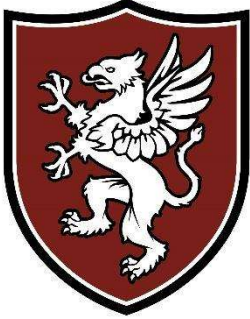


# GreatHearts

Northern Oaks



## Supplemental Reading Packet

April 6 - 10, 2020

6<sup>th</sup> grade

Mrs. Sharp

Mrs. Scholl

Mr. Lucero

Ms. Rogers

Mrs. Boyd

Student Name: \_\_\_\_\_ Section: \_\_

## VI

# MR. TOAD

It was a bright morning in the early part of summer; the river had resumed its wonted banks and its accustomed pace, and a hot sun seemed to be pulling everything green and bushy and spiky up out of the earth towards him, as if by strings. The Mole and the Water Rat had been up since dawn, very busy on matters connected with boats and the opening of the boating season; painting and varnishing, mending paddles, repairing cushions, hunting for missing boat-hooks, and so on; and were finishing breakfast in their little parlour and eagerly discussing their plans for the day, when a heavy knock sounded at the door.

“Bother!” said the Rat, all over egg. “See who it is, Mole, like a good chap, since you’ve finished.”

The Mole went to attend the summons, and the Rat heard him utter a cry of surprise. Then he flung the parlour door open, and announced with much importance, “Mr. Badger!”

This was a wonderful thing, indeed, that the Badger should pay a formal call on them, or indeed on anybody. He generally had to be caught, if you wanted him badly, as he slipped quietly along a hedgerow of an early morning or a late evening, or else hunted up in his own house in the middle of the Wood, which was a serious undertaking.

The Badger strode heavily into the room, and stood looking at the two animals with an expression full of seriousness. The Rat let his egg-spoon fall on the table-cloth, and sat open-mouthed.

“The hour has come!” said the Badger at last with great solemnity.

“What hour?” asked the Rat uneasily, glancing at the clock on the mantelpiece.

"Whose hour, you should rather say," replied the Badger. "Why, Toad's hour! The hour of Toad! I said I would take him in hand as soon as the winter was well over, and I'm going to take him in hand to-day!"

"Toad's hour, of course!" cried the Mole delightedly. "Hooray! I remember now! We'll teach him to be a sensible Toad!"

"This very morning," continued the Badger, taking an arm-chair, "as I learnt last night from a trustworthy source, another new and exceptionally powerful motor-car will arrive at Toad Hall on approval or return. At this very moment, perhaps, Toad is busy arraying himself in those singularly hideous habiliments so dear to him, which transform him from a (comparatively) good-looking Toad into an Object which throws any decent-minded animal that comes across it into a violent fit. We must be up and doing, ere it is too late. You two animals will accompany me instantly to Toad Hall, and the work of rescue shall be accomplished."

"Right you are!" cried the Rat, starting up. "We'll rescue the poor unhappy animal! We'll convert him! He'll be the most converted Toad that ever was before we've done with him!"

They set off up the road on their mission of mercy, Badger leading the way. Animals when in company walk in a proper and sensible manner, in single file instead of sprawling all across the road and being of no use or support to each other in case of sudden trouble or danger.

They reached the carriage-drive of Toad Hall to find, as the Badger had anticipated, a shiny new motor-car, of great size, painted a bright red (Toad's favourite colour), standing in front of the house. As they neared the door it was flung open, and Mr. Toad, arrayed in goggles, cap, gaiters, and enormous overcoat, came swaggering down the steps, drawing on his gauntleted gloves.

"Hullo! come on, you fellows!" he cried cheerfully on catching sight of them. "You're just in time to come with me for a jolly—to come for a jolly—for a—er—jolly——"

His hearty accents faltered and fell away as he noticed the stern unbending look on the countenances of his silent friends, and his invitation remained unfinished.

The Badger strode up the steps. "Take him inside," he said sternly to his companions. Then, as Toad was hustled through the door, struggling and protesting, he turned to the *chauffeur* in charge of the new motor-car.

"I'm afraid you won't be wanted to-day," he said. "Mr. Toad has changed his mind. He will not require the car. Please understand that this is final. You needn't wait." Then he followed the others inside and shut the door.

"Now then!" he said to the Toad, when the four of them stood together in the Hall, "first of all, take those ridiculous things off!"

"Shan't!" replied Toad, with great spirit. "What is the meaning of this gross outrage? I demand an instant explanation."

"Take them off him, then, you two," ordered the Badger briefly.

They had to lay Toad out on the floor, kicking and calling all sorts of names, before they could get to work properly. Then the Rat sat on him, and the Mole got his motor-clothes off him bit by bit, and they stood him up on his legs again. A good deal of his blustering spirit seemed to have evaporated with the removal of his fine panoply. Now that he was merely Toad, and no longer the Terror of the Highway, he giggled feebly and looked from one to the other appealingly, seeming quite to understand the situation.

"You knew it must come to this, sooner or later, Toad," the Badger explained severely. "You've disregarded all the warnings we've given you, you've gone on squandering the money your father left you, and you're getting us animals a bad name in the district by your furious driving and your smashes and your rows with the police. Independence is all very well, but we animals never allow our friends to make fools of themselves beyond a certain limit; and that limit you've reached. Now, you're a good fellow in many respects, and I don't want to be too hard on you. I'll make one more effort to bring you to reason. You will come with me into the smoking-room, and there you will hear some facts about yourself; and we'll see whether you come out of that room the same Toad that you went in."

He took Toad firmly by the arm, led him into the smoking-room, and closed the door behind them.

"That's no good!" said the Rat contemptuously. "Talking to Toad'll never cure him. He'll say anything."

They made themselves comfortable in arm-chairs and waited patiently. Through the closed door they could just hear the long continuous drone of the Badger's voice, rising and falling in waves of oratory; and presently they noticed that the sermon began to be punctuated at intervals by long-drawn sobs, evidently proceeding from the bosom of Toad, who was a soft-hearted and affectionate fellow, very easily converted—for the time being—to any point of view.

After some three-quarters of an hour the door opened, and the Badger reappeared, solemnly leading by the paw a very limp and dejected Toad. His skin hung baggily about him, his legs wobbled, and his cheeks were furrowed by the tears so plentifully called forth by the Badger's moving discourse.

