Fossil Detectives
Dinosaur excavation

Hermione Cockburn
This man is a little bit of a hero of mine, his name was Gideon Mantell. He was a country doctor based in Lewes, in Sussex, whose passion from a very early age was fossils. Now, Mantell lived at a similar time to Buckland and Owen, in the early 1800s. He was developing his passion for palaeontology as an amateur. But he was a country doctor, he didn't have the luxury of dedicating his life to science like Buckland and Owen did, and he spent every spare moment he had out on the South Downs looking for fossils. But he also studied fossils that were sent to him from various places around the south of England. And, one day, he received a box of fossils from a village not far from Lewes, called Cuckfield. And they came from a quarry in Cuckfield at Whiteman's Green, and that just happens to be the place where I was born and grew up in.

So, you can see that this part of the story has a very special place in my heart. Now, when Mantell first received these bones, no one had yet deduced what they really were. Buckland didn't know, Owen came on the scene a few years later in the story, and Mantell was really puzzled by these bones. Now, very intrigued, he began to make regular trips to the quarry at Cuckfield and, on one of those visits, perhaps in 1821 or 1822, we're not entirely sure, he found a fossilised tooth. And it was this fossilised tooth that really led him to make the first conceptual leap, if you like, that these bones that he was finding, and these fossilised teeth that went with them, could be nothing else apart from a giant extinct reptile from the past.

Now, that was a huge, as I say, a sort of conceptual leap, and it took him some time to really persuade others that his idea had any merit. And remember that he was just a country doctor, he wasn't an established academic of the day. And, sadly, it took Mantell several years to persuade the academics of his time that he was correct. Now, Buckland was well aware of Mantell's work and pipped him to the post with his description of Megalosaurus, and actually published his account of Megalosaurus just one year, in eighteen-twenty – oh God, I haven't got the dates here, from memory I'm saying Buckland published in 1824 and Mantell published in 1825. But, really, depending on your interpretation of history at this time, it was Mantell who had made that original suggestion, that there were these ancient reptiles, that were now extinct, that had lived in the distant past.

So, if you haven't heard of Gideon Mantell, remember his name before you remember Buckland or Owen, would be my message to you. Because, I mentioned that Owen coined his phrase and invented the dinosaurs based on three extinct reptiles from the past, we had Buckland's Megalosaurus, then Mantell's dinosaur, that he found in Cuckfield, he called Iguanodon. And, actually, I've just forgotten that I brought this along, this, although you won't be able to see it very closely from where you are, you can come and look at it later, this is the kind of thing that Mantell would have been sent from that quarry at Cuckfield, because this is a fragment of an Iguanodon bone, set still in a piece of sandstone that comes from Cuckfield. And this is, well, it's a prized possession of my mother, which I'm hoping to kind of acquire. It belonged to an elderly gentleman that lived in Cuckfield, a lovely man called Cyril Pike, who gave it to my mother. And I can remember borrowing it from Cyril and taking it to school when I was a little girl, because I thought it was just completely normal, really, to have dinosaur bones found on your doorstep. Now I realise that it was actually something quite special. But this is something that Gideon Mantell could easily have been sent, something similar to this, and puzzled over, and come up with his amazing theory.

So, he discovered Iguanodon, Buckland's Megalosaurus, and the third dinosaur was called Hylaeosaurus, which was also a Mantell discovery from Cuckfield. And it was those three dinosaurs that are the original, one from Oxfordshire, two from Sussex. Now, at Cuckfield, there's very little there left of the quarry, it's actually just a football pitch these days, with a little kind of copse of trees with some rocks still poking out, but my nephew plays football

there most weekends. But there is, if you're ever passing through Cuckfield, there is a commemorative monument there now, since 2000, to celebrate Gideon Mantell, because before that he was really lost to science, he wasn't really celebrated like Buckland and Owen were, so I like to big him up in the any story of the discovery of the dinosaurs.

So, you might be forgiven for thinking, for all this talk of stuff going on back in the early 19th century, that finding dinosaurs in Britain is a thing of the past, and that these days we are more likely to hear of new discoveries of dinosaurs, perhaps in China or South Africa, but, in fact, parts of Britain are still world-class destinations for finding dinosaurs. And one place in particular is the Isle of Wight. And it's so rich in dinosaur fossils, of many different species, that it's been nicknamed 'Dinosaur Island.' Now, the rocks that make up the Isle of Wight date from the Cretaceous period, that's around about 100 million years ago, that's a similar age to the rocks that you get from Cuckfield, and, at this time, many different species of dinosaur lived in that area that has later become the Isle of Wight. And, today, dinosaur fossils literally fall out of the crumbling cliffs, mainly along the south-west coast of the island.

And it was here, just about 18 months ago now, that an amateur fossil enthusiast called Martin Simpson made an exciting discovery of a new Iguanodon specimen. So, this is a very similar dinosaur to the one that Mantell named from his fossils from Cuckfield, that Martin has found this new specimen in a cliff in the Isle of Wight. And whenever he can, Martin visits the site to excavate a few more of the Iguanodon bones. And the second clip I'm going to show you from the series is my chance to join Martin, on a very sunny day last February, to see what it's like to actually collect dinosaur bones in the field.

