Non-fiction

Group 4

New Tales of China's Dinosaurs

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The study of dinosaurs, known as paleontology, extends far beyond the common perception of them as merely scary creatures or gigantic monsters. It is a world uncovered, hundreds of millions of years of history to be decoded underneath our feet. The study of dinosaurs helps us better understand our place in this world, to understand how life evolved, changed, and thrived over millions of years to get to where we are today. China, with its rich deposits of fossils, offers a treasure trove of information that not only illuminates the prehistoric past but also connects deeply with Chinese culture and mythology. These fossils, often linked to legendary creatures like dragons, illustrate how ancient peoples interpreted their world, while simultaneously providing critical insights into the evolutionary lineage of modern birds. Ultimately, the discoveries made in China are reshaping our understanding of evolution, revealing the intricate tapestry of life that has existed long before humans walked the Earth.

Among the multitude of new species of dinosaurs discovered in China, there are a few that stand out from the rest. A group known as the Dromaeosaurids. These dinosaurs are classified as a small clade of theropod dinosaurs (1). These are the dinosaurs that we often see in the media portrayed as the "raptors". They are also the predecessors to modern–day avians. The reason why the focus on this group is so important is because of how certain dromaeosaurids have shaped our understanding of dinosaurs and their unique connection to Chinese culture and history. China is also a hotspot for finding fossils of dinosaurs. The Chinese province of Liaoning contains some of the most world–renowned paleontological dig sites. These dig sites are known collectively as the Jehol Group. Fossils found in these dig sites have changed our understanding and knowledge of life during the Mesozoic era. These dig sites "span the late Hauterivian to early Aptian (131–120 Ma) of the Early Cretaceous and, collectively, these have produced thousands of essentially complete specimens…" (Benton, M. J., Zhonghe, Z., Orr, P. J., Fucheng, Z., & Kearns, S. L. (2008) These specimens are often found remarkably well preserved, with some specimens even being found with soft tissue (5). Apart from the dromaeosaurids, other species have left an impact on palaeontology. We have all heard of famous dinosaur species like the Tyrannosaurus Rex or the Stegosaurus, but China has dinosaurs exactly like these big names. First discovered in 1977, The Tuojiangosaurus was a Stegosaur that lived during the late Jurassic period. The Mamenchisaurus is also one of the most well–known dinosaur species discovered in China. The Mamenchisaurs was a Sauropod, reaching up into the sky with its elongated neck to feast on the conifers of the Late Jurassic period. The dinosaurs mentioned have all been found in the Jehol Biota of the Sichuan province. China has a promising future for palaeontology due to its rich deposits of well–preserved fossils, particularly in regions like Liaoning and Xinjiang, which continue to yield groundbreaking discoveries that enhance our understanding of dinosaur evolution and prehistoric ecosystems. Additionally, the increasing investment in scientific research and international collaboration has positioned Chinese palaeontologists at the forefront of global paleontological research.

From the majestic Sauropods such as Mamenchisaurus or the ornithopods like Tsintaosaurus or the Dromaeosaurids China is rich with dinosaurs. Chinese palaeontologists like C.C Young or W.C Pei led the movement in discovering all there is to know about Chinese Prehistory (2). There is a strong connection between Chinese Culture and Dinosaurs. The Chinese name for dinosaur "恐龍" directly translates to "Scary Dragon", so from an etymological standpoint there is a connection between Dragons and Dinosaurs. The dragons often mentioned in Chinese mythology are often theorized to have been based on the discovery of Dinosaur bones. "While Hua Yang Kuo Chih holds the oldest reference to a Chinese dinosaur fossil, in books about ancient medicine there are also often references made to "dragon bones" (Hu, J, 1994). A partial basis for entire beliefs and omnipotent creatures such as the dragons of China were built off of discoveries of dinosaur bones. The Chinese people and their beliefs have been connected to dinosaurs in some ways before Dinosaurs were even discovered. Dinosaurs have also been used to honor large parts of Chinese culture. In some ways, Dinosaurs have been named after the place they were first discovered, such as Tsingtaosaurus (named after the city of QingDao) or Huayangosaurus (HuaYang being an alternate name for the province of Sichuan). In other cases, the dinosaurs are named in a way to honor Chinese history, such as the Confuciusornis. This small dromaeosaurid was named after the famous Chinese philosopher

Confucius, a tribute to his great contribution to Chinese philosophy and the social and moral philosophy concepts of Confucianism.

The discoveries of Chinese dinosaurs not only impact palaeontology and understanding of the prehistoric world within Chinese Culture but also have an immense impact on the global paleontological world. Certain species of Dromaeosaurids have been incredibly prominent in the world of palaeontology, such as the "Sinosauropteryx" or the "Microraptor". These dinosaurs have contributed to a better understanding of dinosaur traits and overall dinosaur evolution. The Sinosauropteryx, first discovered in the 1990's was crucial to the understanding of feathered traits within dinosaurs. The Sinosauropteryx was preserved with clear evidence of feathers while also clearly a flightless species of dromaeosaurid; this discovery was incredibly important because it proved that dinosaurs had clearly developed feathers without a direct correlation to flight, instead having the feathers be used for insulation. This theory on the use of feathers was able to be applied to species within the same clade, providing substantial evidence that similar dromaeosaurids, or even larger theropods such as the infamous Tyrannosaurus Rex, were likely to have possessed feathers or feather−like structures as well. This suggests that feathers may have been a common trait among theropods. The Microraptor was also able to change the way we looked at the evolution of dinosaurs. The Microraptor is particularly notable for its unique physiology, with feathers prominent on its arms and legs. The presence of feathers and their body structure provide evidence for understanding the mechanics of flight in early birds and their dinosaur ancestors. Microraptors may have glided from treetop to treetop, this evidence contributes to discussions on how flight in modern avians has evolved.

Overall, the role of China's dinosaurs in the future of paleontology is both profound and promising. As ongoing research continues to uncover new species and refine our understanding of evolutionary pathways, China's fossil record serves as a vital resource for scientists worldwide. With the blend of rich cultural history and groundbreaking paleontological discoveries, China not only enhances our knowledge of the prehistoric past but also inspires future generations of researchers to explore the intricate connections between ancient life and modern ecosystems. As to why we study paleontology, these fabulous creatures serve as reminders for us. This planet we call ours doesn't truly belong to us. Life thrived and diversified long before our time. Therefore, it is why with the highest respect we uncover the fossils, and learn from their lives lived long ago.

Citations:

1) Dromaeosauridae. (n.d.). https://ucmp.berkeley.edu/diapsids/saurischia/dromaeosauridae.html
2) Institute of Vertebrate Paleontology and Paleoanthropology. (n.d.). http://english.ivpp.cas.cn/people/members/202104/t20210429_268623.html
3) Hu, J. (1994, February 1). The Dinosaur Craze and the Chinese Dragon. **台灣光華雜誌** Taiwan Panorama | **國際化,雙語編排,文化整合,全球華人的雜誌**. https://www.taiwan−panorama.com/Articles/Details?Guid=45e73f7a−fc08−4b36−9cf5−9b6d7eb12673&langId=3&CatId=11&srsltid=AfmBOoryuCrN9WQ4cCYd0F35TDReVvhnUo3fUp57FquyDtQDVLJn0tvz
4) Padian, K. (2009, March 17). ConfuciusOrnis | Habitat, Skeleton, & Facts. Encyclopedia Britannica. https://www.britannica.com/animal/Confuciusornis
5) Benton, M. J., Zhonghe, Z., Orr, P. J., Fucheng, Z., & Kearns, S. L. (2008). The remarkable fossils from the Early Cretaceous Jehol Biota of China and how they have changed our knowledge of Mesozoic life. Proceedings of the Geologists Association, 119(3–4), 209–228. https://doi.org/10.1016/s0016−7878(08)80302−1

A Renaissance of Chinese Paleontology

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Ancient secrets, tales of life eons ago, before humans ever stepped foot on earth, have been long buried. Hidden deep. Now, millions of years since dinosaurs roamed the earth, the vast landmass of China is at the forefront of paleontological expertise and discovery.

