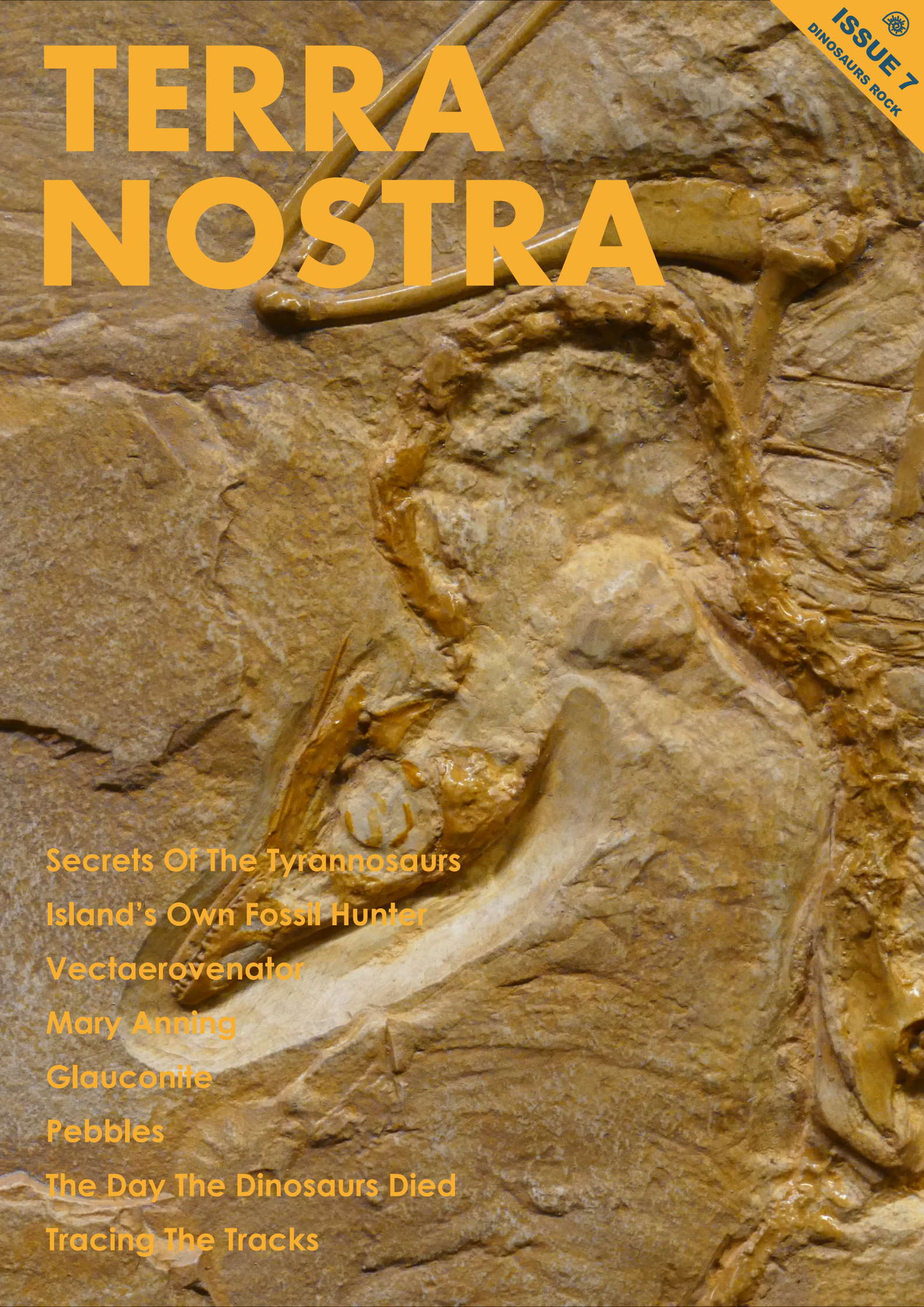




TERRA NOSTRA

Secrets Of The Tyrannosaurs

Island's Own Fossil Hunter

Vectaerovenator

Mary Anning

Glauconite

Pebbles

The Day The Dinosaurs Died

Tracing The Tracks

Contents

Foreword	2
Secrets Of The Tyrannosaurs	3
Island’s Own Fossil Hunter	7
Vectaerovenator	9
Mary Anning	13
Glaucosite	15
Pebbles	16
The Day The Dinosaurs Died	19
Tracing The Tracks	23
Suggested Reading	25

Foreword

Issue 8 of Terra Nostra is themed: Dinosaurs Rock and it has examined a range of material. There’s everything here from cutting edge research on Tyrannosaurs, to famous fossil hunters, to a summary of the dinosaur’s last days on Earth. I think you’d agree that this is quite a diverse issue by any account. If you read closely you might even find an expose by Mr Peace on one of his favourite minerals.

Pupil submissions this issue include a piece on Mary Anning, a brief look at Vectaerovenator, and a series of beautiful hand drawn dinosaurs. Thanks again for your contributions and I look forward to reading what you all come up with next.





SECRETS OF THE TYRANNOSAURS

The most famous of the dinosaurs is probably the Tyrannosaurus Rex, the so-called king of the lizards. For many years the Tyrannosaur was thought to be the largest land carnivore ever to walk the Earth. In older pieces of art, it is often depicted locked in combat with the rather noble looking Triceratops. Ask any adult what their favourite dinosaur is and they will probably pick one of the two. However, the discovery of other large late cretaceous carnivores has tarnished the Rex's somewhat fearsome reputation. In this article we will look at some of the recent discoveries changing our opinion of the Tyrannosaur.

The traditional image, somewhat perpetuated by films such as Jurassic Park, is that the Tyrannosaur was a fiercely independent predator. In these movies, whenever two Tyrannosaurs meet there is fierce and often bloody confrontation. New evidence from fossils discovered at Grand Staircase-Escalante National Monument in Utah in 2014 is turning this image on its head. A chance discovery of an ankle bone ultimately led to the uncovering of the remains of a group of five individuals. A comparison of the bones allowed scientists to identify that the group was made up of one adult, one sub-adult and three juveniles. This led them to the conclusion that the fossils were that of a family group killed in one catastrophic event. A closer examination of the rocks they were bound up in suggested that a single flooding event sweeping through the jungle the animals lived in had claimed them all.

This is a unique deposit that raises some challenging questions about the lifestyle of the Tyrannosaur. Perhaps, the traditional depiction of the solitary hunting Tyrannosaur is wrong. What if, instead, Tyrannosaur families lived and hunted in groups much like many mammalian predators? However, a single fossil discovery will not do much to change the long standing reputation of this dinosaur. Luckily another site in Canada, long thought to be a mass grave of

unrelated Tyrannosaurs may provide further evidence of the family group theory. In 1998, the GAIA Journal published an article by Philip J. Currie which argued that this Canadian fossil discovery suggested that Tyrannosaurs may have been more gregarious than previously thought. He argued against the theory that Tyrannosaurs had been lured into a predator trap (like a tar pit) and that the presence of quick footed juveniles amongst the group could suggest a division of labour amongst hunting teams. This suggests at a level of social structure and sophistication previously thought impossible.

