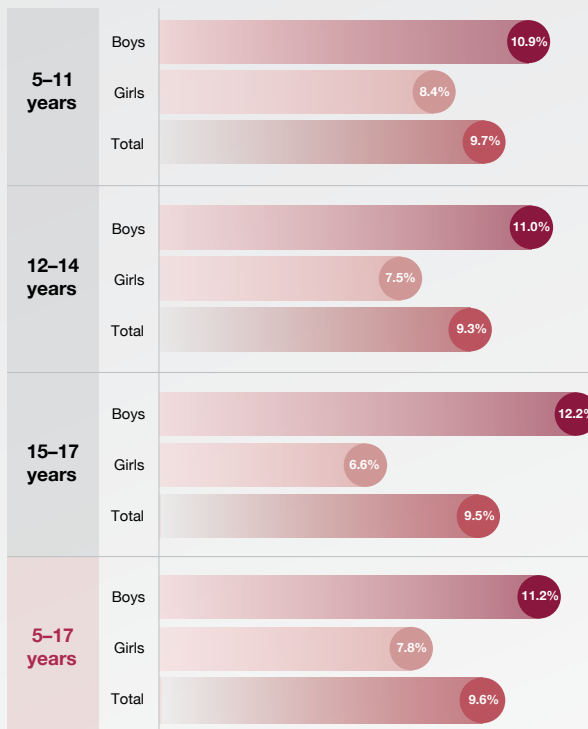
Worldwide, 160 million children are engaged in child labour; 79 million of them are performing hazardous work

Number of children aged 5 to 17 years in child labour and hazardous work



Child labour is more prevalent among boys than girls at every age

Percentage of children aged 5 to 17 years in child labour, by age and sex



We have made a promise to children to end child labour

Sub-Saharan Africa stands out as the region with the highest prevalence and largest number of children in child labour

Percentage and number of children aged 5 to 17 years in child labour, by region

Notes: The size of the bubbles is proportionate to the absolute number of children in child labour. The figure shows regional groupings used for SDG reporting. The region of Oceania is omitted because of low data coverage. For this reason, region-specific numbers do not add up to the global total.

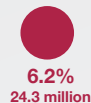
Sub-Saharan Africa



Central and Southern Asia



Eastern and South-Eastern Asia



Northern Africa and Western Asia



Latin America and the Caribbean



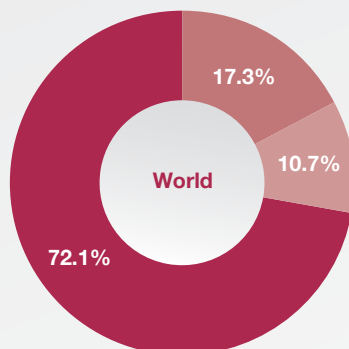
Europe and Northern America



Most children in child labour work within their own family unit

Percentage distribution of children aged 5 to 17 years in child labour, by status at work

- Contributing family workers
- Employees
- Own-account workers

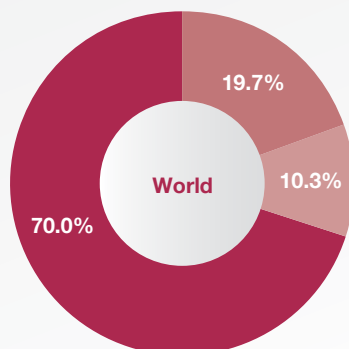


Note: Due to rounding, figures in percentages do not add up to 100 per cent.

The agricultural sector accounts for the largest share of child labour worldwide

Percentage distribution of children aged 5 to 17 years in child labour, by sector of economic activity

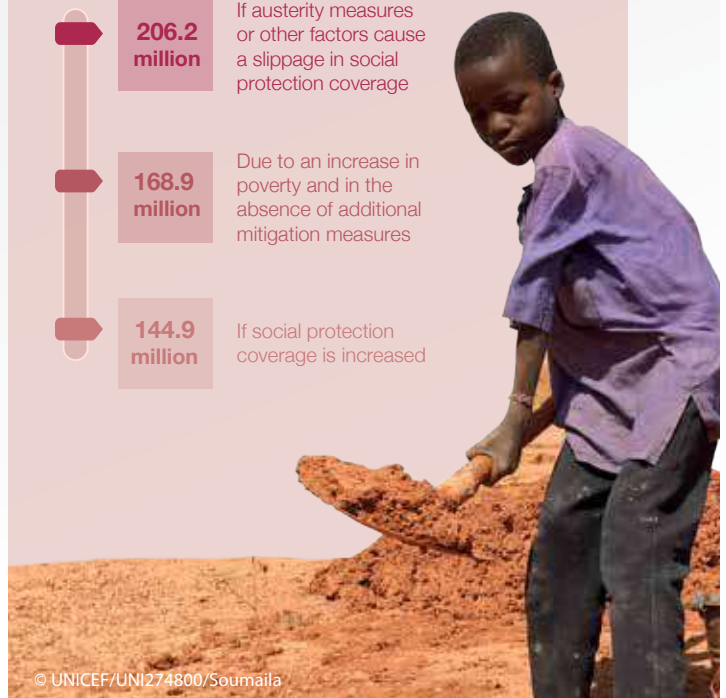
- Agriculture
- Services
- Industry



Impact of COVID-19

Without mitigation measures, the number of children in child labour could rise from 160 million in 2020 to 168.9 million by the end of 2022

Number of children aged 5 to 17 years in child labour, projected to the end of 2022



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There is no time to lose



GLOBAL AND REGIONAL OVERVIEW

Child labour remains unacceptably common in the world today. At the start of 2020, prior to the outbreak of the COVID-19 pandemic, 160 million children – 63 million girls and 97 million boys – were in child labour, or 1 in 10 children worldwide. Seventy-nine million children – nearly half of all those in child labour – were in hazardous work directly endangering their health, safety and moral development.

This global estimate masks large variations across regions. Child labour prevalence stands at 24 per cent in sub-Saharan Africa, three times that of Northern Africa and Western Asia, the region with the second highest prevalence. In absolute terms, the nearly 87 million children in child labour in sub-Saharan Africa are more than in the rest of the world combined.

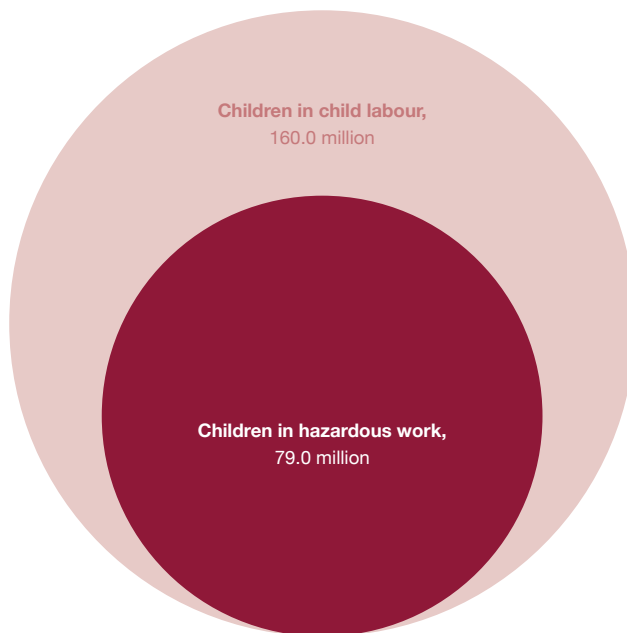
Recent history provides cause for concern. In the last four years, for the first time since 2000, the world did not make progress in reducing child labour. The absolute number of children in child labour increased by over 8 million to 160 million while the proportion of children in child labour remained unchanged. Children in hazardous work mirrored these patterns: The share remained almost unchanged but the number rose by 6.5 million to 79 million.

The pace of progress has varied dramatically across regions. The proportion and number of children in child labour have declined consistently since 2008³ in Asia and the Pacific and Latin America and the Caribbean. Similar progress has proved elusive in sub-Saharan Africa, where child labour has actually gone up since 2012, a trend especially pronounced over the last four years when the region accounted for much of the global increase.

At present, the world is not on track to eliminate child labour by 2025. In order to meet this target, global progress would need to be almost 18 times faster than the rate observed over the past two decades. According to pre-COVID-19 projections based on the pace of change from 2008 to 2016, close to 140 million children will be in child labour in 2025 without accelerated action. The COVID-19 crisis is making these scenarios even more worrisome, with many more children at risk of being pushed into child labour.

Worldwide, 160 million children are engaged in child labour; 79 million of them are performing hazardous work

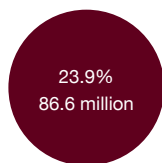
Fig 1. Number of children aged 5 to 17 years in child labour and hazardous work



Sub-Saharan Africa stands out as the region with the highest prevalence and largest number of children in child labour

Fig 2. Percentage and number of children aged 5 to 17 years in child labour, by region

Sub-Saharan Africa



Central and Southern Asia



5.5%
26.3 million

Eastern and South-Eastern Asia



6.2%
24.3 million

Northern Africa and Western Asia



7.8%
10.1 million

Latin America and the Caribbean



6.0%
8.2 million

Europe and Northern America



2.3%
3.8 million

Notes: The size of the bubbles is proportionate to the absolute number of children in child labour. The figure shows regional groupings used for SDG reporting. The region of Oceania is omitted because of low data coverage. For this reason, region-specific numbers do not add up to the global total.



CHILD LABOUR AND EDUCATION

More than one third of all children in child labour are excluded from school. Hazardous child labour constitutes an even greater barrier to school attendance.

Especially worrying is the large share of younger children in child labour who are excluded from school despite falling within the age range for compulsory education. Nearly 28 per cent of 5 to 11 year olds and 35 per cent of 12 to 14 year olds in child labour are out of school. This severely constrains their prospects for decent work in youth and adulthood as well as their life potential overall. Boys and urban children in child labour are slightly more likely to be out of school, but differences by sex and residence are not large.

There is rarely a single reason for why children are in child labour instead of attending school. In many cases, the work demands so much time and energy that it becomes impossible for children to enter, persist and succeed in schooling. In other instances, children work because they lack access to quality, free schools providing a worthwhile alternative. Decisions concerning children's education can be influenced by family perceptions of its importance and the potential returns in the labour market.

For every child in child labour who has reached a compulsory age for education but is excluded from school, another two struggle to balance the demands of school and work. They face compromises in education as a result and should not be forgotten in the discussion of child labour and education. Children who must combine child labour with schooling generally lag behind non-working peers in grade progression and learning achievement, and are more likely to drop out prematurely.

Over one third of children in child labour are out of school

Fig 26. Percentage of children aged 5 to 17 years in child labour not attending school, by age, sex and residence



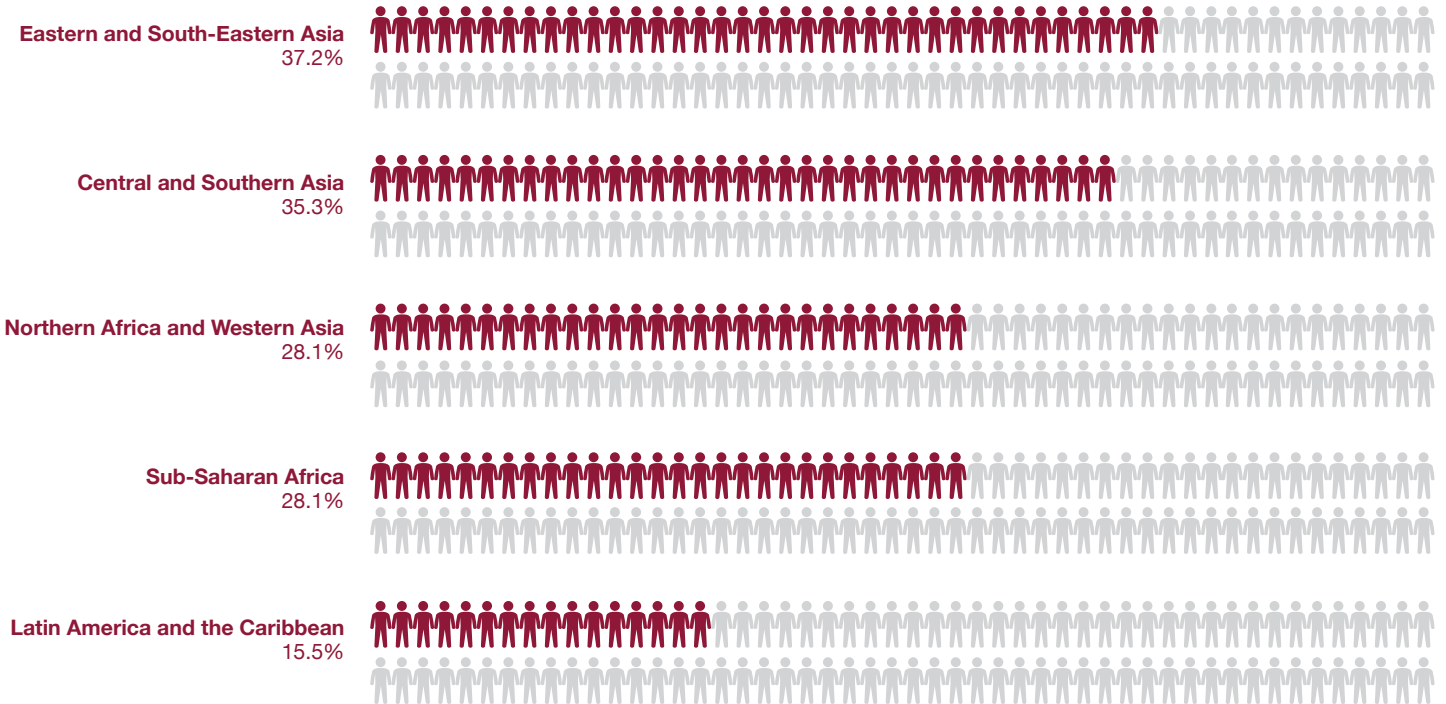
Children engaged in hazardous work are even less likely to attend school

Fig 27. Percentage of children aged 5 to 17 years in hazardous work not attending school, by age, sex and residence



Across all regions, significant shares of children in child labour are out of school

Fig 28. Percentage of children aged 5 to 14 years in child labour not attending school, by region



Notes: The figure shows regional groupings used for SDG reporting. The region of Oceania is omitted because of low data coverage. The region of Europe and Northern America is omitted because of the low levels of children in child labour and out of school.





The impact of COVID-19



The intersection of the COVID-19 pandemic with child labour globally offers substantial cause for concern. In 2020, the pandemic increased the number of children in income-poor households by an estimated 142 million, adding to the 582 million children already in poverty in 2019.²³ Their families have suffered job and income losses, seen cuts in remittances and experienced a host of other shocks.

In such circumstances, a large body of evidence affirms that families may turn to child labour as a coping mechanism.²⁴ School closures during lockdowns add to the risks, especially for children in vulnerable situations, as they are even more likely to work when going to school is not a viable option. When children leave school and enter paid employment, it can be very difficult for them to resume their education.²⁵

Growing anecdotal evidence sheds light on how the COVID-19 crisis is affecting children. Human Rights Watch, for example, collected testimonies from 81 children in Ghana, Nepal and Uganda who have been newly pushed into child labour or endure more difficult work circumstances. Some indicated that their families no longer had sufficient food and they were working to get enough to eat. Children said that their work was frequently long and arduous – one third in each country had to work for at least 10 hours a day, and some described working for as many as 16 hours. Those already working before the crisis struck said they were working more since the closure of schools.²⁶

Other accounts are emerging around the world. An International Cocoa Initiative assessment of 263 communities in Côte d'Ivoire found a significant increase in child labour in cocoa businesses from July to September 2020 compared to the same period 12 months earlier.²⁷ Data from Ecuador indicated a more than one-third rise in child labour prevalence since the pandemic began.²⁸ In Egypt, children are reportedly being sent to work in cotton cultivation and other agricultural work.²⁹ In São Paulo, Brazil, child labour increased by 26 per cent between May and July 2020 in households assisted by UNICEF.³⁰

Several reports have emphasized school closures as driving child labour. In a survey of eight West African countries, children consistently reported working because there was no school. They said that their presence at home raised the expectation that they should work to help their families, which made distance learning difficult even when it was available.³¹ In Burkina Faso, reports of more children working alongside their parents in granite mining have indicated that this is in part because their parents did not want to leave them at home unsupervised during school closures.³²

The impact of the pandemic on child labour, however, does not always fit common assumptions. Preliminary analysis of the limited number of countries with survey data from before and after the pandemic suggests that the most common immediate effect has been a decline in children's involvement in economic activity.³³ The large-scale destruction of jobs arising from the lockdowns and from the fall-off in demand in some economic sectors appears, at least in these countries, to have affected jobs performed by children. These results, however, refer to children's economic activity, which is a broader concept than child labour as it includes permitted forms of children's work. The results also relate primarily to older children, aged 15 to 17, in middle-income countries.

A modelling exercise provides further insights into the likely near-term impact of COVID-19 on child labour. Based on a simple model that uses the latest poverty projections to predict changes in child labour up to 2022,³⁴ it suggests that the net effect of the pandemic during this period is likely to be a substantial additional rise in child labour. Any immediate decline due to disruptions in the broader labour market is likely to be significantly outweighed by a poverty-driven rise in child labour over a slightly longer time horizon.

The model predicts 8.9 million more children in child labour by the end of 2022. Young children aged 5 to 11 account for over half (4.9 million) of the total predicted additional children in child labour. This escalation reflects only the poverty effects of the crisis; the calculation likely understates the total impact of COVID-19 on child labour, such as through unprecedented disruptions to children's education.

Yet the increase in child labour is by no means a foregone conclusion. In addition to the 'baseline' scenario reported above, in which social protection remains constant, two additional scenarios were considered. Both demonstrate the substantial influence of social protection coverage on child labour. In the first 'downside' scenario, social protection coverage slips from the current level in each national income group by an amount proportional to the standard deviation of current coverage levels in each group (Table 1). In the second 'mitigated' scenario, the opposite occurs. Globally, the goal for social protection is much more ambitious, calling for nationally appropriate social protection systems and measures, including social protection floors, for all.

The results are dramatic. Extending social protection by the amounts specified in Table 1 would reduce the number of children in child labour by 15.1 million by the end of 2022, more than offsetting the impact of COVID-19 and accelerating progress towards ending child labour altogether. If austerity measures or other factors cause a slippage in coverage, again by the amounts specified in Table 1, the outlook will worsen. A predicted 46.2 million additional children would enter child labour through the end of 2022. In both scenarios, the biggest changes occur among the youngest children in child labour. The potential for expanding social protection for children, through universal child benefits and other means, is further explored in the final chapter of this report.

Charles Dickens: Biography

The most popular storyteller of his time, a zealous social reformer, the esteemed leader of the English literary scene and a wholehearted friend to the poor, **Charles Dickens was an unrestrained satirist who spared no one. His writings defined the complications, ironies, diversions and cruelties of the new urban life brought by the industrial revolution.**

Writing saved Dickens, both financially and emotionally. **As an adult, he set his life's work on exposing social ills,** using his boundless talents and energies to spin engaging, poignant tales from the streets. In doing so, **he also introduced new accessible forms of publishing that proved immensely popular and influential.**

Dickens's keen

observational style, precise description, and sharp social criticism have kept his large body of

work profoundly enduring.

