

THE  
UNDERGROUND  
CITY



THE  
UNDERGROUND CITY

*or*

THE BLACK INDIES

*(Sometimes Called THE CHILD OF THE CAVERN)*

JULES VERNE

**PHOENIX PICK**

*an imprint of*



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# THE UNDERGROUND CITY

## CHAPTER I:- CONTRADICTORY LETTERS

*To Mr. F. R. Starr, Engineer, 30 Canongate, Edinburgh.*

If Mr. James Starr will come to-morrow to the Aberfoyle coal-mines, Dochart pit, Yarrow shaft, a communication of an interesting nature will be made to him.

“Mr. James Starr will be awaited for, the whole day, at the Callander station, by Harry Ford, son of the old overman Simon Ford.”

“He is requested to keep this invitation secret.”

**SUCH** was the letter which James Starr received by the first post, on the 3rd December, 18—, the letter bearing the Aberfoyle postmark, county of Stirling, Scotland.

The engineer's curiosity was excited to the highest pitch. It never occurred to him to doubt whether this letter might not be a hoax. For many years he had known Simon Ford, one of the former foremen of the Aberfoyle mines, of which he, James Starr, had for twenty years, been the manager, or, as he would be termed in English coal-mines, the viewer. James Starr was a strongly-constituted man, on whom his fifty-five years weighed no more heavily than if they had been forty. He belonged to an old Edinburgh family, and was one of its most distinguished members. His labors did credit to the body of engineers who are gradually devouring the carboniferous subsoil of the United Kingdom, as much at Cardiff and Newcastle, as in the southern counties of Scotland. However, it was more particularly in the depths of the mysterious mines of Aberfoyle, which border on the Alloa mines and occupy part of the county of Stirling, that the name of Starr had acquired the greatest renown. There, the

greater part of his existence had been passed. Besides this, James Starr belonged to the Scottish Antiquarian Society, of which he had been made president. He was also included amongst the most active members of the Royal Institution; and the *Edinburgh Review* frequently published clever articles signed by him. He was in fact one of those practical men to whom is due the prosperity of England. He held a high rank in the old capital of Scotland, which not only from a physical but also from a moral point of view, well deserves the name of the Northern Athens.

We know that the English have given to their vast extent of coal-mines a very significant name. They very justly call them the "Black Indies," and these Indies have contributed perhaps even more than the Eastern Indies to swell the surprising wealth of the United Kingdom.

At this period, the limit of time assigned by professional men for the exhaustion of coal-mines was far distant and there was no dread of scarcity. There were still extensive mines to be worked in the two Americas. The manu-factories, appropriated to so many different uses, locomotives, steamers, gas works, &c., were not likely to fail for want of the mineral fuel; but the consumption had so increased during the last few years, that certain beds had been exhausted even to their smallest veins. Now deserted, these mines perforated the ground with their useless shafts and forsaken galleries. This was exactly the case with the pits of Aberfoyle.

Ten years before, the last butty had raised the last ton of coal from this colliery. The underground working stock, traction engines, trucks which run on rails along the galleries, subterranean tramways, frames to support the shaft, pipes—in short, all that constituted the machinery of a mine had been brought up from its depths. The exhausted mine was like the body of a huge fantastically-shaped mastodon, from which all the organs of life have been taken, and only the skeleton remains.

Nothing was left but long wooden ladders, down the Yarrow shaft—the only one which now gave access to the lower galleries of the Dochart pit. Above ground, the sheds, formerly sheltering the outside works, still marked the spot where the shaft of that pit had been sunk, it being now abandoned, as were the other pits, of which the whole constituted the mines of Aberfoyle.



It was a sad day, when for the last time the workmen quitted the mine, in which they had lived for so many years. The engineer, James Starr, had collected the hundreds of workmen which composed the active and courageous population of the mine. Overmen, brakemen, putters, wastemen, barrowmen, masons, smiths, carpenters, outside and inside laborers, women, children, and old men, all were collected in the great yard of the Dochart pit, formerly heaped with coal from the mine.

Many of these families had existed for generations in the mine of old Aberfoyle; they were now driven to seek the means of subsistence elsewhere, and they waited sadly to bid farewell to the engineer.

James Starr stood upright, at the door of the vast shed in which he had for so many years superintended the powerful machines of the shaft. Simon Ford, the foreman of the Dochart pit, then fifty-five years of age, and other managers and overseers, surrounded him. James Starr took off his hat. The miners, cap in hand, kept a profound silence. This farewell scene was of a touching character, not wanting in grandeur.

“My friends,” said the engineer, “the time has come for us to separate. The Aberfoyle mines, which for so many years have united us in a common work, are now exhausted. All our researches have not led to the discovery of a new vein, and the last block of coal has just been extracted from the Dochart pit.” And in confirmation of his words, James Starr pointed to a lump of coal which had been kept at the bottom of a basket.

“This piece of coal, my friends,” resumed James Starr, “is like the last drop of blood which has flowed through the veins of the mine! We shall keep it, as the first fragment of coal is kept, which was extracted a hundred and fifty years ago from the bearings of Aberfoyle. Between these two pieces, how many generations of workmen have succeeded each other in our pits! Now, it is over! The last words which your engineer will address to you are a farewell. You have lived in this mine, which your hands have emptied. The work has been hard, but not without profit for you. Our great family must disperse, and it is not probable that the future will ever again unite the scattered members. But do not forget that we have lived together for a long time, and that it will be the duty of the miners of Aberfoyle to help each other. Your old masters will not forget you either.

When men have worked together, they must never be stranger to each other again.

We shall keep our eye on you, and wherever you go, our recommendations shall follow you. Farewell then, my friends, and may Heaven be with you!"

So saying, James Starr wrung the horny hand of the oldest miner, whose eyes were dim with tears. Then the overmen of the different pits came forward to shake hands with him, whilst the miners waved their caps, shouting, "Farewell, James Starr, our master and our friend!"

This farewell would leave a lasting remembrance in all these honest hearts. Slowly and sadly the population quitted the yard. The black soil of the roads leading to the Dochart pit resounded for the last time to the tread of miners' feet, and silence succeeded to the bustling life which had till then filled the Aberfoyle mines.

One man alone remained by James Starr. This was the overman, Simon Ford. Near him stood a boy, about fifteen years of age, who for some years already had been employed down below.

James Starr and Simon Ford knew and esteemed each other well. "Good-by, Simon," said the engineer.

"Good-by, Mr. Starr," replied the overman, "let me add, till we meet again!"

"Yes, till we meet again. Ford!" answered James Starr. "You know that I shall be always glad to see you, and talk over old times."

"I know that, Mr. Starr."

"My house in Edinburgh is always open to you."

"It's a long way off, is Edinburgh!" answered the man shaking his head. "Ay, a long way from the Dochart pit."

"A long way, Simon? Where do you mean to live?"

"Even here, Mr. Starr! We're not going to leave the mine, our good old nurse, just because her milk is dried up! My wife, my boy, and myself, we mean to remain faithful to her!"

"Good-by then, Simon," replied the engineer, whose voice, in spite of himself, betrayed some emotion.

"No, I tell you, it's *till we meet again*, Mr. Starr, and not Just 'good-by,'" returned the foreman. "Mark my words, Aberfoyle will see you again!"

The engineer did not try to dispel the man's illusion. He patted Harry's head, again wrung the father's hand, and left the mine.

All this had taken place ten years ago; but, notwithstanding the wish which the overman had expressed to see him again, during that time Starr had heard nothing of him. It was after ten years of separation that he got this letter from Simon Ford, requesting him to take without delay the road to the old Aberfoyle colliery.

A communication of an interesting nature, what could it be? Dochart pit. Yarrow shaft! What recollections of the past these names brought back to him! Yes, that was a fine time, that of work, of struggle,—the best part of the engineer's life. Starr re-read his letter. He pondered over it in all its bearings. He much regretted that just a line more had not been added by Ford. He wished he had not been quite so laconic.

Was it possible that the old foreman had discovered some new vein? No! Starr remembered with what minute care the mines had been explored before the definite cessation of the works. He had himself proceeded to the lowest soundings without finding the least trace in the soil, burrowed in every direction. They had even attempted to find coal under strata which are usually below it, such as the Devonian red sandstone, but without result. James Starr had therefore abandoned the mine with the absolute conviction that it did not contain another bit of coal.

"No," he repeated, "no! How is it possible that anything which could have escaped my researches, should be revealed to those of Simon Ford. However, the old overman must well know that such a discovery would be the one thing in the world to interest me, and this invitation, which I must keep secret, to repair to the Dochart pit!" James Starr always came back to that.

On the other hand, the engineer knew Ford to be a clever miner, peculiarly endowed with the instinct of his trade. He had not seen him since the time when the Aberfoyle colliery was abandoned, and did not know either what he was doing or where he was living, with his wife and his son. All that he now knew was, that a rendezvous had been appointed him at the Yarrow shaft, and that Harry, Simon Ford's son, was to wait for him during the whole of the next day at the Callander station.

