

Stephen Webb

# New Light Through Old Windows

Exploring  
Contemporary Science  
Through 12 Classic  
Science Fiction Tales



Springer

# Science and Fiction

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New Light Through  
Old Windows:  
Exploring  
Contemporary Science  
Through 12 Classic  
Science Fiction Tales



Springer

Stephen Webb  
DCQE University of Portsmouth  
Lee-on-the-Solent, UK

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Cover illustration: Science fiction illustration of the view through an archway in the old town across the bay to the modern buildings of the future city on a bright sunny day, 3d digitally rendered illustration.

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*To my Aunt Edna*

## Preface

As background research for my book *All the Wonder that Would Be* I set myself the happy task of rereading some of my favourite SF stories. Most of them were first published in the period 1935–1985, but upon rereading them it soon became clear to me the extent to which their authors had been standing on the shoulders of earlier giants such as H.G. Wells and Arthur Conan Doyle (or at least on the shoulders of the very tall, such as Ambrose Bierce and William Hope Hodgson). And reading those earlier tales led me to meet some classic SF for the first time—I hadn't realized, for example, how many key science fictional themes E.P. Mitchell seems to have pioneered.

Once you get past their outdated social views and sometimes unfashionable phraseology, these old stories can be rather rewarding. Their authors took the accepted knowledge of the day as a springboard for extrapolation. In other words, they engaged in the same activity that occupies modern-day SF writers—and it's fascinating to compare the results of their extrapolations with our current understanding of science. In some cases, the authors were remarkably prescient; in other cases, they were right for the wrong reasons; and in some cases, they were just plain wrong. In all cases, though, I believe we can learn from them when we attempt to make our own extrapolations and imagine what the future might hold for us.

This book collects a dozen SF stories which, although they were published a long time ago (the oldest story appeared in 1817 and the youngest in 1934), might nevertheless be unfamiliar to younger SF fans. Each story is accompanied by a short scientific commentary. The intention of the commentaries is not to provide full coverage of the relevant science—that would make the book far too long. Rather, they simply contain some thoughts about contemporary science sparked by looking at these old gems. For those who would like

to delve deeper into the science, a further reading section at the end of each commentary should provide sufficient pointers to the relevant modern literature.

Lee-on-the-Solent, UK

Stephen Webb

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I would like to thank Chris Caron, not only for his wise advice but also for passing on numerous comments and ideas that helped me greatly.

Joey Meyer and Professor Steve Ruff kindly allowed me to reproduce images, and I appreciate their quick response to my requests.

Despite many years of struggle with the German language, my linguistic skills remain at a level that lets me order a beer but do little else. So I thank my wife Heike for help with Chap. 7 and for her patience in general. Jessica, as always, is an inspiration.

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# 1

## Life ... But Not as We Know It

### The Terror of Blue John Gap (Arthur Conan Doyle)

The following narrative was found among the papers of Dr. James Hardcastle, who died of phthisis on February 4th, 1908, at 36, Upper Coventry Flats, South Kensington. Those who knew him best, while refusing to express an opinion upon this particular statement, are unanimous in asserting that he was a man of a sober and scientific turn of mind, absolutely devoid of imagination, and most unlikely to invent any abnormal series of events. The paper was contained in an envelope, which was docketed, "A Short Account of the Circumstances which occurred near Miss Allerton's Farm in North-West Derbyshire in the Spring of Last Year." The envelope was sealed, and on the other side was written in pencil—

DEAR SEATON,—

It may interest, and perhaps pain you, to know that the incredulity with which you met my story has prevented me from ever opening my mouth upon the subject again. I leave this record after my death, and perhaps strangers may be found to have more confidence in me than my friend.

Inquiry has failed to elicit who this Seaton may have been. I may add that the visit of the deceased to Allerton's Farm, and the general nature of the alarm there, apart from his particular explanation, have been absolutely established. With this foreword I append his account exactly as he left it. It is in the

form of a diary, some entries in which have been expanded, while a few have been erased.

April 17.—Already I feel the benefit of this wonderful upland air. The farm of the Allertons lies fourteen hundred and twenty feet above sea-level, so it may well be a bracing climate. Beyond the usual morning cough I have very little discomfort, and, what with the fresh milk and the homegrown mutton, I have every chance of putting on weight. I think Saunderson will be pleased.

The two Miss Allertons are charmingly quaint and kind, two dear little hard-working old maids, who are ready to lavish all the heart which might have gone out to husband and to children upon an invalid stranger. Truly, the old maid is a most useful person, one of the reserve forces of the community. They talk of the superfluous woman, but what would the poor superfluous man do without her kindly presence? By the way, in their simplicity they very quickly let out the reason why Saunderson recommended their farm. The Professor rose from the ranks himself, and I believe that in his youth he was not above scaring crows in these very fields.

It is a most lonely spot, and the walks are picturesque in the extreme. The farm consists of grazing land lying at the bottom of an irregular valley. On each side are the fantastic limestone hills, formed of rock so soft that you can break it away with your hands. All this country is hollow. Could you strike it with some gigantic hammer it would boom like a drum, or possibly cave in altogether and expose some huge subterranean sea. A great sea there must surely be, for on all sides the streams run into the mountain itself, never to reappear. There are gaps everywhere amid the rocks, and when you pass through them you find yourself in great caverns, which wind down into the bowels of the earth. I have a small bicycle lamp, and it is a perpetual joy to me to carry it into these weird solitudes, and to see the wonderful silver and black effect when I throw its light upon the stalactites which drape the lofty roofs. Shut off the lamp, and you are in the blackest darkness. Turn it on, and it is a scene from the Arabian Nights.