LIFE

Charles John Huffam Dickens was born February 7, 1812 near Portsmouth, England, the

second of eight children. Dickens's father was employed as a minor civil servant in the Naval

Pay Office, a job that required the family to move a number of times. **The Dickenses spent many**

of Charles's early years fairly pleasantly in Chatham but made their final move to an undesirable

part of London. Charles's father lived **beyond his means**, and floundered financially.

Two days after Charles turned 12, his father was thrown into Marshalsea Debtor's Prison.

Charles was already working at the Warren Blacking Company, pasting labels on bottles of shoe

polish; he'd left school at age 10 to help support the family. Now he was on his own, while the rest of the family roomed in a jail cell with the elder Dickens. Young Dickens lived in a miserable lodging house and worked long hours in squalid conditions, supervised by cruel masters. Though Dickens lived away from his family for only four months (his father came into an unexpected inheritance), the traumatic experience shaped the rest of his life. He came to believe that money and position in Victorian England meant everything. His early encounters with such grave conditions gave Dickens rare and deep insight into life's inequalities and greatly enriched his writing.

Dickens soon returned to school, enrolling at Wellington House Academy in London, where he excelled. He loved reading, especially adventure stories and magical tales by other English writers such as Shakespeare, Tobias Smollett, Oliver Goldsmith, and Henry Fielding. At this time, Dickens began submitting "penny-a-line" material (whereby writers were paid per line for their work) to the British Press. Such submissions largely took the form of factual information about fires, accidents, and police reports. Dickens took great pride in meeting deadlines and beating other reporters to key facts, and his sharp accuracy was well respected. His parents could not afford to complete his education, and at 15 Dickens reluctantly left school to begin the tedious routine of a law clerk. Shorthand played an odd but key role in his career.

While clerking, he taught himself this difficult skill in just 18 months and immediately parlayed

his newfound knowledge into a job as a newspaper reporter.

Dickens first worked at the *Mirror of Parliament*, founded by his uncle, and gained a great

reputation for accuracy, quickness, and sharp observation. He covered the Reform Bill debates,

legislation that extended voting rights to the previously disenfranchised, an experience which

both cemented his commitment to reform while, at the same time, instilled in him a lifelong

suspicion of reformers. *Mirror of Parliament* did not pay its writers when the government was

in recess. At such times, Dickens relied on freelance court reporting for various newspapers

such as the liberal daily *Morning Chronicle*. Such work sharpened his ear for conversational

speech and class mannerisms, which he called on later to portray characters with remarkable

realism.

When the *Morning Chronicle* expanded, Dickens jumped at the chance for a staff position.

At this time, Dickens also started publishing tales and sketches of street life under the pseudonym “Boz” in periodicals such as *Monthly Magazine*, *Bell’s Weekly Magazine*, and

Morning Chronicle. They were immensely popular and

were ultimately collected in two books, *Sketches by Boz* and *Sketches by Boz II*.

These sketches

provide much of the subject matter that would later appear in Dickens’s fiction. They also set

Dickens’s reputation as a flaneur, the French-derived literary term for “connoisseur of street life.”

Book publishers Edward Chapman and William Hall were so impressed with Sketches by Boz

that in 1836 they asked Dickens to write a series of stories to accompany illustrations by Robert

Seymour, one of England's most popular comic artists. Their plan was for Dickens to write 20

monthly installments, which they would sell for one shilling each.

Up until then, serials were used largely for inexpensive reprints of classics or trivial nonfiction. Dickens found just the opposite

of these predictions. **Known as The Pickwick Papers, the serial was enormously well received**

both critically and popularly, and made Dickens a celebrity at the age of 24. The first run sold

400 copies; the last run sold 40,000. All of Dickens's future novels would appear in serial

installments, setting a new Victorian trend in publishing.

Dickens used his first payment of 29 shillings from The Pickwick Papers to marry Catherine

Hogarth, with whom he would eventually have 10 children.

Dickens idealized Catherine's younger sister, Mary, who is thought to be the model for Rose in

Oliver Twist. Mary's untimely death at age 17 greatly affected him.

3

In 1837, Dickens began editing a monthly called Bentley's Miscellany, a collection of fiction,

humor, and other features published by Richard Bentley. **In the second issue, Dickens began**

installments of his first novel, Oliver Twist. The book followed the harsh childhood experiences

of an orphan, and was largely an indictment of the new Poor Laws legislation, which Dickens

felt institutionalized ill treatment of society's least fortunate. Bentley put out the book in three

volumes in 1838. Though *Oliver Twist* was a huge financial and critical success, Dickens and

Bentley soon parted over financial and editorial differences.

Dickens continued publishing novels, as well as essays and letters to newspapers regarding

social reform. In 1842, he visited America for the first time and shocked his hosts by denouncing slavery. He published *American Notes* upon his return to England, criticizing

many aspects of American life and setting off a furor among Americans. Dickens depicted his

low opinion of American manners in his 1843–1844 novel *Martin Chuzzlewit*.

Dickens had used humor wonderfully to liven up the dark truths of his novels; in the 1840s he

refined his style, widening his range with literary devices such as symbolism. In *Bleak House*,

for example, he uses the toxic London fog to symbolize society's ills toward the downtrodden,

his familiar theme. Dickens still offered funny, irreverent characters and situations, but now his

tone was somewhat bitter, often taking the form of biting satire.

Dickens always had an interest in theater, and later in his career, he took great pleasure in

producing and acting in amateur dramas. He collaborated with author Wilkie Collins on a

play called *The Frozen Deep*, which his theatrical company performed for Queen Victoria in

1857. That same year, Dickens left his wife for actress Ellen Ternan

Around this

time, Dickens also began to give public readings for pay, traveling throughout Europe and

America.

Dickens continued editing periodicals, beginning the weekly Household Words in 1850, which

featured installments of Hard Times, among other works. In 1859, he began a new weekly titled

All the Year Round, where Great Expectations, A Tale of Two Cities, Our Mutual Friend and the

unfinished Mystery of Edwin Drood appeared in serialized segments.

Dickens's final days were spent at his beloved home Gad's Hill, an estate he'd admired as a

child. He continued his public readings in London. On June 8, 1870, he had a stroke after a full

day's work and died the next day. Some of his friends claimed his death was caused or hastened

by the dramatic public readings he gave during this period of the final murderous scene between

Bill Sikes and Nancy from Oliver Twist. Five days later, he was buried at Westminster Abbey.

POOR LAW LEGISLATION:

Poor Law reform

In 1832, the government appointed a royal commission to investigate the workings of the Poor Law and make recommendations for improvement. The commissioners sent out questionnaires and visited over 3,000 parishes (out of a total of 15,000) collecting information.

The commission's report and recommendations were published in 1834 and received wide support in Parliament. The commissioners had come up with a way of providing an efficient government cure for the problem, yet one which ensured a minimum of state interference and cost.

Reform

The Poor Law Amendment Act was quickly passed by Parliament in 1834, with separate legislation for Scotland and Ireland. It implemented a major overhaul of the old Poor Law by adopting all the commission's main recommendations. A 'Poor Law Commission' (a new government department, in effect) was set up in London employing inspectors to supervise the work of local officials. Instead of an administrative system based around parishes about 600 locally elected 'boards of guardians' were set up, each board having its own workhouse.

Outdoor relief - the financial support formerly given to the able-bodied - was no longer to be available to them so as to compel them to work. Outside assistance was widely available to the sick and elderly. But in many areas assistance was only given within the confines of the workhouse where the regime was deliberately harsh and often cruel.

Pioneering Act

The new Act was pioneering in introducing a role for central government in the care of the poor, and remained in force throughout the Victorian age. But, as social commentators remarked, the treatment of genuine hardship caused by economic circumstances beyond the control of the individual had been ignored. By the 1880s, greater understanding of poverty and its complex links with economic conditions (such as low pay and unemployment) slowly began to change opinion in Parliament.

**ENERGY SOURCES
AND
POLLUTION**

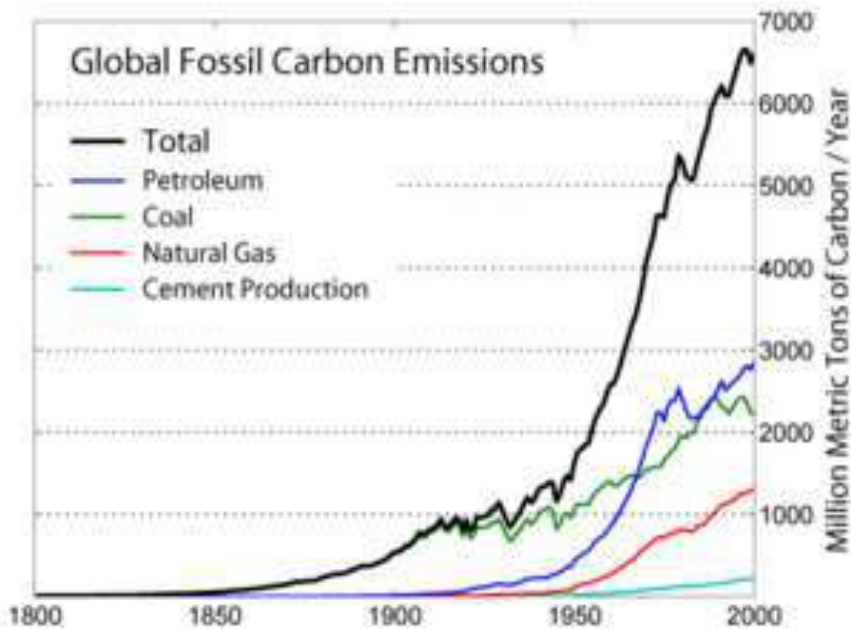
WHAT IS AIR POLLUTION?



Which Types of Energy Source Produces the Most Pollution?

Energy generation is the number one cause of air pollution and the leading cause of global warming emissions in the United States. Energy is often classified as “dirty” or “clean,” but that isn’t the whole story. Advanced energy solutions can blur the line and make this distinction irrelevant as advances in all forms of energy lead to cleaner solutions.

Here are the most common types of energy sources ranked in terms of pollution and carbon emissions



Coal

Coal produces more pollution than any other energy source. While coal produces just 44% of U.S. electricity, it accounts for 80% of power plant carbon emissions. Burning coal leads to soot, smog, acid rain, global warming, and carbon emissions. It also generates a great deal of waste, including sludge, toxic chemicals, and heat. Coal pollutes during every stage of the energy production process, from mining and transportation to storage and burning.

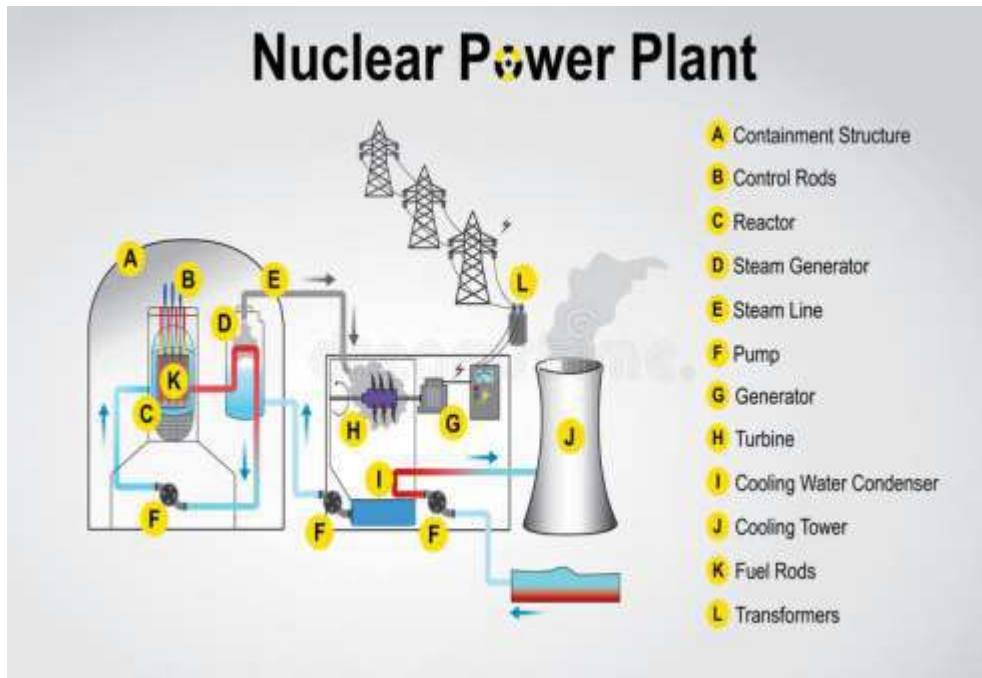
Coal is one of three types of fossil fuel energy — along with natural gas and oil — but it won't last forever. Reserves of fossil fuels are limited and it's believed they will be exhausted after 100 years. Fortunately, coal is on the decline. Many aging coal plants are being shut down and virtually no new coal plants are being constructed.

Natural Gas

Like coal, natural gas is a fossil fuel that contributes to air pollution and has environmental and health risks. The global warming emissions from natural gas are lower than with coal and oil, but emissions are only part of the story with natural gas. Drilling and extracting natural gas and transporting it in pipelines results in the leakage of methane, the main component of natural gas that's 35 times stronger than carbon dioxide at trapping heat. Land disturbance for gas and oil drilling also harms ecosystems through erosion and pollutants that leak into nearby streams. There are also well-documented cases of groundwater near gas wells becoming contaminated with gases and fracking fluids.

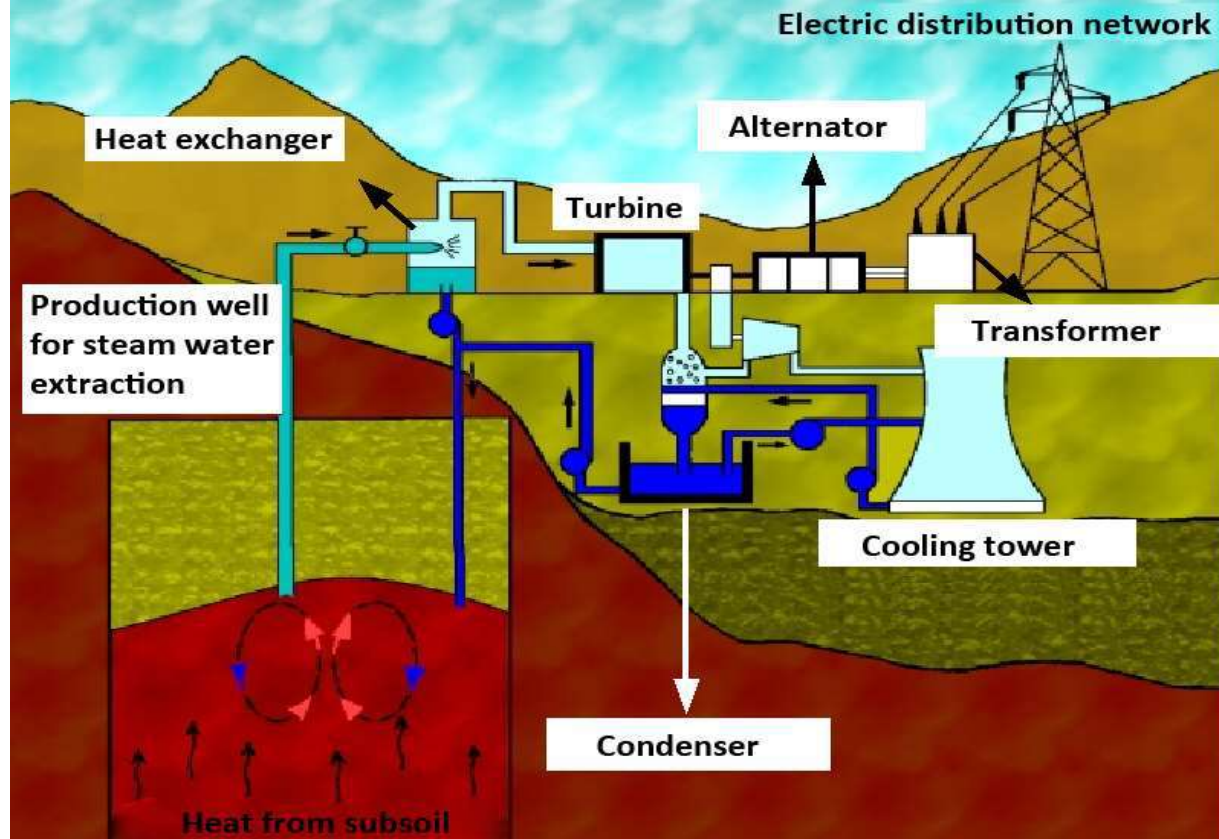
Unfortunately, lawmakers in states that depend heavily on fossil fuels often downplay these concerns. When residents in some fracking communities showed that the water coming from their faucets could actually be lit on fire, Colorado Republican senator Randy Baumgardner claimed it was merely propaganda and a natural phenomenon. No need to worry; water is supposed to catch fire.

Nuclear Power Plant



Nuclear

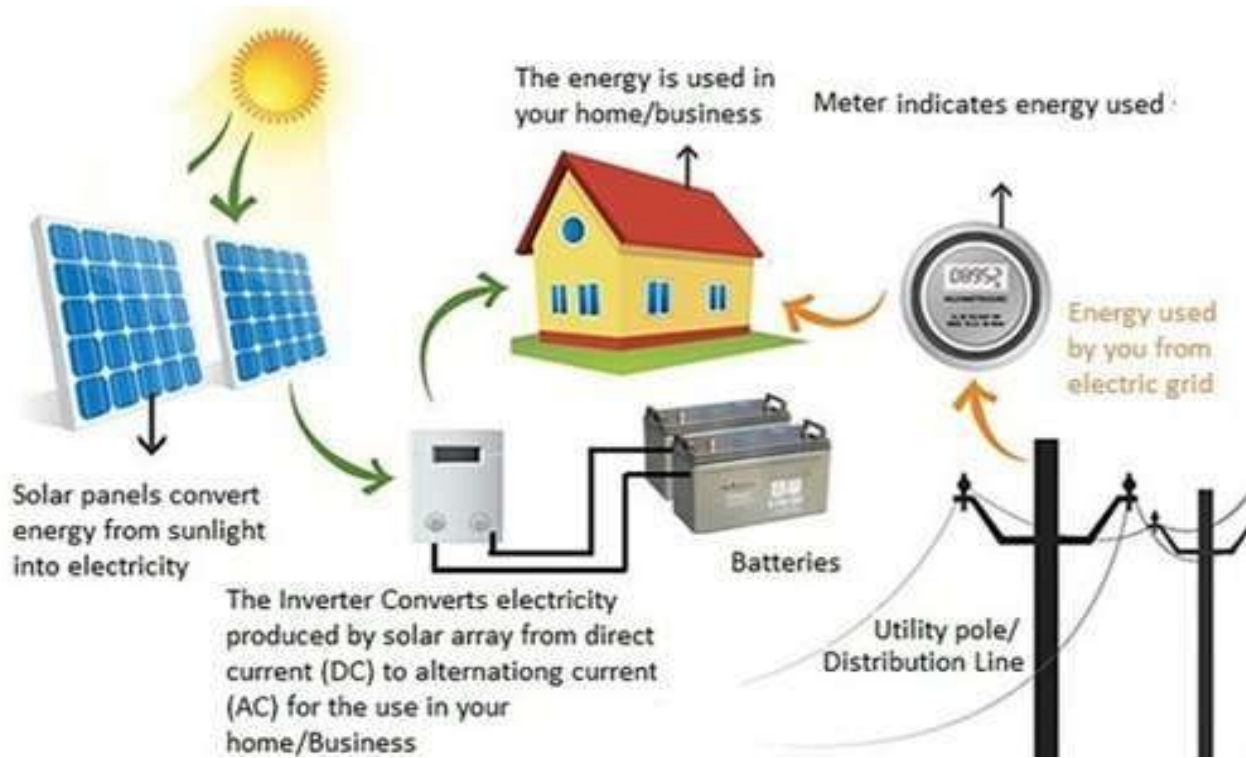
Nuclear energy is one of the biggest sources of renewable energy in the world, although it's not entirely clean. Nuclear energy is emission-free and saves about 2.4 billion tons of carbon emissions per year that would otherwise result from coal, but it results in radioactive, high-level waste (HLW). Unlike other types of industrial waste, the level of hazard of nuclear waste does decrease over time. Waste that results from nuclear energy production needs to be dealt with safely.