"I shall go, I shall go!" said Starr, his excitement increasing as the time drew near.

Our worthy engineer belonged to that class of men whose brain is always on the boil, like a kettle on a hot fire. In some of these

brain kettles the ideas bubble over, in others they just simmer quietly. Now on this day, James Starr's ideas were boiling fast.

But suddenly an unexpected incident occurred. This was the drop of cold water, which in a moment was to condense all the vapors of the brain. About six in the evening, by the third post, Starr's servant brought him a second letter. This letter was enclosed in a coarse envelope, and evidently directed by a hand unaccustomed to the use of a pen. James Starr tore it open. It contained only a scrap of paper, yellowed by time, and apparently torn out of an old copy book.

On this paper was written a single sentence, thus worded:

"It is useless for the engineer James Starr to trouble himself, Simon Ford's letter being now without object."

No signature.

## CHAPTER II:- ON THE ROAD

THE course of James Starr's ideas was abruptly stopped, when he got this second letter contradicting the first.

"What does this mean?" said he to himself. He took up the torn envelope, and examined it. Like the other, it bore the Aberfoyle postmark. It had therefore come from the same part of the county of Stirling. The old miner had evidently not written it. But, no less evidently, the author of this second letter knew the overman's secret, since it expressly contradicted the invitation to the engineer to go to the Yarrow shaft.

Was it really true that the first communication was now without object? Did someone wish to prevent James Starr from troubling himself either uselessly or otherwise? Might there not be rather a malevolent intention to thwart Ford's plans?

This was the conclusion at which James Starr arrived, after mature reflection. The contradiction which existed between the two letters only wrought in him a more keen desire to visit the Dochart pit. And besides, if after all it was a hoax, it was well worth while to prove it. Starr also thought it wiser to give more credence to the first letter than to the second; that is to say, to the request of such a man as Simon Ford, rather than to the warning of his anonymous contradictor.

"Indeed," said he, "the fact of anyone endeavoring to influence my resolution, shows that Ford's communication must be of great importance. To-morrow, at the appointed time, I shall be at the rendezvous."

In the evening, Starr made his preparations for departure. As it might happen that his absence would be prolonged for some days, he wrote to Sir W. Elphinston, President of the Royal Institution, that he should be unable to be present at the next meeting of the Society. He also wrote to excuse himself from two or three engagements which he had made for the week. Then, having ordered his servant to pack a traveling bag, he went to bed, more excited than the affair perhaps warranted.

The next day, at five o'clock, James Starr jumped out of bed, dressed himself warmly, for a cold rain was falling, and left his house in the Canongate, to go to Granton Pier to catch the steamer, which in three hours would take him up the Forth as far as Stirling.

For the first time in his life, perhaps, in passing along the Canongate, he did *not turn to look at Holyrood*, the palace of the former sovereigns of Scotland. He did not notice the sentinels who stood before its gateways, dressed in the uniform of their Highland regiment, tartan kilt, plaid and sporran complete. His whole thought was to reach Callander where Harry Ford was supposedly awaiting him.

The better to understand this narrative, it will be as well to hear a few words on the origin of coal. During the geological epoch, when the terrestrial spheroid was still in course of formation, a thick atmosphere surrounded it, saturated with watery vapors, and copiously impregnated with carbonic acid. The vapors gradually condensed in diluvial rains, which fell as if they had leapt from the necks of thousands of millions of seltzer water bottles. This liquid, loaded with carbonic acid, rushed in torrents over a deep soft soil, subject to sudden or slow alterations of form, and maintained in its semi-fluid state as much by the heat of the sun as by the fires of the interior mass. The internal heat had not as yet been collected in the center of the globe. The terrestrial crust, thin and incompletely hardened, allowed it to spread through its pores. This caused a peculiar form of vegetation, such as is probably produced on the surface of the inferior planets, Venus or Mercury, which revolve nearer than our earth around the radiant sun of our system.

The soil of the continents was covered with immense forests. Carbonic acid, so suitable for the development of the vegetable kingdom, abounded. The feet of these trees were drowned in a sort of immense lagoon, kept continually full by currents of fresh and

salt waters. They eagerly assimilated to themselves the carbon which they, little by little, extracted from the atmosphere, as yet unfit for the function of life, and it may be said that they were destined to store it, in the form of coal, in the very bowels of the earth.

It was the earthquake period, caused by internal convulsions, which suddenly modified the unsettled features of the terrestrial surface. Here, an intumescence which was to become a mountain, there, an abyss which was to be filled with an ocean or a sea. There, whole forests sunk through the earth's crust, below the unfixed strata, either until they found a resting-place, such as the primitive bed of granitic rock, or, settling together in a heap, they formed a solid mass.

As the waters were contained in no bed, and were spread over every part of the globe, they rushed where they liked, tearing from the scarcely-formed rocks material with which to compose schists, sandstones, and limestones. This the roving waves bore over the submerged and now peaty forests, and deposited above them the elements of rocks which were to superpose the coal strata. In course of time, periods of which include millions of years, these earths hardened in layers, and enclosed under a thick carapace of pudding-stone, schist, compact or friable sandstone, gravel and stones, the whole of the massive forests.

And what went on in this gigantic crucible, where all this vegetable matter had accumulated, sunk to various depths? A regular chemical operation, a sort of distillation. All the carbon contained in these vegetables had agglomerated, and little by little coal was forming under the double influence of enormous pressure and the high temperature maintained by the internal fires, at this time so close to it.

Thus there was one kingdom substituted for another in this slow but irresistible reaction. The vegetable was transformed into a mineral. Plants which had lived the vegetative life in all the vigor of first creation became petrified. Some of the substances enclosed in this vast herbal left their impression on the other more rapidly mineralized products, which pressed them as an hydraulic press of incalculable power would have done.

Thus also shells, zoophytes, star-fish, polypi, spirifores, even fish and lizards brought by the water, left on the yet soft coal their exact likeness, "admirably taken off."

Pressure seems to have played a considerable part in the formation of carboniferous strata. In fact, it is to its degree of power that are due the different sorts of coal, of which industry makes use. Thus in the lowest layers of the coal ground appears the anthracite, which, being almost destitute of volatile matter, contains the greatest quantity of carbon. In the higher beds are found, on the contrary, lignite and fossil wood, substances in which the quantity of carbon is infinitely less. Between these two beds, according to the degree of pressure to which they have been subjected, are found veins of graphite and rich or poor coal. It may be asserted that it is for want of sufficient pressure that beds of peaty bog have not been completely changed into coal. So then, the origin of coal mines, in whatever part of the globe they have been discovered, is this: the absorption through the terrestrial crust of the great forests of the geological period; then, the mineralization of the vegetables obtained in the course of time, under the influence of pressure and heat, and under the action of carbonic acid.

Now, at the time when the events related in this story took place, some of the most important mines of the Scottish coal beds had been exhausted by too rapid working. In the region which extends between Edinburgh and Glasgow, for a distance of ten or twelve miles, lay the Aberfoyle colliery, of which the engineer, James Starr, had so long directed the works. For ten years these mines had been abandoned. No new seams had been discovered, although the soundings had been carried to a depth of fifteen hundred or even of two thousand feet, and when James Starr had retired, it was with the full conviction that even the smallest vein had been completely exhausted.

Under these circumstances, it was plain that the discovery of a new seam of coal would be an important event. Could Simon Ford's communication relate to a fact of this nature? This question James Starr could not cease asking himself. Was he called to make conquest of another corner of these rich treasure fields? Fain would he hope it was so.

The second letter had for an instant checked his speculations on this subject, but now he thought of that letter no longer. Besides, the son of the old overman was there, waiting at the appointed rendezvous. The anonymous letter was therefore worth nothing.



The moment the engineer set foot on the platform at the end of his journey, the young man advanced towards him.

"Are you Harry Ford?" asked the engineer quickly.

"Yes, Mr. Starr."

"I should not have known you, my lad. Of course in ten years you have become a man!"

"I knew you directly, sir," replied the young miner, cap in hand. "You have not changed. You look just as you did when you bade us good-bye in the Dochart pit. I haven't forgotten that day."

"Put on your cap, Harry," said the engineer. "It's pouring, and politeness needn't make you catch cold."

"Shall we take shelter anywhere, Mr. Starr?" asked young Ford.

"No, Harry. The weather is settled. It will rain all day, and I am in a hurry. Let us go on."

"I am at your orders," replied Harry.

"Tell me, Harry, is your father well?"

"Very well, Mr. Starr."

"And your mother?"

"She is well, too."

"Was it your father who wrote telling me to come to the Yar-row shaft?"

"No, it was I."

"Then did Simon Ford send me a second letter to contradict the first?" asked the engineer quickly.