But there is one of these strange openings in the earth which has a special interest, for it is the handiwork, not of nature, but of man. I had never heard of Blue John when I came to these parts. It is the name given to a peculiar mineral of a beautiful purple shade, which is only found at one or two places in the world. It is so rare that an ordinary vase of Blue John would be valued at a great price. The Romans, with that extraordinary instinct of theirs, discovered that it was to be found in this valley, and sank a horizontal shaft deep into the mountain side. The opening of their mine has been called Blue John Gap, a clean-cut arch in the rock, the mouth all overgrown with bushes. It is

a goodly passage which the Roman miners have cut, and it intersects some of the great water-worn caves, so that if you enter Blue John Gap you would do well to mark your steps and to have a good store of candles, or you may never make your way back to the daylight again. I have not yet gone deeply into it, but this very day I stood at the mouth of the arched tunnel, and peering down into the black recesses beyond, I vowed that when my health returned I would devote some holiday to exploring those mysterious depths and finding out for myself how far the Roman had penetrated into the Derbyshire hills.

Strange how superstitious these countrymen are! I should have thought better of young Armitage, for he is a man of some education and character, and a very fine fellow for his station in life. I was standing at the Blue John Gap when he came across the field to me.

"Well, doctor," said he, "you're not afraid, anyhow."

"Afraid!" I answered. "Afraid of what?"

"Of it," said he, with a jerk of his thumb towards the black vault, "of the Terror that lives in the Blue John Cave."

How absurdly easy it is for a legend to arise in a lonely countryside! I examined him as to the reasons for his weird belief. It seems that from time to time sheep have been missing from the fields, carried bodily away, according to Armitage. That they could have wandered away of their own accord and disappeared among the mountains was an explanation to which he would not listen. On one occasion a pool of blood had been found, and some tufts of wool. That also, I pointed out, could be explained in a perfectly natural way. Further, the nights upon which sheep disappeared were invariably very dark, cloudy nights with no moon. This I met with the obvious retort that those were the nights which a commonplace sheep-stealer would naturally choose for his work. On one occasion a gap had been made in a wall, and some of the stones scattered for a considerable distance. Human agency again, in my opinion. Finally, Armitage clinched all his arguments by telling me that he had actually heard the Creature—indeed, that anyone could hear it who remained long enough at the Gap. It was a distant roaring of an immense volume. I could not but smile at this, knowing, as I do, the strange reverberations which come out of an underground water system running amid the chasms of a limestone formation. My incredulity annoyed Armitage so that he turned and left me with some abruptness.

And now comes the queer point about the whole business. I was still standing near the mouth of the cave turning over in my mind the various statements of Armitage, and reflecting how readily they could be explained away, when suddenly, from the depth of the tunnel beside me, there issued a most extraordinary sound. How shall I describe it? First of all, it seemed to be a

great distance away, far down in the bowels of the earth. Secondly, in spite of this suggestion of distance, it was very loud. Lastly, it was not a boom, nor a crash, such as one would associate with falling water or tumbling rock, but it was a high whine, tremulous and vibrating, almost like the whinnying of a horse. It was certainly a most remarkable experience, and one which for a moment, I must admit, gave a new significance to Armitage's words. I waited by the Blue John Gap for half an hour or more, but there was no return of the sound, so at last I wandered back to the farmhouse, rather mystified by what had occurred. Decidedly I shall explore that cavern when my strength is restored. Of course, Armitage's explanation is too absurd for discussion, and yet that sound was certainly very strange. It still rings in my ears as I write.

April 20.—In the last three days I have made several expeditions to the Blue John Gap, and have even penetrated some short distance, but my bicycle lantern is so small and weak that I dare not trust myself very far. I shall do the thing more systematically. I have heard no sound at all, and could almost believe that I had been the victim of some hallucination suggested, perhaps, by Armitage's conversation. Of course, the whole idea is absurd, and yet I must confess that those bushes at the entrance of the cave do present an appearance as if some heavy creature had forced its way through them. I begin to be keenly interested. I have said nothing to the Miss Allertons, for they are quite superstitious enough already, but I have bought some candles, and mean to investigate for myself.

I observed this morning that among the numerous tufts of sheep's wool which lay among the bushes near the cavern there was one which was smeared with blood. Of course, my reason tells me that if sheep wander into such rocky places they are likely to injure themselves, and yet somehow that splash of crimson gave me a sudden shock, and for a moment I found myself shrinking back in horror from the old Roman arch. A fetid breath seemed to ooze from the black depths into which I peered. Could it indeed be possible that some nameless thing, some dreadful presence, was lurking down yonder? I should have been incapable of such feelings in the days of my strength, but one grows more nervous and fanciful when one's health is shaken.

For the moment I weakened in my resolution, and was ready to leave the secret of the old mine, if one exists, for ever unsolved. But tonight my interest has returned and my nerves grown more steady. Tomorrow I trust that I shall have gone more deeply into this matter.

April 22.—Let me try and set down as accurately as I can my extraordinary experience of yesterday. I started in the afternoon, and made my way to the Blue John Gap. I confess that my misgivings returned as I gazed into its depths, and I wished that I had brought a companion to share my exploration.