Geothermal

Geothermal is a clean energy source that uses energy produced from beneath the earth. Beneath the earth's crust, high temperatures are the result of a slow decay of radioactive particles. Hot rocks beneath the surface heat up water to produce steam which is then captured and moves turbines. Rotating turbines generate power for generators.

While this energy source is clean, it can only be produced in certain areas of the world.



Solar

Solar panels allow for the collection of solar energy from the sun that can be turned into power. Many homes are now equipped with solar panels to run at least some amount of the home's electricity and some corporations are even jumping on board

While solar is a clean source of energy that does not produce air pollution, it's only available in certain geographical areas that get direct sun long enough to generate usable power.

Wind is a clean source of energy

Wind is a clean, free, and readily available renewable energy source. In 2019 wind energy saved 118 million tonnes of CO₂ in Europe and could save up to 270 million tonnes in 2030 – the equivalent of Spain's annual CO₂ emissions.

Wind does not need to be mined or shipped and the more we use, the closer Europe gets to real energy independence.

Operating wind turbines do not emit greenhouse gases like carbon dioxide (CO₂) or any other air pollutant such as nitrogen oxide (NOx), sulphur oxide (SOx), or particulate matter (PM).

Wind energy is sustainable

Wind energy's water footprint is almost zero, unlike most other forms of electricity generation.

Although there are CO₂ emissions associated with the construction, transport, operation and dismantling of wind turbines these emissions are paid back in less than one year of operation.

Wind turbines are made of standard materials such as concrete, steel, and composite materials for blades. The cement used for turbine foundations is an inert material that does not pollute the soil.

The wind industry and its supply chain are working to develop resource-efficient and sustainable materials, such as low-carbon steel and recyclable composites for blades.

Different turbine models use different quantities of rare earths, mainly in permanent magnets. WindEurope is part of the European Raw Materials Alliance which is working to develop a permanent magnet supply chain for Europe. The industry is working to improve material efficiency, recycling, and substitution.

Wind farms allow for a sustainable use of land and sea

Wind turbines can be built on farms and coexist with many forms of agricultural and other activities.

Wind farms can have positive effects on biodiversity by helping to preserve habitats and ecosystems. Once wind farms have been built their sites are left undisturbed for many years. Many onshore wind farms contain areas of pollinator-friendly habitat.

At offshore wind farms bottom trawling and dredging cannot take place, which helps us preserve the seabed.

The wind industry works with local partners to maximise this positive impact. This has led, for example, to artificial reef substructures being added in between offshore wind turbines to further enhance biodiversity.

Chapter 1

I am by birth a Genevese, and my family is one of the most distinguished of that republic. My ancestors had been for many years counsellors and syndics, and my father had filled several public situations with honour and reputation. He was respected by all who knew him for his integrity and indefatigable attention to public business. He passed his younger days perpetually occupied by the affairs of his country; a variety of circumstances had prevented his marrying early, nor was it until the decline of life that he became a husband and the father of a family.

As the circumstances of his marriage illustrate his character, I cannot refrain from relating them. One of his most intimate friends was a merchant who, from a flourishing state, fell, through numerous mischances, into poverty. This man, whose name was Beaufort, was of a proud and unbending disposition and could not bear to live in poverty and oblivion in the same country where he had formerly been distinguished for his rank and magnificence. Having paid his debts, therefore, in the most honourable manner, he retreated with his daughter to the town of Lucerne, where he lived unknown and in

wretchedness. My father loved Beaufort with the truest friendship and was deeply grieved by his retreat in these unfortunate circumstances. He bitterly deplored the false pride which led his friend to a conduct so little worthy of the affection that united them. He lost no time in endeavouring to seek him out, with the hope of persuading him to begin the world again through his credit and assistance.

Beaufort had taken effectual measures to conceal himself, and it was ten months before my father discovered his abode. Overjoyed at this discovery, he hastened to the house, which was situated in a mean street near the Reuss. But when he entered, misery and despair alone welcomed him. Beaufort had saved but a very small sum of money from the wreck of his fortunes, but it was sufficient to provide him with sustenance for some months, and in the meantime he hoped to procure some respectable employment in a merchant's house. The interval was, consequently, spent in inaction; his grief only became more deep and rankling when he had leisure for reflection, and at length it took so fast hold of his mind that at the end of three months he lay on a bed of sickness, incapable of any exertion.

His daughter attended him with the greatest tenderness, but she saw with despair that their little fund was rapidly decreasing and that there was no other prospect of support. But Caroline Beaufort possessed a mind of an uncommon mould, and her courage rose to support her in her adversity. She procured plain work; she plaited straw and by various means contrived to earn a pittance scarcely sufficient to support life.

Several months passed in this manner. Her father grew worse; her time was more entirely occupied in attending him; her means of subsistence decreased; and in the tenth month her father died in her arms, leaving her an orphan and a beggar. This last blow overcame her, and she knelt by Beaufort's coffin weeping bitterly, when my father entered the chamber. He came like a protecting spirit to the poor girl, who committed herself to his care; and after the interment of his friend he conducted her to Geneva and placed her under the protection of a relation. Two years after this event Caroline became his wife.

There was a considerable difference between the ages of my parents, but this circumstance seemed to unite them only closer in bonds of devoted affection. There was a sense of justice in my father's upright mind which rendered it necessary that he should approve highly to love

strongly. Perhaps during former years he had suffered from the late-discovered unworthiness of one beloved and so was disposed to set a greater value on tried worth. There was a show of gratitude and worship in his attachment to my mother, differing wholly from the doting fondness of age, for it was inspired by reverence for her virtues and a desire to be the means of, in some degree, recompensing her for the sorrows she had endured, but which gave inexpressible grace to his behaviour to her. Everything was made to yield to her wishes and her convenience. He strove to shelter her, as a fair exotic is sheltered by the gardener, from every rougher wind and to surround her with all that could tend to excite pleasurable emotion in her soft and benevolent mind. Her health, and even the tranquillity of her hitherto constant spirit, had been shaken by what she had gone through. During the two years that had elapsed previous to their marriage my father had gradually relinquished all his public functions; and immediately after their union they sought the pleasant climate of Italy, and the change of scene and interest attendant on a tour through that land of wonders, as a restorative for her weakened frame.

From Italy they visited Germany and France. I, their eldest child, was born at Naples, and as an infant

accompanied them in their rambles. I remained for several years their only child. Much as they were attached to each other, they seemed to draw inexhaustible stores of affection from a very mine of love to bestow them upon me. My mother's tender caresses and my father's smile of benevolent pleasure while regarding me are my first recollections. I was their plaything and their idol, and something better—their child, the innocent and helpless creature bestowed on them by heaven, whom to bring up to good, and whose future lot it was in their hands to direct to happiness or misery, according as they fulfilled their duties towards me. With this deep consciousness of what they owed towards the being to which they had given life, added to the active spirit of tenderness that animated both, it may be imagined that while during every hour of my infant life I received a lesson of patience, of charity, and of self-control, I was so guided by a silken cord that all seemed but one train of enjoyment to me.

For a long time I was their only care. My mother had much desired to have a daughter, but I continued their single offspring. When I was about five years old, while making an excursion beyond the frontiers of Italy, they passed a week on the shores of the Lake of Como. Their benevolent disposition often made them enter the cottages

of the poor. This, to my mother, was more than a duty; it was a necessity, a passion—remembering what she had suffered, and how she had been relieved—for her to act in her turn the guardian angel to the afflicted. During one of their walks a poor cot in the foldings of a vale attracted their notice as being singularly disconsolate, while the number of half-clothed children gathered about it spoke of penury in its worst shape. One day, when my father had gone by himself to Milan, my mother, accompanied by me, visited this abode. She found a peasant and his wife, hard working, bent down by care and labour, distributing a scanty meal to five hungry babes. Among these there was one which attracted my mother far above all the rest. She appeared of a different stock. The four others were dark-eyed, hardy little vagrants; this child was thin and very fair. Her hair was the brightest living gold, and despite the poverty of her clothing, seemed to set a crown of distinction on her head. Her brow was clear and ample, her blue eyes cloudless, and her lips and the moulding of her face so expressive of sensibility and sweetness that none could behold her without looking on her as of a distinct species, a being heaven-sent, and bearing a celestial stamp in all her features.

The peasant woman, perceiving that my mother fixed eyes of wonder and admiration on this lovely girl, eagerly communicated her history. She was not her child, but the daughter of a Milanese nobleman. Her mother was a German and had died on giving her birth. The infant had been placed with these good people to nurse: they were better off then. They had not been long married, and their eldest child was but just born. The father of their charge was one of those Italians nursed in the memory of the antique glory of Italy—one among the **schiavi ognor frementi**, who exerted himself to obtain the liberty of his country. He became the victim of its weakness. Whether he had died or still lingered in the dungeons of Austria was not known. His property was confiscated; his child became an orphan and a beggar. She continued with her foster parents and bloomed in their rude abode, fairer than a garden rose among dark-leaved brambles.

When my father returned from Milan, he found playing with me in the hall of our villa a child fairer than pictured cherub—a creature who seemed to shed radiance from her looks and whose form and motions were lighter than the chamois of the hills. The apparition was soon explained. With his permission my mother prevailed on her rustic guardians to yield their charge to her. They

were fond of the sweet orphan. Her presence had seemed a blessing to them, but it would be unfair to her to keep her in poverty and want when Providence afforded her such powerful protection. They consulted their village priest, and the result was that Elizabeth Lavenza became the inmate of my parents' house— my more than sister—the beautiful and adored companion of all my occupations and my pleasures.

Everyone loved Elizabeth. The passionate and almost reverential attachment with which all regarded her became, while I shared it, my pride and my delight. On the evening previous to her being brought to my home, my mother had said playfully, 'I have a pretty present for my Victor— tomorrow he shall have it.' And when, on the morrow, she presented Elizabeth to me as her promised gift, I, with childish seriousness, interpreted her words literally and looked upon Elizabeth as mine—mine to protect, love, and cherish. All praises bestowed on her I received as made to a possession of my own. We called each other familiarly by the name of cousin. No word, no expression could body forth the kind of relation in which she stood to me—my more than sister, since till death she was to be mine only.

Chapter 5

It was on a dreary night of November that I beheld the accomplishment of my toils. With an anxiety that almost amounted to agony, I collected the instruments of life around me, that I might infuse a spark of being into the lifeless thing that lay at my feet. It was already one in the morning; the rain pattered dismally against the panes, and my candle was nearly burnt out, when, by the glimmer of the half-extinguished light, I saw the dull yellow eye of the creature open; it breathed hard, and a convulsive motion agitated its limbs.

How can I describe my emotions at this catastrophe, or how delineate the wretch whom with such infinite pains and care I had endeavoured to form? His limbs were in proportion, and I had selected his features as beautiful. Beautiful! Great God! His yellow skin scarcely covered the work of muscles and arteries beneath; his hair was of a lustrous black, and flowing; his teeth of a pearly whiteness; but these luxuriances only formed a more horrid contrast with his watery eyes, that seemed almost of the same colour as the dun-white sockets in which they were set, his shrivelled complexion and straight black lips.

The different accidents of life are not so changeable as the feelings of human nature. I had worked hard for nearly two years, for the sole purpose of infusing life into an inanimate body. For this I had deprived myself of rest and health. I had desired it with an ardour that far exceeded moderation; but now that I had finished, the beauty of the dream vanished, and breathless horror and disgust filled my heart. Unable to endure the aspect of the being I had created, I rushed out of the room and continued a long time traversing my bed-chamber, unable to compose my mind to sleep. At length lassitude succeeded to the tumult I had before endured, and I threw myself on the bed in my clothes, endeavouring to seek a few moments of forgetfulness. But it was in vain; I slept, indeed, but I was disturbed by the wildest dreams. I thought I saw Elizabeth, in the bloom of health, walking in the streets of Ingolstadt. Delighted and surprised, I embraced her, but as I imprinted the first kiss on her lips, they became livid with the hue of death; her features appeared to change, and I thought that I held the corpse of my dead mother in my arms; a shroud enveloped her form, and I saw the grave-worms crawling in the folds of the flannel. I started from my sleep with horror; a cold dew covered my forehead, my teeth chattered, and every limb became convulsed;

when, by the dim and yellow light of the moon, as it forced its way through the window shutters, I beheld the wretch—the miserable monster whom I had created. He held up the curtain of the bed; and his eyes, if eyes they may be called, were fixed on me. His jaws opened, and he muttered some inarticulate sounds, while a grin wrinkled his cheeks. He might have spoken, but I did not hear; one hand was stretched out, seemingly to detain me, but I escaped and rushed downstairs. I took refuge in the courtyard belonging to the house which I inhabited, where I remained during the rest of the night, walking up and down in the greatest agitation, listening attentively, catching and fearing each sound as if it were to announce the approach of the demoniacal corpse to which I had so miserably given life.

Oh! No mortal could support the horror of that countenance. A mummy again endued with animation could not be so hideous as that wretch. I had gazed on him while unfinished; he was ugly then, but when those muscles and joints were rendered capable of motion, it became a thing such as even Dante could not have conceived.

I passed the night wretchedly. Sometimes my pulse beat so quickly and hardly that I felt the palpitation of every

artery; at others, I nearly sank to the ground through languor and extreme weakness. Mingled with this horror, I felt the bitterness of disappointment; dreams that had been my food and pleasant rest for so long a space were now become a hell to me; and the change was so rapid, the overthrow so complete!

Morning, dismal and wet, at length dawned and discovered to my sleepless and aching eyes the church of Ingolstadt, its white steeple and clock, which indicated the sixth hour. The porter opened the gates of the court, which had that night been my asylum, and I issued into the streets, pacing them with quick steps, as if I sought to avoid the wretch whom I feared every turning of the street would present to my view. I did not dare return to the apartment which I inhabited, but felt impelled to hurry on, although drenched by the rain which poured from a black and comfortless sky.

I continued walking in this manner for some time, endeavouring by bodily exercise to ease the load that weighed upon my mind. I traversed the streets without any clear conception of where I was or what I was doing. My heart palpitated in the sickness of fear, and I hurried on with irregular steps, not daring to look about me:

Frankenstein

Like one who, on a lonely road,
Doth walk in fear and dread,
And, having once turned round, walks on,
And turns no more his head;
Because he knows a frightful fiend
Doth close behind him tread.

[Coleridge's 'Ancient Mariner.']

Continuing thus, I came at length opposite to the inn at which the various diligences and carriages usually stopped. Here I paused, I knew not why; but I remained some minutes with my eyes fixed on a coach that was coming towards me from the other end of the street. As it drew nearer I observed that it was the Swiss diligence; it stopped just where I was standing, and on the door being opened, I perceived Henry Clerval, who, on seeing me, instantly sprung out. 'My dear Frankenstein,' exclaimed he, 'how glad I am to see you! How fortunate that you should be here at the very moment of my alighting!'

Nothing could equal my delight on seeing Clerval; his presence brought back to my thoughts my father, Elizabeth, and all those scenes of home so dear to my recollection. I grasped his hand, and in a moment forgot my horror and misfortune; I felt suddenly, and for the first time during many months, calm and serene joy. I

welcomed my friend, therefore, in the most cordial manner, and we walked towards my college. Clerval continued talking for some time about our mutual friends and his own good fortune in being permitted to come to Ingolstadt. ‘You may easily believe,’ said he, ‘how great was the difficulty to persuade my father that all necessary knowledge was not comprised in the noble art of bookkeeping; and, indeed, I believe I left him incredulous to the last, for his constant answer to my unwearied entreaties was the same as that of the Dutch schoolmaster in *★The Vicar of Wakefield★*: ‘I have ten thousand florins a year without Greek, I eat heartily without Greek.’ But his affection for me at length overcame his dislike of learning, and he has permitted me to undertake a voyage of discovery to the land of knowledge.’

‘It gives me the greatest delight to see you; but tell me how you left my father, brothers, and Elizabeth.’

‘Very well, and very happy, only a little uneasy that they hear from you so seldom. By the by, I mean to lecture you a little upon their account myself. But, my dear Frankenstein,’ continued he, stopping short and gazing full in my face, ‘I did not before remark how very ill you appear; so thin and pale; you look as if you had been watching for several nights.’

‘You have guessed right; I have lately been so deeply engaged in one occupation that I have not allowed myself sufficient rest, as you see; but I hope, I sincerely hope, that all these employments are now at an end and that I am at length free.’

I trembled excessively; I could not endure to think of, and far less to allude to, the occurrences of the preceding night. I walked with a quick pace, and we soon arrived at my college. I then reflected, and the thought made me shiver, that the creature whom I had left in my apartment might still be there, alive and walking about. I dreaded to behold this monster, but I feared still more that Henry should see him. Entreating him, therefore, to remain a few minutes at the bottom of the stairs, I darted up towards my own room. My hand was already on the lock of the door before I recollected myself. I then paused, and a cold shivering came over me. I threw the door forcibly open, as children are accustomed to do when they expect a spectre to stand in waiting for them on the other side; but nothing appeared. I stepped fearfully in: the apartment was empty, and my bedroom was also freed from its hideous guest. I could hardly believe that so great a good fortune could have befallen me, but when I became assured that

my enemy had indeed fled, I clapped my hands for joy and ran down to Clerval.

We ascended into my room, and the servant presently brought breakfast; but I was unable to contain myself. It was not joy only that possessed me; I felt my flesh tingle with excess of sensitiveness, and my pulse beat rapidly. I was unable to remain for a single instant in the same place; I jumped over the chairs, clapped my hands, and laughed aloud. Clerval at first attributed my unusual spirits to joy on his arrival, but when he observed me more attentively, he saw a wildness in my eyes for which he could not account, and my loud, unrestrained, heartless laughter frightened and astonished him.

‘My dear Victor,’ cried he, ‘what, for God’s sake, is the matter? Do not laugh in that manner. How ill you are! What is the cause of all this?’

‘Do not ask me,’ cried I, putting my hands before my eyes, for I thought I saw the dreaded spectre glide into the room; ‘**he**’ can tell. Oh, save me! Save me!’ I imagined that the monster seized me; I struggled furiously and fell down in a fit.