"Sit down there, Toad," said the Badger kindly, pointing to a chair. "My friends," he went on, "I am pleased to inform you that Toad has at last seen the error of his ways. He is truly sorry for his misguided conduct in the past, and he has undertaken to give up motor-cars entirely and for ever. I have his solemn promise to that effect."

"That is very good news," said the Mole gravely.

"Very good news indeed," observed the Rat dubiously, "if only—if only——"

He was looking very hard at Toad as he said this, and could not help thinking he perceived something vaguely resembling a twinkle in that animal's still sorrowful eye.

"There's only one thing more to be done," continued the gratified Badger. "Toad, I want you solemnly to repeat, before your friends here, what you fully admitted to me in the smoking-room just now. First, you are sorry for what you've done, and you see the folly of it all?"

There was a long, long pause. Toad looked desperately this way and that, while the other animals waited in grave silence. At last he spoke.

"No!" he said, a little sullenly, but stoutly; "I'm *not* sorry. And it wasn't folly at all! It was simply glorious!"

"What?" cried the Badger, greatly scandalised. "You back-sliding animal, didn't you tell me just now, in there——"

"Oh, yes, yes, in *there*," said Toad impatiently. "I'd have said anything in *there*. You're so eloquent, dear Badger, and so moving, and so convincing, and put all your points so frightfully well—you can do what you like with me in *there*, and you know it. But I've been searching my mind since, and going over things in it, and I find that I'm not a bit sorry or repentant really, so it's no earthly good saying I am; now, is it?"

"Then you don't promise," said the Badger, "never to touch a motor-car again?"

"Certainly not!" replied Toad emphatically. "On the contrary, I faithfully promise that the very first motor-car I see, poop-poop! off I go in it!"

"Told you so, didn't I?" observed the Rat to the Mole.

"Very well, then," said the Badger firmly, rising to his feet. "Since you won't yield to persuasion, we'll try what force can do. I feared it would come to this all along. You've often asked us three to come and stay with you, Toad, in this handsome house of yours; well, now we're going to. When we've converted you to a proper point of view we may quit, but not before. Take him upstairs, you two, and lock him up in his bedroom, while we arrange matters between ourselves."

"It's for your own good, Toady, you know," said the Rat kindly, as Toad, kicking and struggling, was hauled up the stairs by his two faithful friends. "Think what fun we shall all have together, just as we used to, when you've quite got over this—this painful attack of yours!"

"We'll take great care of everything for you till you're well, Toad," said the Mole; "and we'll see your money isn't wasted, as it has been."

"No more of those regrettable incidents with the police, Toad," said the Rat, as they thrust him into his bedroom.

"And no more weeks in hospital, being ordered about by female nurses, Toad," added the Mole, turning the key on him.

They descended the stair, Toad shouting abuse at them through the keyhole; and the three friends then met in conference on the situation.



"It's going to be a tedious business," said the Badger, sighing. "I've never seen Toad so determined. However, we will see it out. He must never be left an instant unguarded. We shall have to take it in turns to be with him, till the poison has worked itself out of his system."

They arranged watches accordingly. Each animal took it in turns to sleep in Toad's room at night, and they divided the day up between them. At first Toad was undoubtedly very trying to his careful guardians. When his violent paroxysms possessed him he would arrange bedroom chairs in rude resemblance of a motor-car and would crouch on the foremost of them, bent forward and staring fixedly ahead, making uncouth and ghastly noises, till the climax was reached, when, turning a complete somersault, he would lie prostrate amidst the ruins of the chairs, apparently completely satisfied for the moment. As time passed, however, these painful seizures grew gradually less frequent, and his friends strove to divert his mind into fresh channels. But his interest in other matters did not seem to revive, and he grew apparently languid and depressed.

One fine morning the Rat, whose turn it was to go on duty, went upstairs to relieve Badger, whom he found fidgeting to be off and stretch his legs in a long ramble round his wood and down his earths and burrows. "Toad's still in bed," he told the Rat, outside the door. "Can't get much out of him, except, 'O leave him alone, he wants nothing, perhaps he'll be better presently, it may pass off in time, don't be unduly anxious,' and so on. Now, you look out, Rat! When Toad's quiet and submissive, and playing at being the hero of a Sunday-school prize, then he's at his artfullest. There's sure to be something up. I know him. Well, now, I must be off."

"How are you to-day, old chap?" inquired the Rat cheerfully, as he approached Toad's bedside.

He had to wait some minutes for an answer. At last a feeble voice replied, "Thank you so much, dear Ratty! So good of you to inquire! But first tell me how you are yourself, and the excellent Mole?"

"O, *we're* all right," replied the Rat. "Mole," he added in-cautiously, "is going out for a run round with Badger. They'll

be out till luncheon time, so you and I will spend a pleasant morning together, and I'll do my best to amuse you. Now jump up, there's a good fellow, and don't lie moping there on a fine morning like this!"

"Dear, kind Rat," murmured Toad, "how little you realise my condition, and how very far I am from 'jumping up now'—if ever! But do not trouble about me. I hate being a burden to my friends, and I do not expect to be one much longer. Indeed, I almost hope not."

"Well, I hope not, too," said the Rat heartily. "You've been a fine bother to us all this time, and I'm glad to hear it's going to stop. And in weather like this, and the boating season just beginning! It's too bad of you, Toad! It isn't the trouble we mind, but you're making us miss such an awful lot."

"I'm afraid it *is* the trouble you mind, though," replied the Toad languidly. "I can quite understand it. It's natural enough. You're tired of bothering about me. I mustn't ask you to do anything further. I'm a nuisance, I know."

"You are, indeed," said the Rat. "But I tell you, I'd take any trouble on earth for you, if only you'd be a sensible animal."

"If I thought that, Ratty," murmured Toad, more feebly than ever, "then I would beg you—for the last time, probably—to step round to the village as quickly as possible—even now it may be too late—and fetch the doctor. But don't you bother. It's only a trouble, and perhaps we may as well let things take their course."

"Why, what do you want a doctor for?" inquired the Rat, coming closer and examining him. He certainly lay very still and flat, and his voice was weaker and his manner much changed.

"Surely you have noticed of late——" murmured Toad. "But, no—why should you? Noticing things is only a trouble. To-morrow, indeed, you may be saying to yourself, 'O, if only I had noticed sooner! If only I had done something!' But no; it's a trouble. Never mind—forget that I asked."

"Look here, old man," said the Rat, beginning to get rather alarmed, "of course I'll fetch a doctor to you, if you really think you want him. But you can hardly be bad enough for that yet. Let's talk about something else."