Finally, with a return of resolution, I lit my candle, pushed my way through the briars, and descended into the rocky shaft.

It went down at an acute angle for some fifty feet, the floor being covered with broken stone. Thence there extended a long, straight passage cut in the solid rock. I am no geologist, but the lining of this corridor was certainly of some harder material than limestone, for there were points where I could actually see the tool-marks which the old miners had left in their excavation, as fresh as if they had been done yesterday. Down this strange, old-world corridor I stumbled, my feeble flame throwing a dim circle of light around me, which made the shadows beyond the more threatening and obscure. Finally, I came to a spot where the Roman tunnel opened into a water-worn cavern—a huge hall, hung with long white icicles of lime deposit. From this central chamber I could dimly perceive that a number of passages worn by the subterranean streams wound away into the depths of the earth. I was standing there wondering whether I had better return, or whether I dare venture farther into this dangerous labyrinth, when my eyes fell upon something at my feet which strongly arrested my attention.

The greater part of the floor of the cavern was covered with boulders of rock or with hard incrustations of lime, but at this particular point there had been a drip from the distant roof, which had left a patch of soft mud. In the very centre of this there was a huge mark—an ill-defined blotch, deep, broad and irregular, as if a great boulder had fallen upon it. No loose stone lay near, however, nor was there anything to account for the impression. It was far too large to be caused by any possible animal, and besides, there was only the one, and the patch of mud was of such a size that no reasonable stride could have covered it. As I rose from the examination of that singular mark and then looked round into the black shadows which hemmed me in, I must confess that I felt for a moment a most unpleasant sinking of my heart, and that, do what I could, the candle trembled in my outstretched hand.

I soon recovered my nerve, however, when I reflected how absurd it was to associate so huge and shapeless a mark with the track of any known animal. Even an elephant could not have produced it. I determined, therefore, that I would not be scared by vague and senseless fears from carrying out my exploration. Before proceeding, I took good note of a curious rock formation in the wall by which I could recognize the entrance of the Roman tunnel. The precaution was very necessary, for the great cave, so far as I could see it, was intersected by passages. Having made sure of my position, and reassured myself by examining my spare candles and my matches, I advanced slowly over the rocky and uneven surface of the cavern.

And now I come to the point where I met with such sudden and desperate disaster. A stream, some twenty feet broad, ran across my path, and I walked for some little distance along the bank to find a spot where I could cross dry-shod. Finally, I came to a place where a single flat boulder lay near the centre, which I could reach in a stride. As it chanced, however, the rock had been cut away and made top-heavy by the rush of the stream, so that it tilted over as I landed on it and shot me into the ice-cold water. My candle went out, and I found myself floundering about in utter and absolute darkness.

I staggered to my feet again, more amused than alarmed by my adventure. The candle had fallen from my hand, and was lost in the stream, but I had two others in my pocket, so that it was of no importance. I got one of them ready, and drew out my box of matches to light it. Only then did I realize my position. The box had been soaked in my fall into the river. It was impossible to strike the matches.

A cold hand seemed to close round my heart as I realized my position. The darkness was opaque and horrible. It was so utter one put one's hand up to one's face as if to press off something solid. I stood still, and by an effort I steadied myself. I tried to reconstruct in my mind a map of the floor of the cavern as I had last seen it. Alas! the bearings which had impressed themselves upon my mind were high on the wall, and not to be found by touch. Still, I remembered in a general way how the sides were situated, and I hoped that by groping my way along them I should at last come to the opening of the Roman tunnel. Moving very slowly, and continually striking against the rocks, I set out on this desperate quest.

But I very soon realized how impossible it was. In that black, velvety darkness one lost all one's bearings in an instant. Before I had made a dozen paces, I was utterly bewildered as to my whereabouts. The rippling of the stream, which was the one sound audible, showed me where it lay, but the moment that I left its bank I was utterly lost. The idea of finding my way back in absolute darkness through that limestone labyrinth was clearly an impossible one. I sat down upon a boulder and reflected upon my unfortunate plight. I had not told anyone that I proposed to come to the Blue John mine, and it was unlikely that a search party would come after me. Therefore I must trust to my own resources to get clear of the danger. There was only one hope, and that was that the matches might dry. When I fell into the river, only half of me had got thoroughly wet. My left shoulder had remained above the water. I took the box of matches, therefore, and put it into my left armpit. The moist air of the cavern might possibly be counteracted by the heat of my body, but even so, I knew that I could not hope to get a light for many hours. Meanwhile there was nothing for it but to wait.

By good luck I had slipped several biscuits into my pocket before I left the farmhouse. These I now devoured, and washed them down with a draught from that wretched stream which had been the cause of all my misfortunes. Then I felt about for a comfortable seat among the rocks, and, having discovered a place where I could get a support for my back, I stretched out my legs and settled myself down to wait. I was wretchedly damp and cold, but I tried to cheer myself with the reflection that modern science prescribed open windows and walks in all weather for my disease. Gradually, lulled by the monotonous gurgle of the stream, and by the absolute darkness, I sank into an uneasy slumber.