Poor Clerval! What must have been his feelings? A meeting, which he anticipated with such joy, so strangely turned to bitterness. But I was not the witness of his grief,

for I was lifeless and did not recover my senses for a long, long time.

This was the commencement of a nervous fever which confined me for several months. During all that time Henry was my only nurse. I afterwards learned that, knowing my father's advanced age and unfitness for so long a journey, and how wretched my sickness would make Elizabeth, he spared them this grief by concealing the extent of my disorder. He knew that I could not have a more kind and attentive nurse than himself; and, firm in the hope he felt of my recovery, he did not doubt that, instead of doing harm, he performed the kindest action that he could towards them.

But I was in reality very ill, and surely nothing but the unbounded and unremitting attentions of my friend could have restored me to life. The form of the monster on whom I had bestowed existence was forever before my eyes, and I raved incessantly concerning him. Doubtless my words surprised Henry; he at first believed them to be the wanderings of my disturbed imagination, but the pertinacity with which I continually recurred to the same subject persuaded him that my disorder indeed owed its origin to some uncommon and terrible event.

By very slow degrees, and with frequent relapses that alarmed and grieved my friend, I recovered. I remember the first time I became capable of observing outward objects with any kind of pleasure, I perceived that the fallen leaves had disappeared and that the young buds were shooting forth from the trees that shaded my window. It was a divine spring, and the season contributed greatly to my convalescence. I felt also sentiments of joy and affection revive in my bosom; my gloom disappeared, and in a short time I became as cheerful as before I was attacked by the fatal passion.

‘Dearest Clerval,’ exclaimed I, ‘how kind, how very good you are to me. This whole winter, instead of being spent in study, as you promised yourself, has been consumed in my sick room. How shall I ever repay you? I feel the greatest remorse for the disappointment of which I have been the occasion, but you will forgive me.’

‘You will repay me entirely if you do not discompose yourself, but get well as fast as you can; and since you appear in such good spirits, I may speak to you on one subject, may I not?’

I trembled. One subject! What could it be? Could he allude to an object on whom I dared not even think?

‘Compose yourself,’ said Clerval, who observed my change of colour, ‘I will not mention it if it agitates you; but your father and cousin would be very happy if they received a letter from you in your own handwriting. They hardly know how ill you have been and are uneasy at your long silence.’

‘Is that all, my dear Henry? How could you suppose that my first thought would not fly towards those dear, dear friends whom I love and who are so deserving of my love?’

‘If this is your present temper, my friend, you will perhaps be glad to see a letter that has been lying here some days for you; it is from your cousin, I believe.’

Chapter 6

Clerval then put the following letter into my hands. It was from my own Elizabeth:

My dearest Cousin,

You have been ill, very ill, and even the constant letters of dear kind Henry are not sufficient to reassure me on your account. You are forbidden to write—to hold a pen; yet one word from you, dear Victor, is necessary to calm our apprehensions. For a long time I have thought that each post would bring this line, and my persuasions have restrained my uncle from undertaking a journey to Ingolstadt. I have prevented his encountering the inconveniences and perhaps dangers of so long a journey, yet how often have I regretted not being able to perform it myself! I figure to myself that the task of attending on your sickbed has devolved on some mercenary old nurse, who could never guess your wishes nor minister to them with the care and affection of your poor cousin. Yet that is over now: Clerval writes that indeed you are getting better. I eagerly hope that you will confirm this intelligence soon in your own handwriting.

Full Title: *Oliver Twist, or, The Parish Boy's Progress*

When Written: Written serially, February 1837 to April 1839

Where Written: London, England

When Published: February 1837 to April 1839; revised 1847

Literary Period: Victorian

Genre: Victorian social novel; *Bildungsroman* (novel of education); novel of morality

Setting: London, England, and the countryside surrounding, 1830s

Climax: Oliver is shot by a servant of the Maylies; he recovers under their care, and begins the process of learning his true parentage

Antagonist: Monks and Fagin

Point of View: third-person omniscient

Oliver Twist is born in a workhouse in 1830s England. His mother, whose name no one knows, is found on the street and dies just after Oliver's birth. Oliver spends the first nine years of his life in a badly run home for young orphans and then is transferred to a workhouse for adults. After the other boys bully Oliver into asking for more gruel at the end of a meal, Mr. Bumble, the parish beadle, offers five pounds to anyone who will take the boy away from the workhouse. Oliver narrowly escapes being apprenticed to a brutish chimney sweep and is eventually apprenticed to a local undertaker, Mr. Sowerberry. When the undertaker's other apprentice, Noah Claypole, makes disparaging comments about Oliver's mother, Oliver attacks him and incurs the Sowerberrys' wrath. Desperate, Oliver runs away at dawn and travels toward London.

Outside London, Oliver, starved and exhausted, meets Jack Dawkins, a boy his own age. Jack offers him shelter in the London house of his benefactor, Fagin. It turns out that Fagin is a career criminal who trains orphan boys to pick pockets for him. After a few days of training, Oliver is sent on a pickpocketing mission with two other boys. When he sees them swipe a handkerchief from an elderly gentleman, Oliver is horrified and runs off. He is caught but narrowly escapes being convicted of the theft. Mr. Brownlow, the man whose handkerchief was stolen, takes the feverish Oliver to his home and nurses him back to health. Mr. Brownlow is struck by Oliver's resemblance to a portrait of a young woman that hangs in his house. Oliver thrives in Mr. Brownlow's home, but two young adults in Fagin's gang, Bill Sikes and his lover Nancy, capture Oliver and return him to Fagin.

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Fagin sends Oliver to assist Sikes in a burglary. Oliver is shot by a servant of the house and, after Sikes escapes, is taken in by the women who live there, Mrs. Maylie and her beautiful adopted niece Rose. They grow fond of Oliver, and he spends an idyllic summer with them in the countryside. But Fagin and a mysterious man named Monks are set on recapturing Oliver. Meanwhile, it is revealed that Oliver's mother left behind a gold locket when she died. Monks obtains and destroys that locket. When the Maylies come to London, Nancy meets secretly with Rose and informs her of Fagin's designs, but a member of Fagin's gang overhears the conversation. When word of Nancy's disclosure reaches Sikes, he brutally murders Nancy and flees London. Pursued by his guilty conscience and an angry mob, he inadvertently hangs himself while trying to escape.

Mr. Brownlow, with whom the Maylies have reunited Oliver, confronts Monks and wrings the truth about Oliver's parentage from him. It is revealed that Monks is Oliver's half brother. Their father, Mr. Leeford, was unhappily married to a wealthy woman and had an affair with Oliver's mother, Agnes Fleming. Monks has been pursuing Oliver all along in the hopes of ensuring that his half-brother is deprived of his share of the family inheritance. Mr. Brownlow forces Monks to sign over Oliver's share to Oliver. Moreover, it is discovered that Rose is Agnes's younger sister, hence Oliver's aunt. Fagin is hung for his crimes. Finally, Mr. Brownlow adopts Oliver, and they and the Maylies retire to a blissful existence in the countryside.

MAIN THEMES

Thievery and Crime

Oliver Twist is, among other things, a meditation on the nature of criminality in 1830s England: an examination of who commits crimes; of the spectrum of crimes (from petty thievery to murder); and of the idea of criminality as a learned behavior or an innate quality. Oliver is born a poor orphan; he is raised in a workhouse and makes his way to London, where is "rescued" by a group of young thieves controlled by...

[read analysis of Thievery and Crime](#)

Poverty, Institutions, and Class

Oliver Twist is a sustained attack on the British Poor Laws, a complex body of law that forced poor families to labor in prison-like "workhouses." One of the novel's effects is, simply, to describe what poverty was like at this time in England. Although many parts of English society had come in contact with the poor, few had read accounts of what it meant to be poor. Simply by telling of conditions in the workhouse...

[read analysis of Poverty, Institutions, and Class](#)

Individualism and Social Bonds

Oliver Twist presents, also, an inquiry into the nature of "individualism" in 1830s England, and in the social bonds that must be formed and sustained by individuals if they are to prosper. One of the novel's most notable scenes is Fagin's speech, to Noah, arguing that one must look out both for "Number One" (oneself) and "the other Number One," or Fagin. The thieves Fagin controls all look out for themselves, since they would...

[read analysis of Individualism and Social Bonds](#)

Social Forces, Fate, and Free Will

In the novel, "fate" is revealed to be an interaction of social forces or pressures on one's life, and one's decisions as an agent possessing free will. Oliver is an orphan *and* a pauper, meaning his "fate" is more or less sealed from birth: social forces appear poised to keep him in a "low" position forever. But Oliver, as it turns out, is the illegitimate son of a gentleman, and his father has inherited enough...

[read analysis of Social Forces, Fate, and Free Will](#)

City and Country

The novel takes place in two separate, morally distinct locations: the Country and the City.

The Country is everything outside London and its outlying villages; London is the primary City.

To Dickens, the country is a place of peace, quiet, hard work, and strong family structures that ensure people continue to work hard and avoid criminality. The city, however, is a place of difficult working conditions, where the poor are crowded together, ground down by...

[read analysis of City and Country](#)

MAIN CHARACTERS

Oliver Twist

The novel's hero, Oliver Twist is aged nine at the beginning of the novel, and several years older by the end (it is not clear exactly how much time elapses; he is probably about twelve) Born of an unwed mother, in a poorhouse, Oliver is raised in the same poorhouse, then apprenticed to a [coffin](#)-maker named [Sowerberry](#). After getting in a fight with another apprentice regarding his mother's reputation, Oliver strikes out for London on foot, where he accidentally falls in with a group of thieves led by [Fagin](#). Oliver is briefly saved by [Brownlow](#), only to be retaken by [Nancy](#), and involved, later, in a burglary of the [Maylies'](#) house that almost kills him. The Maylies, [Rose](#) and her [aunt](#), take Oliver in, and the novel traces the discovery of Oliver's parentage, a secret kept close by [Monks](#), Oliver's half-brother, who wishes to disinherit his brother and eliminate all traces of Oliver's high-born ancestry. Oliver ends the novel happily, having been adopted by Brownlow. Throughout the novel, Oliver remains a boy of good morals, despite his dire financial situation. **Agnes Fleming**

Oliver's unwed mother, Agnes was engaged to Oliver's father, Edwin, but Edwin died before they could be married; Agnes was pregnant when Edwin died. Agnes gives birth to Oliver in a poorhouse,

Edwin Leeford

Married first to Monks' mother, and then engaged to Agnes Fleming, Oliver's father dies in Rome after having claimed his inheritance, which he intended to pass on to Oliver and Agnes.

Agnes Fleming: Oliver's unwed mother, Agnes was engaged to Oliver's father, Edwin, but Edwin died before they could be married; Agnes was pregnant when Edwin died. Agnes gives birth to Oliver in a poohouse, since her family has abandoned her in the wake of her pregnancy—at the novel's end, the narrator says that, though she was a fine woman, and beautiful, Agnes was "weak and erring," because of her dalliance with Edwin before their marriage.

Edwin Leeford: Married first to Monks' mother, and then engaged to Agnes Fleming, Oliver's father dies in Rome after having claimed his inheritance, which he intended to pass on to Oliver and Agnes. This money, instead, went to Monks' mother and to Monks, thus precipitating much of the drama in the novel—Agnes' giving birth to Oliver in a poorhouse, and Oliver's travails in finding out his true identity.

Mr Brownlow: A man who becomes [Oliver's](#) adopted father at the end of the novel, Brownlow is robbed earlier in the novel by [Bates](#) and the [Dodger](#), only to think that Oliver, who was with those two boys, was responsible. Brownlow recants his accusation and takes Oliver home, to nurture him, but when he sends Oliver out on a mission to return books (prompted by his friend [Grimwig](#), to test Oliver's virtue), Oliver is re-taken by [Fagin](#). Brownlow is distraught at what he believes to be Oliver's betrayal of him, but never entirely believes that Oliver is a bad at heart and spends the remainder of the novel solving the mystery of Oliver's birth and inheritance.

Mr. Brownlow Q

Fagin: One of the novel's trio of antagonists, Fagin is in charge of the "boys," his thieves, and their exploits pay for his life in London. Fagin attempts to make Oliver a thief, but fails; Fagin is later sentenced to death. Fagin is Jewish, and described in extremely anti-Semitic terms by the narrator.

Monks: The second of the novel's antagonists, Monks (whose real name is Edward Leeford) is Oliver's half-brother, and is hellbent on keeping his own fraudulent inheritance by eliminating all traces of Oliver's inheritance, and on making Oliver into a thief so that his name might be ruined. Monks fails in this attempt, after being caught by Brownlow, and admits to his misdeeds and acknowledges Oliver's true parentage.

Charlie Bates: A young thief of Fagin's who is always joking and laughing, Bates undergoes a moral transformation in the novel: from ironic young criminal to defender of goodness after Bates realizes Sikes has killed Nancy. Bates ends the novel having given up crime and taken on a series of difficult jobs, working in the fields.

Nancy: Sikes' romantic partner, Nancy at first takes **Oliver** back to **Fagin** but later expresses regret for this, and attempts to protect Oliver as much as she can. After talking one night to Rose and **Brownlow**, and being overheard by **Noah**, Nancy is killed by Sikes in a rage, for Sikes believes Nancy has "peached," or ratted out the gang (despite the fact that she has staunchly refused to do so).

Rose Maylie

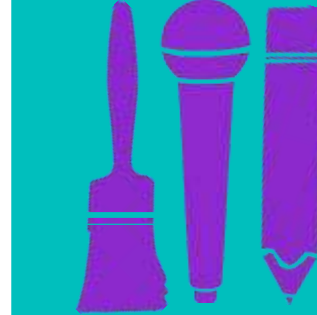
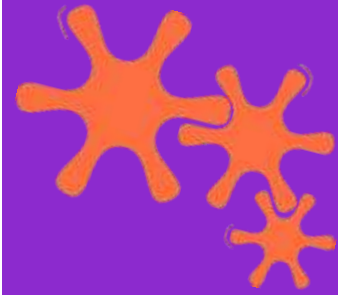
Mrs. Maylie's niece, Rose helps nurse [Oliver](#) back to health, only to catch sick later herself. [Rose](#) is in love with [Harry](#), but social barriers (her low social standing) keep their marriage from occurring until the end of the novel. It is revealed, at the novel's end, that Rose is Oliver's biological aunt. Rose embodies pure goodness and generosity.

Harry Mayle: Rose's cousin, Harry is poised for a "brilliant" career in politics, but he renounces this, and takes on the life of a village parson, in order to marry Rose, who believes she is far too socially inferior to Harry to be an acceptable wife for him. The two live "happily ever after" at the novel's end.

Mr Bumble: The village beadle of [Oliver's](#) home village, Mr. Bumble is another, more minor antagonist in the novel—he hates Oliver, and eventually marries Mrs. Bumble in order to take over the poorhouse's control, such that he can order paupers around. But Bumble is exposed as being complicit in a part of Monks' plot, and loses his social station—he and his wife later end up paupers in the very same poorhouse that they used to run.

SPIRIT OF INNOVATION

STEAM RESOURCES



Spirit of Innovation

Year Six

PowerPoint – Circuits



Electricity

Electricity can be made in a variety of ways, for example:



Burning fossil fuels
(oil, gas, coal) at
power stations



Using wind power
generated by wind
turbines

Using water power
(sometimes called
hydropower)
generated by running
or falling water.



Using solar power
generated by the sun

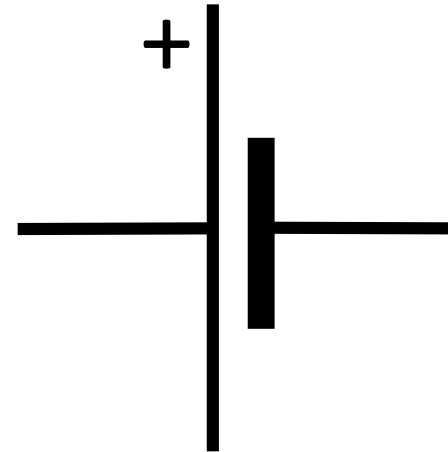


Electricity is transported to our homes, schools and places of work
through wires and cables.

Circuits

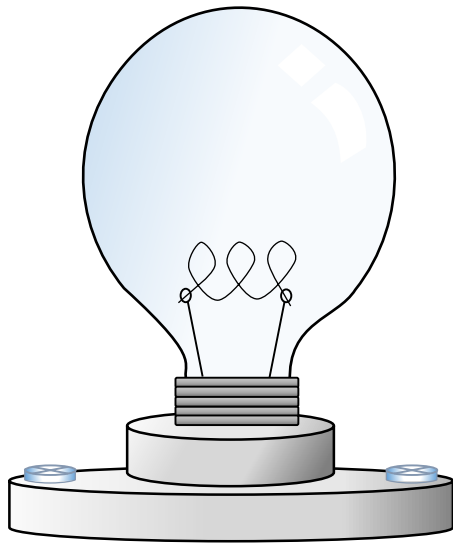
Electrical circuits are built from many different components. These components perform different functions. Some electrical components include: **cells**, **bulbs**, **motors**, **buzzers** and **wires**.

A **cell** converts chemical energy into electrical energy by a chemical reaction. Usually the chemicals are kept inside the **cell**. It is used in a circuit to power other components. A **cell** produces direct current (DC) electricity (electricity that flows in one direction, and does not switch back and forth)



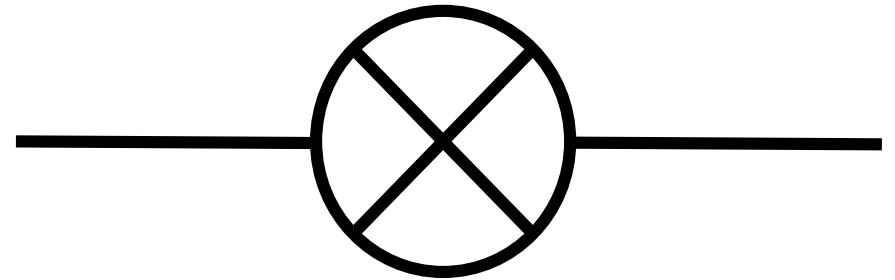
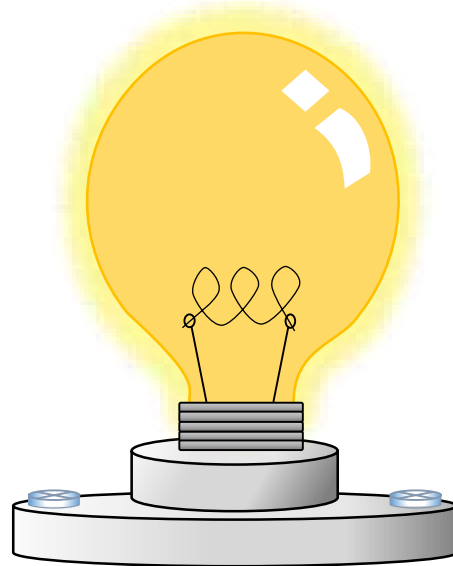
Circuits

Lamps are commonly called **light bulbs**. An electric lamp encloses a thin metal filament that emits light (and heat) when an electric current is passed through it. This filament is covered by a glass bulb containing a gas, such as argon or nitrogen.