It began with the Sinosauropteryx, one of the first dinosaurs discovered during the 1990s in the Liaoning Province of China. It was the first feathered dinosaur ever found. Since then, China has made extraordinary advancements in paleontology, resulting in the birth of one of the most extensive, impressive, and diverse paleontological records in the world. In Liaoning alone, more than 24 pterosaurs, among the earliest flying vertebrates, have been found. Liaoning also has an abundance of feathered dinosaur fossils, highlighting the clear link between feathered dinosaurs and modern birds. China encompasses fossils from the Cambrian period, during which the earliest dinosaurs lived, as well as marine fossils from the Mesozoic period, the most recent dinosaur era. The diversity of these fossils gives China cutting edge and well-developed research, which provides insight into evolution and evolutionary biology. Furthermore, extant fossils in China remain relatively untapped, showing that many more species and dinosaurs can be found in the future, further advancing China to the forefront of paleontology on a global scale.

The Prominence of Liaoning as a Discovery Ground

Liaoning Province has a notable hotspot for fossil discoveries in China, with the aforementioned 24 pterosaurs as well as more than 40 dinosaur species. Liaoning has given China valuable information about the behaviors, migration patterns, and habits of these ancient species. This is because Liaoning has ideal geographical conditions for preservation.

These preservation conditions include lakes and sedimentary strata in Liaoning. The presence of lakes and strata is why the land is nutrient-rich and ideal for preserving bone, tendon, and tissue. This means that not only skeletal fossils were preserved, but also skin impressions and feathers. Another factor was the grained-powdered sediment from previous volcanic activity, meaning that organic material was quickly decomposed and buried. These efficient burials meant that the fossil specimens had extremely minimal exposure to environmental factors that might have otherwise damaged or destroyed it.

Aside from Liaoning being one of the driving factors in the discovery of the groundbreaking evolutionary link between birds and dinosaurs, several new species have been discovered because of Liaoning's ideal fossil producing conditions, all of which have greatly advanced paleontological knowledge of dinosaur diversity. Moreover, aside from merely advancing knowledge, Liaoning's status itself has also established China's global status and prestige in the field of paleontological knowledge. The fact that the pivotal discovery of birds and dinosaurs were discovered in China, and that many dinosaurs have been found in this area, helped promote China as a leader in the field. Because of Liaoning, global experts are drawn to China and see it as a country with an extraordinary fossil record and fossil abundance.

How China's Recent Discoveries Shook the Paleontology World

China's paleontological discoveries have had an extreme and far-reaching impact. For instance, the aforementioned feathered Sinosauropteryx found in the 1990s was one of the factors that led to the groundbreaking discovery that birds and dinosaurs are related due to evolution. It helped prove that feathers were not a characteristic that only birds displayed, but existed in dinosaurs as well. This evolutionary discovery explains the Sinosauropteryx being dubbed the 'China dragon bird.' After this initial discovery, more investigations were launched, including the unearthing of the Microraptor, a miniscule flying dinosaur with four wings. Microraptors' four wings meant that they had flight similar to today's birds. This also demonstrated that feathers and flight, among other avian characteristics like beaks or claws, were all traits of birds inherited from specific dinosaur breeds.

Additionally, in Jiangxi Province, China, a titanosaur species was discovered. A titanosaur is also a sauropodomorph, and the discovery of this titanosaur vastly expanded paleontologists' knowledge of the Late Jurassic era and sauropodomorphs. It added to China's fossil record, which during the 1990s, was limited. It helped researchers plot

out where these sauropodomorphs migrated to or stayed, showing how they could adapt to specific environments of Jiangxi and how they coexisted with other species in the region. Scientists then had the capability to compare and contrast the traits or morphological features of the titanosaur in this region with other sauropodomorphs in Asia and other continents, potentially illuminating evolutionary traits of sauropodomorphs in Europe or Africa. This discovery was crucial in helping paleontologists understand how dinosaurs in different areas interacted with or adapted to their environments. Furthermore, the new titanosaur discovery meant that it could add information to theories of the distribution of specific sauropodomorphs, how they spread to and across regions, and how land masses moved during the Late Jurassic period.

How Could These Unknown Secrets Have Been So Well-Kept?

Despite the fact that China has a rich fossil history, one might be shocked to find that its discoveries and paleontological potential were kept unknown for decades. One of the most notable surprising examples is the city of Chuxiong in Yunnan Province, China. More than 410 fossils were uncovered in Chuxiong, but the city has not received recognition for it until recently. There are two reasons for this: the commercialisation of the fossil trade and the difficulties local farmers face in finding good fossils.

Firstly, the growing popularity of fossils resulted in the commercialisation of the fossil trade; therefore, many duplicates and fakes tainted the market. This meant that many farmers and locals were unaware of how important the 'old rock' they had actually was. They sold them without regard to proper documentation regulatory compliance, selling them at extremely cheap prices. This meant many important fossils were lost and along with them, the information and valuable knowledge of paleontological history. The fossils may have been lost to fossil traders from other countries or regions, becoming disconnected from Chuxiong or China completely.

Secondly, farmers experienced difficulties in finding fossils. Prior to the advancements of fossil technology and pioneering methods of discovering fossils, the lack of infrastructure meant that common farmers had a tough time discovering significant fossils. It meant that even if they did discover some, their crucial lack of preservation technology resulted in fossils being damaged beyond repair or lost forever. Because of this, an untold number of fossils may have been permanently lost, destroyed, or are still deteriorating. The local farmers in rural areas at the time lacked institutions or infrastructure that could have properly guided or aided them in fossil discovery and preservation. This meant that opportunities for fossil recognition, salvaging and paleontological study were lost.

However, this is slowly changing. There are many emerging grassroots movements for preserving fossils and educating rural communities on them. One of the best examples is the Chinese Academy of Sciences' (CAS) campaigns of fossils and paleontology. They have instituted multiple campaigns and programs to educate people including farmers, scholars, and the general public about fossils. Due to groups like the CAS, China has developed into a paleontology powerhouse today, attracting experts from all over the world to examine China's fossil history. The importance of paleontology to the country has meant that even previously disregarded fossil sites are starting to be re-examined with more advanced paleontology technology. Some of that technology includes geochemical analysis and remote sensing, as will be explored later on within this essay.

Branching Out: China's Paleontological Juggernaut

Dinosaur discoveries have led up all the way to the present, and China shows no sign of slowing down. This year, a new dinosaur species called the "Lishulong wangi" was discovered in Yunnan Province, China. This dinosaur is a sauropodomorph, similar to brachiosauruses or apatosauruses.

The discovery of the Lishulong wangi dinosaur in Yunnan is a testament to the fact that new fossils are being uncovered all the time. China has many ongoing excavation efforts, so much so that it has even extended to Hong Kong, which recently discovered its first dinosaur fossils. More specifically, these fossils were discovered on October 23rd, 2024 in North-East Hong Kong on a distant island. Scientists believe that the dinosaur is either an Ornithischian or a Sauropod. It is on display in the Hong Kong Heritage Discovery Centre, an event that has significantly increased the focus on paleontology in Hong Kong locally. This discovery has also increased interest and funding in fossil excavation, with the potential for new discoveries growing exponentially every day. All of these new discoveries have increased international interest and proven China to be a leader in Paleontology.

Technological advancements have also established China as a paleontological leader because they have allowed researchers to analyze fossils as never before. The two main types of technology include geochemical analysis and remote sensing.

Geochemical analysis is the examination of the composition of fossils chemically, which allows scientists to deduce information about specific conditions in which these dinosaurs lived. Remote sensing involves using aerial imagery and satellites to observe landforms in which potential fossils may be discovered, without the hassle of going to the area to explore firsthand. Remote sensing satellites will capture images of the landforms where fossils may be hidden, and are analyzed using programmes like photogrammetry, or light detection and ranging.