"No, Mr. Starr," answered the young miner.

"Very well," said Starr, without speaking of the anonymous letter. Then, continuing, "And can you tell me what your father wants with me?"

"Mr. Starr, my father wishes to tell you himself."

"But you know what it is?"

"I do, sir."

"Well, Harry, I will not ask you more. But let us get on, for I'm anxious to see Simon Ford. By-the-bye, where does he live?"

"In the mine."

"What! In the Dochart pit?"

"Yes, Mr. Starr," replied Harry.

"Really! has your family never left the old mine since the cessation of the works?"

“Not a day, Mr. Starr. You know my father. It is there he was born, it is there he means to die!”

“I can understand that, Harry. I can understand that! His native mine! He did not like to abandon it! And are you happy there?”

“Yes, Mr. Starr,” replied the young miner, “for we love one another, and we have but few wants.”

“Well, Harry,” said the engineer, “lead the way.”

And walking rapidly through the streets of Callander, in a few minutes they had left the town behind them.

### CHAPTER III:- THE DOCHART PIT

**HARRY FORD** was a fine, strapping fellow of five and twenty. His grave looks, his habitually passive expression, had from childhood been noticed among his comrades in the mine. His regular features, his deep blue eyes, his curly hair, rather chestnut than fair, the natural grace of his person, altogether made him a fine specimen of a lowlander. Accustomed from his earliest days to the work of the mine, he was strong and hardy, as well as brave and good. Guided by his father, and impelled by his own inclinations, he had early begun his education, and at an age when most lads are little more than apprentices, he had managed to make himself of some importance, a leader, in fact, among his fellows, and few are very ignorant in a country which does all it can to remove ignorance. Though, during the first years of his youth, the pick was never out of Harry's hand, nevertheless the young miner was not long in acquiring sufficient knowledge to raise him into the upper class of the miners, and he would certainly have succeeded his father as overman of the Dochart pit, if the colliery had not been abandoned.

James Starr was still a good walker, yet he could not easily have kept up with his guide, if the latter had not slackened his pace. The young man, carrying the engineer's bag, followed the left bank of the river for about a mile. Leaving its winding course, they took a road under tall, dripping trees. Wide fields lay on either side, around isolated farms. In one field a herd of hornless cows were quietly grazing; in another sheep with silky wool, like those in a child's toy sheep fold.

The Yarrow shaft was situated four miles from Callander. Whilst walking, James Starr could not but be struck with the change in the country. He had not seen it since the day when the last ton of Aberfoyle coal had been emptied into railway trucks to be sent to Glasgow. Agricultural life had now taken the place of the more stirring, active, industrial life. The contrast was all the greater because, during winter, field work is at a standstill. But formerly, at whatever season, the mining population, above and below ground, filled the scene with animation. Great wagons of coal used to be passing night and day. The rails, with their rotten sleepers, now disused, were then constantly ground by the weight of wagons. Now stony roads took the place of the old mining tramways. James Starr felt as if he was traversing a desert.

The engineer gazed about him with a saddened eye. He stopped now and then to take breath. He listened. The air was no longer filled with distant whistlings and the panting of engines. None of those black vapors which the manufacturer loves to see, hung in the horizon, mingling with the clouds. No tall cylindrical or prismatic chimney vomited out smoke, after being fed from the mine itself; no blast-pipe was puffing out its white vapor. The ground, formerly black with coal dust, had a bright look, to which James Starr's eyes were not accustomed.

When the engineer stood still, Harry Ford stopped also. The young miner waited in silence. He felt what was passing in his companion's mind, and he shared his feelings; he, a child of the mine, whose whole life had been passed in its depths.

"Yes, Harry, it is all changed," said Starr. "But at the rate we worked, of course the treasures of coal would have been exhausted some day. Do you regret that time?"

"I do regret it, Mr. Starr," answered Harry. "The work was hard, but it was interesting, as are all struggles."

"No doubt, my lad. A continuous struggle against the dangers of landslips, fires, inundations, explosions of firedamp, like claps of thunder. One had to guard against all those perils! You say well! It was a struggle, and consequently an exciting life."

"The miners of Alva have been more favored than the miners of Aberfoyle, Mr. Starr!"

"Ay, Harry, so they have," replied the engineer.

"Indeed," cried the young man, "it's a pity that all the globe was not made of coal; then there would have been enough to last millions of years!"

“No doubt there would, Harry; it must be acknowledged, however, that nature has shown more forethought by forming our sphere principally of sandstone, limestone, and granite, which fire cannot consume.”

“Do you mean to say, Mr. Starr, that mankind would have ended by burning their own globe?”

“Yes! The whole of it, my lad,” answered the engineer. “The earth would have passed to the last bit into the furnaces of engines, machines, steamers, gas factories; certainly, that would have been the end of our world one fine day!”

“There is no fear of that now, Mr. Starr. But yet, the mines will be exhausted, no doubt, and more rapidly than the statistics make out!”

“That will happen, Harry; and in my opinion England is very wrong in exchanging her fuel for the gold of other nations! I know well,” added the engineer, “that neither hydraulics nor electricity has yet shown all they can do, and that some day these two forces will be more completely utilized. But no matter! Coal is of a very practical use, and lends itself easily to the various wants of industry. Unfortunately man cannot produce it at will. Though our external forests grow incessantly under the influence of heat and water, our subterranean forests will not be reproduced, and if they were, the globe would never be in the state necessary to make them into coal.”

James Starr and his guide, whilst talking, had continued their walk at a rapid pace. An hour after leaving Callander they reached the Dochart pit.

The most indifferent person would have been touched at the appearance this deserted spot presented. It was like the skeleton of something that had formerly lived. A few wretched trees bordered a plain where the ground was hidden under the black dust of the mineral fuel, but no cinders nor even fragments of coal were to be seen. All had been carried away and consumed long ago.

They walked into the shed which covered the opening of the Yarrow shaft, whence ladders still gave access to the lower galleries of the pit. The engineer bent over the opening. Formerly from this place could be heard the powerful whistle of the air inhaled by the ventilators. It was now a silent abyss. It was like being at the mouth of some extinct volcano.

When the mine was being worked, ingenious machines were used in certain shafts of the Aberfoyle colliery, which in this respect was very well off; frames furnished with automatic lifts, working in

wooden slides, oscillating ladders, called "man-engines," which, by a simple movement, permitted the miners to descend without danger.

But all these appliances had been carried away, after the cessation of the works. In the Yarrow shaft there remained only a long succession of ladders, separated at every fifty feet by narrow landings. Thirty of these ladders placed thus end to end led the visitor down into the lower gallery, a depth of fifteen hundred feet. This was the only way of communication which existed between the bottom of the Dochart pit and the open air. As to air, that came in by the Yarrow shaft, from whence galleries communicated with another shaft whose orifice opened at a higher level; the warm air naturally escaped by this species of inverted siphon.

"I will follow you, my lad," said the engineer, signing to the young man to precede him.

"As you please, Mr. Starr."

"Have you your lamp?"

"Yes, and I only wish it was still the safety lamp, which we formerly had to use!"

"Sure enough," returned James Starr, "there is no fear of fire-damp explosions now!"

Harry was provided with a simple oil lamp, the wick of which he lighted. In the mine, now empty of coal, escapes of light carburetted hydrogen could not occur. As no explosion need be feared, there was no necessity for interposing between the flame and the surrounding air that metallic screen which prevents the gas from catching fire. The Davy lamp was of no use here. But if the danger did not exist, it was because the cause of it had disappeared, and with this cause, the combustible in which formerly consisted the riches of the Dochart pit.

Harry descended the first steps of the upper ladder. Starr followed. They soon found themselves in a profound obscurity, which was only relieved by the glimmer of the lamp. The young man held it above his head, the better to light his companion. A dozen ladders were descended by the engineer and his guide, with the measured step habitual to the miner. They were all still in good condition.

James Starr examined, as well as the insufficient light would permit, the sides of the dark shaft, which were covered by a partly rotten lining of wood.

Arrived at the fifteenth landing, that is to say, half way down, they halted for a few minutes.

"Decidedly, I have not your legs, my lad," said the engineer, panting.

"You are very stout, Mr. Starr," replied Harry, "and it's something too, you see, to live all one's life in the mine."

"Right, Harry. Formerly, when I was twenty, I could have gone down all at a breath. Come, forward!"

But just as the two were about to leave the platform, a voice, as yet far distant, was heard in the depths of the shaft. It came up like a sonorous billow, swelling as it advanced, and becoming more and more distinct.

"Halloo! who comes here?" asked the engineer, stopping Harry.

"I cannot say," answered the young miner.

"Is it not your father?"

"My father, Mr. Starr? no."

"Some neighbor, then?"

"We have no neighbors in the bottom of the pit," replied Harry. "We are alone, quite alone."