"I fear, dear friend," said Toad, with a sad smile, "that 'talk' can do little in a case like this—or doctors either, for that matter; still, one must grasp at the slightest straw. And, by the way—while you are about it—I *hate* to give you additional trouble, but I happen to remember that you will pass the door—I would you mind at the same time asking the lawyer to step up? It would be a convenience to me, and there are moments—perhaps I should say there is *a* moment—when one must face disagreeable tasks, at whatever cost to exhausted nature!"

"A lawyer! O, he must be really bad!" the affrighted Rat said to himself, as he hurried from the room, not forgetting, however, to lock the door carefully behind him.

Outside, he stopped to consider. The other two were far away, and he had no one to consult.

"It's best to be on the safe side," he said, on reflection. "I've known Toad fancy himself frightfully bad before, without the slightest reason; but I've never heard him ask for a lawyer! If there's nothing really the matter, the doctor will tell him he's an old ass, and cheer him up; and that will be something gained. I'd better humour him and go; it won't take very long." So he ran off to the village on his errand of mercy.

The Toad, who had hopped lightly out of bed as soon as he heard the key turned in the lock watched him eagerly from the window till he disappeared down the carriage-drive. Then, laughing heartily, he dressed as quickly as possible in the smartest suit he could lay hands on at the moment, filled his pockets with cash which he took from a small drawer in the dressing-table, and next, knotting the sheets from his bed together and tying one end of the improvised rope round the central mullion of the handsome Tudor window which formed such a feature of his bedroom, he scrambled out, slid lightly to the ground, and, taking the opposite direction to the Rat, marched off light-heartedly, whistling a merry tune.

It was a gloomy luncheon for Rat when the Badger and the Mole at length returned, and he had to face them at table with his pitiful and unconvincing story. The Badger's caustic, not to say brutal, remarks may be imagined, and therefore passed over; but it was painful to the Rat that even the Mole, though he

MR. TOAD

took his friend's side as far as possible, could not help saying, "You've been a bit of a duffer this time, Ratty! Toad, too, of all animals!"

"He did it awfully well," said the crestfallen Rat.

"He did *you* awfully well!" rejoined the Badger hotly. "However, talking won't mend matters. He's got clear away for the time, that's certain; and the worst of it is, he'll be so conceited with what he'll think is his cleverness that he may commit any folly. One comfort is, we're free now, and needn't waste any more of our precious time doing sentry-go. But we'd better continue to sleep at Toad Hall for a while longer. Toad may be brought back at any moment—on a stretcher, or between two policemen."

So spoke the Badger, not knowing what the future held in store, or how much water, and of how turbid a character, was to run under bridges before Toad should sit at ease again in his ancestral Hall.

Meanwhile, Toad, gay and irresponsible, was walking briskly along the high-road, some miles from home. At first he had taken by-paths, and crossed many fields, and changed his course several times, in case of pursuit; but now, feeling by this time safe from recapture, and the sun smiling brightly on him, and all Nature joining in a chorus of approval to the song of self-praise that his own heart was singing to him, he almost danced along the road in his satisfaction and conceit.

"Smart piece of work that!" he remarked to himself chuckling. "Brain against brute force—and brain came out on the top—as it's bound to do. Poor old Ratty! My! won't he catch it when the Badger gets back! A worthy fellow, Ratty, with many good qualities, but very little intelligence and absolutely no education. I must take him in hand some day, and see if I can make something of him."

Filled full of conceited thoughts such as these he strode along, his head in the air, till he reached a little town, where the sign of "The Red Lion," swinging across the road half-way down the main street, reminded him that he had not breakfasted that day, and that he was exceedingly hungry after his

long walk. He marched into the Inn, ordered the best luncheon that could be provided at so short a notice, and sat down to eat it in the coffee-room.

He was about half-way through his meal when an only too familiar sound, approaching down the street, made him start and fall a trembling all over. The poop-poop! drew nearer and nearer, the car could be heard to turn into the inn-yard and come to a stop, and Toad had to hold on to the leg of the table to conceal his over-mastering emotion. Presently the party entered the coffee-room, hungry, talkative, and gay, voluble on their experiences of the morning and the merits of the chariot that had brought them along so well. Toad listened eagerly, all ears, for a time; at last he could stand it no longer. He slipped out of the room quietly, paid his bill at the bar, and as soon as he got outside sauntered round quietly to the inn-yard. "There cannot be any harm," he said to himself, "in my only just *looking* at it!"

The car stood in the middle of the yard, quite unattended, the stable-helpers and other hangers-on being all at their dinner. Toad walked slowly round it, inspecting, criticising, musing deeply.

"I wonder," he said to himself presently, "I wonder if this sort of car *starts* easily?"

Next moment, hardly knowing how it came about, he found he had hold of the handle and was turning it. As the familiar sound broke forth, the old passion seized on Toad and completely mastered him, body and soul. As if in a dream he found himself, somehow, seated in the driver's seat; as if in a dream, he pulled the lever and swung the car round the yard and out through the archway; and, as if in a dream, all sense of right and wrong, all fear of obvious consequences, seemed temporarily suspended. He increased his pace, and as the car devoured the street and leapt forth on the high-road through the open country, he was only conscious that he was Toad once more, Toad at his best and highest, Toad the terror, the traffic-queller, the Lord of the lone trail, before whom all must give way or be smitten into nothingness and everlasting night. He chanted as he flew, and the car responded with sonorous drones; the miles were eaten up under him as he sped he knew

not whither, fulfilling his instincts, living his hour, reckless of what might come to him.

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"To my mind," observed the Chairman of the Bench of Magistrates cheerfully, "the *only* difficulty that presents itself in this otherwise very clear case is, how we can possibly make it sufficiently hot for the incorrigible rogue and hardened ruffian whom we see cowering in the dock before us. Let me see: he has been found guilty, on the clearest evidence, first, of stealing a valuable motor-car; secondly, of driving to the public danger; and, thirdly, of gross impertinence to the rural police. Mr. Clerk, will you tell us, please, what is the very stiffest penalty we can impose for each of these offences? Without, of course, giving the prisoner the benefit of any doubt, because there isn't any."