How long this lasted I cannot say. It may have been for an hour, it may have been for several. Suddenly I sat up on my rock couch, with every nerve thrilling and every sense acutely on the alert. Beyond all doubt I had heard a sound—some sound very distinct from the gurgling of the waters. It had passed, but the reverberation of it still lingered in my ear. Was it a search party? They would most certainly have shouted, and vague as this sound was which had wakened me, it was very distinct from the human voice. I sat palpitating and hardly daring to breathe. There it was again! And again! Now it had become continuous. It was a tread—yes, surely it was the tread of some living creature. But what a tread it was! It gave one the impression of enormous weight carried upon sponge-like feet, which gave forth a muffled but ear-filling sound. The darkness was as complete as ever, but the tread was regular and decisive. And it was coming beyond all question in my direction. My skin grew cold, and my hair stood on end as I listened to that steady and ponderous footfall. There was some creature there, and surely by the speed of its advance, it was one which could see in the dark. I crouched low on my rock and tried to blend myself into it. The steps grew nearer still, then stopped, and presently I was aware of a loud lapping and gurgling. The creature was drinking at the stream. Then again there was silence, broken by a succession of long sniffs and snorts of tremendous volume and energy. Had it caught the scent of me? My own nostrils were filled by a low fetid odour, mephitic and abominable. Then I heard the steps again. They were on my side of the stream now. The stones rattled within a few yards of where I lay. Hardly daring to breathe, I crouched upon my rock. Then the steps drew away. I heard the splash as it returned across the river, and the sound died away into the distance in the direction from which it had come.

For a long time I lay upon the rock, too much horrified to move. I thought of the sound which I had heard coming from the depths of the cave, of Armitage's fears, of the strange impression in the mud, and now came this final and absolute proof that there was indeed some inconceivable monster,

something utterly unearthly and dreadful, which lurked in the hollow of the mountain. Of its nature or form I could frame no conception, save that it was both light-footed and gigantic. The combat between my reason, which told me that such things could not be, and my senses, which told me that they were, raged within me as I lay. Finally, I was almost ready to persuade myself that this experience had been part of some evil dream, and that my abnormal condition might have conjured up an hallucination. But there remained one final experience which removed the last possibility of doubt from my mind. I had taken my matches from my armpit and felt them. They seemed perfectly hard and dry. Stooping down into a crevice of the rocks, I tried one of them. To my delight it took fire at once. I lit the candle, and, with a terrified backward glance into the obscure depths of the cavern, I hurried in the direction of the Roman passage. As I did so I passed the patch of mud on which I had seen the huge imprint. Now I stood astonished before it, for there were three similar imprints upon its surface, enormous in size, irregular in outline, of a depth which indicated the ponderous weight which had left them. Then a great terror surged over me. Stooping and shading my candle with my hand, I ran in a frenzy of fear to the rocky archway, hastened up it, and never stopped until, with weary feet and panting lungs, I rushed up the final slope of stones, broke through the tangle of briars, and flung myself exhausted upon the soft grass under the peaceful light of the stars. It was three in the morning when I reached the farmhouse, and today I am all unstrung and quivering after my terrific adventure. As yet I have told no one. I must move warily in the matter. What would the poor lonely women, or the uneducated yokels here think of it if I were to tell them my experience? Let me go to someone who can understand and advise.

April 25.—I was laid up in bed for two days after my incredible adventure in the cavern. I use the adjective with a very definite meaning, for I have had an experience since which has shocked me almost as much as the other. I have said that I was looking round for someone who could advise me. There is a Dr. Mark Johnson who practices some few miles away, to whom I had a note of recommendation from Professor Saunderson. To him I drove, when I was strong enough to get about, and I recounted to him my whole strange experience. He listened intently, and then carefully examined me, paying special attention to my reflexes and to the pupils of my eyes. When he had finished, he refused to discuss my adventure, saying that it was entirely beyond him, but he gave me the card of a Mr. Picton at Castleton, with the advice that I should instantly go to him and tell him the story exactly as I had done to himself. He was, according to my adviser, the very man who was pre-eminently suited to help me. I went on to the station, therefore, and made my way to the

little town, which is some ten miles away. Mr. Picton appeared to be a man of importance, as his brass plate was displayed upon the door of a considerable building on the outskirts of the town. I was about to ring his bell, when some misgiving came into my mind, and, crossing to a neighbouring shop, I asked the man behind the counter if he could tell me anything of Mr. Picton. "Why," said he, "he is the best mad doctor in Derbyshire, and yonder is his asylum." You can imagine that it was not long before I had shaken the dust of Castleton from my feet and returned to the farm, cursing all unimaginative pedants who cannot conceive that there may be things in creation which have never yet chanced to come across their mole's vision. After all, now that I am cooler, I can afford to admit that I have been no more sympathetic to Armitage than Dr. Johnson has been to me.

April 27. When I was a student I had the reputation of being a man of courage and enterprise. I remember that when there was a ghost-hunt at Coltridge it was I who sat up in the haunted house. Is it advancing years (after all, I am only thirty-five), or is it this physical malady which has caused degeneration? Certainly my heart quails when I think of that horrible cavern in the hill, and the certainty that it has some monstrous occupant. What shall I do? There is not an hour in the day that I do not debate the question. If I say nothing, then the mystery remains unsolved. If I do say anything, then I have the alternative of mad alarm over the whole countryside, or of absolute incredulity which may end in consigning me to an asylum. On the whole, I think that my best course is to wait, and to prepare for some expedition which shall be more deliberate and better thought out than the last. As a first step I have been to Castleton and obtained a few essentials—a large acetylene lantern for one thing, and a good double-barrelled sporting rifle for another. The latter I have hired, but I have bought a dozen heavy game cartridges, which would bring down a rhinoceros. Now I am ready for my troglodyte friend. Give me better health and a little spate of energy, and I shall try conclusions with him yet. But who and what is he? Ah! there is the question which stands between me and my sleep. How many theories do I form, only to discard each in turn! It is all so utterly unthinkable. And yet the cry, the footmark, the tread in the cavern—no reasoning can get past these I think of the old-world legends of dragons and of other monsters. Were they, perhaps, not such fairy-tales as we have thought? Can it be that there is some fact which underlies them, and am I, of all mortals, the one who is chosen to expose it?