Local communities also contribute to paleontological success in China. Given that many if not most fossils are discovered in rural areas, the first to spot them often include farmers and residents. If they spot unusual rock formations or bone fragments, those may be fossils. Thus, educational campaigns have been established and executed to teach various communities about the potential value of their finds. Multiple initiatives have been launched for educational purposes. Workshops and initiatives that demonstrate the scientific and cultural value of rich fossils in rural areas have also given local villagers a sense of pride, motivating many to participate in fossil excavation efforts. These grassroots movements have made fossils a crucial part of the local culture in these areas and helped residents appreciate paleontology. Thus, fossils such as those of the Lishulong wangi, have become a profound part of China's culture, making citizens extremely proud. Museums and displays across China are opening their doors to welcome dinosaur fossils into their exhibits, giving citizens a heightened sense of national pride.

Furthermore, the media exposure surrounding dinosaur and fossil excavations and discoveries means that the appreciation for Chinese fossils extends beyond borders and puts China in the global spotlight. News broadcasts and the aforementioned media exposure ensure that the fossil excavations are reaching a worldwide audience, which amplifies China's dominance in the field. It promotes the contributions made to science and promotes China as a hotspot for innovation in the field of paleontology. In addition, social media exposure helps these news posts about paleontology to reach many audiences through algorithms, allowing China to experience an increase in the number of tourists who come to visit cultural fossil sites and museums. This results in increased global support for Chinese fossil research processes, and it benefits Chinese society. As regions in China are mass−visited by tourists, on a local level, people and businesses also experience economic benefits from the financial expenditures from tourists and foot traffic.

Looking to the future, China's future in the field of paleontology is extremely bright and promising. With continuous excavation projects and a clear commitment to the field of paleontological research, more areas of the country are sure to be explored and more fossils are sure to be uncovered. Additionally, more technological advancements are to be expected in the future as the field continues to gain increased interest and engagement.

Implications for China and the Wider World

The discoveries in China are much more admired than just within its borders. International experts came to study China's fossils and paleontological research. This cross−pollination means will foster extreme innovation in this field.

Paleontological research has benefitted globally from the massive amount of Chinese fossil discoveries, resulting in multitudes of international collaborations with other scientists and organizations. Conferences in China attract famous and important paleontologists from around the world who pool their insights and knowledge. This not only greatly benefits science because it means knowledge transcends borders by bringing scientists from different countries together.

China also holds many paleontological events to increase appreciation. Events that are held for instance, include the International Paleontological Congress. This congress aims to attract and let many of the current leading and advanced paleontologists from around the globe come to the conference and discuss paleontology. Examples of discussions and conferences held within the congress include showcases of recent discoveries, newly discovered paleontology excavation or preservation methodology, etc. Furthermore, many paleontology institutions and organizations in China hope to gain more interest from the public by hosting open workshops that are available to everyone on aspects like fossil preservation and preparation and the geochemical isotopic analysis of older fossils, hoping to educate people on these subjects. For the wider world, this means that we get better discussion and collaboration among international borders and scientists, facilitating the sharing of paleontological potential and

knowledge worldwide, helping other countries advance too. Scientists discuss emerging paleontology trends, challenges they respectively face, and how to overcome them. The best paleontological practices can now be shared globally.

Lastly, when the attending scientists have the ability to connect with other scientists, this means that more joint studies and research can be conducted, further advancing the paleontological field, as brilliant scientists have the opportunity to work together and make new discoveries. These networking and connections are extremely crucial for building international partnerships. An example of international collaborations between scientists being a result of these conferences is the Chinese Academy of Sciences (CAS) collaborating with other schools and museums worldwide. The CAS has initiated partnerships and collaborations with institutions from the West, including both Europe and the US, to launch paleontology projects in which the discoveries and research from both of the countries are shared. When countries come together in collaboration for science, sharing techniques and methods like never before, rapid and groundbreaking advancements in the field occur.

Conclusion

China has made great strides in research techniques, boasts ideal conditions for the preservation of natural areas and is focused on initiatives to create greater interest and appreciation for paleontology among the people, allowing China's rich paleontological history to become a part of the cultural fabric. Furthermore, China's synergistic collaborations with other countries ensures that exchanges of information among international paleontology community will increase, and China will continue to be a hub for paleontological exploration

The rich record of discoveries, including the most recent Lishulong wangi sauropodomorph and the new species of titanosaur, indicates that China, even with how impressive its record already is, is merely scratching the surface of paleontological discoveries. More species and organisms are predicted to be unearthed in China, with each of them being pivotal in helping scientists and researchers understand exactly what life looked like all those millions of years ago. Looking ahead to the future, China's remarkable dedication to benefitting paleontology means that there is going to be even more great biological and ecological discoveries made, potentially even ones as groundbreaking as the link between dinosaurs and birds.

The impressive and rich stories of China and its paleontological landscape are crucial in contributing to the knowledge of Earth's past, inspiring feelings of wonder and appreciation for the natural world that was on Earth before we humans stepped foot on it. They illustrate the inspiring process of gaining knowledge and finally being one step closer to understanding the world.

Unearthing Dragons: The Evolution of Chinese Paleontology Through the Ages

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China has been involved with paleontology dating back to 1920, and we still are; in fact, we discovered another new species just a month ago! Our country is now being increasingly recognized because of the contributions we make to the paleontology field. As of December 2023, more than 300 species of dinosaurs have been discovered in China, making us the country with the highest number of dinosaur species in the world. Institute of Vertebrate Paleontology and Paleoanthropology (IVPP) in Beijing statistics say that China has officially named 343 different kinds of dinosaurs.

1920 is the year most considered to be the beginning stages of paleontology in China. It all started with Ding Wenjiang, who was the director of the Geological Survey Institute at the time and one of the four founding figures of geology in the country. He invited A.W Grabau or Amadeus William Grabau who taught at Peking as well as being chief paleontologist at the Chinese Geological Survey. The second person was Siguang Li who had a masters degree from Birmingham University. The two played the crucial role of teaching the first generation of Paleontologists in China.

Theoretical studies of dinosaurs started in the 1920s, but actual discoveries did not happen until the mid-1990s, and notably, these discoveries were not made by experts in the field. A farmer in Sihetun, a rural village in Liaoning, accidentally uncovered two halves of a slab that preserved the image of what we now recognize as Sinosauropteryx, considered to be the world's first known feathered dinosaur that is not related to birds.

Sinosauropteryx was also the first dinosaur from which scientists could determine color patterns based on pigments remaining in its fossils. This research reveals that it primarily had a reddish-brown coloration, with alternating bright and dark bands on its tail, similar to zebra stripes. These bands likely helped the small dinosaur blend into its surroundings, enhancing its camouflage. It is also possible that its stomach was brightly colored like many animals today. Many animals today exhibit countershading; it reduces the shadows visible on the animal's underside, making them less noticeable to potential predators and helping them blend into their environment.

If Sinosauropteryx were still alive today, it would be found in Northern China, where it lived during the early Cretaceous period alongside other Chinese dinosaurs, such as the feathered tyrannosaur Yutyrannus, the long-clawed Beipiaosaurus, and the parrot-beaked Psittacosaurus. Despite its name suggesting a large size, Sinosauropteryx was a small theropod, meaning it was bipedal and covered in feathers.

The Golden Age of paleontology began in the northeastern region of China, specifically in Liaoning, which is famous for its rich fossil deposits. Among these are Sinosauropteryx and over 40 other species, including 24 types of pterosaurs—winged reptiles. The fossil sites in Liaoning contain a diverse array of organisms, such as plants, insects, mollusks, crustaceans, fish, frogs, salamanders, turtles, lizards, and, notably, feathered dinosaurs.