The Clerk scratched his nose with his pen. "Some people would consider," he observed, "that stealing the motor-car was the worst offence; and so it is. But checking the police undoubtedly carries the severest penalty; and so it ought. Supposing you were to say twelve months for the theft, which is mild; and fifteen years for the furious driving, which is lenient; and fifteen years for the cheek, which was pretty bad sort of cheek, judging by what we've heard from the witness-box, even if you only believe one-tenth part of what you heard, and I never believe more than myself—those figures, if added together correctly, tot up to nineteen years——"

"First-rate!" said the Chairman.

"—So you had better make it a round twenty years and be on the safe side," concluded the Clerk.

"An excellent suggestion!" said the Chairman approvingly. "Prisoner! Pull yourself together and try and stand up straight. It's going to be twenty years for you this time. And mind, if you appear before us again, upon any charge whatever, we shall have to deal with you very seriously!"

Then the brutal minions of the law fell upon the hapless Toad; loaded him with chains, and dragged him from the Court House, shrieking, praying, protesting; across the market-place, where the playful populace, always as severe upon detected



crime as they are sympathetic and helpful when one is merely "wanted," assailed him with jeers, carrots, and popular catch-words; past hooting school children, their innocent faces lit up with the pleasure they ever derive from the sight of a gentleman in difficulties; across the hollow-sounding drawbridge, below the spiky portcullis, under the frowning archway of the grim old castle,<sup>13</sup> whose ancient towers soared high overhead; past guardrooms full of grinning soldiery off duty, past sentries who coughed in a horrid, sarcastic way, because that is as much as a sentry on his post dare do to show his contempt and abhorrence of crime; up time-worn winding stairs, past men-at-arms in casquet and corselet of steel, darting threatening looks through their vizards;<sup>14</sup> across courtyards, where mastiffs strained at their leash and pawed the air to get at him; past ancient warders, their halberds leant against the wall, dozing over a pasty and a flagon of brown ale; on and on, past the rack-chamber and the thumbscrew-room, past the turning that led to the private scaf-fold, till they reached the door of the grimest dungeon that lay in the heart of the innermost keep. There at last they paused, where an ancient gaoler sat fingering a bunch of mighty keys.

"Oddsbodikins!" said the sergeant of police, taking off his helmet and wiping his forehead. "Rouse thee, old loon, and take over from us this vile Toad, a criminal of deepest guilt and matchless artfulness and resource. Watch and ward him with all thy skill; and mark thee well, greybeard, should aught unward befall, thy old head shall answer for his—and a murrain on both of them!"

The gaoler nodded grimly, laying his withered hand on the shoulder of the miserable Toad. The rusty key creaked in the lock, the great door clanged behind them; and Toad was a helpless prisoner in the remotest dungeon of the best-guarded keep of the stoutest castle in all the length and breadth of Merry England.

## VII

# THE PIPER AT THE GATES OF DAWN

The Willow-Wren was piping his thin little song, hidden himself in the dark selvedge of the river bank. Though it was past ten o'clock at night, the sky still clung to and retained some lingering skirts of light from the departed day; and the sullen heats of the torrid afternoon broke up and rolled away at the dispersing touch of the cool fingers of the short midsummer night. Mole lay stretched on the bank, still panting from the stress of the fierce day that had been cloudless from dawn to late sunset, and waited for his friend to return. He had been on the river with some companions, leaving the Water Rat free to keep an engagement of long standing with Otter; and he had come back to find the house dark and deserted, and no sign of Rat, who was doubtless keeping it up late with his old comrade. It was still too hot to think of staying indoors, so he lay on some cool dock-leaves, and thought over the past day and its doings, and how very good they all had been.

The Rat's light footfall was presently heard approaching over the parched grass. "O, the blessed coolness!" he said, and sat down, gazing thoughtfully into the river, silent and pre-occupied.

"You stayed to supper, of course?" said the Mole presently. "Simply had to," said the Rat. "They wouldn't hear of my going before. You know how kind they always are. And they made things as jolly for me as ever they could, right up to the moment I left. But I felt a brute all the time, as it was clear to me they were very unhappy, though they tried to hide it. Mole, I'm afraid they're in trouble. Little Portly is missing again; and you know what a lot his father thinks of him, though he never says much about it."



"What, that child?" said the Mole lightly. "Well, suppose he is; why worry about it? He's always straying off and getting lost, and turning up again; he's so adventurous. But no harm ever happens to him. Everybody hereabouts knows him and likes him, just as they do old Otter, and you may be sure some animal or other will come across him and bring him back again all right. Why, we've found him ourselves, miles from home, and quite self-possessed and cheerful!"

"Yes; but this time it's more serious," said the Rat gravely. "He's been missing for some days now, and the Otters have hunted everywhere, high and low, without finding the slightest trace. And they've asked every animal, too, for miles around, and no one knows anything about him. Otter's evidently more anxious than he'll admit. I got out of him that young Portly hasn't learnt to swim very well yet, and I can see he's thinking of the weir. There's a lot of water coming down still, considering the time of the year, and the place always had a fascination for the child. And then there are—well, traps and things—you know. Otter's not the fellow to be nervous about any son of his before it's time. And now he is nervous. When I left, he came out with me—said he wanted some air, and talked about stretching his legs. But I could see it wasn't that, so I drew him out and pumped him, and got it all from him at last. He was going to spend the night watching by the ford. You know the place where the old ford used to be, in by-gone days before they built the bridge?"

"I know it well," said the Mole. "But why should Otter choose to watch there?"

"Well, it seems that it was there he gave Portly his first swimming-lesson," continued the Rat. "From that shallow, gravelly spit near the bank. And it was there he used to teach him fishing, and there young Portly caught his first fish, of which he was so very proud. The child loved the spot, and Otter thinks that if he came wandering back from wherever he is—if he is anywhere by this time, poor little chap—he might make for the ford he was so fond of; or if he came across it he'd remember it well, and stop there and play, perhaps. So Otter goes there every night and watches—on the chance, you know, just on the chance!"

They were silent for a time, both thinking of the same thing—the lonely, heart-sore animal, crouched by the ford, watching and waiting, the long night through—on the chance.

"Well, well," said the Rat presently, "I suppose we ought to be thinking about turning in." But he never offered to move.

"Rat," said the Mole, "I simply can't go and turn in, and go to sleep, and do nothing, even though there doesn't seem to be anything to be done. We'll get the boat out, and paddle up stream. The moon will be up in an hour or so, and then we will search as well as we can—anyhow, it will be better than going to bed and doing *nothing*."

"Just what I was thinking myself," said the Rat. "It's not the sort of night for bed anyhow; and daybreak is not so very far off, and then we may pick up some news of him from early risers as we go along."