May 3.—For several days I have been laid up by the vagaries of an English spring, and during those days there have been developments, the true and sinister meaning of which no one can appreciate save myself. I may say that we have had cloudy and moonless nights of late, which according to my

information were the seasons upon which sheep disappeared. Well, sheep have disappeared. Two of Miss Allerton's, one of old Pearson's of the Cat Walk, and one of Mrs. Moulton's. Four in all during three nights. No trace is left of them at all, and the countryside is buzzing with rumours of gipsies and of sheep-stealers.

But there is something more serious than that. Young Armitage has disappeared also. He left his moorland cottage early on Wednesday night and has never been heard of since. He was an unattached man, so there is less sensation than would otherwise be the case. The popular explanation is that he owes money, and has found a situation in some other part of the country, whence he will presently write for his belongings. But I have grave misgivings. Is it not much more likely that the recent tragedy of the sheep has caused him to take some steps which may have ended in his own destruction? He may, for example, have lain in wait for the creature and been carried off by it into the recesses of the mountains. What an inconceivable fate for a civilized Englishman of the twentieth century! And yet I feel that it is possible and even probable. But in that case, how far am I answerable both for his death and for any other mishap which may occur? Surely with the knowledge I already possess it must be my duty to see that something is done, or if necessary to do it myself. It must be the latter, for this morning I went down to the local police-station and told my story. The inspector entered it all in a large book and bowed me out with commendable gravity, but I heard a burst of laughter before I had got down his garden path. No doubt he was recounting my adventure to his family.

June 10.—I am writing this, propped up in bed, six weeks after my last entry in this journal. I have gone through a terrible shock both to mind and body, arising from such an experience as has seldom befallen a human being before. But I have attained my end. The danger from the Terror which dwells in the Blue John Gap has passed never to return. Thus much at least I, a broken invalid, have done for the common good. Let me now recount what occurred as clearly as I may.

The night of Friday, May 3rd, was dark and cloudy—the very night for the monster to walk. About eleven o'clock I went from the farmhouse with my lantern and my rifle, having first left a note upon the table of my bedroom in which I said that, if I were missing, search should be made for me in the direction of the Gap. I made my way to the mouth of the Roman shaft, and, having perched myself among the rocks close to the opening, I shut off my lantern and waited patiently with my loaded rifle ready to my hand.

It was a melancholy vigil. All down the winding valley I could see the scattered lights of the farmhouses, and the church clock of Chapel-le-Dale tolling

the hours came faintly to my ears. These tokens of my fellow-men served only to make my own position seem the more lonely, and to call for a greater effort to overcome the terror which tempted me continually to get back to the farm, and abandon for ever this dangerous quest. And yet there lies deep in every man a rooted self-respect which makes it hard for him to turn back from that which he has once undertaken. This feeling of personal pride was my salvation now, and it was that alone which held me fast when every instinct of my nature was dragging me away. I am glad now that I had the strength. In spite of all that it has cost me, my manhood is at least above reproach.

Twelve o'clock struck in the distant church, then one, then two. It was the darkest hour of the night. The clouds were drifting low, and there was not a star in the sky. An owl was hooting somewhere among the rocks, but no other sound, save the gentle sough of the wind, came to my ears. And then suddenly I heard it! From far away down the tunnel came those muffled steps, so soft and yet so ponderous. I heard also the rattle of stones as they gave way under that giant tread. They drew nearer. They were close upon me. I heard the crashing of the bushes round the entrance, and then dimly through the darkness I was conscious of the loom of some enormous shape, some monstrous inchoate creature, passing swiftly and very silently out from the tunnel. I was paralysed with fear and amazement. Long as I had waited, now that it had actually come I was unprepared for the shock. I lay motionless and breathless, whilst the great dark mass whisked by me and was swallowed up in the night.

But now I nerved myself for its return. No sound came from the sleeping countryside to tell of the horror which was loose. In no way could I judge how far off it was, what it was doing, or when it might be back. But not a second time should my nerve fail me, not a second time should it pass unchallenged. I swore it between my clenched teeth as I laid my cocked rifle across the rock. And yet it nearly happened. There was no warning of approach now as the creature passed over the grass. Suddenly, like a dark, drifting shadow, the huge bulk loomed up once more before me, making for the entrance of the cave. Again came that paralysis of volition which held my crooked forefinger impotent upon the trigger. But with a desperate effort I shook it off. Even as the brushwood rustled, and the monstrous beast blended with the shadow of the Gap, I fired at the retreating form. In the blaze of the gun I caught a glimpse of a great shaggy mass, something with rough and bristling hair of a withered grey colour, fading away to white in its lower parts, the huge body supported upon short, thick, curving legs. I had just that glance, and then I heard the rattle of the stones as the creature tore down into its burrow. In an instant, with a triumphant revulsion of feeling, I had cast my fears to the wind, and

uncovering my powerful lantern, with my rifle in my hand, I sprang down from my rock and rushed after the monster down the old Roman shaft.