The land in this area is largely unattractive to farmers due to its barren nature, making it ideally suited for fossil hunting. Paleontologists can easily search for fossils without having to navigate through dense vegetation, and the absence of plant roots helps minimize the disturbance of ancient skeletons.

Many remarkable discoveries have been made in Liaoning, including a completely intact pterosaur embryo, a cat-sized mammal named Repenomamus robustus that had a dinosaur as its last meal, and the most vividly colored fossil ever found, Sinornithosaurus millennii, affectionately nicknamed "Dave the Fuzzy Raptor."

It was a significant discovery because most pieces were well preserved, plus there was a large variety and quantity. Many still held delicate features such as skin textures and feathers, that were visible. Identifying numerous feathered animals provided insights into the origin of feathers or flight and the evolution of birds.

These findings offer a glimpse into the moment when birds diverged from other dinosaurs, leading to the development of new forms of flight and feeding methods. They reveal important details about the adaptations in

digestion, respiration, skeleton structure, and plumage that transformed these creatures from large, fearsome, meat–eating dinosaurs into animals resembling modern pigeons and hummingbirds.

China's paleontology field suddenly began to develop much faster than before, mostly due to the amount of students studying paleontology. In the past, the field was not as advanced in China, leading many paleontology students to pursue their education abroad in Western countries, where they received more advanced training than China training. Many of these students eventually returned to China, lucky to secure funding for research and laboratory facilities. Additionally, domestically trained students started joining large institutions such as the Nanjing Institute of Geology and Palaeontology, the Chinese Academy of Sciences (NIGPAS), and the Institute of Vertebrate Paleontology and Paleoanthropology (IVPP). This group of students were named as the third generation of Chinese paleontologists. They had advantages that previous generations lacked like learning English, which helped them learn newer techniques easier.

Those who chose to remain overseas after completing their Ph.D. programs played a vital role in fostering relationships between China and foreign countries. Their efforts helped arrange the participation of more Chinese researchers in international conferences and collaborations. Many different collaborations began with various countries, such as the Sino–Japanese Silk Road Expedition.

In 1992, the Sino–Japanese Dinosaur Expedition, also known as the Silk Road Expedition, began in the Gongpoquang Basin of the Mazong Shan area in Gansu province, located in north–central China, within the Western Corridor Area. lower and middle parts of the deposits yielded remains of pelecypods and conchostracans. The upper part was deposited in a delta facies. Data suggested that the exposed deposits are from the Early Cretaceous age which was 145 – 100.5 Ma. The sediments were called the Xinminbao Group in the Western Corridor Area. From this basin, the team was able to classify many new genera and species of turtles, crocodyliforms, dinosaurs, and mammals.

The holotype teeth of Silosaurus were collected from this site. The full name of the species, Siluosaurus zhangqiani, has significant meaning: "Silu" refers to the Silk Road, where the species was discovered, and "zhangqiani" honors the Chinese diplomat who surveyed the Silk Road in the second century B.C. A third species of Probactrosaurus has been named Probactrosaurus mazongshanensis, with the name referring to the Mazong Shan region. This species shares the second part of its name, "mazongshanensis," with another species found at the site, Psittacosaurus mazongshanensis. Additionally, two specimens of Archaeoceratops oshimai were discovered in the Middle Gray Unit of the Ximinbao Group, marking the first basal neoceraptopsian found in the area. Researchers also uncovered a skeleton that included 11 cervical vertebrae, 5 dorsal vertebrae, and some ribs, all of which belonged to Nanshiungosaurus from the Upper Xinminbao Group.

5 years later the expedition group travelled to the Turpan Basin in Xinjiang province where the main focus was to look at Late Jurassic deposits. During their work, they discovered a gigantic sauropod that they then described as the hudiesaurus sinojaponorum. This species was newly identified as a giant sauropod, with an estimated body length of 29 to 30 meters, making it the largest sauropod known from Asia. The name "Hudiesaurus" is derived from the Chinese word for "butterfly," referring to the flat, butterfly–shaped process located at the front base of the vertebral spine. The species name "sinojapanorum" acknowledges the members of the Sino–Japan Silk Road Dinosaur Expedition. Additionally, it plays on the meaning of "central part" in Chinese, which is a clever reference to the Japanese Chunichi Shimbun press group that funded the research.

While all these accomplishments are in the nineteen hundreds, things only get better as we progress into the 2000s. The Ministry of Sciences and Technology provided special funds for basic research in China with those grants amounting to 20 million yuan for a five–year project. Chinese paleontology has been experiencing unexpected growth due to the increasing funding available to the promising young generation of paleontologists. This expansion has significantly enlarged their research scope and output, now covering traditional areas such as paleontology and stratigraphy, as well as emerging fields like paleobiology. Since 2000, some students and postdoctoral researchers from Western countries have begun joining Chinese institutions and universities, further enhancing international collaboration between China and the global scientific community.

In 2010, Dr. Xing Xu of the IVPP and his collaborators described a new dinosaur that is one of the smallest known and remarkably well–adapted for running. This original paper was published in the scientific journal Zootaxa. The fossilized skeleton of this tiny creature, named Xixiankyus zhangi, is incomplete but would have measured

approximately half a meter in length. The specimen was discovered in Xixia County, Henan Province, an area known for its large number of dinosaur egg fossils—accounting for about half of all such fossils in China and one-third of the total in the world, despite dinosaur fossils being generally rare.

Xixiankyus zhangi, a late Cretaceous runner, exhibits several adaptations for speed. Most notably, its femur (thigh bone) is particularly short compared to its lower legs and feet, a pattern similar to that seen in modern running animals. Features like its pelvis and backbone would have contributed to stability and reduced energy-wasting movements, enabling it to sprint across prehistoric landscapes. Dr. Corwin Sullivan, a postdoctoral researcher from Canada working at the IVPP and one of the authors of the study, stated, "The limb proportions of Xixianykus are among the most extreme ever recorded for a theropod dinosaur. This doesn't provide a basis for estimating its top speed, but it does show that Xixianykus was a highly efficient runner. Several other characteristics of the skeleton reinforce this impression"

Interestingly, some of these adaptations might also have played a role in the dinosaur's daily activities, such as digging for food. Xixiankyus belongs to the theropod group of dinosaurs, which includes well-known members like Tyrannosaurus, Allosaurus, and Velociraptors. Many of these dinosaurs share a fast-paced approach to life.

Unfortunately, the forequarters of Xixiankyus are not preserved. However, its closest relatives had short but strong arms, each tipped with a single massive claw, which they used to break into logs or insect nests. This suggests that Xixiankyus probably fed similarly. Study co-author Dr. David Hone, a postdoctoral fellow at the IVPP from Britain, remarked, "It may sound odd, but digging and running work quite well together. Some modern termite eating species travel long distances between colonies of their prey, so as an efficient runner Xixianykus would have been able to follow this pattern. Any small dinosaurs would be vulnerable to predators too and the ability to make a speedy exit if danger threatened would be valuable to an animal like this."

In December of last year, a new genus and species of non-sauropodan sauropodomorph, named Lishulong wangi, was identified from a fossil discovered in the Lower Jurassic Lufeng Formation in Yunnan, Southwest China, which is renowned for its fossil sites. According to lead researcher You Hailu from the Chinese Academy of Sciences' Institute of Vertebrate Paleontology and Paleoanthropology, "Lishulong wangi possesses the largest cranial material among its group in the Lufeng Formation, measuring about 40 centimeters in length. Its discovery has increased the diversity of dinosaurs in Southwest China and enhanced our understanding of the evolutionary characteristics of early-diverging sauropodomorphs."

The new species showed the quick diversification of sauropodomorph dinosaurs during the Early Jurassic period. The findings, resulting from a collaboration between the institute and the Bureau of Natural Resources of Lufeng County, were published in the journal PeerJ, under the title "The Largest Sauropodomorph Skull from the Lower Jurassic Lufeng Formation of China." The research team comments that studying these fossils is a long and complex process, often taking years for excavation, repair, and assembly before producing actual results.