They got the boat out, and the Rat took the sculls, paddling with caution. Out in mid-stream, there was a clear, narrow track that faintly reflected the sky; but wherever shadows fell on the water from bank, bush, or tree, they were as solid to all appearance as the banks themselves, and the Mole had to steer with judgment accordingly. Dark and deserted as it was, the night was full of small noises, song and chatter and rustling, telling of the busy little population who were up and about, plying their trades and vocations through the night till sunshine should fall on them at last and send them off to their well-earned repose. The water's own noises, too, were more apparent than by day, its gurglings and "cloops" more unexpected and near at hand; and constantly they started at what seemed a sudden clear call from an actual articulate voice.

The line of the horizon was clear and hard against the sky, and in one particular quarter it showed black against a silvery climbing phosphorescence that grew and grew. At last, over the rim of the waiting earth the moon lifted with slow majesty till it swung clear of the horizon and rode off, free of moorings; and once more they began to see surfaces—meadows wide-spread, and quiet gardens, and the river itself from bank to bank, all softly disclosed, all washed clean of mystery and terror, all radiant again as by day, but with a difference that was tremendous.

Their old haunts greeted them again in other raiment, as if they had slipped away and put on this pure new apparel and come quietly back, smiling as they shyly waited to see if they would be recognised again under it.

Fastening their boat to a willow, the friends landed in this silent, silver kingdom, and patiently explored the hedges, the low trees, the runnels and their little culverts, the ditches and dry water-ways. Embarking again and crossing over, they worked their way up the stream in this manner, while the moon, serene and detached in a cloudless sky, did what she could, though so far off, to help them in their quest; till her hour came and she sank earthwards reluctantly, and left them, and mystery once more held field and river.

Then a change began slowly to declare itself. The horizon became clearer, field and tree came more into sight, and somehow with a different look; the mystery began to drop away from them. A bird piped suddenly, and was still; and a light breeze sprang up and set the reeds and bulrushes rustling. Rat, who was in the stern of the boat, while Mole sculled, sat up suddenly and listened with a passionate intentness. Mole, who with gentle strokes was just keeping the boat moving while he scanned the banks with care, looked at him with curiosity.

"It's gone!" sighed the Rat, sinking back in his seat again. "So beautiful and strange and new! Since it was to end so soon, I almost wish I had never heard it. For it has roused a longing in me that is pain, and nothing seems worth while but just to hear that sound once more and go on listening to it for ever. No! There it is again!" he cried, alert once more. Entranced, he was silent for a long space, spell-bound.

"Now it passes on and I begin to lose it," he said presently. "O Mole! the beauty of it! The merry bubble and joy, the thin, clear, happy call of the distant piping! Such music I never dreamed of, and the call in it is stronger even than the music is sweet! Row on, Mole, row! For the music and the call must be for us."

The Mole, greatly wondering, obeyed. "I hear nothing myself," he said, "but the wind playing in the reeds and rushes and osiers."

The Rat never answered, if indeed he heard. Rapt, transported, trembling, he was possessed in all his senses by this new divine thing that caught up his helpless soul and swung and dangled it, a powerless but happy infant in a strong sustaining grasp.

In silence Mole rowed steadily, and soon they came to a point where the river divided, a long backwater branching off to one side. With a slight movement of his head Rat, who had long dropped the rudder-lines, directed the rower to take the backwater. The creeping tide of light gained and gained, and now they could see the colour of the flowers that gemmed the water's edge.

"Clearer and nearer still," cried the Rat joyously. "Now you must surely hear it! Ah—at last—I see you do!"

Breathless and transfixed the Mole stopped rowing as the liquid run of that glad piping broke on him like a wave, caught him up, and possessed him utterly. He saw the tears on his comrade's cheeks, and bowed his head and understood. For a space they hung there, brushed by the purple loosestrife that fringed the bank; then the clear imperious summons that marched hand-in-hand with the intoxicating melody imposed its will on Mole, and mechanically he bent to his oars again. And the light grew steadily stronger, but no birds sang as they were wont to do at the approach of dawn; and but for the heavenly music all was marvellously still.

On either side of them, as they glided onwards, the rich meadow-grass seemed that morning of a freshness and a greenness unsurpassable. Never had they noticed the roses so vivid, the willow-herb so riotous, the meadow-sweet so odorous and pervading. Then the murmur of the approaching weir began to hold the air, and they felt a consciousness that they were nearing the end, whatever it might be, that surely awaited their expedition.

A wide half-circle of foam and glinting lights and shining shoulders of green water, the great weir closed the backwater from bank to bank, troubled all the quiet surface with twirling eddies and floating foam-streaks, and deadened all other sounds with its solemn and soothing rumble. In midmost of the stream,

embraced in the weir's shimmering arm-spread, a small island lay anchored, fringed close with willow and silver birch and alder. Reserved, shy, but full of significance, it hid whatever it might hold behind a veil, keeping it till the hour should come, and, with the hour, those who were called and chosen.

Slowly, but with no doubt or hesitation whatever, and in something of a solemn expectancy, the two animals passed through the broken, tumultuous water and moored their boat at the flowery margin of the island. In silence they landed, and pushed through the blossom and scented herbage and undergrowth that led up to the level ground, till they stood on a little lawn of a marvellous green, set round with Nature's own orchard-trees—crab-apple, wild cherry, and sloe.

"This is the place of my song-dream, the place the music played to me," whispered the Rat, as if in a trance. "Here, in this holy place, here if anywhere, surely we shall find Him!"

Then suddenly the Mole felt a great Awe fall upon him, an awe that turned his muscles to water, bowed his head, and rooted his feet to the ground. It was no panic terror—indeed he felt wonderfully at peace and happy—but it was an awe that smote and held him and, without seeing, he knew it could only mean that some august Presence was very, very near. With difficulty he turned to look for his friend, and saw him at his side cowed, stricken, and trembling violently. And still there was utter silence in the populous bird-haunted branches around them; and still the light grew and grew.