"Well, we must let this intruder pass," said James Starr. "Those who are descending must yield the path to those who are ascending."

They waited. The voice broke out again with a magnificent burst, as if it had been carried through a vast speaking trumpet; and soon a few words of a Scotch song came clearly to the ears of the young miner.

"The Hundred Pipers!" cried Harry. "Well, I shall be much surprised if that comes from the lungs of any man but Jack Ryan."

"And who is this Jack Ryan?" asked James Starr.

"An old mining comrade," replied Harry. Then leaning from the platform, "Halloo! Jack!" he shouted.

"Is that you, Harry?" was the reply. "Wait a bit, I'm coming." And the song broke forth again.

In a few minutes, a tall fellow of five and twenty, with a merry face, smiling eyes, a laughing mouth, and sandy hair, appeared at the bottom of the luminous cone which was thrown from his lantern, and set foot on the landing of the fifteenth ladder. His first act was to vigorously wring the hand which Harry extended to him.

"Delighted to meet you!" he exclaimed. "If I had only known you were to be above ground to-day, I would have spared myself going down the Yarrow shaft!"

"This is Mr. James Starr," said Harry, turning his lamp towards the engineer, who was in the shadow.

“Mr. Starr!” cried Jack Ryan. “Ah, sir, I could not see. Since I left the mine, my eyes have not been accustomed to see in the dark, as they used to do.”

“Ah, I remember a laddie who was always singing. That was ten years ago. It was you, no doubt?”

“Ay, Mr. Starr, but in changing my trade, I haven’t changed my disposition. It’s far better to laugh and sing than to cry and whine!”

“You’re right there, Jack Ryan. And what do you do now, as you have left the mine?”

“I am working on the Melrose farm, forty miles from here. Ah, it’s not like our Aberfoyle mines! The pick comes better to my hand than the spade or hoe. And then, in the old pit, there were vaulted roofs, to merrily echo one’s songs, while up above ground!—But you are going to see old Simon, Mr. Starr?”

“Yes, Jack,” answered the engineer.

“Don’t let me keep you then.”

“Tell me, Jack,” said Harry, “what was taking you to our cottage to-day?”

“I wanted to see you, man,” replied Jack, “and ask you to come to the Irvine games. You know I am the piper of the place. There will be dancing and singing.”

“Thank you, Jack, but it’s impossible.”

“Impossible?”

“Yes; Mr. Starr’s visit will last some time, and I must take him back to Callander.”

“Well, Harry, it won’t be for a week yet. By that time Mr. Starr’s visit will be over, I should think, and there will be nothing to keep you at the cottage.”

“Indeed, Harry,” said James Starr, “you must profit by your friend Jack’s invitation.”

“Well, I accept it, Jack,” said Harry. “In a week we will meet at Irvine.”

“In a week, that’s settled,” returned Ryan. “Good-by, Harry! Your servant, Mr. Starr. I am very glad to have seen you again! I can give news of you to all my friends. No one has forgotten you, sir.”

“And I have forgotten no one,” said Starr.

“Thanks for all, sir,” replied Jack.

“Good-by, Jack,” said Harry, shaking his hand. And Jack Ryan, singing as he went, soon disappeared in the heights of the shaft, dimly lighted by his lamp.



A quarter of an hour afterwards James Starr and Harry descended the last ladder, and set foot on the lowest floor of the pit.

From the bottom of the Yarrow shaft radiated numerous empty galleries. They ran through the wall of schist and sandstone, some shored up with great, roughly-hewn beams, others lined with a thick casing of wood. In every direction embankments supplied the place of the excavated veins. Artificial pillars were made of stone from neighboring quarries, and now they supported the ground, that is to say, the double layer of tertiary and quaternary soil, which formerly rested on the seam itself. Darkness now filled the galleries, formerly lighted either by the miner's lamp or by the electric light, the use of which had been introduced in the mines.

"Will you not rest a while, Mr. Starr?" asked the young man.

"No, my lad," replied the engineer, "for I am anxious to be at your father's cottage."

"Follow me then, Mr. Starr. I will guide you, and yet I daresay you could find your way perfectly well through this dark labyrinth."

"Yes, indeed! I have the whole plan of the old pit still in my head."

Harry, followed by the engineer, and holding his lamp high the better to light their way, walked along a high gallery, like the nave of a cathedral. Their feet still struck against the wooden sleepers which used to support the rails.

They had not gone more than fifty paces, when a huge stone fell at the feet of James Starr. "Take care, Mr. Starr!" cried Harry, seizing the engineer by the arm.

"A stone, Harry! Ah! these old vaultings are no longer quite secure, of course, and—"

"Mr. Starr," said Harry Ford, "it seems to me that stone was thrown, thrown as by the hand of man!"

"Thrown!" exclaimed James Starr. "What do you mean, lad?"

"Nothing, nothing, Mr. Starr," replied Harry evasively, his anxious gaze endeavoring to pierce the darkness. "Let us go on. Take my arm, sir, and don't be afraid of making a false step."

"Here I am, Harry." And they both advanced, whilst Harry looked on every side, throwing the light of his lamp into all the corners of the gallery.

"Shall we soon be there?" asked the engineer.

"In ten minutes at most."

"Good."

“But,” muttered Harry, “that was a most singular thing. It is the first time such an accident has happened to me.

That stone falling just at the moment we were passing.”

“Harry, it was a mere chance.”

“Chance,” replied the young man, shaking his head. “Yes, chance.” He stopped and listened.

“What is the matter, Harry?” asked the engineer.

“I thought I heard someone walking behind us,” replied the young miner, listening more attentively. Then he added, “No, I must have been mistaken. Lean harder on my arm, Mr. Starr. Use me like a staff.”

“A good solid staff, Harry,” answered James Starr. “I could not wish for a better than a fine fellow like you.”

They continued in silence along the dark nave. Harry was evidently preoccupied, and frequently turned, trying to catch, either some distant noise, or remote glimmer of light.

But behind and before, all was silence and darkness.

## CHAPTER IV:- THE FORD FAMILY

TEN minutes afterwards, James Starr and Harry issued from the principal gallery. They were now standing in a glade, if we may use this word to designate a vast and dark excavation. The place, however, was not entirely deprived of daylight. A few rays straggled in through the opening of a deserted shaft. It was by means of this pipe that ventilation was established in the Dochart pit. Owing to its lesser density, the warm air was drawn towards the Yarrow shaft. Both air and light, therefore, penetrated in some measure into the glade.

Here Simon Ford had lived with his family ten years, in a subterranean dwelling, hollowed out in the schistous mass, where formerly stood the powerful engines which worked the mechanical traction of the Dochart pit.

Such was the habitation, "his cottage," as he called it, in which resided the old overman. As he had some means saved during a long life of toil, Ford could have afforded to live in the light of day, among trees, or in any town of the kingdom he chose, but he and his wife and son preferred remaining in the mine, where they were happy together, having the same opinions, ideas, and tastes. Yes, they were quite fond of their cottage, buried fifteen hundred feet below Scottish soil. Among other advantages, there was no fear that tax gatherers, or rent collectors would ever come to trouble its inhabitants.

At this period, Simon Ford, the former overman of the Dochart pit, bore the weight of sixty-five years well. Tall, robust, well-built, he would have been regarded as one of the most conspicuous

men in the district which supplies so many fine fellows to the Highland regiments.

Simon Ford was descended from an old mining family, and his ancestors had worked the very first carboniferous seams opened in Scotland. Without discussing whether or not the Greeks and Romans made use of coal, whether the Chinese worked coal mines before the Christian era, whether the French word for coal (*Houille*) is really derived from the farrier Houillos, who lived in Belgium in the twelfth century, we may affirm that the beds in Great Britain were the first ever regularly worked. So early as the eleventh century, William the Conqueror divided the produce of the Newcastle bed among his companions-in-arms. At the end of the thirteenth century, a license for the mining of "sea coal" was granted by Henry III. Lastly, towards the end of the same century, mention is made of the Scotch and Welsh beds.

It was about this time that Simon Ford's ancestors penetrated into the bowels of Caledonian earth, and lived there ever after, from father to son. They were but plain miners. They labored like convicts at the work of extracting the precious combustible. It is even believed that the coal miners, like the salt-makers of that period, were actual slaves.

However that might have been, Simon Ford was proud of belonging to this ancient family of Scotch miners. He had worked diligently in the same place where his ancestors had wielded the pick, the crowbar, and the mattock. At thirty he was overman of the Dochart pit, the most important in the Aberfoyle colliery. He was devoted to his trade. During long years he zealously performed his duty. His only grief had been to perceive the bed becoming impoverished, and to see the hour approaching when the seam would be exhausted.