Off

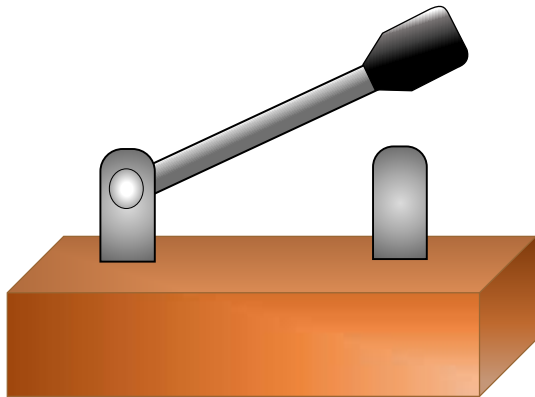
On



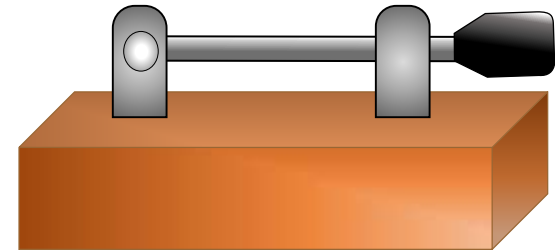
Circuits

An electrical **switch** is used to interrupt the flow of electrons in a **circuit**. **Switches** are either completely on (*closed*) or completely off (*open*). Then the **switch** is closes electricity is able to flow around the circuit.

Open – no electricity can flow

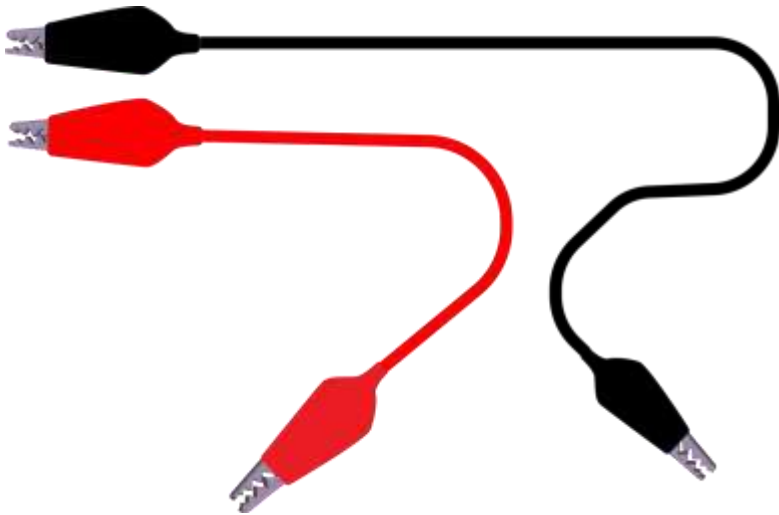


Closed – electricity can flow



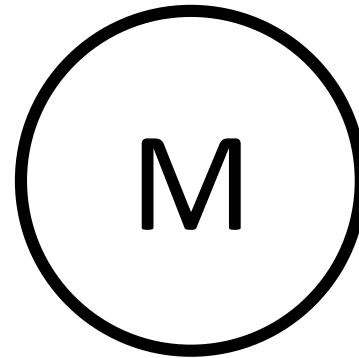
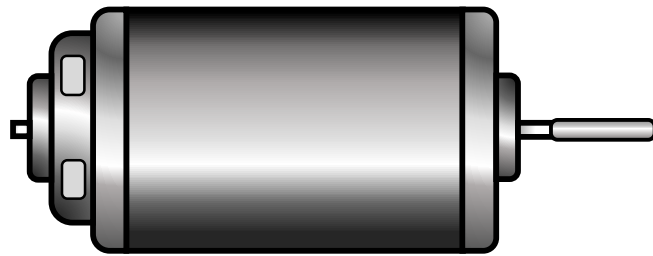
Circuits

A **wire** is a long thin piece of metal that is used to carry electric current. Most **wires** often has an inner core made of a material that conduct electricity and an outer coating that is an insulator, often plastic.

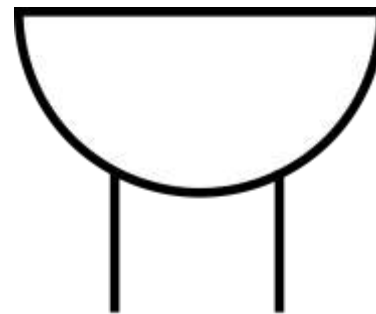
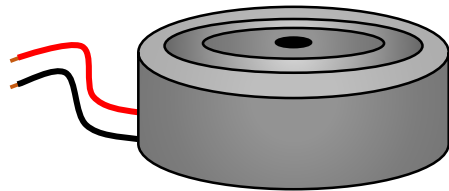


Circuits

The **motor** in a machine is the part that uses electricity or fuel to produce movement. E.g. it converts electrical power into mechanical power.



A **buzzer** is an electrical device that creates a buzzing sound when electricity passes through it.

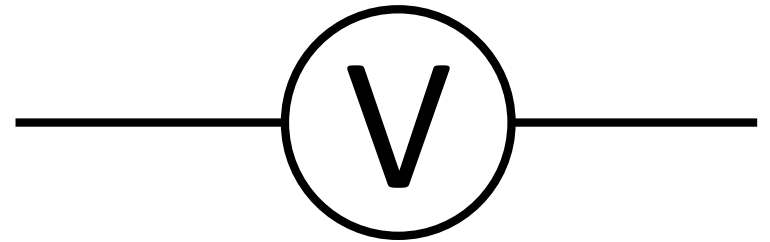


Circuits

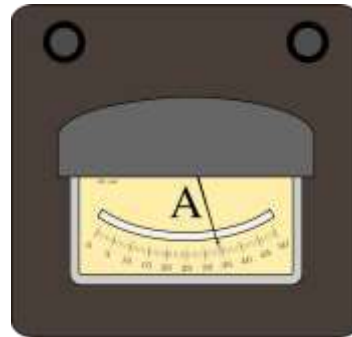
Voltage: is the difference in electrical energy between two parts of a circuit. It can be measured using a volt meter and is measured in volts. The bigger the voltage, the bigger the current. Large electrical items need a higher electrical voltage and current than smaller items



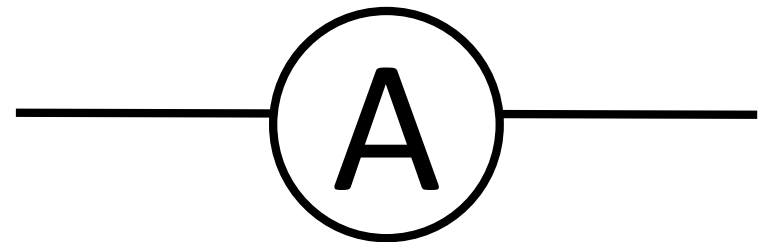
A **voltmeter** is an instrument used for measuring electrical potential difference between two points in an electric circuit.



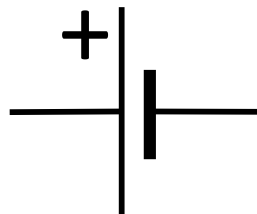
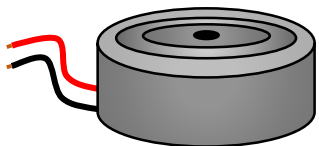
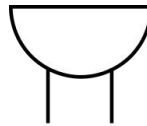
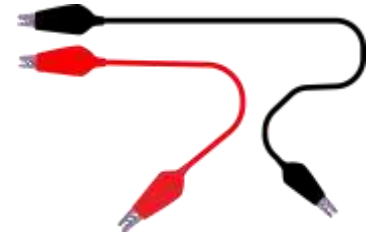
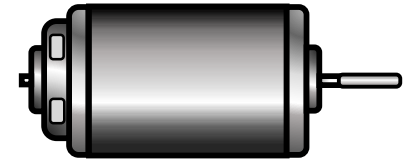
Current: this is the amount of electricity flowing through the circuit (basically a flow of electrons moving in a loop in the circuit). It can be measured using an ammeter and measured in amps.



An **ammeter** (from Ampere Meter) is a measuring instrument used to measure the current in a circuit. Electric currents are measured in amperes (A), hence the name.

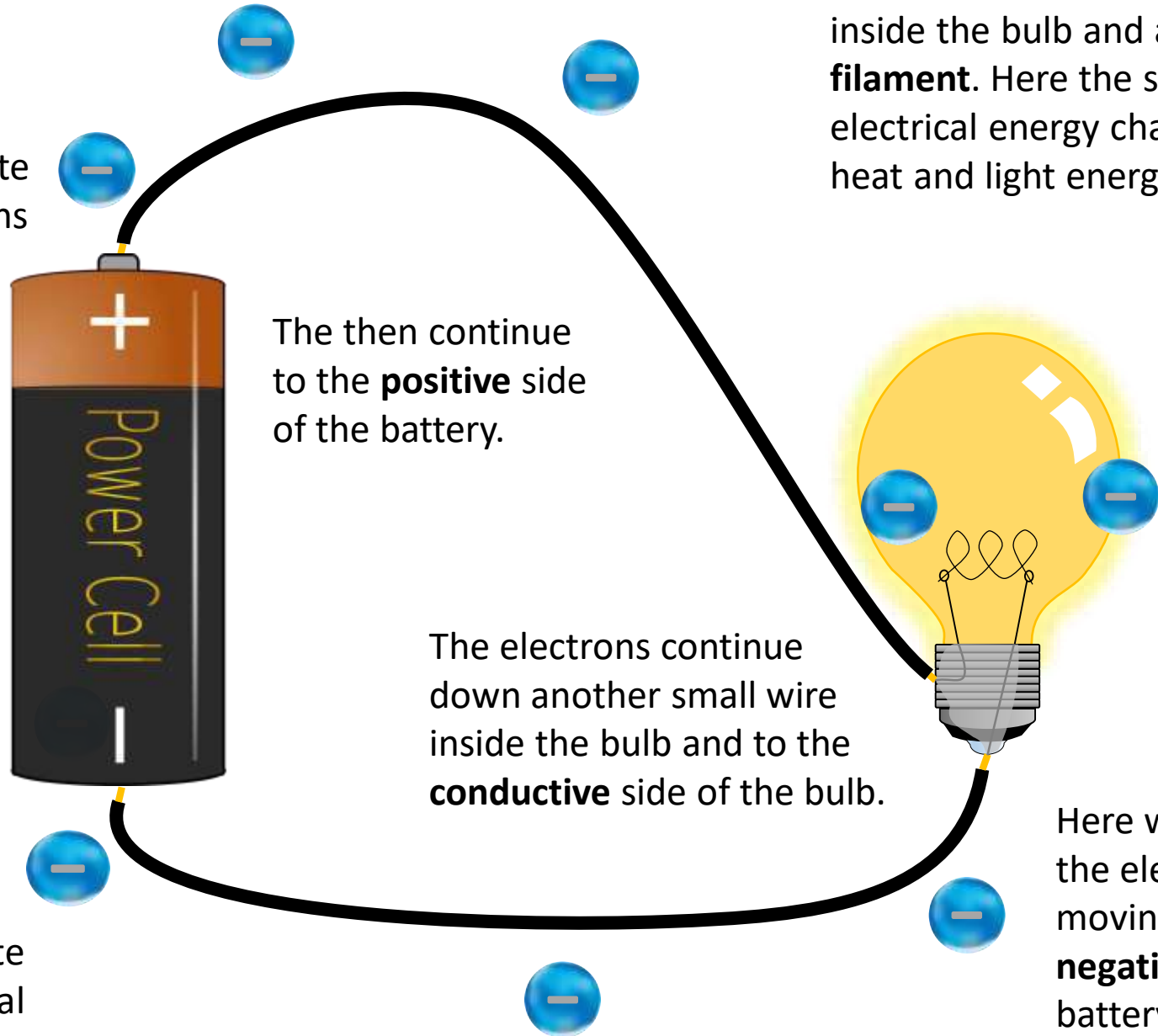


Match the symbol to the image



The electrons have now travelled a **complete circuit**.

Without a complete circuit the electrons cannot flow.



The then continue to the **positive** side of the battery.

The electrons continue down another small wire inside the bulb and to the **conductive** side of the bulb.

The electrons flow up the wire inside the bulb and across the **filament**. Here the some of the electrical energy changes to heat and light energy.

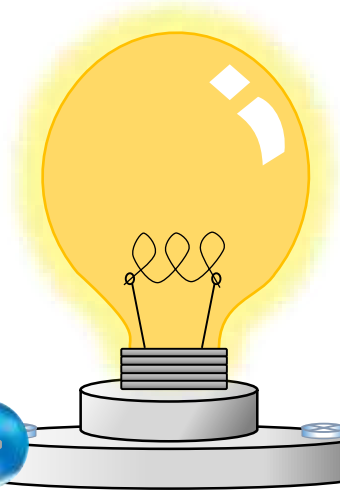
Here we can see the electrons moving from the **negative** side of the battery towards the base of the bulb.

A **circuit** is a route in which electrical **current** can flow.

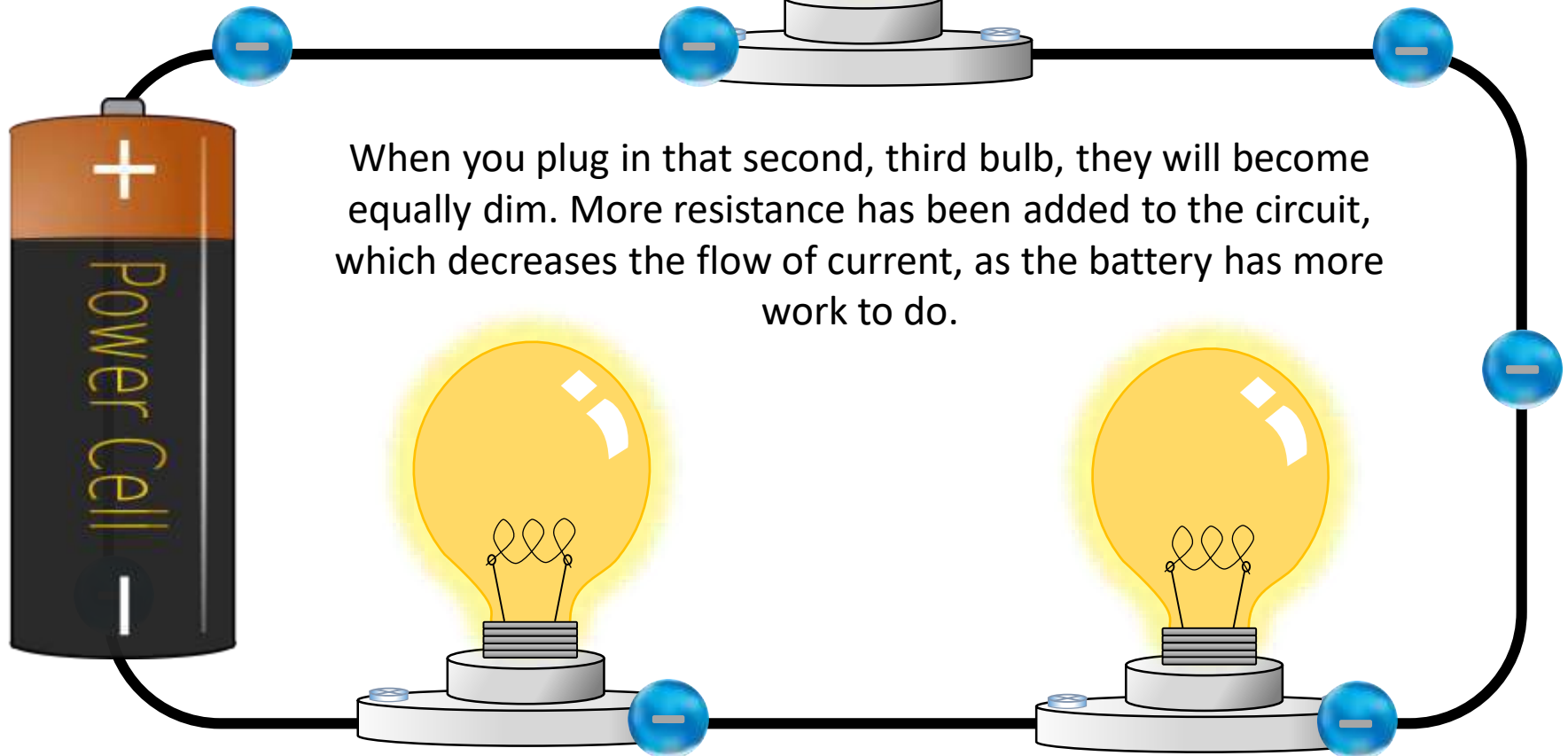
Series Circuit



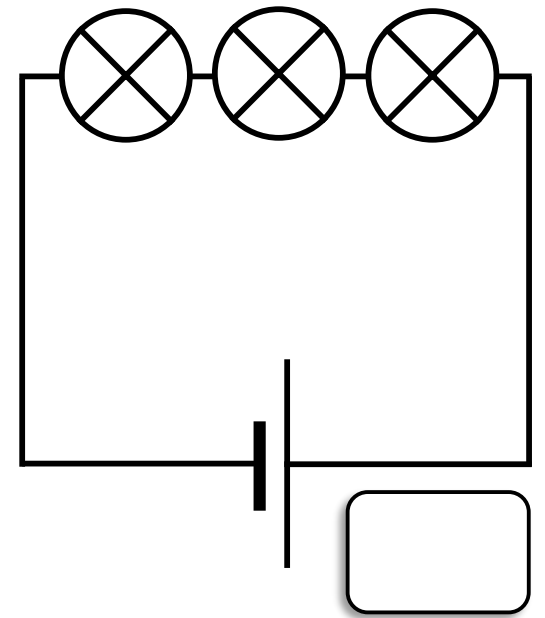
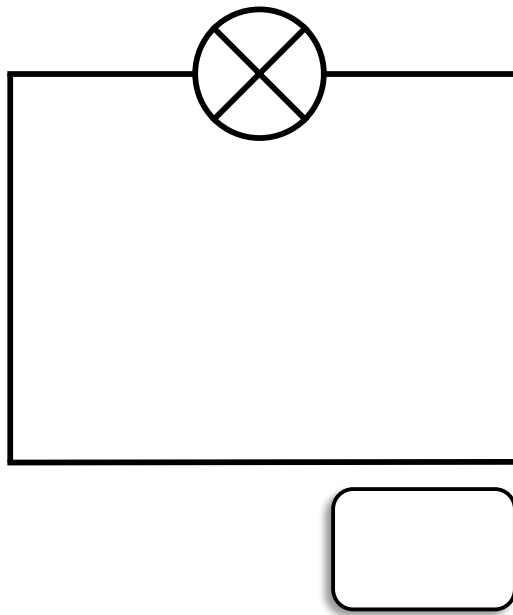
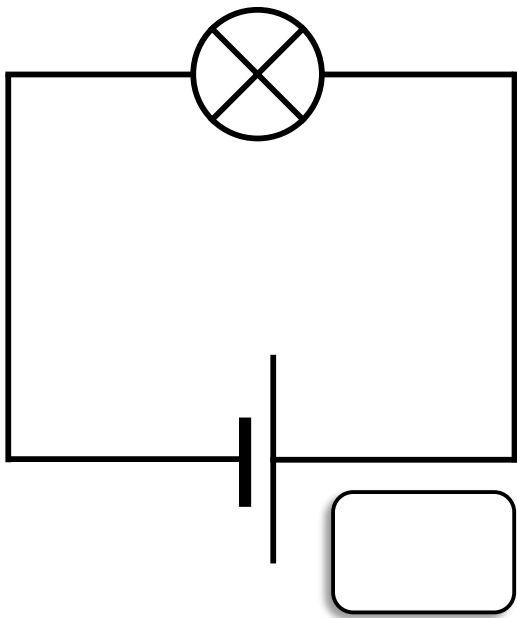
The current flows the same, from one component to another.