Perhaps he would never have dared to raise his eyes, but that, though the piping was now hushed, the call and the summons seemed still dominant and imperious. He might not refuse, were Death himself waiting to strike him instantly, once he had looked with mortal eye on things rightly kept hidden. Trembling he obeyed, and raised his humble head; and then, in that utter clearness of the imminent dawn, while Nature, flushed with fulness of incredible colour, seemed to hold her breath for the event, he looked in the very eyes of the Friend and Helper; saw the backward sweep of the curved horns, gleaming in the growing daylight; saw the stern, hooked nose between, the kindly eyes that were looking down on them humbrously, 's

while the bearded mouth broke into a half-smile at the corners; saw the rippling muscles on the arm that lay across the broad chest, the long supple hand still holding the pan-pipes only just fallen away from the parted lips; saw the splendid curves of the fallen away from the parted lips; saw the splendid curves of the slagggy limbs disposed in majestic ease on the sward; saw, last of all, nestling between his very hooves, sleeping soundly in utter peace and contentment, the little, round, podgy, childish form of the baby otter. All this he saw, for one moment breathless and intense, vivid on the morning sky; and still, as he looked, he lived; and still, as he lived, he wondered.

"Rat!" he found breath to whisper, shaking. "Are you afraid?"

"Afraid?" murmured the Rat, his eyes shining with unutterable love. "Afraid! Of Him? O, never, never! And yet—and yet—O, Mole, I am afraid!"

Then the two animals, crouching to the earth, bowed their heads and did worship.

Sudden and magnificent, the sun's broad golden rim showed itself over the horizon facing them; and the first rays, shooting across the level water-meadows, took the animals full in the eyes and dazzled them. When they were able to look once more, the Vision had vanished, and the air was full of the carol of birds that hailed the dawn.

As they stared blankly, in dumb misery deepening as they slowly realised all they had seen and all they had lost, a capricious little breeze, dancing up from the surface of the water, tossed the aspens, shook the dewy roses, and blew lightly and caressingly in their faces; and with its soft touch came instant oblivion. For this is the last best gift that the kindly demi-god is careful to bestow on those to whom he has revealed himself in their helping: the gift of forgetfulness. Lest the awful remembrance should remain and grow, and over-shadow mirth and pleasure, and the great haunting memory should spoil all the after-lives of little animals helped out of difficulties, in order that they should be happy and light-hearted as before.

Mole rubbed his eyes and stared at Rat, who was looking about him in a puzzled sort of way. "I beg your pardon; what did you say, Rat?" he asked.



"I think I was only remarking," said Rat slowly, "that this was the right sort of place, and that here, if anywhere, we should find him. And look! Why, there he is, the little fellow!" And with a cry of delight he ran towards the slumbering Portly.

But Mole stood still a moment, held in thought. As one wakened suddenly from a beautiful dream, who struggles to recall it, and can re-capture nothing but a dim sense of the beauty of it, the beauty! Till that, too, fades away in its turn, and the dreamer bitterly accepts the hard, cold waking and all its penalties; so Mole, after struggling with his memory for a brief space, shook his head sadly and followed the Rat.

Portly woke up with a joyous squeak, and wriggled with pleasure at the sight of his father's friends, who had played with him so often in past days. In a moment, however, his face grew blank, and he fell to hunting round in a circle with pleading whine. As a child that has fallen happily asleep in its nurse's arms, and wakes to find itself alone and laid in a strange place, and searches corners and cupboards, and runs from room to room, despair growing silently in its heart, even so Portly searched the island and searched, dogged and unwearied, till at last the black moment came for giving it up, and sitting down and crying bitterly.

The Mole ran quickly to comfort the little animal; but Rat, lingering, looked long and doubtfully at certain hoof-marks deep in the sward.

"Some—great—animal—has been here," he murmured slowly and thoughtfully; and stood musing, musing; his mind strangely stirred.

"Come along, Rat!" called the Mole. "Think of poor Otter, waiting up there by the ford!"

Portly had soon been comforted by the promise of a treat—mals conducted on the river in Mr. Rat's real boat; and the two animals between them in the bottom of the boat, and paddled off down the backwater. The sun was fully up by now, and hot on them, birds sang lustily and without restraint, and flowers smiled and nodded from either bank, but somehow—so thought the animals—with less of richness and blaze of colour

than they seemed to remember seeing quite recently somewhere—they wondered where.

The main river reached again, they turned the boat's head up-stream, towards the point where they knew their friend was keeping his lonely vigil. As they drew near the familiar ford, the Mole took the boat in to the bank, and they lifted Portly out and set him on his legs on the tow-path, gave him his marching orders and a friendly farewell pat on the back, and shoved into midstream. They watched the little animal as he waddled along the path contentedly and with importance; watched him till they saw his muzzle suddenly lift and his waddle break into a clumsy amble as he quickened his pace with shrill whines and wriggles of recognition. Looking up the river, they could see Otter start up, tense and rigid, from out of the shallows where he crouched in dumb patience, and could hear his amazed and joyous bark as he bounded up through the osiers on to the path. Then the Mole, with a strong pull on one oar, swung the boat round and let the full stream bear them down again whither it would, their quest now happily ended.

"I feel strangely tired, Rat," said the Mole, leaning wearily over his oars as the boat drifted. "It's being up all night, you'll say, perhaps; but that's nothing. We do as much half the nights of the week, at this time of the year. No; I feel as if I had been through something very exciting and rather terrible, and it was just over; and yet nothing particular has happened."

"Or something very surprising and splendid and beautiful," murmured the Rat, leaning back and closing his eyes. "I feel just as you do, Mole; simply dead tired, though not body-tired. It's lucky we've got the stream with us, to take us home. Isn't it jolly to feel the sun again, soaking into one's bones! And hark to the wind playing in the reeds!"

"It's like music—far away music," said the Mole nodding drowsily.

"So I was thinking," murmured the Rat, dreamful and languid. "Dance-music—the lilting sort that runs on without a stop—but with words in it, too—it passes into words and out of them again—I catch them at intervals—then it is dance-music once more, and then nothing but the reeds' soft thin whispering."



“You hear better than I,” said the Mole sadly. “I cannot catch the words.”

“Let me try and give you them,” said the Rat softly, his eyes still closed. “Now it is turning into words again—faint but clear—*Lest the awe should dwell—And turn your frolic to fret—You shall look on my power at the helping hour—But then you shall forget!* Now the reeds take it up—*forget, forget,* they sigh, and it dies away in a rustle and a whisper. Then the voice returns—

*“Lest limbs be reddened and rent—I spring the trap that is set—As I loose the snare you may glimpse me there—For surely you shall forget!* Row nearer. Mole, nearer to the reeds! It is hard to catch, and grows each minute fainter.