It was then he devoted himself to the search for new veins in all the Aberfoyle pits, which communicated underground one with another. He had had the good luck to discover several during the last period of the working. His miner's instinct assisted him marvelously, and the engineer, James Starr, appreciated him highly. It might be said that he divined the course of seams in the depths of the coal mine as a hydroscope reveals springs in the bowels of the earth. He was par excellence the type of a miner whose whole existence is indissolubly connected with that of his mine. He had lived there from

his birth, and now that the works were abandoned he wished to live there still. His son Harry foraged for the subterranean housekeeping; as for himself, during those ten years he had not been ten times above ground.

“Go up there! What is the good?” he would say, and refused to leave his black domain. The place was remarkably healthy, subject to an equable temperature; the old overman endured neither the heat of summer nor the cold of winter. His family enjoyed good health; what more could he desire?

But at heart he felt depressed. He missed the former animation, movement, and life in the well-worked pit. He was, however, supported by one fixed idea. “No, no! the mine is not exhausted!” he repeated.

And that man would have given serious offense who could have ventured to express before Simon Ford any doubt that old Aberfoyle would one day revive! He had never given up the hope of discovering some new bed which would restore the mine to its past splendor. Yes, he would willingly, had it been necessary, have resumed the miner’s pick, and with his still stout arms vigorously attacked the rock. He went through the dark galleries, sometimes alone, sometimes with his son, examining, searching for signs of coal, only to return each day, wearied, but not in despair, to the cottage.

Madge, Simon’s faithful companion, his “gude-wife,” to use the Scotch term, was a tall, strong, comely woman. Madge had no wish to leave the Dochart pit any more than had her husband. She shared all his hopes and regrets. She encouraged him, she urged him on, and talked to him in a way which cheered the heart of the old overman. “Aberfoyle is only asleep,” she would say. “You are right about that, Simon. This is but a rest, it is not death!”

Madge, as well as the others, was perfectly satisfied to live independent of the outer world, and was the center of the happiness enjoyed by the little family in their dark cottage.

The engineer was eagerly expected. Simon Ford was standing at his door, and as soon as Harry’s lamp announced the arrival of his former viewer he advanced to meet him.

“Welcome, Mr. Starr!” he exclaimed, his voice echoing under the roof of schist. “Welcome to the old overman’s cottage! Though it is buried fifteen hundred feet under the earth, our house is not the less hospitable.”

“And how are you, good Simon?” asked James Starr, grasping the hand which his host held out to him.

“Very well, Mr. Starr. How could I be otherwise here, sheltered from the inclemencies of the weather? Your ladies who go to Newhaven or Portobello in the summer time would do much better to pass a few months in the coal mine of Aberfoyle! They would run no risk here of catching a heavy cold, as they do in the damp streets of the old capital.”

“I’m not the man to contradict you, Simon,” answered James Starr, glad to find the old man just as he used to be. “Indeed, I wonder why I do not change my home in the Canongate for a cottage near you.”

“And why not, Mr. Starr? I know one of your old miners who would be truly pleased to have only a partition wall between you and him.”

“And how is Madge?” asked the engineer.

“The goodwife is in better health than I am, if that’s possible,” replied Ford, “and it will be a pleasure to her to see you at her table. I think she will surpass herself to do you honor.”

“We shall see that, Simon, we shall see that!” said the engineer, to whom the announcement of a good breakfast could not be indifferent, after his long walk.

“Are you hungry, Mr. Starr?”

“Ravenously hungry. My journey has given me an appetite. I came through horrible weather.”

“Ah, it is raining up there,” responded Simon Ford.

“Yes, Simon, and the waters of the Forth are as rough as the sea.”

“Well, Mr. Starr, here it never rains. But I needn’t describe to you all the advantages, which you know as well as myself. Here we are at the cottage. That is the chief thing, and I again say you are welcome, sir.”

Simon Ford, followed by Harry, ushered their guest into the dwelling. James Starr found himself in a large room lighted by numerous lamps, one hanging from the colored beams of the roof.

“The soup is ready, wife,” said Ford, “and it mustn’t be kept waiting any more than Mr. Starr. He is as hungry as a miner, and he shall see that our boy doesn’t let us want for anything in the cottage! By-the-bye, Harry,” added the old overman, turning to his son, “Jack Ryan came here to see you.”

"I know, father. We met him in the Yarrow shaft."

"He's an honest and a merry fellow," said Ford; "but he seems to be quite happy above ground. He hasn't the true miner's blood in his veins. Sit down, Mr. Starr, and have a good dinner, for we may not sup till late."

As the engineer and his hosts were taking their places:

"One moment, Simon," said James Starr. "Do you want me to eat with a good appetite?"

"It will be doing us all possible honor, Mr. Starr," answered Ford.

"Well, in order to eat heartily, I must not be at all anxious. Now I have two questions to put to you."

"Go on, sir."

"Your letter told me of a communication which was to be of an interesting nature."

"It is very interesting indeed."

"To you?"

"To you and to me, Mr. Starr. But I do not want to tell it you until after dinner, and on the very spot itself. Without that you would not believe me."

"Simon," resumed the engineer, "look me straight in the face. An interesting communication? Yes. Good! I will not ask more," he added, as if he had read the reply in the old overman's eyes.

"And the second question?" asked the latter.

"Do you know, Simon, who the person is who can have written this?" answered the engineer, handing him the anonymous letter.

Ford took the letter and read it attentively. Then giving it to his son, "Do you know the writing?" he asked.

"No, father," replied Harry.

"And had this letter the Aberfoyle postmark?" inquired Simon Ford.

"Yes, like yours," replied James Starr.

"What do you think of that, Harry?" said his father, his brow darkening.

"I think, father," returned Harry, "that someone has had some interest in trying to prevent Mr. Starr from coming to the place where you invited him."

"But who," exclaimed the old miner, "who could have possibly guessed enough of my secret?" And Simon fell into a reverie, from which he was aroused by his wife.

"Let us begin, Mr. Starr," she said. "The soup is already getting cold. Don't think any more of that letter just now."

On the old woman's invitation, each drew in his chair, James Starr opposite to Madge—to do him honor—the father and son opposite to each other. It was a good Scotch dinner. First they ate "hotchpotch," soup with the meat swimming in capital broth. As old Simon said, his wife knew no rival in the art of preparing hotchpotch. It was the same with the "cockylecky," a cock stewed with leeks, which merited high praise. The whole was washed down with excellent ale, obtained from the best brewery in Edinburgh.

But the principal dish consisted of a "haggis," the national pudding, made of meat and barley meal. This remarkable dish, which inspired the poet Burns with one of his best odes, shared the fate of all the good things in this world—it passed away like a dream.

Madge received the sincere compliments of her guest. The dinner ended with cheese and oatcake, accompanied by a few small glasses of "usquebaugh," capital whisky, five and twenty years old—just Harry's age. The repast lasted a good hour. James Starr and Simon Ford had not only eaten much, but talked much too, chiefly of their past life in the old Aberfoyle mine.

Harry had been rather silent. Twice he had left the table, and even the house. He evidently felt uneasy since the incident of the stone, and wished to examine the environs of the cottage. The anonymous letter had not contributed to reassure him.

Whilst he was absent, the engineer observed to Ford and his wife, "That's a fine lad you have there, my friends."

"Yes, Mr. Starr, he is a good and affectionate son," replied the old overman earnestly.

"Is he happy with you in the cottage?"

"He would not wish to leave us."

"Don't you think of finding him a wife, some day?"

"A wife for Harry," exclaimed Ford. "And who would it be? A girl from up yonder, who would love merry-makings and dancing, who would prefer her clan to our mine! Harry wouldn't do it!"

"Simon," said Madge, "you would not forbid that Harry should take a wife."

"I would forbid nothing," returned the old miner, "but there's no hurry about that. Who knows but we may find one for him—"

Harry re-entered at that moment, and Simon Ford was silent.



When Madge rose from the table, all followed her example, and seated themselves at the door of the cottage. "Well, Simon," said the engineer, "I am ready to hear you."

"Mr. Starr," responded Ford, "I do not need your ears, but your legs. Are you quite rested?"

"Quite rested and quite refreshed, Simon. I am ready to go with you wherever you like."

"Harry," said Simon Ford, turning to his son, "light our safety lamps."

"Are you going to take safety lamps!" exclaimed James Starr, in amazement, knowing that there was no fear of explosions of fire-damp in a pit quite empty of coal.

"Yes, Mr. Starr, it will be prudent."

"My good Simon, won't you propose next to put me in a miner's dress?"

"Not just yet, sir, not just yet!" returned the old overman, his deep-set eyes gleaming strangely.

Harry soon reappeared, carrying three safety lamps. He handed one of these to the engineer, the other to his father, and kept the third hanging from his left hand, whilst his right was armed with a long stick.

"Forward!" said Simon Ford, taking up a strong pick, which was leaning against the wall of the cottage.

"Forward!" echoed the engineer. "Good-by, Madge."

"*God* speed you!" responded the good woman.