It is well known that the Tyrannosaurus Rex had the strongest bite of any land animal ever discovered. Its bite was capable of crushing through solid bone with ease but it has long been debated how the animal achieved this without shattering its own skull. In order to generate the 7 ton bite force required to crush the bones of its prey the Tyrannosaurus Rex needed a skull of enormous strength. To put that into context, a Tyrannosaurus Rex could easily crush a car with its jaws even as its 6 inch teeth punched through the cars steel skin. Recent investigation of Tyrannosaurus Rex skulls has identified that the structure of its skull is more like modern hyenas than the flexible ones of birds and reptiles. In the past, scientists wondered if the Tyrannosaurus Rex could move its jaws more like a snake with them moving both up and down and out to the side to better distribute the enormous stresses generated by its jaws. Computer models of its jaws demonstrated that this kind of movement would actually increase the risk of catastrophic failure in the skull.

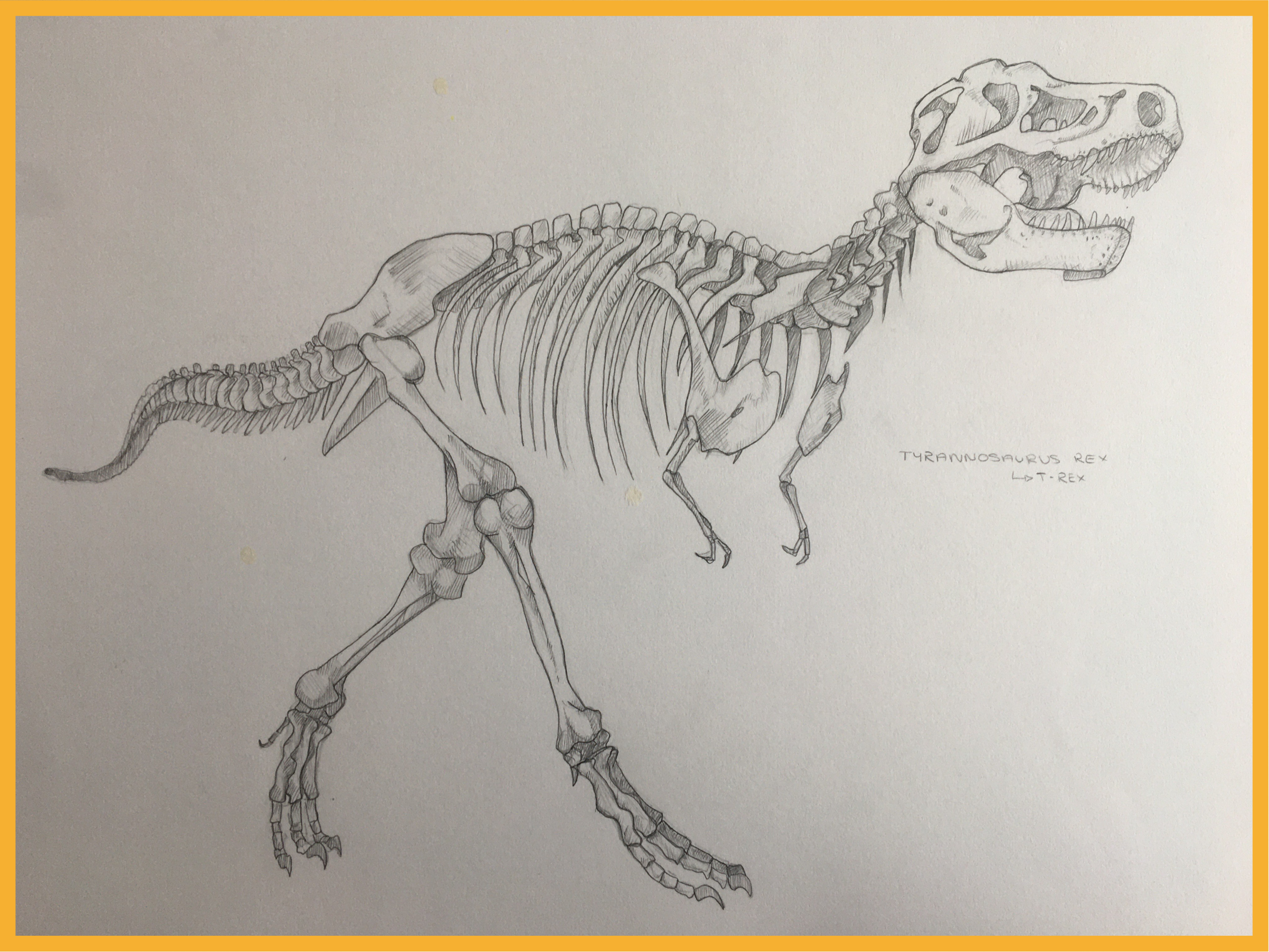
There is another famous scene in Jurassic Park that might now require re-editing. The infamous jeep chase scene in which the Tyrannosaurus Rex runs after a fleeing jeep at some speed might in fact be based on a lie. An investigation of the bone structure of the Tyrannosaurus Rex in 2017 suggested that if the 7000 kilogram beast was to run it would shatter its own bones. Instead, it is postulated that the Rex probably walked after its dinner at a speed of between 10 and 25 miles per hour. Most of the time, the animal would have preferred to walk at a much more comfortable pace similar to that of a person. So, theoretically you could take your pet Tyrannosaur out for a walk. However it was chasing after you, thinking about a nice light snack, only the very fastest runners would get away.

There is still plenty to discover about the king of the

lizards and plenty of interesting information to digest. An increasing number of finds, coupled with newer computer modelling techniques is finally allowing us to strip back 65 million years and examine how this truly gigantic predator lived. Yet no matter how much information we uncover, that iconic image of the lone Tyrannosaurus Rex bellowing defiantly above its kill will continue to endure in the minds of many of the dinosaur's biggest fans.



DRAWING BY MILLIE T, YEAR 11





ISLAND'S OWN FOSSIL HUNTER

In this article we will briefly examine the life of one very important fossil collector working on the Island during the golden age of fossil discovery. The central figure to this tale being the Reverend William D Fox, the curate of Parish church of St Mary the Virgin in Brighstone (although at the time known as Brixton). As a man of the cloth and a keen collector of “dragons” he is somewhat of an interesting character in that he bridges the divide between science and religion, two disciplines that are often thought of as being in conflict. Over the course of his lifetime Fox identified at least four new dinosaur species and each are named after him.