*“Helper and healer, I cheer—Small waifs in the woodland wet—Strays I find in it, wounds I bind in it—Bidding them all forget!* Nearer, Mole, nearer! No, it is no good; the song has died away into reed-talk.”

“But what do the words mean?” asked the wondering Mole.

“That I do not know,” said the Rat simply. “I passed them on to you as they reached me. Ah! now they return again, and this time full and clear! This time, at last, it is the real, the unmistakable thing, simple—passionate—perfect——”

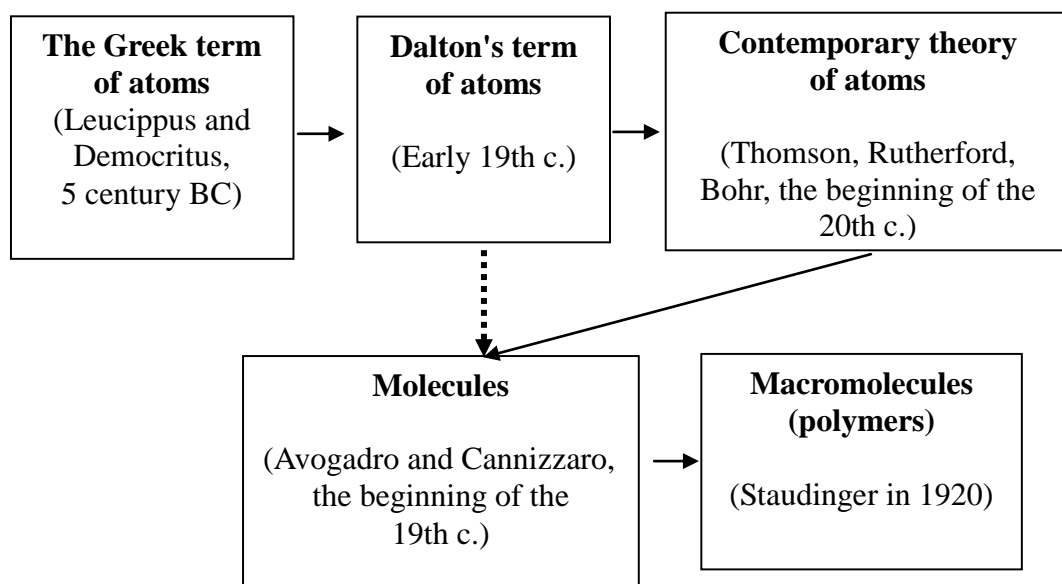
“Well, let’s have it, then,” said the Mole, after he had waited patiently for a few minutes, half-dozing in the hot sun.

But no answer came. He looked, and understood the silence. With a smile of much happiness on his face, and something of a listening look still lingering there, the weary Rat was fast asleep.

## 4. CONTRIBUTION OF BOSCOVICH'S THEORY TO MODERN COMPREHENSION OF THE STRUCTURE OF MATTER

### 4.1. Common view of the historical journey for the discovery of structure of atoms, molecules and macromolecules

It is often said that the ancient Greek philosophers Leucippus and Democritus first came to idea that all was made of atoms, tiny indivisible particles. Their thought was religiously prohibited and dormant for more than 1500 years. During this period, there were a few people who thought about the atomic structure, but in the period to 19th century, there was a great preparation that formed the basis for further work on it. It is often said, that John Dalton at the beginning of the 19th century came up with the idea that each chemical element has its smallest particles. Believing that these particles are indivisible, Dalton, following the example of the Greeks, called them atoms (Scheme 4-1.).



*Scheme 4-1. A common view of the historical journey of discovery structure of atoms, molecules and macromolecules*

A little later it turned out that these Dalton atoms must be divisible, i.e. the atom had a structure, and the atom was made up of smaller particles, the atomic nucleus and electrons. This truth of atoms was revealed in the 19th and 20th century and many famous scientists contributed to finding out the structure of atoms are usually named as: Faraday, Maxwell, William Thomson (better known as Lord Kelvin), J. J. Thomson, Rutherford and Bohr. The remarkable contributions of the last three scientists are emphasized; according to the usual contemporary story for the historical journey of the discovery of the atomic structure looks like shown in scheme 4-1. Then, usually are listed the names of A. Avogadro and A. Cannizzaro who in 19th century indicated that atoms are combined into molecules, and then its stated that H. Staudinger in 1920 first introduced the hypothesis that the molecules combine into even larger entities - macromolecules.

However, it was not quite so. A part of the story was left out. It is undeniable that these scientists contributed highly to the interpretation of the structure of matter. It is important to note, however, that these achievements are based on the ideas of Roger Boscovich, which is not known enough to the wider scientific community.

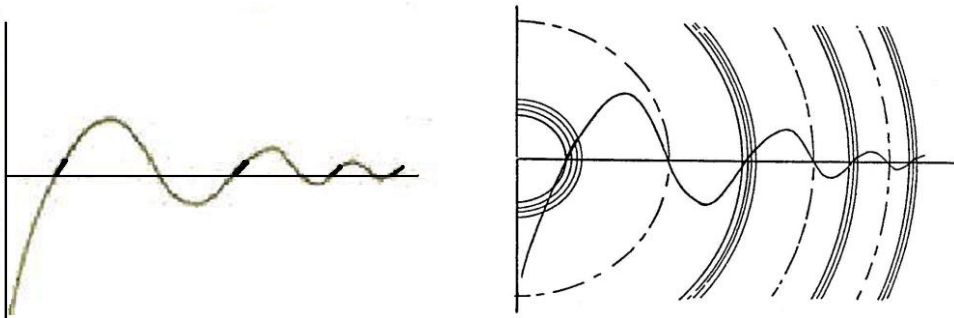
Earlier in western literature it was regularly cited the importance of Boscovich to the discovery of the structure of atoms, but since 1920, his name is usually omitted /6a/. It is commendable that some of our scholars in Serbia and Croatia typically cite the name of this great scientist, but unfortunately do not give enough information on his impact on the discovery of the structure of atoms. Therefore, we would like here to briefly introduce the reader to the contribution of Boscovich to the discovery of atomic structures, and more detailed views can be found in the literature /2, 6a, 7, 15, 17, 18/.

## **4.2. Contribution of Boscovich's Theory to the discovery of the structure of atoms**

At the end of the 19th century, the more mature conviction (i.e. point-of-view) was that Dalton's atoms of chemical elements were still divisible and consisted of positively charged particles and negatively charged electrons. The question was - how were these particles located in the atom.