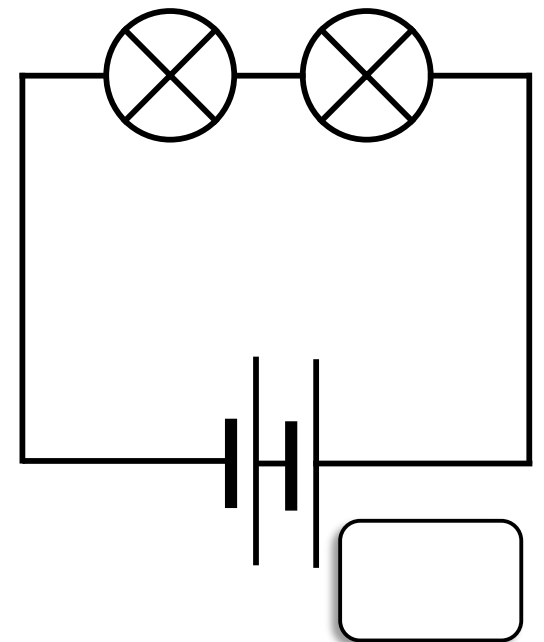
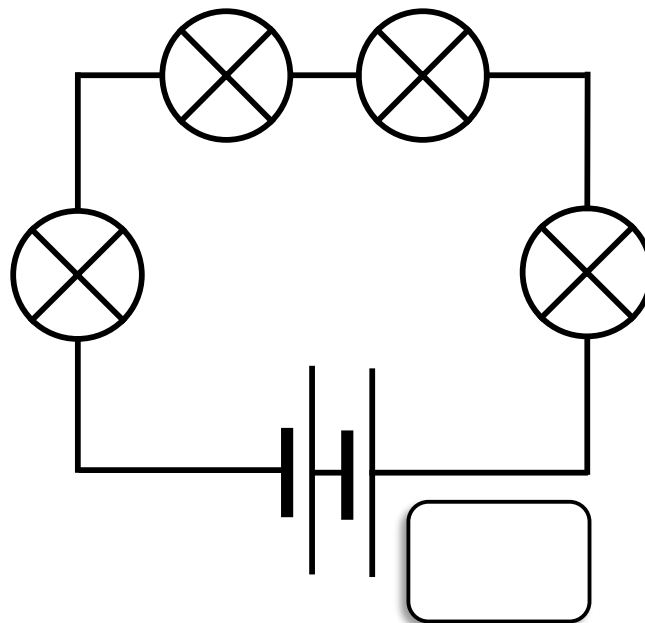
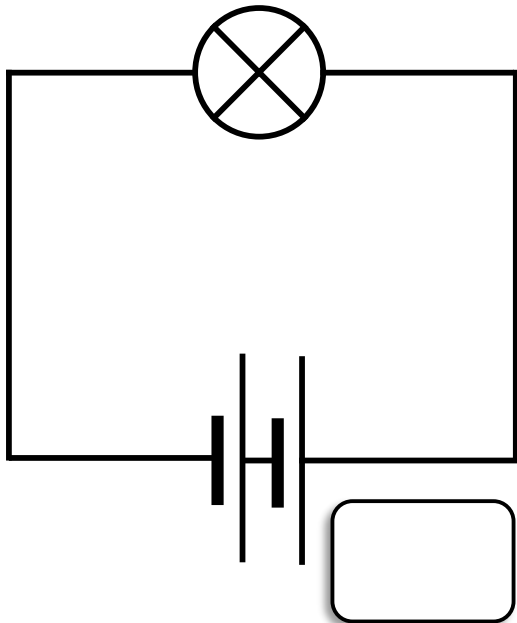
If a bulb is removed the circuit will be broken, as the electrons stop flowing.



When you plug in that second, third bulb, they will become equally dim. More resistance has been added to the circuit, which decreases the flow of current, as the battery has more work to do.



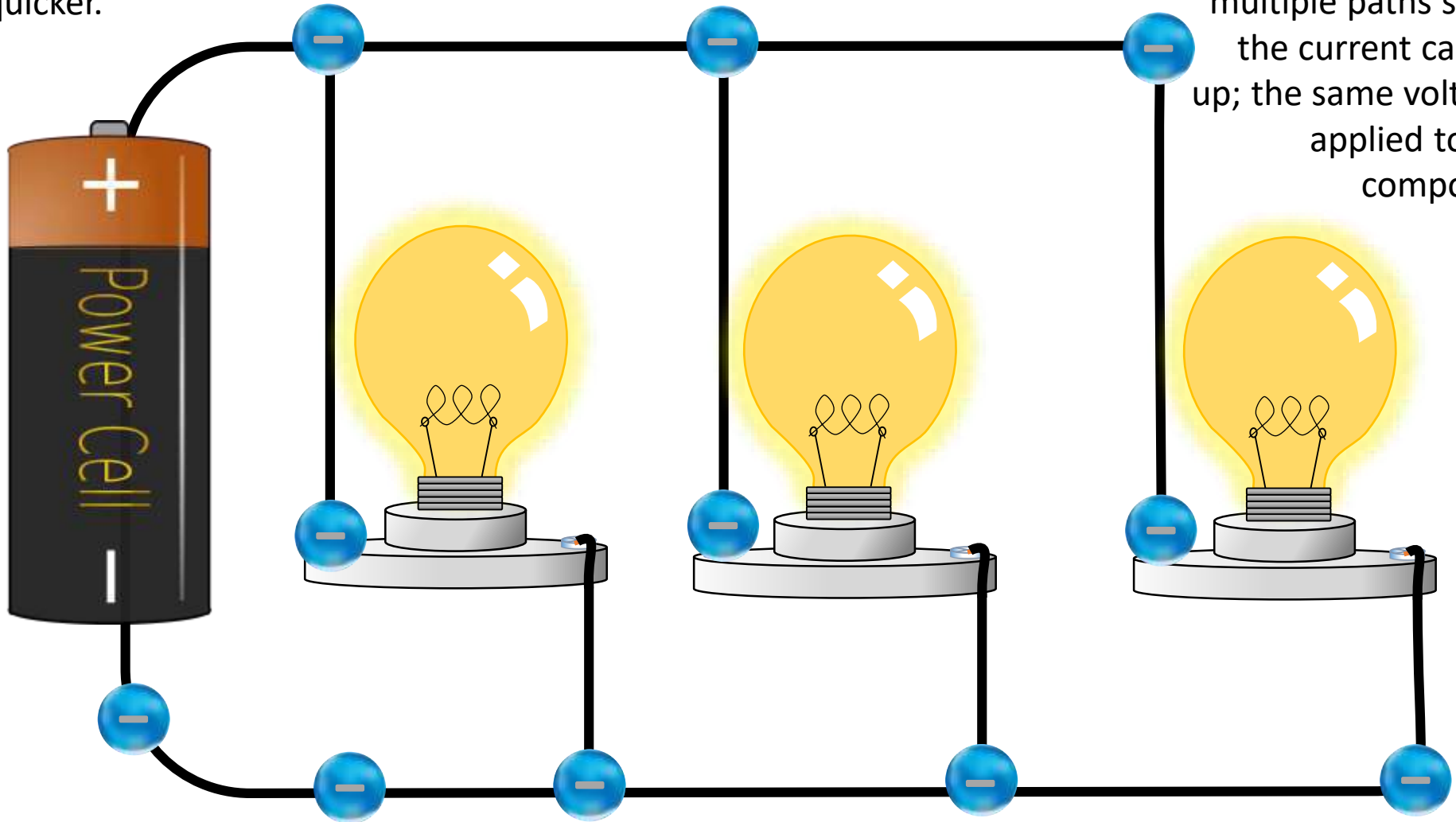
Rank these circuits; starting with the brightest bulb and ending with the dimmest bulb. Give reasons for your answer.



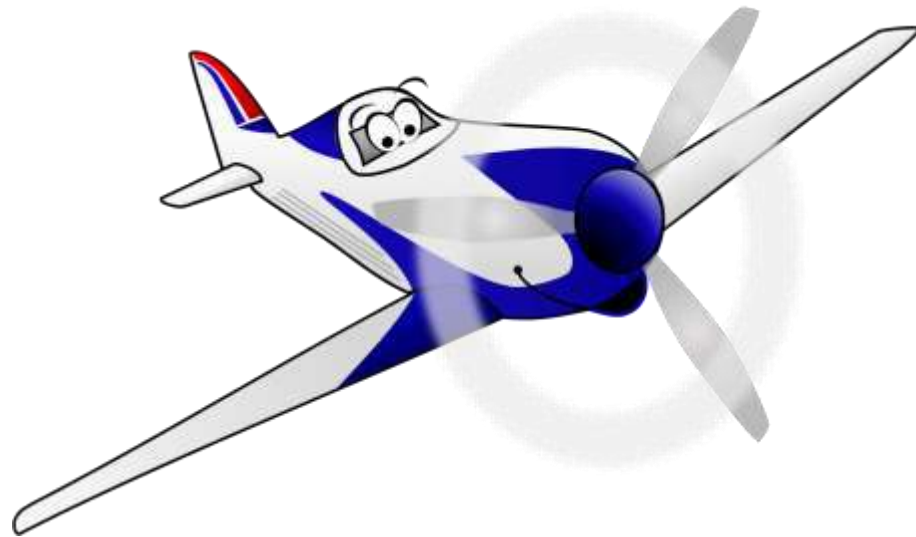
In a parallel circuit the bulbs will remain bright, but it will drain the battery power quicker.

Parallel Circuit

Components connected in parallel are connected along multiple paths so that the current can split up; the same voltage is applied to each component.



If a bulb is removed the electrons will continue to flow, as each bulb has its own circuit.



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PIONEERS OF POWER

**SUSTAINABLE
DEVELOPMENT GOALS**

The logo for the Sustainable Development Goals (SDGs) is a circular emblem composed of 17 colored segments, each representing one of the goals. The colors include shades of blue, green, yellow, orange, red, and purple. The emblem is positioned between the words 'DEVELOPMENT' and 'GOALS' in the main title.



The effects of the coronavirus disease 2019 (COVID-19) pandemic have reversed much of the progress made in reducing poverty, with global extreme poverty rising in 2020 for the first time since the Asian financial crisis of the late 1990s. Even before COVID-19, the world was not on track to achieve the goal of ending poverty by 2030, and without immediate and significant action, it will remain beyond reach. The crisis has demonstrated more clearly than ever the importance of disaster preparedness and robust social protection systems. While the number of countries with disaster risk reduction strategies has increased substantially, and many temporary social protection measures have been put in place in response to the pandemic, increased efforts are needed on both fronts to ensure the most vulnerable are protected.

Working poverty disproportionately affects women and youth, and the pandemic is likely to magnify those disparities. However, lockdowns and related public health measures due to COVID-19 have severely affected the informal economy, where the vast majority of the working poor are employed. The related income losses threaten to roll back global progress on reducing working poverty.

Although the gender gap in working poverty globally has narrowed over the years, young workers are twice as likely to be living in poverty as adults, reflecting lower earnings and poorer quality jobs. Since the COVID-19 crisis has had a disproportionate impact on the livelihoods of women and young people, it is likely to exacerbate these longstanding disparities.

Governments have put new social protection measures in place, but most are only temporary. Social protection measures are fundamental to preventing and reducing poverty across the life cycle. The COVID-19 crisis has demonstrated the importance of social protection systems to protect people's health, jobs and incomes, as well as the consequences of high coverage gaps.



Just prior to the COVID-19 pandemic, 650 million people were going hungry, and some 2 billion people were suffering from food insecurity . The crisis has posed additional threats to global food security and nutrition. Disrupted food supply chains and economic slowdowns have affected food systems worldwide and threatened people’s access to food. Urgent short-term actions are needed to avert rising hunger, and a transformation of food systems is required to achieve a healthy and sustainable food future for all.

COVID-19 is pushing rising rates of hunger and food insecurity even higher

COVID-19 has had a further and profound impact on hunger and food security, triggered by disruptions in food supply chains, income losses, widening social inequities, an altered food environment and price hikes.

Achieving food security goes beyond the eradication of hunger. Nearly one in three people in the world (2.37 billion) were affected by moderate or severe food insecurity in 2020, an increase of almost 320 million from 2019. Such levels indicate that people are unable to eat a healthy, balanced diet on a regular basis, or that they run out of food and, at worst, go a day or days without eating.

Small-scale food producers constitute the majority of food producers in the 37 countries surveyed; in some countries, they account for up to 91 per cent. Strengthening the resilience and adaptability of these small farmers is critical to reversing the trend towards rising hunger and reducing the share of people living in extreme poverty. Moreover, large-scale producers earn two to three times the annual income of small farmers. In almost all countries surveyed, households headed by men achieve higher labour productivity and earn a larger annual income than those headed by women.

Pandemic-related shocks are likely to trigger a rise in stunting.

Children are considered stunted, or chronically malnourished, when they are too short for their age. The actual number of children affected is likely to be higher due to continued constraints in accessing nutritious diets and essential nutrition services during the pandemic.

The three regions with the highest stunting prevalence were Oceania (excluding Australia and New Zealand) at 41.4 per cent, sub-Saharan Africa (32.3 per cent) and Central and Southern Asia (29.8 per cent). The latter two regions accounted for nearly three quarters of all stunted children globally. Particular attention needs to be focused on these regions since the pandemic is affecting the most vulnerable children disproportionately.



Many health indicators were moving in the right direction before the threat of COVID-19 emerged. Maternal and child health had improved, immunization coverage had increased and communicable diseases had been reduced, although not fast enough to meet those 2030 targets. The pandemic has reversed progress in health and poses major threats beyond the disease itself. About 90 per cent of countries are still reporting one or more disruptions to essential health services, and available data from a few countries show that the pandemic has shortened life expectancy. Not surprisingly, the virus is disproportionately affecting disadvantaged groups.

The pandemic has demonstrated the importance of universal health coverage and multisectoral coordination for health emergency preparedness. Moreover, to design effective pandemic policy interventions, Governments will need to improve and strengthen basic demographic and epidemiological data collection.

[Beyond millions of deaths worldwide, the full toll of the COVID-19 pandemic on health is not yet known](#)

As of June 2021, total reported deaths from COVID-19 reached 3.7 million globally.

For those who survived the virus, COVID-19 may have lingering health effects, including long-term disability due to lung scarring and heart damage, along with mental health issues that could affect individuals for a prolonged period. Indiscriminate use of antibiotics during the pandemic may increase antimicrobial resistance. Although it is still too early for existing data to reflect this impact, the COVID-19 pandemic threatens to reverse years of progress towards improved worldwide health. Evidence from countries indicates that the COVID-19 pandemic has shortened life expectancy.

A decade of progress in reproductive, maternal and child health could be stalled or reversed by the pandemic. Substantial progress has been made towards ending preventable child deaths. The global under-5 mortality rate was halved from 2000 to 2019 – falling from 76 to 38 deaths per 1,000 live births.

Before the pandemic, steady progress had been made in reducing mortality from non-communicable diseases (NCD). Between 2010 and 2019, the probability of dying from any of the four main NCDs (cardiovascular disease, cancer, diabetes and chronic respiratory disease) for people between the ages of 30 and 70 declined from 19.9 per cent to 17.8 per cent.



COVID-19 has wreaked havoc worldwide on children's learning and well-being. Before the pandemic, progress in education was already too slow to achieve Goal 4 by 2030. One year into the crisis, two in three students were still affected by full or partial school closures. One hundred million more children than before fail to demonstrate basic reading skills. The poorest and most vulnerable children are exacerbating longstanding inequalities. Many risk never returning to school; some are forced into child marriage or child labour. Special efforts are required to recover learning losses caused by COVID-19.

Even before COVID-19, the world was not on track to meet reading and mathematics targets. The pandemic is projected to cause an additional 101 million children to fall below the minimum reading proficiency threshold, increasing the total number of students falling behind to 584 million in 2020. Similar declines are observed in the area of mathematics. Progress to ensure that all children complete primary and secondary school has been slow. Large disparities among population groups remain pervasive. Almost half of countries with data did not reach gender parity in primary school completion. Disparities by location and wealth are even more stark: only a third of countries reached parity in primary school completion between rural and urban students, and just one sixth of countries reached parity between students in the poorest and richest households. Continuing education and training are key to improved livelihoods and to developing a labour force resilient to economic shocks and adaptable to technological change. Prior to the pandemic, the average participation rate of youth and adults in formal and non-formal education was only 25 per cent. Gender parity in participation rates was achieved in less than a fifth of the countries.

With schools and workspaces transitioning online due to COVID-19, information and communication (ICT) skills have become critically important. However, available data from 2017–2019 indicate that less than 40 per cent of youth and adults reported performing one of the basic ICT skills in the last three months, such as sending an email with an attachment. Large differences in skill levels are found among various groups and occupations, but relatively smaller gender differences, especially at younger ages.



The social and economic impacts of the COVID-19 pandemic have adversely affected progress towards gender equality. Violence against women and girls has intensified; child marriage, on the decline in recent years, is expected to increase; and women have suffered a disproportionate share of job losses and increased care work at home. The pandemic has highlighted the need to act swiftly to address pervasive global gender inequalities. Women have played a central role in the response to COVID-19, as frontline health workers, care providers, and as managers and leaders of recovery efforts. Yet they remain underrepresented in leadership positions, and their rights and priorities are often not explicitly addressed in response and recovery measures. The crisis presents an opportunity to re-shape and rebuild systems, laws, policies and institutions to advance gender equality.

Violence against women persists at unacceptably high levels and has been intensified by the pandemic. Nearly one in three women have been subjected to physical and/or sexual violence at least once since the age of 15, usually by an intimate partner. Intimate partner violence starts early. Over the past decade, the practice of child marriage has declined significantly, with the global proportion of young women who were married as children decreasing: as a result, the marriages of some 25 million girls have been averted. However, the profound effects of the COVID-19 pandemic are putting girls at higher risk of early marriage due to a combination of economic shocks, school closures and interruptions in reproductive health services. On an average day, women spend about 2.5 times as many hours on unpaid domestic work and care work as men. Both women and men have increased their unpaid workloads during the crisis, but women are doing a disproportionate share. Moreover, more women than men are leaving the workforce to provide childcare. The pandemic has exacerbated gender inequalities and threatens to undermine progress on women's empowerment. However, as of 1 January 2021, women's representation was far from parity: the global average of women in single or lower chambers of national parliaments was only 25.6 per cent, and 36.3 per cent in local deliberative bodies, continuing a slow upward trend. At the current rate, it will take no fewer than 40 years to achieve gender parity in national parliaments.



Billions of people around the globe live without safely managed drinking water, sanitation and hygiene services. COVID-19 has underscored the need for universal access to these services to combat the pandemic and promote a healthy, green and sustainable recovery.