Fox was not a native of the island and moved here from Cumberland in 1862 to take up the position of curate in Brighstone. During his time in Brighstone he could often be found walking along the shore of Brighstone Bay which was a short walk from his home at Myrtle Cottage. During these walks he began to discover the fossilised remains of several dinosaur species but believed them to be the remains of “dragons.” With Darwin’s Origin of Species being published just three years earlier in 1859, the church was still negotiating natural selections place in creationism and not yet ready to accept the dinosaurs as anything other than the dragons slayed by the saints.

Fox, whilst not a formally trained palaeontologist could see the importance of such finds and began to collect them. Now Fox was not a man who took collecting lightly. He amassed a vast collection of over 500 specimens in a relatively short period of time. Amongst these are several large vertebrae weighing over 20lbs each! His collecting got so heavy duty that he was spotted riding a donkey weighed down with fossils on more than one occasion.

However, as with all obsessions Fox’s came at a cost.

His lengthy walks and regular trips to beaches further afield meant that he was not able to perform his role as the curate effectively. In fact, he began to neglect his job so much that the church took notice and politely asked him to move on from the Parish. It is not surprising considering the Vicar’s wife is quoted as saying of Fox that: “it was always the bones first and the parish next.” The disappointment that Fox must have felt at being asked to leave the Parish is palpable in the letters he wrote to Richard Owen.

Richard Owen was also an important figure in the burgeoning field of palaeontology and a friend to Fox. Whilst Owen was also a brilliant palaeontologist he was also a controversial figure. He is accused of stealing other scientist’s specimens and writing anonymous reviews of others discrediting their work. Despite these flaws, Owen is probably most famous for giving the dinosaurs their name in 1842. Having begun to look at the rich wealth of fossils coming out of the south of England, Owen began to realise that they shared similar characteristics. He named this group the “terrible lizards” or Dinosauria. In 1881, Owen would go on to create London’s Natural History Museum where Fox’s fossils reside today.

Yet in early 1867, Owen was asked by Fox to use his leverage as a celebrity scientist to ensure that he was able to stay on as a curate in Brighstone despite his neglect of the role. He is noted as writing ‘I cannot leave this place while I have any money left to live on,’ and concluded his letter stating that he took deep pleasure in ‘hunting for old dragons.’ In effect, fossils had become his life. Clearly, Owen and Fox were firm friends as Owen took the matter to the Prime Minister. In this letter, Owen asked Gladstone to try to influence the church’s position on the matter of Fox as curate to ensure that he could maintain his important work. Despite this intervention the church would not relent and Fox was forced to resign his post that year.

True to his letter, Fox didn’t move far from Brighstone. He settled down in Shorwell and continued to collect fossils until his death in 1881. He is buried in St. Mary’s Churchyard in Brighstone. After his death, Richard Owen purchased Fox’s entire collection of fossils as he knew that they were of a high standard thanks to their years of correspondence. Fox’s collection was put on display in Owen’s new Natural History Museum where it still resides today. It is considered to be of international significance and formed an integral part of the formation of vertebrate palaeontology as a field of study.

What is interesting about Fox’s story is not just that he was a man of religion involved in exploring a rather controversial science but that he was a complete amateur with no formal training. Today, his old stomping ground of Brighstone bay continues to produce high quality fragments of dinosaur fossils. Anyone with a little luck and a pinch of skill can still discover something 120 million years in the making!





VECTAEROVENATOR INOPINATUS

What was believed to be a new species of dinosaur was discovered on Shanklin beach in 2019. The bones were examined by palaeontologists at the University of Southampton and are believed to be the bones of a new type of theropod dinosaur.

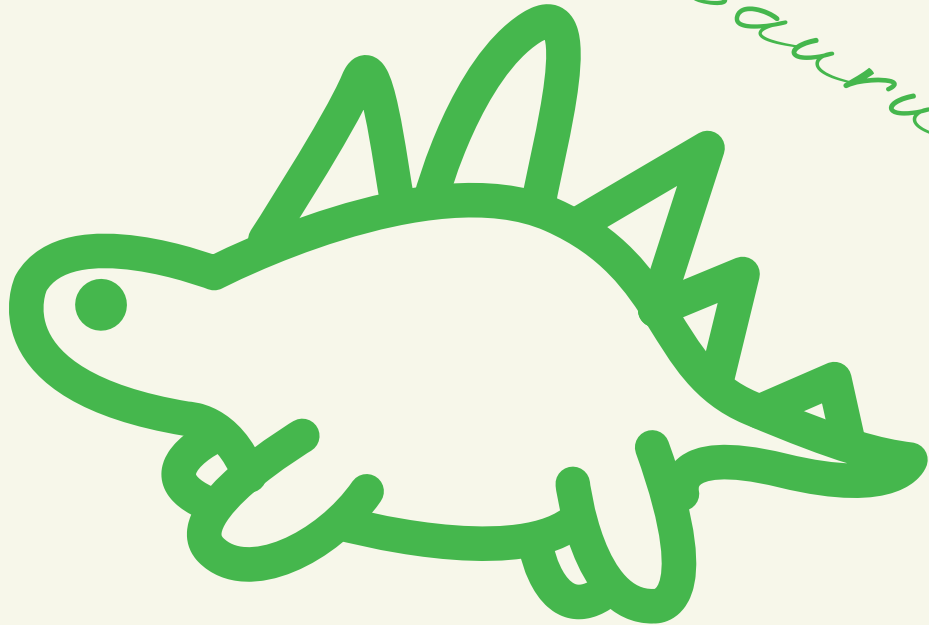
It lived in the cretaceous period, around 115 million years ago. It is thought that when the dinosaur was alive, it would have measured around 4m (13ft) long. It belongs to the group of theropod dinosaurs, which includes Tyrannosaurus Rex and also modern day birds. It has been given the name Vectaerovenator Inopinatus.

The bones of Vectaerovenator Inopinatus were found in three separate discoveries and were handed in to Dinosaur Isle Museum nearby in Sandown. They were discovered by a regular fossil hunter, called Robin