The fossil was unearthed in 2007 during a scientific survey in Dalishu village, Lufeng, and includes a relatively complete skull along with nine cervical vertebrae. After undergoing repair and assembly in 2008, it was put on display at the Museum of Lufeng Dinosaur Valley. Wang Tao, director of the Dinosaur Fossil Protection and Research Center at the Bureau of Natural Resources of Lufeng County, estimates that Lishulong wangi measured around 8 meters in length when it was alive.

Previously before Lishulong wangi in 2024 December, there were a total of six genera and eight species of Early Jurassic sauropodomorphs were identified in Lufeng. Lishulong wangi cannot be classified as any of the previously known species, but phylogenetic analyses suggest it is an early-diverging member of the Sauropodiformes and a sister taxon to Yunnanosaurus. Based on current fossil records, Lishulong wangi is the largest known sauropodomorph from the Early Jurassic epoch in China and is considered morphologically mature according to the paper.

Mainland China has had many great years but when Hong Kong got it's first-ever dinosaur fossil, it was a surprise for everyone. It would be a year to remember when something as rare as this happens in Hong Kong, it marked the first time and hopefully more to come. The AMO subsequently invited experts from the IVPP of the Chinese Academy of Sciences (CAS) to investigate the findings. Preliminary analysis using bone tissue sections allowed the experts to specify that the specimens date back to the Cretaceous Period, around 145 to 66 million years ago.

Prof. Michael Pittman, a paleontologist at the Chinese University of Hong Kong, noted, "Hong Kong is famous for being a built–up landscape, but half of it is country park. In the countryside areas, most of what you see are dinosaur–era rocks, but it's volcanic rocks – and they are bad places to find fossils because fossils just melt. But Port Island is one of the islands that has dinosaur–age rocks of the right type and right environment."

These are just some of the many accomplishments China has done starting from the 1990s. In conclusion, China has gone from a country that wasn't involved in paleontology to one that is now considered top two in the world. Its rich fossil resources, combined with other biological and geological disciplines and new technologies, make this possible. It's only possible with its rich fossil resources as well as the integration with other biological and geological disciplines and the use of new technologies. This isn't the end either, there is still much to come and we will keep evolving as we look back at our past.

New Tales of China's Dinosaurs

HKUGA College, Yan Ki, Sunarie – 16

What is the first thing that comes to mind when you think about China? Could it be the boisterous lion dances during the Chinese New Year, or is it perhaps the myriad of inventions from ancient China that changed the entire world? While China is most known for its prosperity and innovation in ancient times, what many might not know is that millions and millions of years ago, this special place was also home to many unassailable creatures that once ruled the world – dinosaurs. Long before the rise and fall of dynasties, before breathtaking palaces and temples even existed, the dinosaurs roamed freely in this lawless territory, leaving their mark in the unbeknownst chapter of Chinese history. Finally, 65 million years later, here we are, digging up the remains of these dinosaurs that were once unstoppable. What can the fossils of these ancient rulers tell us about their lives? Without further ado, let us delve into the stories and histories of fossils found in China and unveil the secrets of dinosaurs!

The first fossil to be introduced will definitely change your perspective on myths and reality. First discovered in southern China in 2003, the full, reconstructed fossil of *Dinocephalosaurus orientalis* was finally revealed to the public in 2024. What makes this fossil so spectacular and particularly intriguing is its uncanny resemblance to the mythical creature of the dragon, spanning a whopping 6 meters long with 32 separate vertebrae. With the long, flexible shape of the *Dinocephalosaurus orientalis*' neck, the graceful movements of the dinosaur maneuvering in the water can easily be reminiscent of that of the formidable dragon in Chinese culture. This creature lived in the sea, preying on fish as their main source of food, which can be seen from the remnants of those preserved in the stomach of the *Dinocephalosaurus orientalis*. However, the function of its elongated neck is still yet to be researched on, but some paleontologists speculate that this unique feature is related to how the *Dinocephalosaurus orientalis* ambushed prey. One thing's for sure, though – the discovery of this fossil just proves how perplexing and impressive dinosaurs were and their existence can be way beyond our imagination.

While the *Dinocephalosaurus orientalis* lives up to the stereotype of dinosaurs being terrifying reptiles with scaly, rough skin, the *Fujianvenator prodigiosus*, that lived around 150 million years ago, brings something new to the plate. The fossils of *Fujianvenator prodigiosus* were unearthed in 2022, and as the name states, found in the Fujian Province of China. One thing that sets this pheasant-sized species apart is its characteristic feathers that cover its entire body. The discovery of these fossils further reinforced the link between dinosaurs and avians, contributing significantly to the research on the primary evolution of birds. Based on the fossils, paleontologists were able to determine that the elongated arms of this dinosaur were actually wings. Researchers believe that the feathers of the *Fujianvenator prodigiosus* were essential for flight, and coupled with its long legs for fast running in swamps, these features optimized the hunting of food. The anatomy of this dinosaur stumped many researchers – despite its feathers and living like modern-day cranes, the skeletal features of the *Fujianvenator prodigiosus* was far from similar to today's birds. This special trait gave rise to the second half of this creature's name, as the word *prodigiosus* is actually derived from a Latin word that means "bizarre". How fitting!

Other than never-before-seen fossils being excavated, some other fossils found in China also boast some remarkable features. For instance, the *Mamenchisaurus sinocanadorum* towered above every other dinosaur with its astonishing neck that is 15 meters long. To put things into perspective, that is the height of a 5-floor-building, or around 9 grown adults stacked together, which is beyond incomprehensible. This groundbreaking discovery was made back in 1987 in the Xinjiang province of northern China, and nearly three decades later, scientists finally confirmed and dubbed the *Mamenchisaurus sinocanadorum* as the dinosaur with the longest neck. Such a ginormous neck was crucial for the survival of this dinosaur as it can hover over tons of vegetation for food without actually moving its body, ultimately conserving energy which can support its huge body size. Despite only fragments of the fossils of the *Mamenchisaurus sinocanadorum* being recovered, scientists are able to determine the skeletal structure of this dinosaur by cross-referencing and CT scanning, which is simply awe-inspiring. Even after tons of research and looking through various drawings, it is still hard to believe that these giants once roamed freely on the very Earth we are living on now.

Last but not least, there is the fossil of the *Huayangosaurus taibaii*, which was unearthed in Sichuan province back in 1979. Much like the more well-known *stegosaurus*, the *Huayangosaurus* had iconic plates that trailed along its arched back all the way down to its spiked tail, which were used for defense against predators attacking in the air. In fact, the *Huayangosaurus taibaii* actually lived 20 million years before the *stegosaurus*, and is believed to be its

predecessor. One thing that differentiates the two species, though, is that the *Huayangosaurus taibaii* has a beak with teeth, which was lost during evolution in the stegosaurus. The *Huayangosaurus taibaii* was also much smaller in size, at around 4 meters long, which is still undeniably big, but is nothing compared with the other dinosaurs introduced before. Since the stegosaurus, the cousin of *Huayangosaurus taibaii*, is infamously known for being the "dumbest dinosaur" due to its small brain size, researchers also raised speculations on the intelligence and behavior of the *Huayangosaurus taibaii*, which may be possible from analyzing the skull fossils excavated. Who could've expected the role that the *Huayangosaurus taibaii* played in shaping the modern knowledge of typical dinosaurs today?

All these fossils introduced are just a mere glimpse into the story of dinosaurs uncovered in China. One thing that was absolutely fascinating was how each individual dinosaur was able to adapt to the environment in their own unique ways, which perfectly illustrated the power of evolution. From small fragments of fossils, scientists and paleontologists were able to piece together endless possibilities and explorations behind each species. Calling this feat impressive would be a massive understatement. Till this day, the discovery of fossils has just hit the tip of the iceberg. Beneath the earth that we are resting on right now, there is a plethora of stories waiting to be unveiled. The dinosaurs have left a lot in store for us humans to explore. Hopefully soon, one day, we will be able to fully understand the history of our reptile ancestors!