At the end of the 19th century, J. J. Thomson (from Cavendish Laboratory in Cambridge) discussed various models of atoms. According to one of them, which is most frequently cited in contemporary literature as by Thomson, is that of positive charge filling the entire atom forming a ball, where negative electrons are deployed like plum grains in pudding. (Hence, it is named "plum-pudding model" as well as "Thomson model".) However, Lord Kelvin, in the period 1902-1907, published several works which emphasized his belief that the issue of atomic structure can be resolved by Boscovich's Theory and proposed a "planetary model of the atom".

J. J. Thomson also thoroughly discussed the "planetary model of the atom", under which the positive charge is located in the nucleus of atom and the electrons orbit the nucleus /2, 7/. Seeking a theoretical foundation for the idea that electrons can move only at certain paths around the nucleus of atoms, Thomson concluded that for this purpose only Boscovich's Theory would serve. In 1907 Thomson wrote in his work "The corpuscular theory of matter" /90/: "Suppose we regard the charged ion as a Boscovichian atom exerting a central force on a corpuscle which changes from repulsion to attraction and from attraction to repulsion several times... such a force, for example, as is represented graphically in Figure 4-1 where the abscissa represent distances from the atom, and the ordinates the forces exerted by the atom on a corpuscle..." It is obvious that Figure 4-1 actually combines Boscovich's curve (Fig. 3-1) and Boscovich's orbitals (Fig. 3-2).



*Figure 4-1. Left curve as stated by Thomson /90/: A positively charged nucleus of the atom is at coordinate's origin and the positions of electron orbits are at bolded part of the curve. Following Thomson's opinion, Gill /7/ presented "permissible" (solid line) and "forbidden" (dashed line) orbitals (right curve). The abscissa shows the distance of the electron from nucleus and the ordinates show the force: repulsive (below) and attractive (above) /7/.*

The doubt, over what model of the atom was correct, the "plum-pudding" or "planetary", was solved by Rutherford, who was a former student and collaborator to Thomson. Rutherford in 1907 transferred to the Department of Physics, University of Manchester, and in the next year confirmed that alpha particles are actually helium nuclei, i.e. positively charged particles which are composed of two protons and two neutrons. Thin sheets of metal were bombarded with alpha particles, and thus Rutherford in 1911 experimentally confirmed the "planetary model of the atom". This model is commonly called a "Rutherford model".

In 1912, after seven months spent with Thomson in Cambridge and four months spent with Rutherford in Manchester /19/, Niels Bohr in 1913 calculated the possible paths of electrons, taking into account that electrons can move from one orbital to another only if they receive or lose a certain amount of (quantum) energy - as Boscovich said a century and a half earlier (Section 3.3). Today, this model of the atom is called "Bohr model", which is not fully justified to call it that.



# Chapter 3

## Moving Toward the Industrial Age

**New Ways of Farming** If an English family living in, say, the 1300s could travel forward in time to the 1700s, they would notice that many things were still the same. But some important changes were happening.

**The Big Question**  
.....  
In what ways did the inventions of the Industrial Revolution impact people's lives?  
.....

Before the Industrial Revolution, most people still worked on the land, struggling to put enough food on their table to keep from starving. Over the years, however, inventive people discovered new and more efficient ways to do their work. And foods, not known before, were brought across the Atlantic from the Americas. Potatoes grew well in moist, sandy English soil. Corn grew well, too, but most farmers thought it was only fit for farm animals! Most families probably never tasted chocolate: many never saw anyone smoking tobacco. These were expensive items and were only sampled by the wealthy. Oxen, cows, horses, sheep, goats, and pigs were larger now, thanks to better feed and breeding practices. For many families, there was meat on the table more than just once or twice a year. Better-fed people were healthier and even noticeably taller than their ancestors. More sheep also meant more wool for clothing and blankets.

More important than the availability of new crops were the many new tools and farming techniques. New plows were stronger and heavier, and had metal blades.



An improved diet meant that people were healthier and even lived longer.



These plows allowed the plowman to loosen and turn over deeper, richer soil. Seedlings had better root systems and were less likely to dry out if there was little rain. New methods of harnessing **draft animals** made better use of their strength. Larger oxen or horses pulled these heavier plows more efficiently. Agriculture was beginning to bring profits to the lords and some of the most enterprising villagers. Improved roads and newly dug canals made it easier for farmers to bring grain to the mill. Flour was more easily brought to markets in nearby towns, too. **Waterwheels** were improved, so mills could grind more flour. There was an enthusiasm for change, especially if it meant increased **productivity** and increased profit.

**Vocabulary**  
 "draft animal," (phrase) an animal used for pulling heavy loads  
 waterwheel, n. a wheel that is turned by flowing water and used to power machinery  
 productivity, n. the rate at which goods are made or work is completed



Waterwheels converted the power of flowing water into a form of energy that could power machinery. Often mills were built beside rivers and streams for this reason.

## The Enclosure Movement

The English landscape began to change. Land where villagers had once grown crops was taken over by gentry landlords and "enclosed"—fenced in and turned into pasture for the sheep whose wool was in great demand for cloth. Meadows and woods that lords and villagers had shared were also enclosed. Previously the land was divided into many small plots. By the 1600s, larger, more efficient farms were emerging.

As this "enclosure movement" lumped together many small fields, the cost of producing crops fell. Fewer farm workers were needed. With bigger harvests and lower costs, the larger landlords reaped more profits and grew wealthier. But many villagers found themselves without work. Some hired themselves out as day laborers. Many rural families scraped together a modest living by doing weaving in their cottages. Desperate for work, hundreds of thousands of villagers had to leave the countryside, flocking to cities, to nearby mines, or to the American colonies. Eventually, these displaced people, and certainly their descendants, would become a large part of the labor force as the Industrial Age took hold.

## New Ways of Mining and Making Metal Tools

By 1700, timber and firewood were scarce in England, and coal became an important source of energy. Coal could burn hot enough to soften iron. Iron was used to make new, stronger farm tools. It could also be used for strong bridges, and for machinery that would help dig canals and deepen harbors. Many wealthy English landowners began investing some of their profits in coal and iron mines.

Soon, the easy-to-mine coal and iron deposits that were close to the surface of the ground were used up. Miners dug **shafts** down underground to follow the minerals wherever they could. Quite often, these mines flooded with groundwater.

**Vocabulary**  
 shaft, n. a deep, narrow tunnel that gives access to a mine