My splendid lamp cast a brilliant flood of vivid light in front of me, very different from the yellow glimmer which had aided me down the same passage only twelve days before. As I ran, I saw the great beast lurching along before me, its huge bulk filling up the whole space from wall to wall. Its hair looked like coarse faded oakum, and hung down in long, dense masses which swayed as it moved. It was like an enormous unclipped sheep in its fleece, but in size it was far larger than the largest elephant, and its breadth seemed to be nearly as great as its height. It fills me with amazement now to think that I should have dared to follow such a horror into the bowels of the earth, but when one's blood is up, and when one's quarry seems to be flying, the old primeval hunting-spirit awakes and prudence is cast to the wind. Rifle in hand, I ran at the top of my speed upon the trail of the monster.

I had seen that the creature was swift. Now I was to find out to my cost that it was also very cunning. I had imagined that it was in panic flight, and that I had only to pursue it. The idea that it might turn upon me never entered my excited brain. I have already explained that the passage down which I was racing opened into a great central cave. Into this I rushed, fearful lest I should lose all trace of the beast. But he had turned upon his own traces, and in a moment we were face to face.

That picture, seen in the brilliant white light of the lantern, is etched for ever upon my brain. He had reared up on his hind legs as a bear would do, and stood above me, enormous, menacing—such a creature as no nightmare had ever brought to my imagination. I have said that he reared like a bear, and there was something bear-like—if one could conceive a bear which was ten-fold the bulk of any bear seen upon earth—in his whole pose and attitude, in his great crooked forelegs with their ivory-white claws, in his rugged skin, and in his red, gaping mouth, fringed with monstrous fangs. Only in one point did he differ from the bear, or from any other creature which walks the earth, and even at that supreme moment a shudder of horror passed over me as I observed that the eyes which glistened in the glow of my lantern were huge, projecting bulbs, white and sightless. For a moment his great paws swung over my head. The next he fell forward upon me, I and my broken lantern crashed to the earth, and I remember no more.

When I came to myself I was back in the farmhouse of the Allertons. Two days had passed since my terrible adventure in the Blue John Gap. It seems that I had lain all night in the cave insensible from concussion of the brain, with my left arm and two ribs badly fractured. In the morning my note had been found, a search party of a dozen farmers assembled, and I had been

tracked down and carried back to my bedroom, where I had lain in high delirium ever since. There was, it seems, no sign of the creature, and no blood-stain which would show that my bullet had found him as he passed. Save for my own plight and the marks upon the mud, there was nothing to prove that what I said was true.

Six weeks have now elapsed, and I am able to sit out once more in the sunshine. Just opposite me is the steep hillside, grey with shaly rock, and yonder on its flank is the dark cleft which marks the opening of the Blue John Gap. But it is no longer a source of terror. Never again through that ill-omened tunnel shall any strange shape flit out into the world of men. The educated and the scientific, the Dr. Johnsons and the like, may smile at my narrative, but the poorer folk of the countryside had never a doubt as to its truth. On the day after my recovering consciousness they assembled in their hundreds round the Blue John Gap. As the *Castleton Courier* said:

It was useless for our correspondent, or for any of the adventurous gentlemen who had come from Matlock, Buxton, and other parts, to offer to descend, to explore the cave to the end, and to finally test the extraordinary narrative of Dr. James Hardcastle. The country people had taken the matter into their own hands, and from an early hour of the morning they had worked hard in stopping up the entrance of the tunnel. There is a sharp slope where the shaft begins, and great boulders, rolled along by many willing hands, were thrust down it until the Gap was absolutely sealed. So ends the episode which has caused such excitement throughout the country. Local opinion is fiercely divided upon the subject. On the one hand are those who point to Dr. Hardcastle's impaired health, and to the possibility of cerebral lesions of tubercular origin giving rise to strange hallucinations. Some *idée fixe*, according to these gentlemen, caused the doctor to wander down the tunnel, and a fall among the rocks was sufficient to account for his injuries. On the other hand, a legend of a strange creature in the Gap has existed for some months back, and the farmers look upon Dr. Hardcastle's narrative and his personal injuries as a final corroboration. So the matter stands, and so the matter will continue to stand, for no definite solution seems to us to be now possible. It transcends human wit to give any scientific explanation which could cover the alleged facts.

Perhaps before the *Courier* published these words they would have been wise to send their representative to me. I have thought the matter out, as no one else has occasion to do, and it is possible that I might have removed some of the more obvious difficulties of the narrative and brought it one degree nearer to scientific acceptance. Let me then write down the only explanation which seems to me to elucidate what I know to my cost to have been a series

of facts. My theory may seem to be wildly improbable, but at least no one can venture to say that it is impossible.

My view is—and it was formed, as is shown by my diary, before my personal adventure—that in this part of England there is a vast subterranean lake or sea, which is fed by the great number of streams which pass down through the limestone. Where there is a large collection of water there must also be some evaporation, mists or rain, and a possibility of vegetation. This in turn suggests that there may be animal life, arising, as the vegetable life would also do, from those seeds and types which had been introduced at an early period of the world's history, when communication with the outer air was more easy. This place had then developed a fauna and flora of its own, including such monsters as the one which I had seen, which may well have been the old cave-bear, enormously enlarged and modified by its new environment. For countless aeons the internal and the external creation had kept apart, growing steadily away from each other. Then there had come some rift in the depths of the mountain which had enabled one creature to wander up and, by means of the Roman tunnel, to reach the open air. Like all subterranean life, it had lost the power of sight, but this had no doubt been compensated for by nature in other directions. Certainly it had some means of finding its way about, and of hunting down the sheep upon the hillside. As to its choice of dark nights, it is part of my theory that light was painful to those great white eyeballs, and that it was only a pitch-black world which it could tolerate. Perhaps, indeed, it was the glare of my lantern which saved my life at that awful moment when we were face to face. So I read the riddle. I leave these facts behind me, and if you can explain them, do so; or if you choose to doubt them, do so. Neither your belief nor your incredulity can alter them, nor affect one whose task is nearly over.