China's Evolutionary Impact on Dinosaur Fossil Discoveries

Immaculate Heart of Mary College, Chen, Tsz Ching – 16

When all the treasures of dinosaur fossils in China were still sleeping quietly underground, all these were found unexpectedly, and that surprised and enlightened the whole world, giving the world a glimpse of the real dragons in China. A farmer initiated a significant frenzy of discovery for dinosaurs after he found the world's very first clearly feathered dinosaur in the 1990s. The 1990s marked a truly pivotal decade, heralding a renewed interest in paleontology within the country after the discovery of Sinosauropteryx, also known as "The China Dragon Bird." This small, feathered dinosaur, dating back to the Early Cretaceous period, was a groundbreaking find.

The Significance of Sinosauropteryx

Though many think that Sinosauropteryx is indeed something really mysterious, however, it is more than that, the fact is the discovery is revolutionary, and there were some reasons for that. It was the first dinosaur found with clear evidence of feathers, providing a crucial link between dinosaurs and birds. Prior to this discovery, the prevailing view was that feathers were exclusive to avian species. The presence of feathers on this type of creature suggested that many theropods, or bipedal carnivorous dinosaurs, might have shared similar characteristics. These findings supported the growing body of evidence that birds evolved from theropod dinosaurs, reshaping our understanding of the evolutionary lineage.

Insights into Dinosaur Behavior and Ecology

The discovery of this very species unveiled the life of Sinosauropteryx to the modern world. Exceptionally well–preserved, this small theropod dinosaur was discovered with skin impressions that revealed potential coloration patterns, offering significant insights into the behavior and ecology of dinosaurs. For the first time, the world was enlightened by such a discovery as scientists could indeed examine not only the physical characteristics of Sinosauropteryx, such as its feather structure and body size, but also infer aspects of its habits and lifestyle. The presence of feathers indicates that insulation and display played crucial roles in its survival, possibly hinting at social behaviors or mating rituals. Furthermore, the remarkable preservation has enabled researchers to investigate the intricate details of its integumentary structures, illuminating the evolutionary transition from dinosaurs to modern birds. This unprecedented level of detail has paved the way for further research in Liaoning, a region famous for its Late Jurassic and Early Cretaceous fossil beds. The discoveries made in Liaoning have ignited a renewed interest in dinosaur biology, raising questions about their coloration, thermoregulation, and even their social structures. Sinosauropteryx stands as a vital benchmark in paleontology, showcasing the complex relationship between morphology and behavior in the evolutionary narrative of dinosaurs.

The Fossil Wealth of Liaoning

The great news of the discovery of Sinosauropteryx, the sediments of Liaoning, attracted numerous paleontologists who were eager to know more about them. These sediments, originating from the unique geological conditions of the province, preserved an extensive array of fossils, creating abundant and perfect opportunities for research. Over the years, more than forty dinosaur species have been identified in this region, alongside a diverse collection of over twenty–four species of flying reptiles. Again, it was such a wonderful proof of having dragons in China is no longer a myth in a child's story book.

The Rise of Feathered Dinosaurs

From the discovery, we know that the Liaoning fossils display a rich and diverse ecosystem from the Cretaceous period, showcasing an impressive variety of species that thrived in this dynamic environment. This unique site has provided scientists with substantial information about the flora and fauna of that era. Among the notable discoveries, herbivorous dinosaurs such as Psittacosaurus and Lufengosaurus coexisted with formidable predators like Tyrannosaurus. Scientists found that this combination indicates a complex food web, where a plentiful population of herbivores supported various predatory species. According to the the fossil findings, they suggest that Liaoning was not merely a habitat for these dinosaurs, it is also a vibrant ecosystem with numerous ecological niches. The presence of well–preserved plant material alongside dinosaur remains points to a lush landscape, likely filled with diverse vegetation that provided sustenance for herbivores. Moreover, the coexistence of different dinosaur species indicates a highly dynamic environment, where competition and predation influenced the behavior and evolution of these animals. In addition to dinosaurs, the Liaoning fossils have revealed a range of other organisms, including early mammals, birds, and insects, which together paint a comprehensive picture of life during this period. The diversity of

species and the complexity of their interactions underscore how the region was a hotbed of evolutionary activity. The findings from this area are very precious and that helps us, humans, have a better understanding of dinosaur ecology, behavior, and evolution, establishing Liaoning as a crucial site for paleontological research and discovery.

Pterosaur Discoveries in Liaoning

With more findings unearth in that area, dinosaurs with feathers from Liaoning have gained immense popularity in recent years. Fossils like Microraptor and Anchiornis, which feature beautifully preserved feathers, have provided additional confirmation of the evolutionary transformation from dinosaurs to birds. For instance, Microraptor was a small quadrupedal winged dinosaur that exhibited both bird and reptile traits, such as feathers on its arms and legs. The unique form of these creatures has sparked discussions about how flying evolved and their various roles in the environment.

In addition to dinosaurs, Liaoning has yielded a remarkable collection of pterosaur fossils. These flying reptiles, which lived alongside dinosaurs, varied greatly in size and shape. Fossils of species like Pterodaustro and Sinopterus have revealed adaptations ranging from filter-feeding to agile hunting. The diversity of the pterosaurs found in Liaoning highlights just how complex those Cretaceous ecosystems must have been, including their interactions both with the land and in the air.

Chinese Contributions to Paleontology

From the beginning till even now, it is no doubt that Chinese scientists have contributed tremendously to the exploration and analysis of fossils, particularly in Liaoning province, known for its rich and diverse fossil beds. Institutions like the Chinese Academy of Sciences, along with various regional universities, have established themselves as leaders in paleontological research. The fossil sites in Liaoning, especially the renowned Jehol Biota, have produced an impressive array of well-preserved specimens, including feathered dinosaurs and early mammals, offering invaluable insights into the history of life on Earth.

The Jehol Biota: A Window into the Past

Regarding the remarkable Jehol Biota, it encompasses the diverse ecosystem of scenic northeastern China during the intriguing Lower Cretaceous period, which occurred around 133 to 120 million years ago. This captivating ecosystem, immortalized by fossils nestled within the geological marvels of the Yixian Formation and Jiufotang Formation, resonates with tales of ancient habitats teeming with vitality. Moreover, there's a tantalizing possibility of fossil remnants lying within the enigmatic Sinuiju series of North Korea, hinting at a broader panorama of biological heritage waiting to be unraveled.

Climate and Geological Influences on Fossil Preservation

Basking in its glory of wetlands and abundant lakes, the ecosystem of Jehol thrived amid a dynamic canvas of ever-shifting climatic transitions, where seasonal rainfall waltzed with temperamental oscillations between semiarid and mesic conditions, all under the gentle embrace of a temperate climate. Nevertheless, the idyllic tranquility of the ecosystem was sporadically disturbed by dramatic ash eruptions from nearby volcanoes, which inadvertently became custodians of a treasure trove of exquisitely preserved fossils—a gateway to a lost world waiting to be rediscovered.

Advances in Imaging Technology

The true essence of the Jehol Biota lies not merely in the plethora of fossils it harbors but extends far beyond, offering a compelling narrative into the intricate details of evolutionary mechanisms that shaped life forms into their present diversity. These remarkably well-preserved specimens, gently whispering the secrets of a bygone era, unveil a spectacular panorama of interwoven interactions among species and their ingenious adaptations to the capricious dance of ever-changing environments. Discoveries of astonishing feathered dinosaurs epitomize a riveting evolutionary bridge linking birds and reptiles, shedding light on the majestic march of life through the corridors of time. Similarly, the humble early mammals ensnared within these enigmatic deposits offer tantalizing glimpses into the genesis of modern mammalian lineages, unraveling the threads of evolutionary history that unify us all.