Hermione Cockburn
My interest in rocks and fossils has taken me all over the world, but I've never had the chance to take part in the excavation of a dinosaur, especially not in such an incredible setting.

Martin Simpson, an amateur enthusiast, is in charge of the dig.

Hermione Cockburn
Now, I might just pause it there, because I've shown this clip before, and a very logical question that somebody in the audience asked me was, 'how, given that kind of cliff, did Martin ever come across the site that now we're digging?' He goes out most days, in all weathers, looking for dinosaur bones on the island, but how could he possibly ever have spotted this specimen? Well, the way he does it is to walk along the beach at the bottom of this cliff section, and if you find a piece of bone down on the beach, you know that it's come from somewhere above you. And then you walk up that section of cliff and, hopefully, you can identify what layer it comes from, if you have a good understanding of the geology of this particular section of coastline. The questioner also said, 'does he always use ropes?' And I have to say that we were very safety conscious on the shoot and used ropes – as you can see, it was pretty dangerous to be taking cameras and stuff down onto this site. But also this cliff changes, almost week by week you can get extra landslips going on. So, it's a very challenging environment, but one that Martin knows very well, so he was able to find the specimen.

Clip from Fossil Detectives

Hermione Cockburn
Watch out below. There's a lot of debris.

Martin Simpson
Not far off.

Hermione Cockburn
This is extreme palaeontology.

Hermione Cockburn
So, this is it. This is the site.

Martin Simpson
This is the site, yeah.

Hermione Cockburn
What an incredible sight, halfway up this cliff.

Martin Simpson
The bones are in about a four foot depth, and it's going into the cliff sort of north-west, head first, that way. So, what we've got to do is get all the scree, all the stuff that's slipped, off it, back to fresh rock, which is what I'm doing here.

Hermione Cockburn
So, what can I do to help?

Martin Simpson
Well, if you want to carry on. Actually, if you like, we've come across this bone here, it looks like a rib, it's got a sort of –

Hermione Cockburn
Oh, my goodness! Just sticking out of the cliff.

Martin Simpson
Yeah.

Hermione Cockburn
Can you see that? That is a dinosaur bone, just poking out.

Martin Simpson
We're lucky today because it's still quite wet, as it's coming out, it's wet, so it's probably okay to put a knife in. Or if you want to use the hammer and chisel, feel free.

Hermione Cockburn
Any moment, there could be another bone.

Hermione Cockburn
You've got to be patient. I'm sure there's something in here.

Hermione Cockburn
I am like a woman possessed now.

Hermione Cockburn
Any moment, there could just be another bone sticking out. You've got to be so delicate, but I think it's coming out, it's loose.

Martin Simpson
Is that it?

Hermione Cockburn
Yeah.

Hermione Cockburn
The surface, it's so beautiful.

Martin Simpson
It's immaculate, isn't it?

Hermione Cockburn
It is, it's immaculate.

Martin Simpson

It's got this beautiful pattern on it.

Hermione Cockburn
Look, it is just like a modern day bone. So, what do you think we're looking at here?

Martin Simpson
It's splitting at the end. And what I think that is, it's the bone that goes under the vertebrates. Under each vertebrate there's a little piece that comes up, and it branches off at the top. But that's good, we haven't got many of those.

Hermione Cockburn
I've just excavated my first piece of dinosaur. It's astonishing to see this.

Hermione Cockburn
So much effort goes into even the smallest finds. But it's from such tiny fragments of bone that you can begin to piece together an idea of this magnificent creature.

End of clip

Hermione Cockburn
Okay, so, yeah, the only bone that we did manage to find was that little fragment that Martin had already sort of seen sticking out. But we were there for about two hours, literally, I did not want to leave the hacking away at that cliff face. It really is a compelling task. But if you imagine that that's just one fragment of a creature that would have been 67 metres long, he's got his work cut out for him.

He hopes to actually excavate the rest of that dinosaur, probably in the next six months to a year, and then there is a little museum down in the Isle of Wight called Dinosaur Farm, which he'll be putting it on display. But it's just one of maybe up to 200 different dinosaur skeletons – Peter will correct me if I'm wrong – that have been collected from the island. It really is one of the best places that you can go if you're interested in finding your own dinosaur. And I think the thing – the reason why I wanted to kind of include a couple of clips about dinosaurs is because they really, I think, capture the imagination of young and old. And that dates back right from when they were first discovered, in Victorian times.

You might have picked up a reference there to Charles Dickens, on the first clip. Even when dinosaurs were first discovered, around about the time of Dickens, they were big news, and he put Megalosaurus, that first one discovered, into the first paragraph of his book, 'Bleak House.' And I think ever since, I'm sure all of us in the audience have, at some point, been struck by just something about dinosaurs. They're the biggest creatures that have ever walked upon the Earth, there's something terribly fascinating about them.