Water is required across all sectors of society to produce food, energy, goods and services. Over the last century, global water use has increased at more than twice the rate of population growth. Many water sources are drying up, becoming more polluted or both. In addition to water stress and water pollution, countries are facing growing challenges linked to degraded water-related ecosystems, water scarcity caused by climate change, underinvestment in water and sanitation, and insufficient cooperation on transboundary waters. The world is not on track to achieve Goal 6. A dramatic acceleration in current rates of progress and integrated and holistic approaches to water management are badly needed.

Between 2015 and 2020, the proportion of the global population using safely managed drinking water services increased from 70.2 per cent to 74.3 per cent. Despite this progress, another 2 billion people still lacked safely managed drinking water in 2020.

The proportion of the global population using safely managed sanitation services increased from 47.1 per cent in 2015 to 54 per cent in 2020.

The proportion of the global population with basic hygiene rose, this means that, at the start of the COVID-19 pandemic, 2.3 billion people worldwide still lacked a basic handwashing facility with soap and water at home, and 670 million had no facility at all.

Universal access to water, sanitation and hygiene services goes well beyond household use. To ensure that we build back better from the COVID-19 crisis, Governments will need to accelerate their efforts to ensure access to drinking water, sanitation and hygiene for all. When a country or territory withdraws 25 per cent or more of its renewable freshwater resources, it is water stressed. This challenge affects countries on every continent. In 2018, 2.3 billion people lived in water-stressed countries.

Improving water-use efficiency is one key to reducing water stress. All economic sectors have seen their water-use efficiency improve since 2015, with a 15 per cent increase in industry, 8 per cent in agriculture and 8 per cent in the service sector. More concrete measures are needed to save water and increase water-use efficiency, particularly in those regions that have or are close to having a high to critical level of water stress.



Over the last decade, access to electricity has expanded, use of renewable energy in the electricity sector has increased, and energy efficiency has improved. Still, millions of people are without electricity, and one third of the global population lack clean cooking fuels and technologies. Progress in ensuring energy access has been uneven across regions, leaving the most vulnerable even further behind.

The pandemic is reversing progress and causing millions of people to lose access to electricity. Moreover, depressed oil and gas prices are likely to discourage uptake of clean energy technologies. On the positive side, lower fossil fuel prices provide an opportunity for governments to reform fossil fuel subsidies. Stimulus plans designed to boost economic growth, protect workers and create jobs could scale up the deployment of clean energy technologies.

The global electricity access rate improved from 83 per cent in 2010 to 90 per cent in 2019, with 1.1 billion people receiving electricity for the first time. However, 759 million people were still without access in 2019.

The COVID-19 pandemic could reverse progress in some countries. In Africa, the number of people without electricity increased in 2020 after declining over the previous six years. In developing countries in Africa and Asia, basic electricity services are now unaffordable for more than 25 million people who had previously gained access. An additional 85 million people, mainly in developing countries in Asia, may be forced to scale back to basic electricity access because of an inability to pay for an extended bundle of services. The share of renewable energy in total final energy consumption gradually increased to 17.1 per cent in 2018, up from 16.4 in 2010. The main contribution came from the electricity sector, where the share of renewables now exceeds 25 per cent. Nonetheless, electricity makes up only around 21 per cent of final energy use. The remaining portion is concentrated in the heat and transport sectors, where, in 2018, modern renewables penetrated 9.2 per cent and 3.4 per cent of the global market, respectively. Traditional uses of biomass – such as the burning of wood for heat – still account for almost 14 per cent of global heat consumption.

Excluding traditional uses of biomass, Latin America and the Caribbean shows the highest share of modern renewable energy in total final energy consumption. This is largely due to significant hydropower generation, and to the use of bioenergy in industrial processes and biofuels for transport. In 2018, more than a third of the global annual increase in modern renewable energy consumption took place in Eastern Asia, where wind- and solar-generated electricity dominated growth.



Even before the pandemic hit, global economic growth had slowed. The COVID-19 crisis disrupted economic activities around the world and caused the worst recession since the Great Depression. In 2020, 8.8 per cent of global working hours were lost (relative to the fourth quarter of 2019), equivalent to 255 million full-time jobs – about four times the number lost during the global financial crisis in 2009. The pandemic has put workers in informal employment at risk, as they lack protection against illness or lockdowns. Young workers and women have been particularly affected by the crisis. With the roll-out of COVID-19 vaccines and continued fiscal and monetary support, the United States of America and China are expected to experience strong growth in 2021. However, for many other countries, economic growth will remain below pre-pandemic trends for a prolonged period

The global economy grew by an average of about 2 per cent from 2014 to 2018. With the roll-out of vaccines and government aid, a global economic recovery is under way, led by China and the United States. However, for many countries, economic growth is not expected to return to pre-pandemic levels until 2022 or 2023.

Youth and women were especially hard hit, with employment losses of 8.7 per cent and 5.0 per cent, respectively, in 2020, compared with 3.7 per cent for adults and 3.9 per cent for men. Before the pandemic, the unemployment rate of youth was already three times that of adults. During the crisis, women were more likely than men to drop out of the labour force in order to care for children. This further increased longstanding gender gaps in labour force participation rates. Before the pandemic, informal employment represented 60.2 per cent of global employment. This means that 2 billion people worldwide worked in jobs characterized by lack of basic protection, including social protection coverage. The share is much higher in LDCs, where the proportion of informal employment in total employment was 88.7 per cent in 2019. Globally, the share of informal employment was 90.7 per cent in the agriculture sector, compared with 48.9 per cent in the non-agricultural sector. Estimates suggest that three quarters of informal economy workers (1.6 billion) were significantly affected by lockdown measures and/or were working in the hardest-hit sectors. Among them, women were overrepresented in so-called high-risk sectors: 42 per cent of women workers were engaged in those sectors, compared with 32 per cent of men. These workers face a high risk of falling into poverty and will experience greater challenges in regaining their livelihoods during the recovery.



Due to tariffs and trade tensions between the world's dominant economies, global manufacturing growth was already in decline before the COVID-19 pandemic. When it struck, the movement of people and goods was restricted, disrupting global value chains, as well as the global manufacturing and transport industries. Small-scale industries in particular have been severely affected. The lack of resilient infrastructure, information and communication technologies, and basic services limits a country's ability to perform and adjust to shocks. For the global community to achieve Goal 9, industrialization, improvements in infrastructure, and the promotion of technological innovation by increasing investment in research and development are key

The pandemic hit the manufacturing sector harder than during the 2007–2009 global financial crisis, resulting in a drop in production of 6.8 per cent in 2020. The year 2020 was catastrophic for air travel demand. As a result, jobs supported by the air transport industry fell by 52.5 per cent over the course of 2020 – from 87.7 million to 41.7 million. Airline financial losses are projected at \$371 billion in 2020, with an extra \$115 billion and \$13 billion in losses for airports and air navigation services providers, respectively.

A constantly changing list of open- and closed-destination countries has added a level of uncertainty. Air transport is not projected to get back to pre-pandemic levels until 2024. Governments should coordinate and do what they can to bolster the air transport industry to restore lost jobs and get the global economy back on track.

The importance of investing in research and development (R&D) has never been more apparent. The rapid development of COVID-19 vaccines demonstrates the critical role of innovation in unexpected crises.

The pandemic is not the only crisis the world is facing, and it will not be the last. Policy commitments towards financing for R&D, especially in developing economies, need to continue and be strengthened.



Before the COVID-19 pandemic, various measures of inequality were moving in the right direction. Income inequality had fallen in some countries. Low-income countries continued to benefit from preferential trade status. The transaction costs of remittances were going down. Most countries with available data had policies that facilitated orderly, safe and responsible migration. However, inequality persists, whether in income, wealth, opportunities or other dimensions. Those considered vulnerable also face multiple and intersecting forms of discrimination. The pandemic is exacerbating existing inequalities within and among countries and hitting the most vulnerable people and the poorest countries hardest. Tackling inequality will be crucial for reducing vulnerability to health and other emergencies and for enhancing the resilience of societies.

Despite thousands of migrant deaths each year, not all countries have comprehensive policies on migration

Even with mobility restrictions on borders around the world due to COVID-19, tens of thousands of people continue to leave their homes and embark on dangerous journeys across deserts and seas. In 2020, 4,186 deaths and disappearances were recorded on migratory routes worldwide. Though this is fewer than in previous years, some routes saw an increase in fatalities. The true number of deaths globally may be higher, as the pandemic has increased the challenges to collecting this data. The latest figures show that, as of 2019, just 54 per cent of countries had a comprehensive set of policy measures to facilitate orderly, safe, regular and responsible migration and mobility of people, based on the 111 countries with available data.

Income inequality has been going down since the 2008 global financial crisis; the pandemic could reverse that trend



Cities in many countries have become epicentres of COVID-19, exposing their vulnerabilities stemming from lack of adequate and affordable housing, insufficient public health systems, and inadequate urban infrastructure such as water, sanitation and waste services, public transport and open public spaces. Deeply rooted inequalities have led to disproportionate pandemic-related impacts on migrants, the homeless, and those living in urban slums and informal settlements. That said, in responding to the crisis, some cities have emerged as engines of economic recovery, centres of innovation and catalysts for social and economic transformation

Between 2014 and 2018, the proportion of the urban population living in slums worldwide increased from 23 per cent to 24 per cent, translating to over 1 billion slum dwellers. The needs and concerns of these people are rarely taken into account in conventional urban planning, financing and policymaking, leaving an enormous segment of the global population behind.

The pandemic has disproportionately affected low-income households and those working in the informal sector. This has further increased the number of slum dwellers and those whose living conditions have deteriorated, making them even more vulnerable. Without concerted action on the part of Governments at all levels, in collaboration with civil society and development partners, the number of slum dwellers will continue to rise in most developing countries. Poorly planned and managed urbanization translates to a disconnect between the provision of infrastructure and residential concentrations, leading to inadequate networks of streets and a lack of reliable transport systems. This diminishes the potential of cities to leverage economies of scale and agglomeration

Access to public transport was significantly disrupted during the pandemic – from partial closures and guidelines on reduced capacities to total network closures. As the pandemic response continues, countries and cities need to provide options for accessible, safe, reliable and sustainable public transport systems. Such systems should be well-integrated with walking and cycling paths through long-term policies, sustainable urban mobility plans and targeted investments.



A growing global population combined with the unsustainable use of natural resources is having a devastating impact on our planet – propelling climate change, destroying nature and raising pollution levels. About 14 per cent of the world’s food is lost along the supply chain prior to the retail level. Around the world, 1 million plastic drinking bottles are purchased every minute, and 5 trillion single-use plastic bags are thrown away each year.

Today, we have a historic window of opportunity to design a transformative COVID-19 recovery strategy to build sustainable and resilient economies and societies. It is time to fully embrace the decoupling of economic growth from environmental degradation, a reduction in carbon emissions, improvements in resource efficiency, and the promotion of sustainable lifestyles.

Globally, domestic material consumption per capita, the total amount of materials directly used by an economy to meet its consumption needs, rose by more than 40 per cent from 2000 to 2017. All regions except Europe and Northern America and Australia and New Zealand experienced significant increases over the past two decades. Rising domestic material consumption in developing regions is mainly due to industrialization, including the outsourcing of material-intensive production from developed regions. Natural resource use and related benefits, along with environmental impacts, are unevenly distributed across countries and regions. A path for sustainable consumption and production requires circular economy approaches. Shifting to sustainable consumption and production patterns is a prerequisite to addressing global crises, including climate change, biodiversity loss and pollution, and is central to achieving sustainable development. There is a positive trend in the development of national instruments and strategies aimed at supporting this shift. By 2020, 83 countries and the European Union reported a total of 700 policies and implementation activities under the 10-Year Framework of Programmes on Sustainable Consumption and Production. However, only 50 policies and implementation activities were reported in sub-Saharan Africa, compared with 374 in Europe and Northern America.

As of December 2020, 40 countries had reported on sustainable public procurement policies or action plans (or equivalent legal dispositions), which encourage the procurement of environmentally sound, energy-efficient products, and promote more socially responsible purchasing practices and sustainable supply chains.



Despite a pandemic-related economic slowdown, the climate crisis continues largely unabated. A temporary reduction in human activities resulted in a dip in emissions. However, concentrations of greenhouse gases continued to increase in 2020, reaching new record highs. It was one of the three warmest years on record, with the global average temperature about 1.2°C above the 1850–1900 baseline. In the face of looming catastrophe, climate action is gaining momentum.

The global pandemic has laid bare humanity’s vulnerabilities. It has shown the world how much damage can be wreaked by a crisis that pales in comparison to a full-scale climate emergency. We must heed this wake-up call and seize the opportunity to rebuild in a way that will reduce emissions and increase resilience to climate change.

Greenhouse gas emissions will continue to increase without critical steps to shift economies towards carbon neutrality. The COVID-19 pandemic significantly reduced human activities in 2020, leading to a temporary fall in CO₂ emissions. Developed countries saw the steepest declines, averaging drops of almost 10 per cent.

As the world recovers from the pandemic, emissions are expected to rise further unless critical steps are taken to shift economies towards carbon neutrality. The voluntary efforts countries are making to reduce national emissions and adapt to the impacts of climate change are described in their nationally determined contributions (NDCs).

An increasing number of countries are also prioritizing the formulation and implementation of national adaptation plans to boost their efforts to adjust to a changing climate. These include building flood defences, setting up early warning systems for cyclones, or switching to drought-resistant crops. As of May 2021, 125 of 154 developing countries were in the process of formulating and implementing national adaptation plans, and 22 countries have submitted their plans to the Framework Convention on Climate Change secretariat. Developed countries are stepping up their efforts to provide technical guidance and support to LDCs – which are particularly vulnerable to the effects of climate change – to develop and carry out such plans



More than 3 billion people rely on the ocean for their livelihoods, and over 80 per cent of world merchandise trade is carried out by sea. Oceans contribute to poverty eradication, sustained economic growth and food security. However, the benefits they provide are increasingly undermined by human activities. Rising CO₂ emissions are driving ocean warming, acidification and deoxygenation, which threaten marine ecosystems and the people who depend on them, and are overwhelming the capacity of oceans to moderate climate change. Overfishing depletes fish stocks, a third of which are already overexploited. Land-based pollutants, including plastic pollution and nutrient and sewage runoff, adversely affect coastal habitats and communities. These changes have long-term repercussions that require urgent scaling up of protection of marine environments, investment in ocean science, and support for small-scale fishing communities and the sustainable management of the oceans.

The extent of marine protected areas has increased significantly, with 2020 coverage reaching 7.74 per cent of global coastal waters and oceans. The 10 per cent target set for 2020 may still be met, because several sites planned for designation in 2020 were delayed. Between 2000 and 2020, the mean percentage of key biodiversity areas (KBAs) covered by protected areas grew from 28 per cent to 44 per cent. However, increases have risen by only 1 percentage point over the last five years. On average, over half of each KBA remains outside of any form of protection.

Safeguarding KBAs remains crucial to the sustainability of oceans. A recent example from the South Atlantic used satellite tracking data for 14 species of seabirds and seals to pinpoint breeding grounds and feeding sites crucial to the preservation of these and other species. This information was used to revise the management of a marine protected area by extending the closure of fisheries by two months and expanding several permanent no-fishing zones, while allowing commercial fishing to occur in a regulated manner.



Ending environmental decline and restoring our planet is fundamental to sustainable development. Nevertheless, forests are being cut down, biological diversity is declining, and terrestrial ecosystems are being degraded at alarming rates, with profound consequences for human survival and well-being. Land degradation now affects one fifth of the Earth's land area. The COVID-19 pandemic has reminded us that by threatening biodiversity, humanity threatens its own survival.

To address these challenges, considerable efforts are being made to expand sustainable forest management and to protect sites critical to biodiversity. Countries are also enacting legislation and accounting principles to make nature "count" and to address threats to biodiversity, such as the growing spread of invasive alien species. It is time to put the health of the planet at the centre of all our plans and policies.

More than one quarter of the species assessed for the IUCN Red List are threatened with extinction. Human activities are causing biodiversity to decline faster than at any other time in human history. The world has fallen short on its 2020 targets to halt biodiversity loss. The Red List Index of the International Union for Conservation of Nature (IUCN), which monitors the overall extinction risk for various species, shows a 10 per cent decline since 1993. Fortunately, conservation actions could stave off further species losses. For example, many bird and mammal species have benefited from invasive species control, conservation in zoos and other collections, and site protection. Since 1993, conservation actions have prevented the extinction of 21 to 32 species of birds and 7 to 16 species of mammals. Considering that 10 bird and 5 mammal species were confirmed or suspected to have been driven to extinction over this period, such actions have reduced extinction rates by three to four times compared with what would have been anticipated.



The world is still a long way from achieving the goal of peaceful, just and inclusive societies. Hundreds of millions of people are living in fragile and conflict-affected States. At the end of 2020, about 1 per cent of the global population had been forcibly displaced as a result of persecution, conflict or generalized violence. The COVID-19 pandemic has exposed and intensified inequality and discrimination. In fact, the crisis has created major disruptions in government functioning and has tested, weakened and sometimes even shattered countries' systems of rights and protection. The pandemic is disproportionately affecting the most vulnerable worldwide, with children at high risk. Recovery from the crisis and sustainable development must be built on a foundation of peace, stability, respect for human rights, effective governance and the rule of law.

The pandemic is intensifying children's risk of exploitation, including trafficking and child labour. Millions of children around the globe face different forms of exploitation, including trafficking and child labour. The risk to children is increasing due to the combined effects of pandemic-related school closures and economic distress. Trafficking in persons is found in every country. Perpetrators engaged in this criminal activity target the marginalized and impoverished, including children. Globally, one in three trafficking victims detected in 2018 were a child; in low-income countries, the share was one half. Girls are primarily victims of sexual exploitation (72 per cent of detected girl victims), while boys are mainly subjected to forced labour (66 per cent of detected boy victims). Previous economic crises suggest that the sharp increase in adult unemployment rates and an asymmetric global recovery from COVID-19 is likely to increase the risk of trafficking. Therefore, in all countries, investments in job creation for adults and young people of legal working age, along with economic recovery, could reduce risks to children of various forms of exploitation.



The pandemic is further testing multilateral and global partnerships that were already shaky. Although official development assistance (ODA) increased and remittance flows declined less than expected in 2020, foreign direct investment (FDI) dropped by 40 per cent. The impacts of the pandemic are leading to debt distress in many countries, and also limiting countries' fiscal and policy space for critical investments in recovery (including access to vaccines), climate action and the SDGs, threatening to prolong recovery periods. The interconnected global economy requires a global response to ensure that all countries, developing countries in particular, can address compounding and parallel health, economic and environmental crises and recover better. Strengthening multilateralism and global partnerships is more important than ever.

Foreign aid reached an all-time high during the crisis, but donors are still not living up to their commitments. Net ODA flows by member countries of the Development Assistance Committee of the Organization for Economic Cooperation and Development reached \$161 billion in 2020, an increase of 7 per cent in real terms from 2019, driven by members' support of an inclusive global recovery in light of the pandemic and an increase in bilateral sovereign lending by some loan-giving members. Net ODA flows represented 0.32 per cent of donors' combined gross national income (GNI) in 2020, falling short of the 0.7 per cent target. Most members were able to maintain their planned ODA commitments, and some were able to rapidly mobilize additional funding. But more is needed to respond to the COVID-19 crisis.