The Future of 3D Modeling in Paleontology

These remarkable discoveries have not only enhanced our understanding of dinosaur evolution but have also illuminated the transition of species from land to air. The collaboration between Chinese scientists and international researchers has further enriched the field, promoting a global exchange of ideas and findings. Joint expeditions to Liaoning have led to significant discoveries and co-authored publications, thereby expanding the overall knowledge base in paleontology. Moreover, the incorporation of advanced technologies, such as imaging and analysis techniques,

has enabled more detailed examinations of fossilized remains, uncovering complex details about ancient ecosystems. As these collaborative efforts persist, they hold the promise of deepening our understanding of evolutionary processes and the history of life, highlighting Liaoning's crucial role in modern paleontological research.

The Global Impact of Chinese Discoveries

Prominent paleontologists like Xu Xing, one of the leading figures in dinosaur research, have made important contributions to understanding dinosaur evolution through their work in Liaoning. Xu Xing, born in Xinjiang, China, in 1969, is a Chinese paleontologist who has named more dinosaurs than any other living paleontologist. Xu Xing graduated from the Department of Geology at Peking University and is currently a researcher at the Institute of Vertebrate Paleontology and Paleoanthropology of the Chinese Academy of Sciences in Beijing. He originally planned to become an economist; however, Chinese authorities assigned him to the Department of Geology.

Moreover, the preparation of fossils and advancements in imaging technology have been instrumental in the progress of paleontological research across China, transforming the field in numerous ways. Traditional preparation methods often required physical handling, which could damage fragile remains. In the future, technological advancements, such as computed tomography (CT) for three-dimensional imaging of both fossil and extant bones, are expected to enhance fossil studies.

Inspiring Future Generations

Nowadays, we use CT scanners for more in-depth findings, However, most commercial CT scanners cannot display the internal structure of fossils due to their high density, which exceeds the upper limits of the normal CT number scale, specifically the Hounsfield scale. X-ray projections from CT scans of fossils have been modified by scaling the data to provide an expanded CT number scale, allowing visualization of the internal structures of highly fossilized objects. These images have been compared with state-of-the-art, high-resolution CT images of extant bones. Special image reformatting software has been used to create qualitative and quantitative three-dimensional imaging. Recent rapid advances in CT technology have made this imaging modality the procedure of choice in much of diagnostic radiology. In fact, the use of this tool in paleoanthropology has been limited in the past due to restricted access to scanners. However, new developments in CT will soon make this technique available to many researchers.

Moving forward, utilizing 3D models in scientific research provides remarkable possibilities. Scientists adeptly employ these models to manipulate specific elements of the specimen, enabling a deeper understanding and facilitating further investigations. This manipulation extends to the ability to replace missing sections within the specimen by integrating data from corresponding parts of the same bone. Moreover, digital reconstruction techniques applied to skulls or other intricate structures enable the restoration of their original form, especially if they have been flattened or distorted during the fossilization process.

In addition to these fundamental applications, 3D modeling allows for the reconstruction of soft tissues within the specimen. For instance, the interior of the braincase can be virtually recreated with meticulous detail, empowering researchers to explore and analyze its features. Muscles that attach at distinct points on the bones can also be precisely reconstructed in a virtual format. This comprehensive approach to virtual reconstruction provides an unparalleled opportunity to study and comprehend the intricate biological structures present in fossils.

A New Era of Understanding

The revolutionary discoveries made in China have undeniably transformed the global understanding of dinosaurs and the intricate nature of their evolutionary journey. The invaluable insights obtained from the fossil-rich region of Liaoning not only confirm existing scientific theories but also serve as a catalyst for a wave of innovative investigations, guiding researchers toward uncharted territories in paleontology. By shedding light on previously undiscovered aspects of prehistoric life, China's paleontological findings have captivated the international scientific community, prompting a reevaluation of long-held assumptions and sparking renewed enthusiasm for exploring the mysteries of our planet's ancient past. Moreover, the wealth of data unearthed from Liaoning continues to inspire scholars to delve deeper into the complexities of dinosaur evolution, propelling the field of paleontology into a new era of exploration and understanding. Through these groundbreaking discoveries, China has cemented its position as a pivotal player in shaping the path for dinosaur research, inviting collaboration and discourse on a global scale as we strive to unlock the secrets of the Mesozoic era and gain further insight into the fascinating world of these majestic creatures.

As fossil–hunting efforts continue to gain momentum in China, the future of paleontology in the country looks incredibly promising and full of potential. With its vast and diverse landscapes, China is a veritable treasure trove of undiscovered secrets just waiting to be unearthed by enthusiastic paleontologists and researchers. Regions like Xinjiang, with its rich geological formations, boast the potential to reveal groundbreaking insights into the prehistoric world of dinosaurs and other ancient life forms. The unique stratigraphy and fossil–rich deposits in these areas are significant not only for understanding the evolutionary history of species but also for reconstructing ancient ecosystems. The ongoing exploration and excavation efforts in these regions are paving the way for new discoveries that could revolutionize our understanding of ancient life on Earth, shedding light on previously unknown species and their interactions with each other and their environments.

As researchers delve into emerging areas of study, the future of paleontology in China looks incredibly promising, filled with numerous unexplored paths that hold the potential for exciting discoveries. Each fossil unearthed tells a unique story, revealing vital pieces of Earth's complex history and sparking a sense of wonder that encourages aspiring scientists to take on the important task of advancing this essential scientific field. Furthermore, the continuous development of paleontology not only enhances our understanding of the past but also acts as a driving force for cultivating a deep appreciation for the natural world. This, in turn, instills in future generations a strong sense of awe and curiosity, motivating them to explore the mysteries hidden within our planet's ancient history.

In conclusion, the remarkable discoveries made in the Liaoning region have truly transformed our understanding of dinosaur evolution, illuminating the complex relationships between morphology, ecology, and behavior among these ancient beings. The discovery of exceptionally preserved feathered dinosaurs like Sinosauropteryx has not only expanded our knowledge but has also ignited curiosity and wonder across the globe. This finding, along with others, has firmly established China’s role as a key player in paleontology, highlighting its rich fossil deposits and the invaluable insights they offer to both scientists and enthusiasts. Furthermore, this thriving paleontological phenomenon draws attention to the importance of ongoing exploration and research efforts in uncovering the mysteries of ancient life forms. China's impact on paleontological research is significant, with each new discovery acting as a stepping stone toward a deeper understanding of our past. As we continue to investigate the secrets hidden within the fossil record, we are not just revealing the stories of ancient times; we’re also developing a greater appreciation for the diversity and complexity of life that once flourished on our planet.

Dragons, no longer only exist in story books.
Dragons, did live on our Motherland many years ahead of us.

Let us appreciate the beauty of the discovery of these giant creatures and dedicate ourselves to support the research in this area in the future.

The Most Significant Dragon in China

Immaculate Heart of Mary College, Tang, Nok Yi – 15

Our motherland, China, is a global city with immense wealth, resources, and a long history. Moreover, it has become the global epicenter of fossil-hunting. In this resourceful country, many fossils have been found underground. However, with the search for fossils, many dinosaurs have been discovered in China, regardless of size, shape, or type. The most significant dinosaur found in China is the first feathered dinosaur. Furthermore, more than 40 dinosaur species have been discovered in the province of Liaoning since the first clearly feathered dinosaur was identified in the 1990s.

The first feathered dinosaur was named Sinosauropteryx, also known as "the China dragon bird." This small, feathered dinosaur was first unearthed in Liaoning Province, China, in the mid-1990s. It became a significant milestone in paleontology and a treasure of China.

Sinosauropteryx was a small, bipedal theropod dinosaur, easily recognized by its short arms, prominent first fingers, and exceptionally long tail. It includes some of the smallest adult non-avian theropod specimens ever discovered. Despite this individual being relatively immature, the holotype specimen measured just 68 cm in length, including its tail. The largest known specimen of Sinosauropteryx measured 1.07 m in length and was estimated to weigh approximately 0.55 kg.