"A good supper, wife, do you hear?" exclaimed Ford. "We shall be hungry when we come back, and will do it justice!"

## CHAPTER V:- SOME STRANGE PHENOMENA

**MANY** superstitious beliefs exist both in the Highlands and Lowlands of Scotland. Of course the mining population must furnish its contingent of legends and fables to this mythological repertory. If the fields are peopled with imaginary beings, either good or bad, with much more reason must the dark mines be haunted to their lowest depths. Who shakes the seam during tempestuous nights? who puts the miners on the track of an as yet unworked vein? who lights the fire-damp, and presides over the terrible explosions? who but some spirit of the mine? This, at least, was the opinion commonly spread among the superstitious Scotch.

In the first rank of the believers in the supernatural in the Dochart pit figured Jack Ryan, Harry's friend. He was the great partisan of all these superstitions. All these wild stories were turned by him into songs, which earned him great applause in the winter evenings.

But Jack Ryan was not alone in his belief. His comrades affirmed, no less strongly, that the Aberfoyle pits were haunted, and that certain strange beings were seen there frequently, just as in the Highlands. To hear them talk, it would have been more extraordinary if nothing of the kind appeared. Could there indeed be a better place than a dark and deep coal mine for the freaks of fairies, elves, goblins, and other actors in the fantastical dramas? The scenery was all ready, why should not the supernatural personages come there to play their parts?

So reasoned Jack Ryan and his comrades in the Aberfoyle mines. We have said that the different pits communicated with each other

by means of long subterranean galleries. Thus there existed beneath the county of Stirling a vast tract, full of burrows, tunnels, bored with caves, and perforated with shafts, a subterranean labyrinth, which might be compared to an enormous ant-hill.

Miners, though belonging to different pits, often met, when going to or returning from their work. Consequently there was a constant opportunity of exchanging talk, and circulating the stories which had their origin in the mine, from one pit to another. These accounts were transmitted with marvelous rapidity, passing from mouth to mouth, and gaining in wonder as they went.

Two men, however, better educated and with more practical minds than the rest, had always resisted this temptation. They in no degree believed in the intervention of spirits, elves, or goblins. These two were Simon Ford and his son. And they proved it by continuing to inhabit the dismal crypt, after the desertion of the Dochart pit. Perhaps good Madge, like every Highland woman, had some leaning towards the supernatural. But she had to repeat all these stories to herself, and so she did, most conscientiously, so as not to let the old traditions be lost.

Even had Simon and Harry Ford been as credulous as their companions, they would not have abandoned the mine to the imps and fairies. For ten years, without missing a single day, obstinate and immovable in their convictions, the father and son took their picks, their sticks, and their lamps. They went about searching, sounding the rock with a sharp blow, listening if it would return a favor-able sound. So long as the soundings had not been pushed to the granite of the primary formation, the Fords were agreed that the search, unsuccessful to-day, might succeed to-morrow, and that it ought to be resumed. They spent their whole life in endeavoring to bring Aberfoyle back to its former prosperity. If the father died before the hour of success, the son was to go on with the task alone.

It was during these excursions that Harry was more particularly struck by certain phenomena, which he vainly sought to explain. Several times, while walking along some narrow cross-alley, he seemed to hear sounds similar to those which would be produced by violent blows of a pickaxe against the wall.

Harry hastened to seek the cause of this mysterious work. The tunnel was empty. The light from the young miner's lamp, thrown

on the wall, revealed no trace of any recent work with pick or crowbar. Harry would then ask himself if it was not the effect of some acoustic illusion, or some strange and fantastic echo. At other times, on suddenly throwing a bright light into a suspicious-looking cleft in the rock, he thought he saw a shadow. He rushed forward. Nothing, and there was no opening to permit a human being to evade his pursuit!

Twice in one month, Harry, whilst visiting the west end of the pit, distinctly heard distant reports, as if some miner had exploded a charge of dynamite. The second time, after many careful researches, he found that a pillar had just been blown up.

By the light of his lamp, Harry carefully examined the place attacked by the explosion. It had not been made in a simple embankment of stones, but in a mass of schist, which had penetrated to this depth in the coal stratum. Had the object of the explosion been to discover a new vein? Or had someone wished simply to destroy this portion of the mine? Thus he questioned, and when he made known this occurrence to his father, neither could the old overman nor he himself answer the question in a satisfactory way.

"It is very queer," Harry often repeated. "The presence of an unknown being in the mine seems impossible, and yet there can be no doubt about it. Does someone besides ourselves wish to find out if a seam yet exists? Or, rather, has he attempted to destroy what remains of the Aberfoyle mines? But for what reason? I will find that out, if it should cost me my life!"

A fortnight before the day on which Harry Ford guided the engineer through the labyrinth of the Dochart pit, he had been on the point of attaining the object of his search. He was going over the southwest end of the mine, with a large lantern in his hand. All at once, it seemed to him that a light was suddenly extinguished, some hundred feet before him, at the end of a narrow passage cut obliquely through the rock. He darted forward.

His search was in vain. As Harry would not admit a supernatural explanation for a physical occurrence, he concluded that certainly some strange being prowled about in the pit. But whatever he could do, searching with the greatest care, scrutinizing every crevice in the gallery, he found nothing for his trouble.

If Jack Ryan and the other superstitious fellows in the mine had seen these lights, they would, without fail, have called them super-

natural, but Harry did not dream of doing so, nor did his father. And when they talked over these phenomena, evidently due to a physical cause, "My lad," the old man would say, "we must wait. It will all be explained some day."

However, it must be observed that, hitherto, neither Harry nor his father had ever been exposed to any act of violence. If the stone which had fallen at the feet of James Starr had been thrown by the hand of some ill-disposed person, it was the first criminal act of that description.

James Starr was of opinion that the stone had become detached from the roof of the gallery; but Harry would not admit of such a simple explanation. According to him, the stone had not fallen, it had been thrown; for otherwise, without rebounding, it could never have described a trajectory as it did.

Harry saw in it a direct attempt against himself and his father, or even against the engineer.

## CHAPTER VI:- SIMON FORD'S EXPERIMENT

THE old clock in the cottage struck one as James Starr and his two companions went out. A dim light penetrated through the ventilating shaft into the glade. Harry's lamp was not necessary here, but it would very soon be of use, for the old overman was about to conduct the engineer to the very end of the Dochart pit.

After following the principal gallery for a distance of two miles, the three explorers—for, as will be seen, this was a regular exploration—arrived at the entrance of a narrow tunnel. It was like a nave, the roof of which rested on woodwork, covered with white moss. It followed very nearly the line traced by the course of the river Forth, fifteen hundred feet above.

“So we are going to the end of the last vein?” said James Starr.

“Ay! You know the mine well still.”

“Well, Simon,” returned the engineer, “it will be difficult to go further than that, if I don't mistake.”

“Yes, indeed, Mr. Starr. That was where our picks tore out the last bit of coal in the seam. I remember it as if it were yesterday. I myself gave that last blow, and it re-echoed in my heart more dismally than on the rock. Only sandstone and schist were round us after that, and when the truck rolled towards the shaft, I followed, with my heart as full as though it were a funeral. It seemed to me that the soul of the mine was going with it.”

The gravity with which the old man uttered these words impressed the engineer, who was not far from sharing his sentiments. They were those of the sailor who leaves his disabled vessel—of the

proprietor who sees the house of his ancestors pulled down. He pressed Ford's hand; but now the latter seized that of the engineer, and, wringing it:

"That day we were all of us mistaken," he exclaimed. "No! The old mine was not dead. It was not a corpse that the miners abandoned; and I dare to assert, Mr. Starr, that its heart beats still."

"Speak, Ford! Have you discovered a new vein?" cried the engineer, unable to contain himself. "I know you have! Your letter could mean nothing else."

"Mr. Starr," said Simon Ford, "I did not wish to tell any man but yourself."

"And you did quite right, Ford. But tell me how, by what signs, are you sure?"

"Listen, sir!" resumed Simon. "It is not a seam that I have found."

"What is it, then?"

"Only positive proof that such a seam exists."

"And the proof?"

"Could fire-damp issue from the bowels of the earth if coal was not there to produce it?"

"No, certainly not!" replied the engineer. "No coal, no fire-damp. No effects without a cause."

"Just as no smoke without fire."

"And have you recognized the presence of light carburetted hydrogen?"

"An old miner could not be deceived," answered Ford. "I have met with our old enemy, the fire-damp!"

"But suppose it was another gas," said Starr. "Firedamp is almost without smell, and colorless. It only really betrays its presence by an explosion."

"Mr. Starr," said Simon Ford, "will you let me tell you what I have done? Harry had once or twice observed something remarkable in his excursions to the west end of the mine. Fire, which suddenly went out, sometimes appeared along the face of the rock or on the embankment of the further galleries. How those flames were lighted, I could not and cannot say. But they were evidently owing to the presence of fire-damp, and to me fire-damp means a vein of coal."