Brachiosaurus



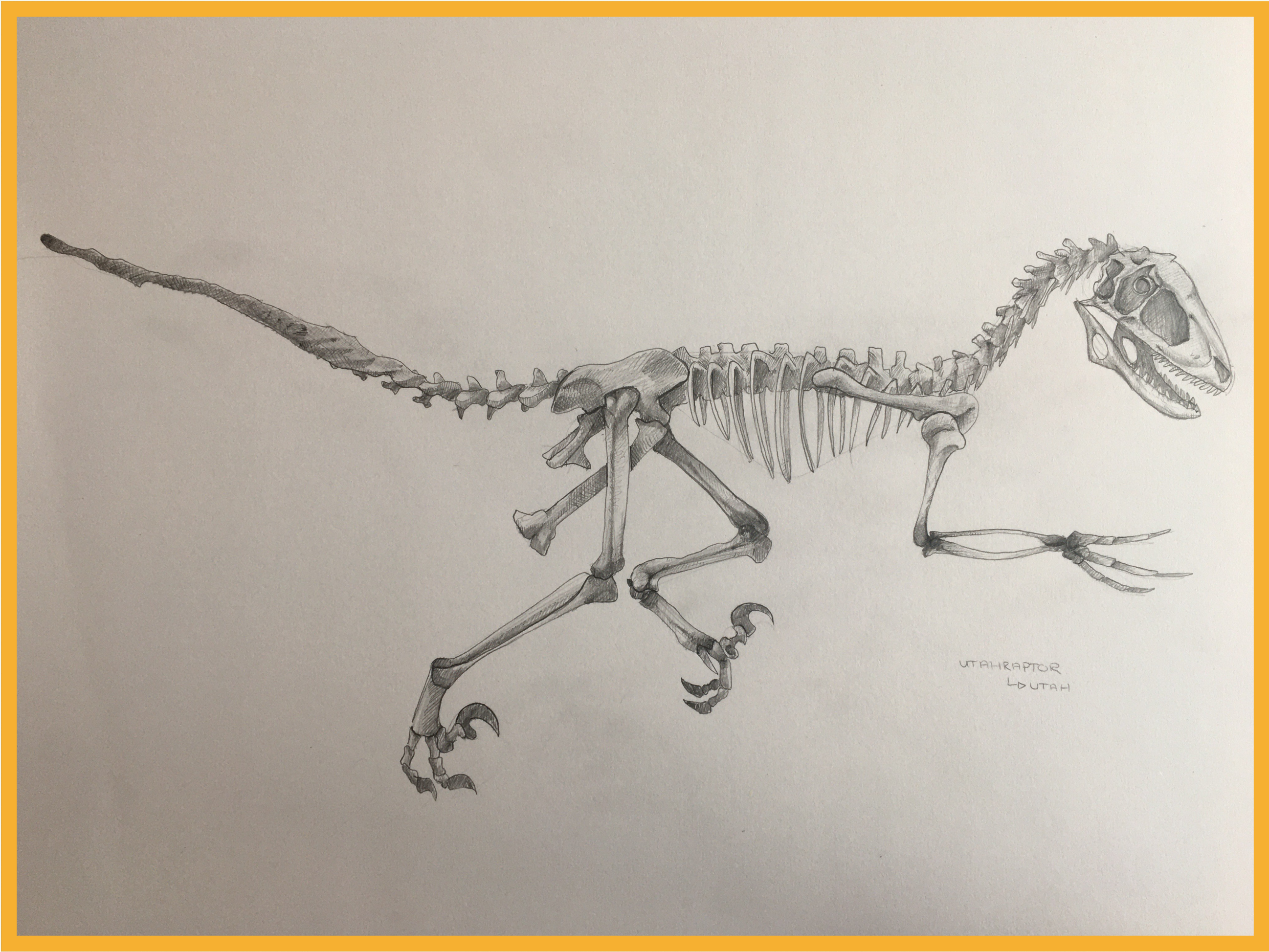
Stegosaurus



Triceratops



DRAWING BY MILLIE T, YEAR 11





MARY ANNING

By Macey H, Year 10

When talking about great geologists of the past, we often think of men like Charles Darwin or Alfred Wegener, but that is only because the women of geology have been overshadowed by them. This has been happening throughout history. However, just because we haven't heard of these pioneers doesn't mean they haven't worked tirelessly to further their craft and achieved great things. In geology, there is one woman who definitely deserves more credit than she is given.

You may well have heard of her, though not by her name. Have you ever wondered who the woman was in the tongue twister 'she sells seashells by the seashore'? Her name was Mary Anning, and she sold a lot more than just sea shells. In fact, she was arguably the most successful fossil hunter in history, though unfortunately the successful geologists of her time bought her discoveries, claiming her finds as their own. She was the first person to ever discover full dinosaur skeletons, preserving them incredibly well, and her findings laid the groundwork for the entire field of palaeontology, the study of fossils.

Mary Anning grew up very poor. Her father died when she was young, leaving her family with lots of debt. Mary mainly ran errands for neighbours to try to bring in income for the family, but she loved to do hobbies in her spare time. When her father was still alive, Mary and he had gone seashell hunting on the beach often. One day whilst Mary was foraging on the beach she found what we now know as an ammonite. A passer-by saw it and offered to pay money for it. It was then that Mary had the brilliant idea of opening a shop for curiosities she had found on the beach. Her father had sometimes sold the 'crocodile teeth' they found on the beach to tourists, but Mary went on to find many incredible fossils, selling them in her shop.

This attracted many well established geologists to the area, but rather than go and look for the fossils

themselves, they simply bought them off of Mary Anning, returning to London to the Royal Geological Society and claiming the find as their own. She didn't mind selling her finds, because at first she had no knowledge or use for them, but as she kept discovering more and more fossils she became interested in geology and read as many books in the local library on it as possible. Anning became an expert at geology and fossils, more so than some members of the Royal Geographical Society. She discovered, polished and preserved many specimens, including three that can be seen in the Natural History Museum today: Ichthyosaur, Plesiosaur and Pterosaur.

In conclusion, Mary Anning was possibly one of the most important geologists and fossilists, preserving hundreds of specimens with her brother, but wasn't credited nearly enough for her work. Hopefully in future she will be acknowledged for her amazing work and dedication.





GLAUCONITE

By Mr Peace

Ask anyone what their favourite mineral is, and they will usually reply with one of the precious minerals – diamond, ruby, gold or even opal.

But beauty is in the eye of the beholder. My favourite mineral, above all others, is glauconite. I once compared a girlfriend to glauconite and she was distinctly unimpressed.

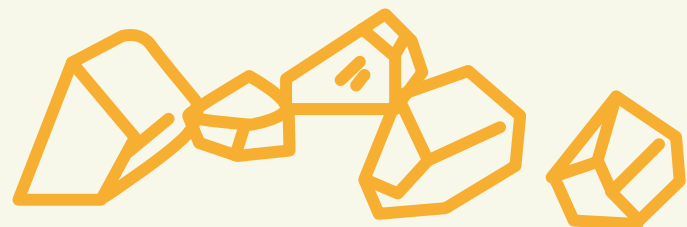
But to judge glauconite by the standards we judge other minerals by is unfair. Let me tell you why. You see, whilst glauconite isn't as beautiful or as valuable as some minerals, it is solid, dependable, trustworthy and when added to a rock, it makes it more aesthetically pleasing. Great characteristics, no?

There are some branches of geology where we use aspects of rocks to tell us information about the conditions that existed when a rock was formed. No-one was around at that time, so we have to use some detective work, and this allows you to build up a picture of what a place was like millions and millions of years ago.

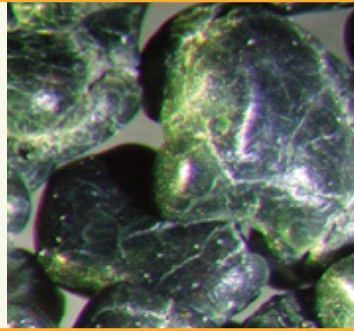


Garnet Schist

Garnet is an example. You mostly find garnet in a rock called schist, a metamorphic rock changed from another by high temperatures and pressures associated with mountain building.