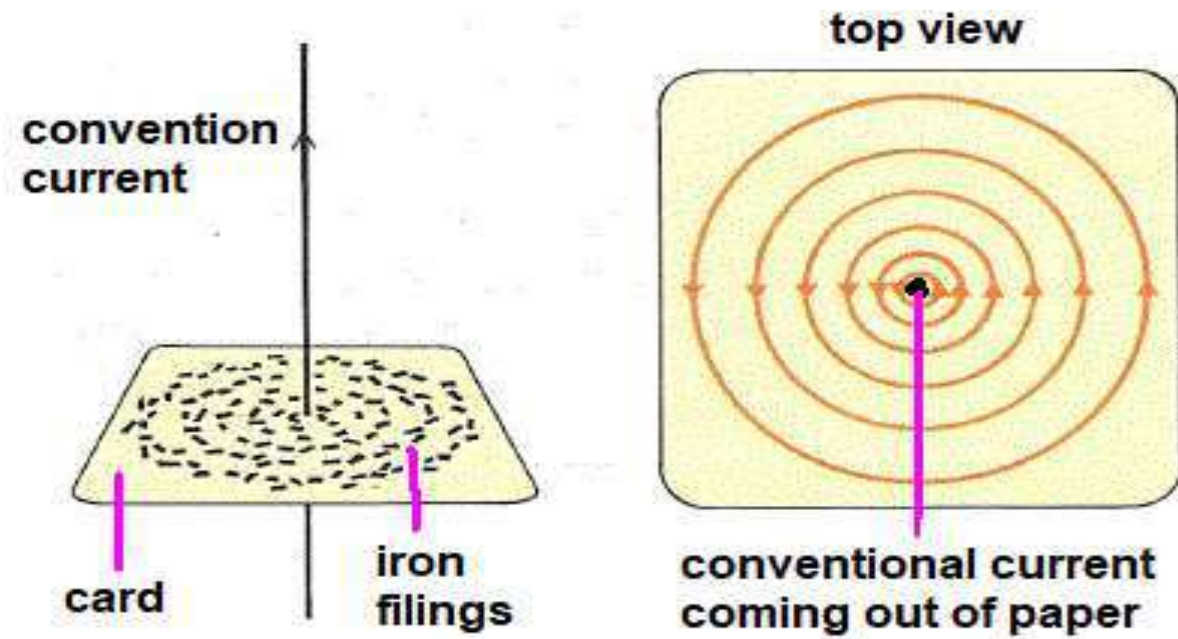
Net bilateral flows to low-income countries were \$25 billion, a decrease of 3.5 per cent in real terms compared with 2019. Net bilateral ODA increased by 6.9 per cent to lower-middle-income countries, and by 36.1 per cent to upper-middle-income countries, reaching \$33 billion and \$18 billion, respectively.

MAGNETISM AND ELECTROMAGNETISM

PP 32-37

LET'S MAKE AN EXPERIMENT

- PLACE A SHEET OF PAPER OVER A MAGNET AND THEN SPRINKLE IRON FILINGS ONTO THE PAPER.
- THE FILINGS WILL ARRANGE IN A SERIES OF LINES THAT DO NOT CROSS AND THAT TERMINATES THE POLES OF THE MAGNET
- THE CONCENTRATION OF FILINGS WILL GIVE AN INDICATION OF THE STRENGTH OF THE MAGNETIC FIELD



The magnetic field around a wire

THE TERMS «MAGNET» AND «MAGNETISM» COMES FROM MAGNESIA, A PLACE ON ASIA WHERE FOR THE FIRST TIME THE ANCIENT GREEKS NOTICED THAT A PARTICULAR ROCK HAD THE POWER TO ATTRACT FEW MATERIALS



INSIDE THE EARTH THERE IS A CORE THAT ACTS AS A MAGNET. IT IS LINED UP WITH THE POLES; IF A MAGNET IS SUSPENDED AS IN A COMPASS, IT WILL TURN IN THE EARTH'S MAGNETIC FIELD. THIS IS THE REASON WHY THE POLES OF A MAGNET ARE CALLED «NORTH AND SOUTH»

WHAT IS MAGNETISM?

- Magnetism is the property of an object of attracting other objects. There are natural magnet, such as magnetite (a type of iron) that can attract iron, manganese, nickel, cobalt and their alloys. These materials are known as FERROMAGNETIC. Usually a magnet cannot affect materials such as wood, plastic and water.
- Every natural magnet has two opposite poles: the negative (south) and the positive (north). The poles cannot be separated. When two magnets get close the like poles repel, while the opposite get attracted. (ex: a south pole attracts a north, but repels a similar)

- WHAT IS A MAGNETIC FIELD?
- IT IS GENERATED BY A MAGNET AND IT IS MADE UP OF INVISIBLE LINES OF FORCE LEAVING THE MAGNET AT THE NORTH POLE AND ENTERING IT AT THE SOUTH, WHILE INTO THE MAGNET THEY TRAVEL FROM SOUTH TO NORTH CREATING A CONTINUOUS LINE OF FORCES.
- THE MAGNETIZATION CAN BE PERMANENT OR TEMPORARY (WHEN THE MATERIAL ARE TAKEN AWAY).
- THE ELECTROMAGNET ARE A GOOD EXAMPLE OF «TEMPORARY MAGNETISM» AS THEY ARE CREATED WHEN THE ELECTRIC CURRENT PASSES THROUGH A CONDUCTOR AND AN ELECTRIC FIELD IS CREATED

WHY ARE MAGNETIC FIELD IMPORTANT IN ELECTRICAL EQUIPMENT?

- IF YOU CONNECT A COIL TO A BATTERY THIS ONE IT IS TRANSFORMED IN A BAR MAGNET, AND AS A BAR MAGNET IT HAS A NORTH POLE AND A SOUTH POLE. WHEREAS THE CURRENT IS TURNED OFF, THE MAGNETIC FORCE DISAPPEARS AND THE COIL WORKS AS AN ELECTROMAGNET.
- THE STRENGTH OF THE MAGNETIC FORCE PRODUCED BY THE COIL DEPENDS BOTH ON THE CURRENT AND IN THE NUMBER OF TURNS: THE FORCE OF THE CURRENT IS THE RESULT OF THE CURRENT IN THE WIRE AND THE NUMBER OF TURNS.
- THIS IS POSSIBLE ONLY WITH A PERMANENT MAGNET, AS IT IS DIFFICULT TO INCREASE IT BEYOND CERTAIN LIMITS.

THE MAGLEV VEHICLES:

THE MAGNETIC LEVITATION TRANSPORT, OR MAGLEV, IS A FORM OF TRANSPORTATION THAT GUIDES VEHICLES THANKS TO ELECTROMAGNETIC FORCE. MAGLEV TRAINS, FOR EXAMPLE, FLOAT ON A CUSHION OF AIR, ELIMINATING FRICTION. THE ABSENCE OF IT AND THE AERODYNAMIC DESIGN OF THEM, ALLOWS THESE TRAINS TO REACH VERY IMPORTANT SPEED (TO BE COMPARED WITH THOSE OF PLANES AND JET).

MAGLEV TRAINS ARE TODAY ONLY IN JAPAN AND GERMANY, AS THEY NEED A LOT OF MONEY FOR THEIR CONSTRUCTION AND VERY MODERN STRUCTURES. FOR EXAMPLE THE LINK BETWEEN MUNICH AND THE AIRPORT WAS CANCELLED BY THE GOVERNMENT IN 2008 BECAUSE OF THE COSTS.

THERE ARE TWO DIFFERENT TECHNOLOGIES THAT HAVE BEEN USED BY THE MAGLEV CONSTRUCTORS:

THE EMS (ELECTROMAGNETIC SUSPENSION) THAT USES THE ATTRACTIVE FORCE OF AN ELECTROMAGNET UNDER A RAIL TO LIFT THE TRAIN UP AND IN THIS WAY IT CAN PROVIDE BOTH LEVITATION AND PROPULSION. THIS IS THE TECHNOLOGY USED IN THE GERMAN TRAIN.

THE EDS (ELECTROMAGNETIC SUSPENSION) IS THE TECHNOLOGY USED IN JAPAN. BOTH THE TRAIN AND THE TRACK EXERT A MAGNETIC FIELD, AND THE TRAIN IS LEVITATED BY THE REPULSIVE FORCE BETWEEN THEM. THE MAGNETIC FIELD IS CREATED FROM A SUPER-COOLED AND A SUPERCONDUCTING ELECTROMAGNET.

WORK SAFETY

PP 170-177 NEW ON CHARGE

HERE'S A LIST OF THE MAIN SAFETY PANELS YOU MAY FIND WHEN WORKING WITH ELECTRICITY, BUT ALSO WHEN WORKING SOMEWHERE ELSE AS THESE ARE USED IN INDUSTRIES, COMPANIES AND PUBLIC BUILDINGS.



Voltage warning labels



Electrical voltage symbol



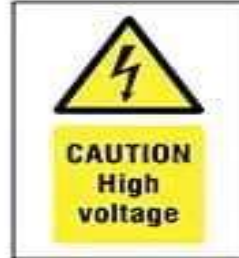
Danger of death from electricity warning



Switch off when not in use



Electric shock warning



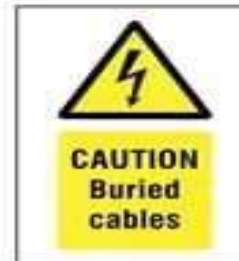
High voltage warning



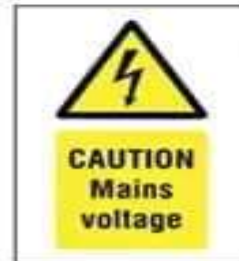
Overhead cables warning



Live wires warning



Buried cables warning



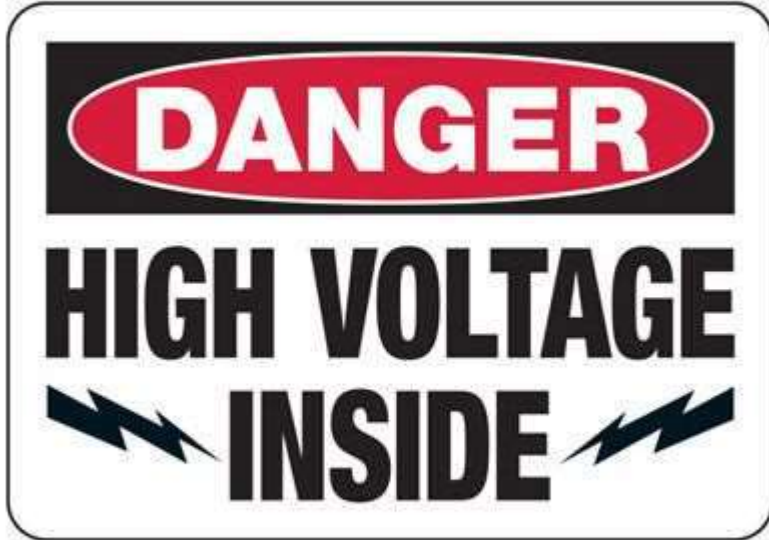
Mains voltage warning



Danger do not enter sign



Warning to isolate before removing cover



WARNING

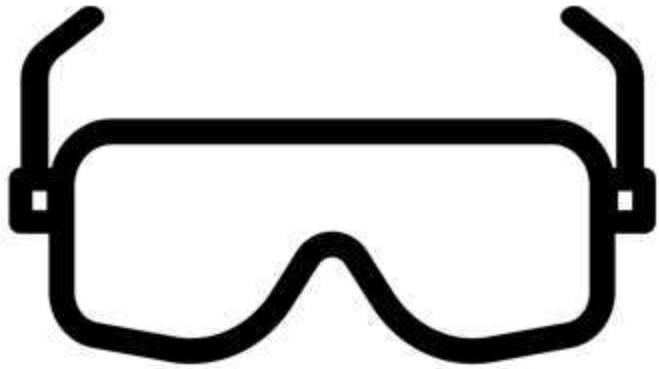


**RESTRICTED
AREA**

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NOTICE



**SAFETY
GLASSES
REQUIRED**

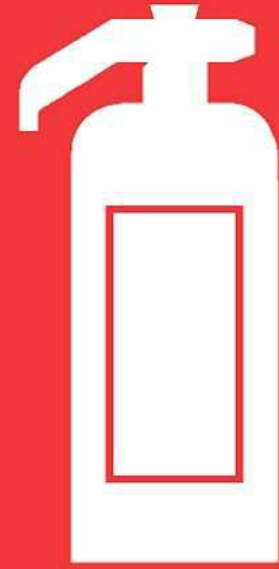


Danger
Radiation risk



BIOHAZARD

FIRE



EXTINGUISHER



CAUTION



**Electrocution
Risk**

IN EUROPE THE PREVENTION OF HEALTH AND SAFETY OF WORKERS IS COVERED BY THE 1989 EUROPEAN DIRECTIVE (89/391/EEC). THIS DIRECTIVE STATES THAT :

- 1) THE EMPLOYER IS RESPONSIBLE FOR THE HEALTH AND SAFETY OF WORKERS
- 2) THE EMPLOYER'S DUTY IS TO EVALUATE THE SAFETY AND HEALTHY RISKS AND TO TAKE APPROPRIATE PREVENTIVE MEASURES
- 3) BOTH THE WORKER AND THE EMPLOYER HAVE TO TAKE UP DUTIES AND RESPONSIBILITIES AND REPORT POTENTIAL DANGERS.

WHAT IS THE EMPLOYER'S RESPONSIBILITY:
FIRST THE EMPLOYER HAS TO DO A RISK ASSESSMENT

THE RISK ASSESSMENT IS A PROCEDURE THAT IDENTIFIES THE HAZARDS THAT THE WORKER MAY MEET DURING THE WORK. THESE ARE SOME OF THE QUESTIONS A WORKERS SHOULD ASK HIM/HERSELF:

- 1) ARE THE EXISTING PRECAUTIONS ENOUGH?
- 2) HAVE I DONE EVERYTHING TO REDUCE THE RISKS?

A TURNING POINT IN THIS PROCEDURE IS THE COMMUNICATION BETWEEN THE WORKER AND THE EMPLOYER: IT HAS TO BE CLEAR, IT HAS TO BE PART OF THE WORKING ROUTINE AND NOTHING HAS TO BE OMITTED. THE WORKER HIMSELF HAS TO BE TRAINED CONSTANTLY WITH PROPER TRAINING COURSES AND INSTRUCTIONS.

SAFETY FIRST:

A work environment free from injuries and accidents attracts employees. Employees are more satisfied and productive in such an environment.

A safe work environment is essential for both employees and employers alike. It is the right of all employees to have safety in the workplace.

Workplace safety is essential regardless of the size of a company. All companies, big or small, need to incorporate safety in their workplaces.

Well-implemented safety measures keep employees safe and also protect industrial equipment. It is the responsibility and duty of employers to protect their employees and keep them safe.

WHAT IS THE CAUSE OF MOST OF THE ACCIDENTS:

- 1) CONTACT WITH OVERHEAD AND UNDERGROUND POWER CABLES
- 2) INADEQUATE HEARTHING ESPECIALLY OF SOCKETS
- 3) EARTH LEAKAGE CAUSED BY EXCESSIVE BUILD UP IN THE MAIN WIRING SYSTEM
- 4) LACK OF FUSE
- 5) CIRCUIT BREAKER
- 6) MISSING OF RCD PROTECTION

WHAT ARE THE DEVICES EMPLOYED TO REDUCE THE RISKS:
USE OF **PPE**

What is Electrical PPE?

Electrical PPE stands for electrical Personal Protective Equipment (PPE). It refers to a range of specialized gear and equipment designed to protect individuals who work with or around electricity from electrical hazards. Using electrical PPE is a vital part of electrical safety protocols and should always be accompanied by proper work practices and adherence to relevant safety regulations and standards

The Importance of PPE in Electrical Safety

Electrical hazards can include electric shock, burns, arc flashes (sudden releases of intense energy during electrical faults or short circuits), and arc blasts, which can occur during tasks like electrical installation, maintenance, troubleshooting, or repair. In this regard, the proper and safe use of PPE serves as a barrier between the worker and the electrical energy, preventing or minimizing the impact of potential hazards.

Protection Against Electrical Shock – Electrical PPEs, like insulated gloves and voltage-rated tools, are designed to withstand and insulate against the voltage levels present in electrical systems.

Prevention of Burns and Arc Flashes – Flame-resistant clothing and arc flash suits help resist ignition, reduce the extent of burns, and provide thermal protection in case of an arc flash incident.

Reduction of Electrical Contact Injuries – Electrical PPE, like safety shoes with non-conductive soles and insulating mats, provides insulation and prevents the flow of electric current through the worker's body, reducing the severity of injuries in case of an electrical fault.

Compliance with Safety Regulations – Workers and employers can ensure compliance with relevant regulations in countries and states to maintain a safe work environment.

Risk Mitigation – Electrical PPE acts as an additional layer of protection, reducing the likelihood of accidents and injuries and the overall risk associated with electrical work.

TOGETHER WITH THE PPE THERE ARE SOME TECHNIQUES THAT MAY REDUCE SOME RISKS:

- 1) REDUCE THE WORKER'S EXPOSURE TO ELECTROMAGNETIC RADIATION TO A MINIMUM
- 2) **THE INTRINSIC SAFETY (IS):** ELECTRICAL EQUIPMENT CREATES INTERNAL SPARKS THAT COULD IGNITE FLAMMABLE SUBSTANCE IN THE AIR, A SAFE DEVICE OPERATES ON A LOW VOLTAGE SO THAT THE ENERGY IN THE SPARKS, AND CONSEQUENTLY THE TEMPERATURE, IS LOW AND SAFE.
- 3) **FOLLOW THE «LOTO» PROCEDURE, WHERE LOTO STANDS FOR LOG OUT/TAG OUT:** BEFORE WORKING ON ANY MACHINERY THIS HAS TO BE DISCONNECTED FROM THE POWER SUPPLY AND THEN A LOCK IS ATTACHED TO THE SWITCH SO THAT IT CANNOT BE TURNED ON. THE EMPLOYEE IS THE ONLY WHO HAS GOT THE LOCK, SO THIS MAY PREVENT OTHER PEOPLE, EVEN UNAUTHORIZED, TO USE THAT MACHINERY.

THE EMPLOYER SHOULD ALSO CHECK HIS PPE (PERSONAL PROTECTION EQUIPMENT) TO SEE IF:

- 1) CLOTHES WITH NO HOLES
- 2) DEFECTS THAT CAN REDUCE THE FIRE RESISTANT PROPERTIES
- 3) CLOTHING SHOULD BE MADE OF COTTON OR WOOL NOT SYNTHETIC MATERIALS AS THEY'RE FLAMMABLE
- 4) BUTTONS AND HINGES OR OTHERS CHAINS MAY BE CONDUCTORS SO THEY SHOULD BE AVOIDED
- 5) HELMETS SHOULD BE INTACT
- 6) SAFETY GLASSES SHOULD BE INTACT AND THEY MUST BE WORN TO PROTECT AGAINST FLYING OBJECTS, DUST AND ELECTRICAL ARCING.