"Did not these fires cause any explosion?" asked the engineer quickly.

“Yes, little partial explosions,” replied Ford, “such as I used to cause myself when I wished to ascertain the presence of fire-damp. Do you remember how formerly it was the custom to try to prevent explosions before our good genius, Humphry Davy, invented his safety-lamp?”

“Yes,” replied James Starr. “You mean what the ‘monk,’ as the men called him, used to do. But I have never seen him in the exercise of his duty.”

“Indeed, Mr. Starr, you are too young, in spite of your five-and-fifty years, to have seen that. But I, ten years older, often saw the last ‘monk’ working in the mine. He was called so because he wore a long robe like a monk. His proper name was the ‘fireman.’ At that time there was no other means of destroying the bad gas but by dispersing it in little explosions, before its buoyancy had collected it in too great quantities in the heights of the galleries. The monk, as we called him, with his face masked, his head muffled up, all his body tightly wrapped in a thick felt cloak, crawled along the ground. He could breathe down there, when the air was pure; and with his right hand he waved above his head a blazing torch. When the firedamp had accumulated in the air, so as to form a detonating mixture, the explosion occurred without being fatal, and, by often renewing this operation, catastrophes were prevented. Sometimes the ‘monk’ was injured or killed in his work, then another took his place. This was done in all mines until the Davy lamp was universally adopted. But I knew the plan, and by its means I discovered the presence of firedamp and consequently that of a new seam of coal in the Dochart pit.”

All that the old overman had related of the so-called “monk” or “fireman” was perfectly true. The air in the galleries of mines was formerly always purified in the way described.

Fire-damp, marsh-gas, or carburetted hydrogen, is colorless, almost scentless; it burns with a blue flame, and makes respiration impossible. The miner could not live in a place filled with this injurious gas, any more than one could live in a gasometer full of common gas. Moreover, fire-damp, as well as the latter, a mixture of inflammable gases, forms a detonating mixture as soon as the air unites with it in a proportion of eight, and perhaps even five to the hundred. When this mixture is lighted by any cause, there is an explosion, almost always followed by a frightful catastrophe.



As they walked on, Simon Ford told the engineer all that he had done to attain his object; how he was sure that the escape of fire-damp took place at the very end of the farthest gallery in its western part, because he had provoked small and partial explosions, or rather little flames, enough to show the nature of the gas, which escaped in a small jet, but with a continuous flow.

An hour after leaving the cottage, James Starr and his two companions had gone a distance of four miles. The engineer, urged by anxiety and hope, walked on without noticing the length of the way. He pondered over all that the old miner had told him, and mentally weighed all the arguments which the latter had given in support of his belief. He agreed with him in thinking that the continued emission of carburetted hydrogen certainly showed the existence of a new coal-seam. If it had been merely a sort of pocket, full of gas, as it is sometimes found amongst the rock, it would soon have been empty, and the phenomenon have ceased. But far from that. According to Simon Ford, the fire-damp escaped incessantly, and from that fact the existence of an important vein might be considered certain. Consequently, the riches of the Dochart pit were not entirely exhausted. The chief question now was, whether this was merely a vein which would yield comparatively little, or a bed occupying a large extent.

Harry, who preceded his father and the engineer, stopped.

"Here we are!" exclaimed the old miner. "At last, thank Heaven! you are here, Mr. Starr, and we shall soon know." The old overman's voice trembled slightly.

"Be calm, my man!" said the engineer. "I am as excited as you are, but we must not lose time."

The gallery at this end of the pit widened into a sort of dark cave. No shaft had been pierced in this part, and the gallery, bored into the bowels of the earth, had no direct communication with the surface of the earth.

James Starr, with intense interest, examined the place in which they were standing. On the walls of the cavern the marks of the pick could still be seen, and even holes in which the rock had been blasted, near the termination of the working. The schist was excessively hard, and it had not been necessary to bank up the end of the tunnel where the works had come to an end. There the vein had failed, between the schist and the tertiary sandstone. From this very place had been extracted the last piece of coal from the Dochart pit.

"We must attack the dyke," said Ford, raising his pick; "for at the other side of the break, at more or less depth, we shall assuredly find the vein, the existence of which I assert."

"And was it on the surface of these rocks that you found out the fire-damp?" asked James Starr.

"Just there, sir," returned Ford, "and I was able to light it only by bringing my lamp near to the cracks in the rock. Harry has done it as well as I."

"At what height?" asked Starr.

"Ten feet from the ground," replied Harry.

James Starr had seated himself on a rock. After critically inhaling the air of the cavern, he gazed at the two miners, almost as if doubting their words, decided as they were. In fact, carburetted hydrogen is not completely scentless, and the engineer, whose sense of smell was very keen, was astonished that it had not revealed the presence of the explosive gas. At any rate, if the gas had mingled at all with the surrounding air, it could only be in a very small stream. There was no danger of an explosion, and they might without fear open the safety lamp to try the experiment, just as the old miner had done before.

What troubled James Starr was, not lest too much gas mingled with the air, but lest there should be little or none.

"Could they have been mistaken?" he murmured. "No: these men know what they are about. And yet—"

He waited, not without some anxiety, until Simon Ford's phenomenon should have taken place. But just then it seemed that Harry, like himself, had remarked the absence of the characteristic odor of fire-damp; for he exclaimed in an altered voice, "Father, I should say the gas was no longer escaping through the cracks!"

"No longer!" cried the old miner—and, pressing his lips tight together, he snuffed the air several times.

Then, all at once, with a sudden movement, "Hand me your lamp, Harry," he said.

Ford took the lamp with a trembling hand. He drew off the wire gauze case which surrounded the wick, and the flame burned in the open air.

As they had expected, there was no explosion, but, what was more serious, there was not even the slight crackling which indicates the presence of a small quantity of firedamp. Simon took the stick

which Harry was holding, fixed his lamp to the end of it, and raised it high above his head, up to where the gas, by reason of its buoyancy, would naturally accumulate. The flame of the lamp, burning straight and clear, revealed no trace of the carburetted hydrogen.

"Close to the wall," said the engineer.

"Yes," responded Ford, carrying the lamp to that part of the wall at which he and his son had, the evening before, proved the escape of gas.

The old miner's arm trembled whilst he tried to hoist the lamp up. "Take my place, Harry," said he.

Harry took the stick, and successively presented the lamp to the different fissures in the rock; but he shook his head, for of that slight crackling peculiar to escaping fire-damp he heard nothing. There was no flame. Evidently not a particle of gas was escaping through the rock.

"Nothing!" cried Ford, clenching his fist with a gesture rather of anger than disappointment.

A cry escaped Harry.

"What's the matter?" asked Starr quickly.

"Someone has stopped up the cracks in the schist!"

"Is that true?" exclaimed the old miner.

"Look, father!" Harry was not mistaken. The obstruction of the fissures was clearly visible by the light of the lamp. It had been recently done with lime, leaving on the rock a long whitish mark, badly concealed with coal dust.

"It's he!" exclaimed Harry. "It can only be he!"

"He?" repeated James Starr in amazement.

"Yes!" returned the young man, "that mysterious being who haunts our domain, for whom I have watched a hundred times without being able to get at him—the author, we may now be certain, of that letter which was intended to hinder you from coming to see my father, Mr. Starr, and who finally threw that stone at us in the gallery of the Yarrow shaft! Ah! there's no doubt about it; there is a man's hand in all that!"

Harry spoke with such energy that conviction came instantly and fully to the engineer's mind. As to the old overman, he was already convinced. Besides, there they were in the presence of an undeniable fact—the stopping-up of cracks through which gas had escaped freely the night before.

“Take your pick, Harry,” cried Ford; “mount on my shoulders, my lad! I am still strong enough to bear you!” The young man understood in an instant. His father propped himself up against the rock. Harry got upon his shoulders, so that with his pick he could reach the line of the fissure. Then with quick sharp blows he attacked it. Almost directly afterwards a slight sound was heard, like champagne escaping from a bottle—a sound commonly expressed by the word “puff.”

Harry again seized his lamp, and held it to the opening. There was a slight report; and a little red flame, rather blue at its outline, flickered over the rock like a Will-o'-the-Wisp.

Harry leaped to the ground, and the old overman, unable to contain his joy, grasped the engineer's hands, exclaiming, “Hurrah! hurrah! hurrah! Mr. Starr. The fire-damp burns! the vein is there!”

## CHAPTER VII:- NEW ABERFOYLE

THE old overman's experiment had succeeded. Firedamp, it is well known, is only generated in coal seams; therefore the existence of a vein of precious combustible could no longer be doubted. As to its size and quality, that must be determined later.

"Yes," thought James Starr, "behind that wall lies a carboniferous bed, undiscovered by our soundings. It is vexatious that all the apparatus of the mine, deserted for ten years, must be set up anew. Never mind. We have found the vein which was thought to be exhausted, and this time it shall be worked to the end!"