Glauconite Crystals



Glauconite is another mineral which tells you exactly what the conditions were like in the rocks it is found in. It is a green mineral which only forms in sedimentary rocks in marine environments. It often indicates conditions with low oxygen.



Upper Greensand

I first became aware of glauconite when doing some fieldwork in Sandown Bay many years ago. I came across rock which looked like it had lots of green sand grains in it. This was one of the Upper Greensand rocks of the Cretaceous period formed on the continental shelf in low oxygen conditions some 100 million years ago.



Upper Greensand Above Blackgang Chine

You may well recognise these rocks in the cliff above Blackgang Chine.

Not only is glauconite an excellent indicator of the environment it formed in, but it makes the rocks it is found in pleasing to the eye, adding a green tinge.

Glauconitic rocks have been quarried and used here on the Isle of Wight as building stone.



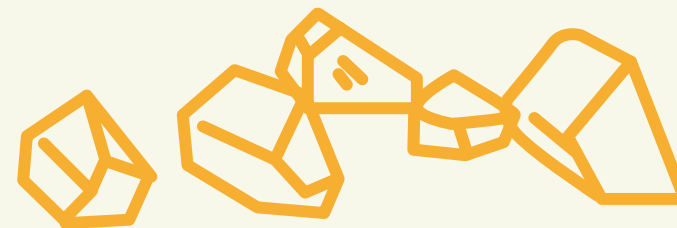
St. Catherine's Church

In the Ventnor area, for example, the Upper Greensand Sandstone is named Ventnor Stone and has been used to construct St Catherine's Church and The Royal Hotel.



Ventnor Stone Cottages, Belgrave Road

There is a particularly green version of Ventnor stone which has been used to construct the buildings in Belgrave Road. So next time you wander around Ventnor have a look at the stone, and if you see some green, stop and have a think at just how attractive glauconite is!



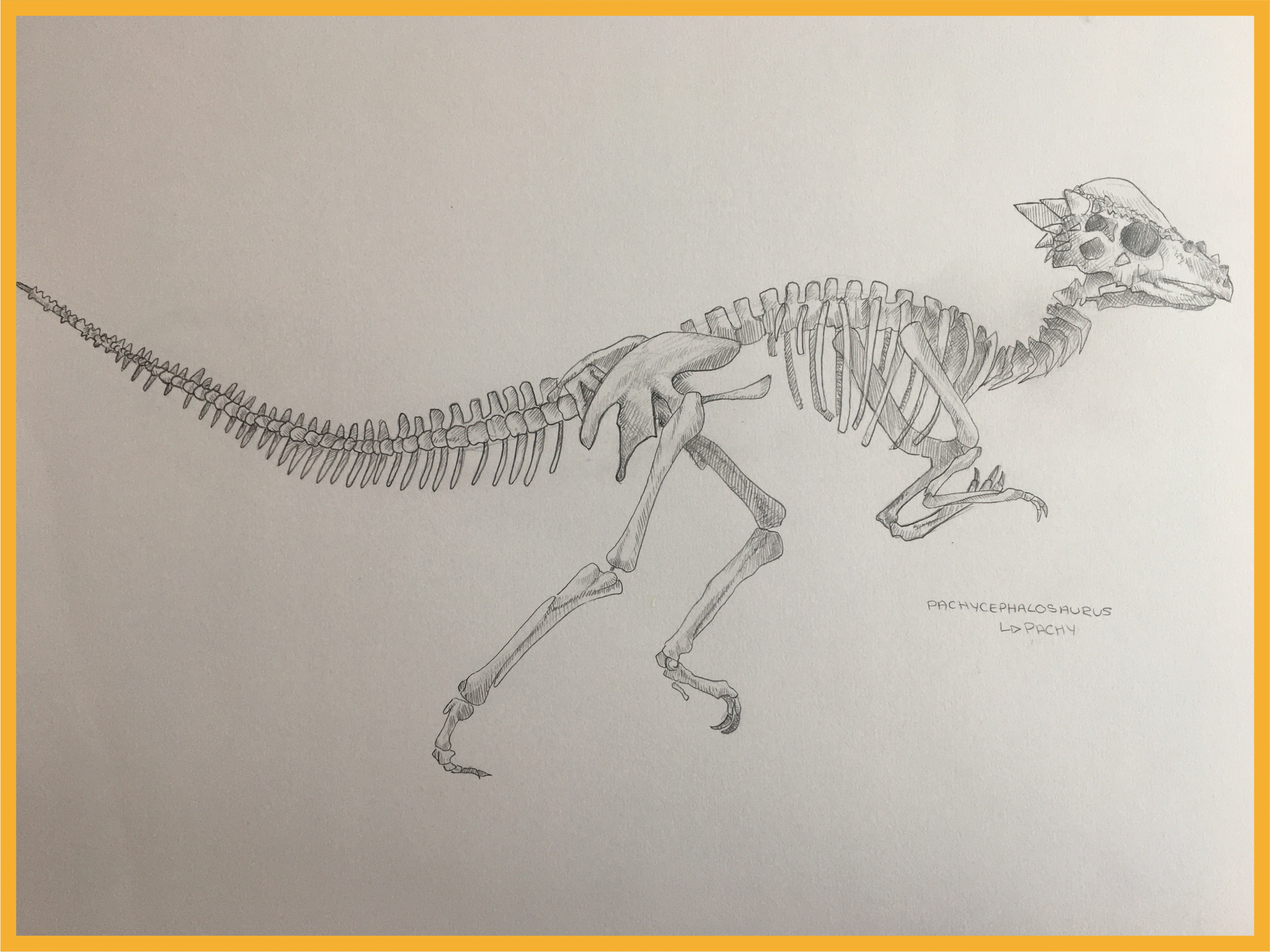
PEBBLES

By F. D. Sherman

Out of a pellucid brook
Pebbles round and smooth I took;
Like a jewel, every one
Caught a colour from the sun, —
Ruby red and sapphire blue,
Emerald and onyx too,
Diamond and amethyst, —
Not a precious stone I missed;
Gems I held from every land
In the hollow of my hand.

Workman Water these had made;
Patiently through sun and shade,
With the ripples of the rill
He had polished them, until
Smooth, symmetrical and bright,
Each one sparkling in the light
Showed within its burning heart
All the lapidary's art;
And the brook seemed thus to sing:
Patience conquers everything!