So ended the strange narrative of Dr. James Hardcastle.

**Arthur Conan Doyle** (1859–1930) created one of the most successful fictional characters of all time: Sherlock Holmes. The immense popularity of Holmes became something of an irritant to his author, since Doyle was keen to write tales about something other than the cases of Baker Street's master detective. Some of Doyle's non-Holmes output was science fiction: his novel *The Lost World* (1912) featuring Professor Challenger—a scientist as irascible as Holmes was coolly rational—became a classic of the genre.

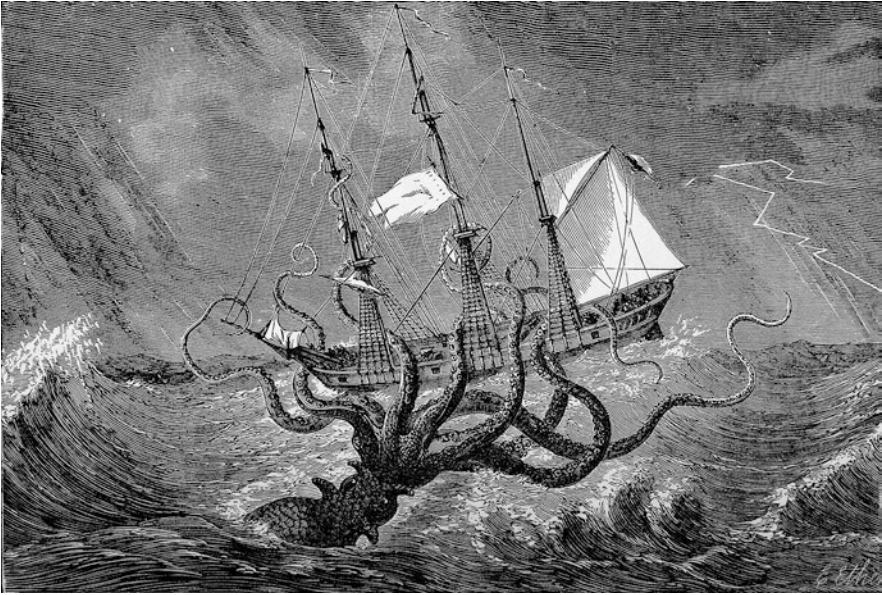
## Commentary

Doyle's 1910 story is grounded in reality. The limestone hills around Castleton really are as picturesque as he describes. There really is a semi-precious, purple-blue mineral called Blue John and, in the UK, there are only two places it can be found: Blue John Cavern and Treak Cliff Cavern, both of which hide under a triangular-shaped hill called Treak Cliff a mile or so away from Castleton. And Blue John really was mined. Indeed, extraction continues to this day albeit on a reduced scale—mainly to service the day-trippers who come to explore the show caves and marvel at the Blue John formations. (These popular visitor attractions repeat one of the details mentioned in Doyle's story, namely that the Romans discovered these banded fluorite veins. In truth, there is no evidence the Romans were aware that Blue John existed in Derbyshire. The mineral was probably first mined in about 1750.) The background aspects of "The Terror of Blue John Gap" are, therefore, realistic. But how convincing is the main thrust of the story? Could the caves under Treak Cliff—or caves anywhere else for that matter—be home to a monster?

The monster in Blue John Gap would now be classified as a *cryptid*—an animal, according to the *Oxford English Dictionary*, "whose existence or survival to the present day is disputed or unsubstantiated". Although not part of the *OED* definition, size and aggression surely also play a role: when we talk about unfamiliar life forms we tend to think in terms of *big* creatures that might hurt us. As Doyle demonstrated, they make for the best stories. And there are many such stories. One book devoted to *cryptozoology*—literally, the study of hidden animals—lists more than a thousand cryptids. Some are of world renown: surely everyone has heard of Bigfoot, the Kraken (see Fig. 1.1), and the Loch Ness Monster. Most are of purely local fame—anyone heard of Amaypathenya, Batutut, or Chipekwe? (No, me neither.) What the book demonstrates, however, is that cultures all across the world tell tales of strange lake monsters or fearsome, hairy, manlike beasts. Given the prevalence of these stories, could they be hiding a grain of truth? Are cryptids creeping about out there?

At first glance it seems unlikely.

The ubiquity of monster stories signifies little in itself—after all, the pervasiveness of ghost stories is seldom taken as proof of an afterlife. And, if cryptids *did* exist, is it credible that hard evidence of their existence would be lacking? Earth is now home to 7.5 billion human beings, many of whom possess a smartphone, so if cryptids were around YouTube would be filled with amateur footage of Nessie and the Abominable Snowman.