"Well, Mr. Starr," asked Ford, "what do you think of our discovery? Was I wrong to trouble you? Are you sorry to have paid this visit to the Dochart pit?"

"No, no, my old friend!" answered Starr. "We have not lost our time; but we shall be losing it now, if we do not return immediately to the cottage. To-morrow we will come back here. We will blast this wall with dynamite. We will lay open the new vein, and after a series of soundings, if the seam appears to be large, I will form a new Aberfoyle Company, to the great satisfaction of the old shareholders. Before three months have passed, the first corves full of coal will have been taken from the new vein."

"Well said, sir!" cried Simon Ford. "The old mine will grow young again, like a widow who remarries! The bustle of the old days will soon begin with the blows of the pick, and mattock, blasts of powder, rumbling of wagons, neighing of horses, creaking of ma-

chines! I shall see it all again! I hope, Mr. Starr, that you will not think me too old to résumé my duties of overman?"

"No, Simon, no indeed! You wear better than I do, my old friend!"

"And, sir, you shall be our viewer again. May the new working last for many years, and pray Heaven I shall have the consolation of dying without seeing the end of it!"

The old miner was overflowing with joy. James Starr fully entered into it; but he let Ford rave for them both. Harry alone remained thoughtful. To his memory recurred the succession of singular, inexplicable circumstances attending the discovery of the new bed. It made him uneasy about the future.

An hour afterwards, James Starr and his two companions were back in the cottage. The engineer supped with good appetite, listening with satisfaction to all the plans unfolded by the old overman; and had it not been for his excitement about the next day's work, he would never have slept better than in the perfect stillness of the cottage.

The following day, after a substantial breakfast, James Starr, Simon Ford, Harry, and even Madge herself, took the road already traversed the day before. All looked like regular miners. They carried different tools, and some dynamite with which to blast the rock. Harry, besides a large lantern, took a safety lamp, which would burn for twelve hours. It was more than was necessary for the journey there and back, including the time for the working—supposing a working was possible.

"To work! to work!" shouted Ford, when the party reached the further end of the passage; and he grasped a heavy crowbar and brandished it.

"Stop one instant," said Starr. "Let us see if any change has taken place, and if the fire-damp still escapes through the crevices."

"You are right, Mr. Starr," said Harry. "Whoever stopped it up yesterday may have done it again to-day!"

Madge, seated on a rock, carefully observed the excavation, and the wall which was to be blasted.

It was found that everything was just as they left it. The crevices had undergone no alteration; the carburetted hydrogen still filtered through, though in a small stream, which was no doubt because it had had a free passage since the day before. As

the quantity was so small, it could not have formed an explosive mixture with the air inside. James Starr and his companions could therefore proceed in security. Besides, the air grew purer by rising to the heights of the Dochart pit; and the fire-damp, spreading through the atmosphere, would not be strong enough to make any explosion.

“To work, then!” repeated Ford; and soon the rock flew in splinters under his skillful blows. The break was chiefly composed of pudding-stone, interspersed with sandstone and schist, such as is most often met with between the coal veins. James Starr picked up some of the pieces, and examined them carefully, hoping to discover some trace of coal.

Starr having chosen the place where the holes were to be drilled, they were rapidly bored by Harry. Some cartridges of dynamite were put into them. As soon as the long, tarred safety match was laid, it was lighted on a level with the ground. James Starr and his companions then went off to some distance.

“Oh! Mr. Starr,” said Simon Ford, a prey to agitation, which he did not attempt to conceal, “never, no, never has my old heart beaten so quick before! I am longing to get at the vein!”

“Patience, Simon!” responded the engineer. “You don’t mean to say that you think you are going to find a passage all ready open behind that dyke?”

“Excuse me, sir,” answered the old overman; “but of course I think so! If there was good luck in the way Harry and I discovered this place, why shouldn’t the good luck go on?”

As he spoke, came the explosion. A sound as of thunder rolled through the labyrinth of subterranean galleries. Starr, Madge, Harry, and Simon Ford hastened towards the spot.

“Mr. Starr! Mr. Starr!” shouted the overman. “Look! the door is broken open!”

Ford’s comparison was justified by the appearance of an excavation, the depth of which could not be calculated. Harry was about to spring through the opening; but the engineer, though excessively surprised to find this cavity, held him back. “Allow time for the air in there to get pure,” said he.

“Yes! beware of the foul air!” said Simon.

A quarter of an hour was passed in anxious waiting. The lantern was then fastened to the end of a stick, and introduced into the cave,

where it continued to burn with unaltered brilliancy. "Now then, Harry, go," said Starr, "and we will follow you."

The opening made by the dynamite was sufficiently large to allow a man to pass through. Harry, lamp in hand, entered unhesitatingly, and disappeared in the darkness. His father, mother, and James Starr waited in silence. A minute—which seemed to them much longer—passed. Harry did not reappear, did not call. Gazing into the opening,

James Starr could not even see the light of his lamp, which ought to have illuminated the dark cavern.

Had the ground suddenly given way under Harry's feet? Had the young miner fallen into some crevice? Could his voice no longer reach his companions?

The old overman, dead to their remonstrances, was about to enter the opening, when a light appeared, dim at first, but gradually growing brighter, and Harry's voice was heard shouting, "Come, Mr. Starr! come, father! The road to New Aberfoyle is open!"

If, by some superhuman power, engineers could have raised in a block, a thousand feet thick, all that portion of the terrestrial crust which supports the lakes, rivers, gulfs, and territories of the counties of Stirling, Dumbarton, and Renfrew, they would have found, under that enormous lid, an immense excavation, to which but one other in the world can be compared—the celebrated Mammoth caves of Kentucky. This excavation was composed of several hundred divisions of all sizes and shapes. It might be called a hive with numberless ranges of cells, capriciously arranged, but a hive on a vast scale, and which, instead of bees, might have lodged all the ichthyosauri, megatheriums, and pterodactyles of the geological epoch.

A labyrinth of galleries, some higher than the most lofty cathedrals, others like cloisters, narrow and winding—these following a horizontal line, those on an incline or running obliquely in all directions—connected the caverns and allowed free communication between them.

The pillars sustaining the vaulted roofs, whose curves allowed of every style, the massive walls between the passages, the naves themselves in this layer of secondary formation, were composed of sandstone and schistous rocks. But tightly packed between these useless strata ran valuable veins of coal, as if the black blood of this



strange mine had circulated through their tangled network. These fields extended forty miles north and south, and stretched even under the Caledonian Canal. The importance of this bed could not be calculated until after soundings, but it would certainly surpass those of Cardiff and Newcastle.

We may add that the working of this mine would be singularly facilitated by the fantastic dispositions of the secondary earths; for by an unaccountable retreat of the mineral matter at the geological epoch, when the mass was solidifying, nature had already multiplied the galleries and tunnels of New Aberfoyle.

Yes, nature alone! It might at first have been supposed that some works abandoned for centuries had been discovered afresh. Nothing of the sort. No one would have deserted such riches. Human termites had never gnawed away this part of the Scottish subsoil; nature herself had done it all. But, we repeat, it could be compared to nothing but the celebrated Mammoth caves, which, in an extent of more than twenty miles, contain two hundred and twenty-six avenues, eleven lakes, seven rivers, eight cataracts, thirty-two unfathomable wells, and fifty-seven domes, some of which are more than four hundred and fifty feet in height. Like these caves, New Aberfoyle was not the work of men, but the work of the Creator.

Such was this new domain, of matchless wealth, the discovery of which belonged entirely to the old overman. Ten years' sojourn in the deserted mine, an uncommon pertinacity in research, perfect faith, sustained by a marvelous mining instinct—all these qualities together led him to succeed where so many others had failed. Why had the soundings made under the direction of James Starr during the last years of the working stopped just at that limit, on the very frontier of the new mine? That was all chance, which takes great part in researches of this kind.

However that might be, there was, under the Scottish subsoil, what might be called a subterranean county, which, to be habitable, needed only the rays of the sun, or, for want of that, the light of a special planet.

Water had collected in various hollows, forming vast ponds, or rather lakes larger than Loch Katrine, lying just above them. Of course the waters of these lakes had no movement of currents or tides; no old castle was reflected there; no birch or oak trees

waved on their banks. And yet these deep lakes, whose mirror-like surface was never ruffled by a breeze, would not be without charm by the light of some electric star, and, connected by a string of canals, would well complete the geography of this strange domain.

Although unfit for any vegetable production, the place could be inhabited by a whole population. And who knows but that in this steady temperature, in the depths of the mines of Aberfoyle, as well as in those of Newcastle, Alloa, or Cardiff—when their contents shall have been exhausted—who knows but that the poorer classes of Great Britain will some day find a refuge?