DRAWING BY MILLIE T, YEAR 11





THE DAY THE DINOSAURS DIED

If you invented a time machine and stepped backwards around 65 million years ago you would have been a witness to one of the greatest disasters in natural history. Sure, you wouldn't have lived to tell the tale but neither did half of the plant and animal species alive at the time. Say you arrived a few days before the asteroid that would lead to such devastation what signs would there be to warn you that a piece of rock six miles wide was hurtling towards you at forty-five thousand miles per hour? If you were to glance up at the night sky the first thing you would have noticed was a star. A star like any other except that it didn't move with the others around it. If you were to continue looking at this strangely still star you would also begin to wonder if it was slowly but surely getting brighter. At this point you had roughly sixty hours to find some way of saving yourself. For the dinosaurs, who were not the most gifted of astronomers, they were playing out the last great acts of their kind. Perhaps somewhere the long necked Sauropods, the true giants of the land, carefully grazed the very tops of the trees whilst somewhere nearby a Tyrannosaurus stood defiant over a recent kill. Overhead Pterosaurs soared aloft on leathery wings the true master of the air. Within the space of three days, these scenes would never be repeated on this Earth again.

Asteroids of this size don't enter the atmosphere gently but instead tear a hole as they violently compress and heat the air in front of them. This super heated compressed air forms a deadly supersonic shock wave. When the asteroid struck the shallow seas where the Yucatan peninsula is today its shock wave travelled across seas, over coastlines and deep into the interior of the North American continent. The super heated winds closest to the asteroid impact travelled at speeds of over 1000 miles per hour. Anything nearby was scoured from the surface and

devastation here would have been absolute. Nothing living within 1500 kilometres of the impact stood a chance of survival. For anything living here death was near instantaneous, they would not have had the chance to realise what had happened before the shock wave was upon them. However, given what was to come these were probably the lucky ones.

Within two minutes of the initial impact the asteroid had burrowed a crater eighteen miles deep and ejected twenty-five trillion metric tons of debris into the atmosphere. As the Earth's crust rebounded from the shock, much like water does when a pebble is thrown into it, a peak taller than Mt. Everest appeared very briefly. In the process, the equivalent energy of more than a billion Hiroshima size atomic bombs was released. This peak then became a giant jet of molten material that exited the atmosphere and gradually spread across most of North America. This material was so hot, in fact it was hotter than the surface of the sun, that everything combustible within a 1000 mile radius would have caught fire. As this material began to reenter the atmosphere it fell as a rain of molten glass (named as tektites) across most of the western Hemisphere. Anything that had somehow escaped the initial destruction would have been exposed to a rain of fire from which there was no shelter above ground. It is estimated that giant forest fires as a result of this material reentering the atmosphere would have led to the loss of 70% of the Earth's total forests.

The vast majority of the material ejected from the impact crater entered orbit around the Earth before being recaptured and pulled back towards the planet's surface. The material that wasn't captured by the Earth's gravity entered irregular orbits around the sun. Over several million years this material has made its way to some very interesting places. For instance, the surface of Mars is littered with the debris ejected by the impact. A study in 2013 estimated that tens of thousands of pounds of material had probably made its way to the surface of Titan (the largest moon of Saturn). This material is likely to have been carrying living microbes when it left the planet and may have potentially seeded the solar system with life!

Thanks to the asteroid's impact in a relatively shallow sea, giant tsunamis would have also been created. These walls of water would have raced outwards like the ripples on a pond in all directions across the Gulf of Mexico. Where they met land they tore hundreds of meters of rock away from the coastlines before carrying this material hundreds of miles inland. Today



the evidence of these giant waves can be found in the jumbled up deposits sometimes encountered whilst oil drilling.

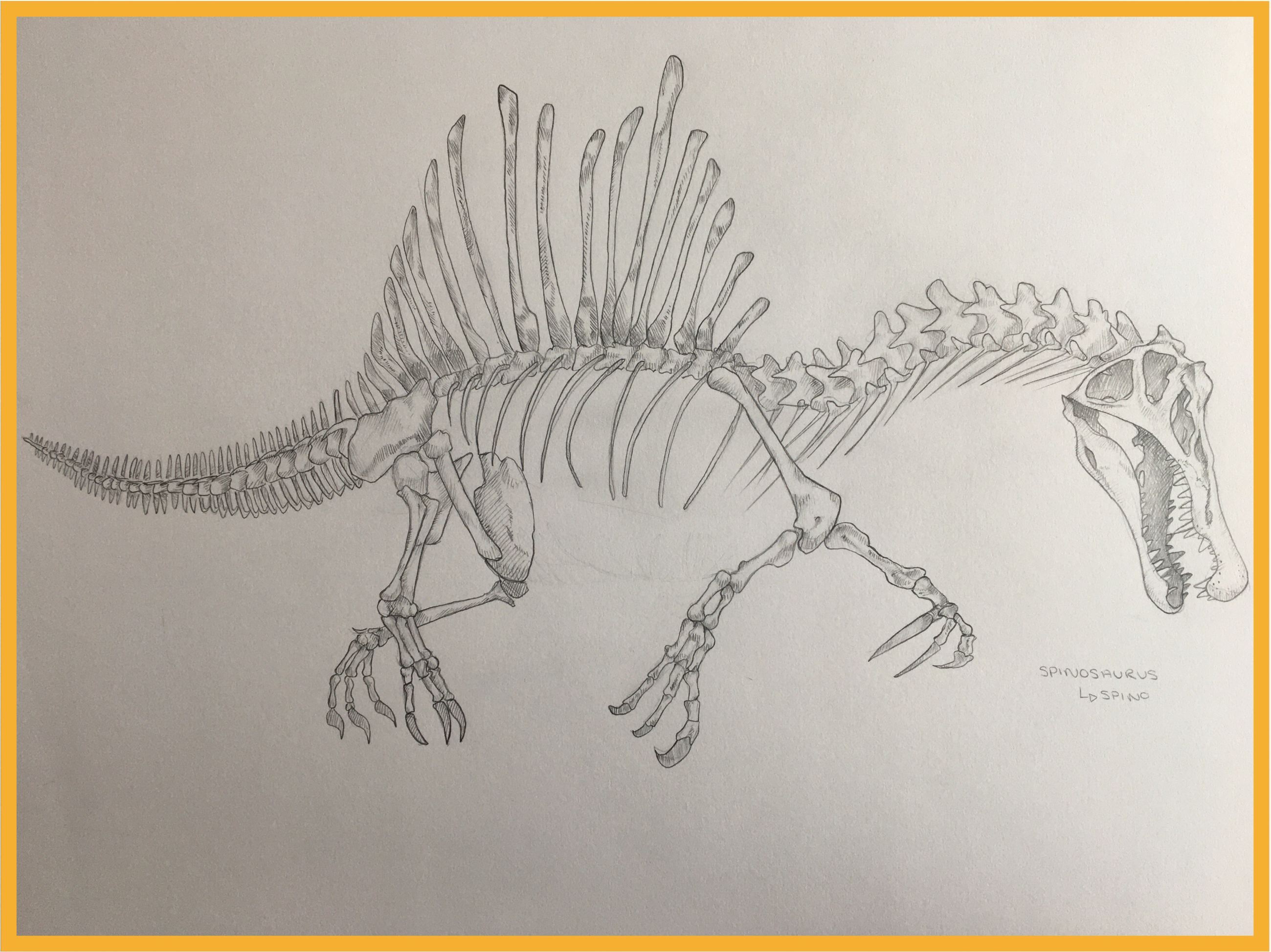
Despite all the initial destruction it is likely that a large amount of life managed to make it through these critical hours. Their world, the world they once ruled, was no more. Where there was once light and life there was now darkness and death. The metres deep layers of soot, ash and ejecta suggest that the sun was obscured for some time. For the surviving dinosaurs it meant that they lived out the last days in darkness. Without light, the base of the food chain collapsed. Photosynthesis essentially stopped and with the loss of plants and phytoplankton the food chains on both land and sea ceased to exist. As well as this, without the sun heating the Earth's surface it is likely that the world was plunged into a nuclear winter which the dinosaurs were ill adapted to endure. The last of the dinosaurs, the great terrible lizards, are likely to have starved in an environment too cold for them to survive.