**Fig. 1.1** The legendary Kraken, seizing an unfortunate ship. The artist Edgar Etherington produced this wood engraving to illustrate John Gibson's 1887 book "Monsters of the Sea: Legendary and Authentic" (Credit: Public domain)

And yet ...

Biologists accept that they haven't found every large creature currently living on Earth. As I was re-reading Doyle's story, for example, a journal article announced the discovery on the island of Vangunu of a hitherto unknown giant rat—a rodent that lives in trees and feeds on coconuts. Biologists were only searching for the creature because of tales told by natives of the Solomon Islands. Of course, a nut-munching rat isn't as exciting as Doyle's monster but inevitably science will continue to uncover creatures that previously have been hidden from view. Indeed, since the turn of the century dozens of new mammals have been described. That's just land-based mammals. The deep sea offers a vast unexplored reservoir of ecological niches. Scientists have yet to catalogue many of the creatures that live far below the surface, a region where sunlight doesn't penetrate and pressures are high. It's not impossible that some of the creatures who dwell in the deep are large beasts—sea monsters, if you will. (There are countless tales of strange sea creatures. As a young man, serving in the navy, my father kept a diary. An entry from 1960 describes a couple of sailors fishing one day in the Med. One of the sailors caught something and began to pull. A giant tentacle came out of the water, grabbed hold of the fishing line, and snapped it ... The shocked anglers dropped their poles and ran.)

Although it would be unwise to bet on the existence of cryptids, and certainly on cryptids of the kind described by Arthur Conan Doyle, it's not entirely unreasonable to believe "monsters" exist somewhere on our planet. And if a creature such the Yeti *were* discovered, just imagine the peaks of excitement that journalists would scale! But what would be the impact of such a discovery on science? I don't believe it would necessarily be profound. Ultimately—depending upon the details, of course—the discovery might merely indicate that creatures can survive in niches away from the ever-increasing influence of humans. Indeed, this thought raises a question. More than a century after the publication of Doyle's story, are there any discoveries in biology that *would* have a profound impact? The answer is: of course! Let's briefly consider one example of just such a profound discovery, based on work that took place in the 1970s. We can then consider a suggestion which, if it were proved true, would represent a biological discovery of far more significance than that of a bipedal carnivore in Blue John Gap.

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Big creatures are made up of eukaryotic cells—cells that possess a nucleus, a cytoskeleton, and flexible cell walls (or no cell walls at all). These cells have the ability to combine, pass on genetic information through sex, and evolve different body shapes in response to environmental pressures. The eukaryotic grade of life thus contains all the complex life we see around us, in all its wonderful variety—from aardvarks, bats, and camels through to xerus, yaks, and zebras. Bigfoot, Nessie, and the monster of Blue John Gap would all be examples of the eukaryotic grade of life. By many measures, however, the most successful organisms on Earth aren't the big, complex, life forms. The most successful creatures are single-celled microorganisms like bacteria.

Prokaryotic cells—those that possess rigid cell walls—have been on the planet for 3.6 billion years or so. These cells evolve biochemical rather than morphological responses to environmental pressures, an approach that helped them survive the various mass extinctions which have wiped out so many biologically complex species in the past. Bacteria constitute a large fraction of Earth's biomass. So when we talk about the dominant form of life on Earth we shouldn't be so human-centric: bacteria might be unable to ponder the mysteries of the universe, but they are important. And although land-dwellers with the size of the Blue John Gap monster are unlikely to have eluded us, surprises surely await biologists in the microcosmic world. There's more space for discovery in the world of microorganisms than there is in the ocean depths.

The microbial world has already sprung one big surprise: the revelation that life is so adaptable it can evolve to thrive in niches once thought deadly. Some organisms require high acid levels in order to survive and some require high alkaline levels. Some organisms require the absence rather than the presence of oxygen. Some organisms thrive in salt, or at high temperatures, or in ice. So-called *extremophiles* can be found in deserts, subsurface Antarctic ice, hydrothermal vents ... life is pretty much everywhere you look.

In the late 1970s, the American microbiologist Carl Richard Woese discovered that a certain class of extremophile wasn't a type of eukaryote, but neither was it a type of bacteria. This particular prokaryote represented a completely new domain of life. The discovery was as much a shock to the scientific community as the sighting of the Blue John monster was to James Hardcastle. Biologists had got used to the idea of there being two domains of life: eukarya and bacteria. Woese showed there are *three* domains: eukarya, bacteria, and archaea. Archaea and bacteria are no more related to each other than they are to eukaryotes. (Fig. 1.2 shows a simplified version of the tree of life.)

For a while biologists believed all archaea were extremophiles, eking out a living in harsh environments. In recent years, however, archaea have been found in a wide range of moderate habitats; they have even been found in the human gut and on human skin. They are among the most abundant organisms on the planet.

Four decades on and Woese's discovery has transformed our understanding of microbial diversity, provided us with new perspectives on our thinking about evolution, and improved our knowledge of the history of life on Earth. It was a key breakthrough in biology. Is it possible that an even more exciting discovery might be waiting to be made?

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Although there are three separate domains—archaea, bacteria, and eukarya—all forms of life on Earth possess certain common features. For instance, all life forms are able to metabolize; in other words, they can draw nutrients from their environment, convert them into energy, and excrete the waste products. And all life forms are able to reproduce. Indeed, one can argue that metabolism and reproduction are necessary factors in order to define something as being alive. But some common features of life on Earth seemingly *aren't* necessary. Some features of life appear to be mere accidents. Consider, for example, chirality.