Today, the legacy of the impact that ended the reign of one of the most successful families of life on the planet can be found in a notebook thick black band in the rocks of 65 million years ago. This thin black line

of compressed soot, ash and ejecta is all that remains to mark the moment that life on Earth changed forever. Below this Cretaceous-Paleogene (sometimes called Cretaceous Tertiary) boundary dinosaur fossils are abundant but above the thin black line there has never been a single dinosaur fossil discovered. It is the boundary between life as it once was and life as we know it.

However, some scientists make the argument that the KT extinction was just a sudden acceleration towards the eventual disappearance of the dinosaurs. There is a theory that suggests that the diversity of the dinosaurs was on the decline for at least 10 million years before their sudden and violent disappearance. According to these scientists the changing climate of the planet and a range of other factors was culminating towards an irresistible extinction. Whilst attractive is a difficult theory to prove as the fossil record is far from complete and late Cretaceous dinosaur sites are relatively rare. New evidence is also contradicting this theory with newly reshuffled family trees in a paper published in 2020 asserting that the dinosaurs were doing at well as ever.

DRAWING BY MILLIE T, YEAR 11





TRACING THE TRACKS

Fossil hunting is all about the timing. You must be in the right place at the right time and in the right conditions. On the Isle of Wight, the most common place to find fossils are the beaches. The constantly changing tides and rapidly eroding coastlines constantly unveil gems hidden for millions of years. Yet, after all this time, if you're even a day too late all you might see are fossil footprints fading into the surrounding stones; their clearly defined lines becoming less recognisable by the minute.

Whilst the majority of fossil hunters are in it for the thrill of discovering preserved bones, the real treats are often in the traces left behind by the living organisms. They provide a direct connection to the living animals themselves and help you to bridge the vast distance between then and now. There is something completely stunning about the knowledge that you are standing in the spot where immense beasts once roamed. Bone fossils are all about the animal in death but trace fossils are all about life. Living, breathing, roaring, tooth and claw life.

How do such fragile traces get preserved and survive for so long? How does a footprint become a fossil? Much like your discovery of the fossil it requires the dinosaur to be in the right place, at the right time and in the right conditions. First of all the animal has to make a track. This happens when it places its foot into soft material like mud and silt. As the animal puts its weight through its foot it compresses the material underneath and leaves behind a perfect impression. This impression is called an undertrack. If the ground is too hard a shallow print with detail is left behind and where the ground is too soft the footprint's sides can collapse ruining it. Once the footprint is pressed into the soft material it then has to survive for some time whilst the sun bakes it hard. As you can imagine, the sensitive conditions needed to preserve the print make them quite rare. Where the print is filled by a

new material and fossilised a cast is formed. Sometimes this material resists erosion better than the original material and a cast fossil is left standing proud above the rocks around it, and at other times the fill is more erodible than the original material and an undertrack remains.

Where there are many footprints left behind we often find an individual's trackway by examining lines of undertrack and cast fossils. These allow us to understand much more about an individual's size, stride length, direction of travel, and behaviour. Sometimes these trackways appear to go straight up vertical surfaces, as they do at the Cal Orcko site in Bolivia, but clearly dinosaurs weren't walking up walls. What has happened is that over time sediments and rocks that were once horizontal have been pushed up into a vertical position. At Cal Orcko the remains of a riverbed have undergone this process and it appears to the untrained eye that at least eight separate species had skills a spider would envy.

Recently, a very small but highly interesting track was discovered by Professor Xing of the Chinese University of Geoscience. Whilst examining a trackway in China they discovered a single 6cm print belonging to a cat sized Stegosaur. This is the smallest Stegosaur print ever discovered and is thought to belong to a very young individual. Interestingly, the print shows a marked difference from the adult prints all around it. This single print shows that the young Stegosaur walked with its heels off the ground, like a cat or a bird, rather than on its heels like the adults. This suggests that as the Stegosaur got older and added more mass it transitioned from walking on its toes to walking on its whole foot in order to help it spread its mass better.

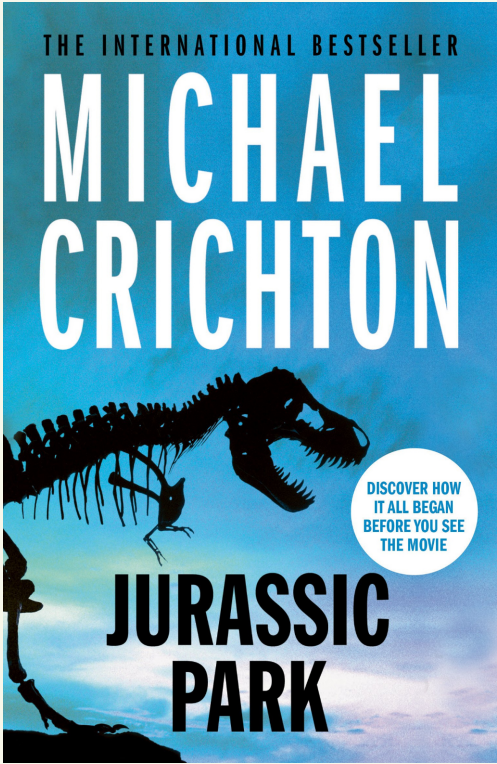
Trackways and fossil prints are not just found in far off places. The Isle of Wight has its own dinosaur trace fossils that anyone can go out and see as long as the conditions are right. Just last year a Neovenator footprint was unearthed after Storm Ciara. In April, another print appeared in the same location! Where might you find these prints? Anywhere the 130 million year old Wessex formation is exposed. This formation makes up the remains of an ancient floodplain and is rife with trace fossils from flooding events. Hanover Point is a particularly prosperous area for fossil hunters with tracks from Iguanodons regularly showing up. However, the Wessex formation is particularly vulnerable to the sea and exposed prints may only last a few days. If you do decide to take a trip to

Hanover point to go fossil hunting after strong winds and rain be careful! Tides and conditions can rapidly overtake you. Always go prepared. Carry a phone, notify someone where you are going and look up the tide times. No good fossil walk ends with having to be rescued by the Coastguard!





SUGGESTED READING

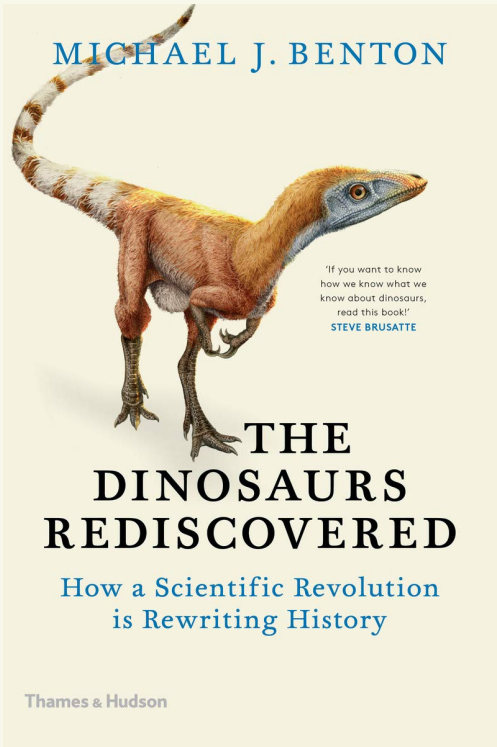


Jurassic Park - Michael Crichton

You've probably seen the movie, you can probably even whistle the tune, but have you ever read the novel? If not, I cannot recommend it enough. It is one of the true giants of speculative science fiction and must be on any lover of the genre.

Inside, Crichton tells a story of chaos, disaster and greed set in the worst possible location; a park full of genetically reborn dinosaurs. This book will both make you smile in child-like wonder and shiver in absolute terror.

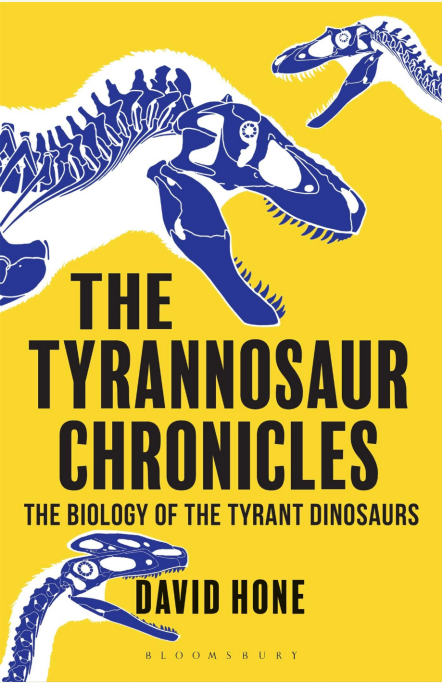
(There is some strong language in this book)



The Dinosaurs Rediscovered – Professor Benton

In the last 20 or so years the field of dinosaur palaeontology has made some stunning discoveries. These include giant sauropods from Patagonia and feathered dinosaurs from China. What we thought we knew about the dinosaurs has been written and rewritten time and time again.

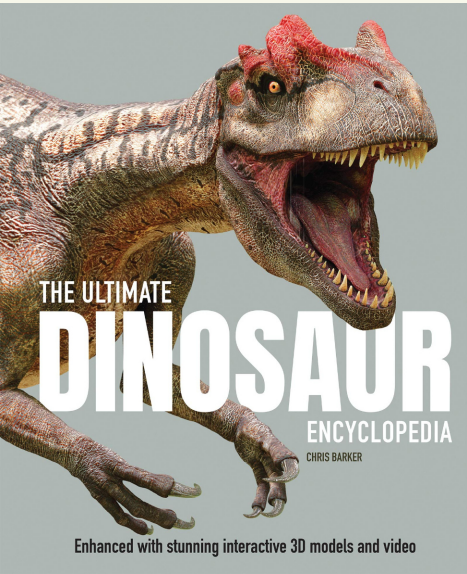
In this book, Prof. Benton takes us through some of these new discoveries and redraws the history of the dinosaurs to match what is being unearthed. This book is really first rate for anyone with a series interest in the dinosaurs.



The Tyrannosaur Chronicles - David Hone

The Tyrannosaur's are everyone's favourite dinosaur family. However, they didn't start out as the biggest, meanest, kids on the block. Over the course of 100 million years these small carnivores evolved into some of the greatest bone crushers of all time.

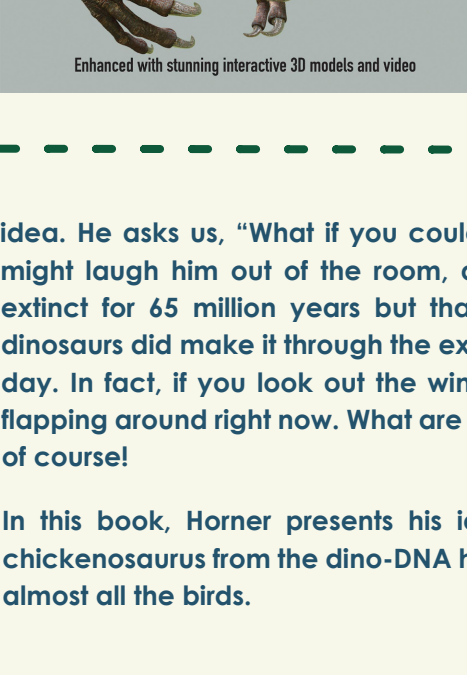
This book tracks the rise of these dinosaurs, and presents the latest facts about this heavily studied group. It does this by telling the story of the group through their anatomy, ecology and behaviour, exploring how they came to be the dominant terrestrial predators of the Mesozoic and, in more recent times, one of the great icons of biology.



The Ultimate Dinosaur Encyclopedia - Chris Barker

If your are more into seeing your dinosaurs "in the flesh" then you might consider taking a look inside The Ultimate Dinosaur Encyclopedia. Full page colour images backed up with well laid out statistics make this on a pleasure to read.

If you want to swat up on facts and stats without too much writing to unpick then this is a good choice.



How To Build A Dinosaur - Jack Horner

Jack Horner is a world renowned Palaeontologist with a crazy

idea. He asks us, "What if you could build a dinosaur?" Whilst at first you might laugh him out of the room, quoting that the dinosaurs have been extinct for 65 million years but that isn't quite right. Some of the avian dinosaurs did make it through the extinction and happily flap around to this day. In fact, if you look out the window one of them is probably happily flapping around right now. What are these modern day dinosaurs? The Birds of course!

In this book, Horner presents his ideas and work on the creation of a chickenosaurus from the dino-DNA hidden deep within the genetic code of almost all the birds.