Anatomically, Sinosauropteryx resembled its European relative, Compsognathus, but differed in several key proportions. Its skull was 15% longer than its thigh bones, whereas in Compsognathus, the skull and thigh bones were roughly equivalent in length. Sinosauropteryx's arms were significantly shorter, making up only 30% of its leg length, compared to 40% in Compsognathus.

Furthermore, Sinosauropteryx exhibited unique features not seen in any other theropods. For instance, it possessed 64 vertebrae in its tail, making it the theropod with the longest tail relative to its body length. Its hands were unusually long for its short arms, measuring about 84% to 91% of the rest of the arm's length and half the length of its foot. The first fingers were particularly robust, both longer and thicker than the forearm bones, and had large claws. The dinosaur's teeth also varied depending on their position in the jaw: slender and serration-free at the tips of the upper jaws, while those farther back were compressed, serrated, and more suited for cutting.

Interestingly, pigmentation in the holotype's abdominal area has been studied as potential traces of internal organs. John Ruben and colleagues interpreted this as evidence of a liver, suggesting Sinosauropteryx may have had a crocodilian-like "hepatic piston" respiratory system. However, later research noted that while the pigmentation likely represented something originally internal, no clear organ structures could be identified due to the distortion caused when the skeleton was flattened. Additionally, dark pigment was also observed in the eye region of the holotype and another specimen, providing intriguing insights into its soft tissue preservation.

From studying the traces of pigment left in fossils, scientists have discovered that Sinosauropteryx was mostly a red-brown color with alternating dark and light bands on its tail. These bands would have helped to camouflage the little dinosaur, similar to zebra stripes. Furthermore, it may have also had a light-colored stomach. This type of color pattern, which is darker on top and lighter underneath, is called countershading. It is common in many animals today. Countershading prevents shadows on the animal's underside from appearing too dark, helping the creature blend into the background and be less obvious to would-be predators.

This "China dragon bird" is famous for its feathers, which have special characteristics that link dragons and birds. It possessed a primitive type of feather, consisting of short, down-like filaments preserved across various parts of its

body. These filaments are visible along the back half of the skull, arms, neck, back, and both the top and underside of the tail. Additional patches of feathers have been identified on the sides of the body. Based on the density of feathers along the back and the seemingly random distribution of patches elsewhere, paleontologists Chen, Dong, and Zheng proposed that Sinosauropteryx was likely fully feathered in life. They further suggested that the ventral feathers may have been removed during decomposition.

The preserved feathers show a gap between the filaments and the underlying bones, corresponding to the expected thickness of skin and muscle tissue in life. This pattern suggests that the feathers were external to the skin and not subcutaneous structures. The filaments are closest to the bone in areas with minimal musculature, such as the skull and the end of the tail, and farther from the bone in areas with more musculature, like the back vertebrae. This provides further evidence that the filaments were positioned on the outside of the body.

The feather filaments are preserved in random orientations and often appear wavy, indicating that they were soft and flexible in life. Microscopic analysis reveals that the filaments were hollow, with darkened edges and lighter interiors, a feature reminiscent of modern feathers. Compared to the fur of mammals of similar size, the filaments were relatively coarse, with individual strands being larger and thicker.

The length of the filaments varied across the body. On the type specimen, the shortest filaments, measuring about 13 mm, were located just in front of the eyes. They increased in length toward the shoulders, where they reached about 35 mm. Over the back, the filament length remained consistent until the hips, beyond which they lengthened again, reaching a maximum of 40 mm midway down the tail. The underside of the tail had shorter filaments, which decreased more rapidly in length compared to those on the dorsal side. For example, by the 25th tail vertebra, the underside filaments were only about 35 mm long. The longest feathers found on the forearm measured approximately 14 mm.

While the dense feathering made it difficult to isolate individual structures for study, some researchers have suggested the presence of two distinct filament types: thick and thin. The thick filaments appeared stiffer, while the thinner filaments lay parallel to one another but at angles to the thick filaments. This arrangement led to the hypothesis that the feathers might have been quill-like structures with barbs branching off, similar to but more primitive than modern bird feathers. These structures most closely resemble the "plumules" or down-like feathers of modern birds, with a thick central quill and long barbs. Similar features have also been identified in other fossils from the Yixian Formation, such as Confuciusornis.

However, a 2018 study offered an alternative interpretation, proposing that the thick filaments might actually be bundles of thinner filaments overlapping each other. This hypothesis is supported by observations that the thin filaments often run parallel to both each other and the thick filaments, rather than branching out as earlier studies suggested. Some thick filaments even end in tufts of thin filaments, which contrasts with the typical appearance of plumulaceous feathers, where a short central quill supports long tufts. Additionally, the thick filaments showed no evidence of calcium phosphate, a key component of modern feather quills, and their pronounced curvature casts doubt on the presence of a strong central quill. As a result, the study favored the idea that Sinosauropteryx's feathers were simple, single-branch filaments, though it is possible they occasionally joined at the base to form tufted structures, representing an evolutionary precursor to down-like feathers.

While Sinosauropteryx displayed feather-like structures, it was not closely related to the famous "first bird," Archaeopteryx. Many dinosaur groups, such as deinonychosaurians, oviraptorosaurs, and therizinosauroids, were more closely related to Archaeopteryx than Sinosauropteryx was. This broader distribution of feathers among theropods suggests that feathering may have been a widespread characteristic across many theropod lineages, even in less bird-like dinosaurs such as Compsognathus. This supports the idea that feathers were not exclusive to bird ancestors but were a more general feature of theropod evolution.

Despite its feathers, most paleontologists do not classify Sinosauropteryx as a bird. Phylogenetically, the genus is only distantly related to the clade Aves, which is traditionally defined as Archaeopteryx lithographica and all modern birds. However, when Sinosauropteryx was first described, the scientists employed an apomorphic, or character–based, definition of the Class Aves. According to this definition, any animal with feathers qualifies as a bird. They argued that the filamentous structures of Sinosauropteryx were true feathers, complete with a rachis and barbs, and proposed that the genus should be considered a true bird. Based on this interpretation, they placed Sinosauropteryx in a new biological order, Sinosauropterygiformes, within the subclass Sauriurae, and assigned it to the family Sinosauropterygidae.

These classifications, however, were not widely accepted. Sinosauropteryx is generally placed within the family Compsognathidae, a group of small, long–tailed coelurosaurian theropods that lived during the Late Jurassic and Early Cretaceous periods in Asia, Europe, and South America. More recently, in 2024, Andrea Cau published a study that challenged this long–standing classification. His research on the phylogenetics of Compsognathids suggested that Sinosauropteryx, along with four other species previously considered Compsognathids, formed a polytomy within basal Coelurosauria. Interestingly, this polytomy did not include Compsognathus itself, raising the possibility that none of these species, including Sinosauropteryx, belong to the family Compsognathidae.

Regarding the habits of Sinosauropteryx, scientists have learned about it by investigating fossil specimens. The discovery of a tiny lizard preserved in the stomach of one of the fossil specimens indicates that Sinosauropteryx was a carnivore, feeding on small animals such as mammals and lizards. Moreover, scientists found another dinosaur skeleton, which they believed might be Sinosauropteryx, containing mammal bones in its belly.

Today, northern China is believed to have been the habitat of Sinosauropteryx during the Early Cretaceous Period. At that time, the environment was cool, with an average yearly temperature of about 10 degrees Celsius. Sinosauropteryx lived among many trees, particularly conifers, cycads, and tree ferns. They coexisted with several other Chinese dinosaurs, including the feathered tyrannosaur Yutyrannus, the long–clawed Beipiaosaurus, and the parrot–beaked Psittacosaurus.

Sinosauropteryx, as a dinosaur from the Yixian Formation, is part of the Jehol Biota, a diverse collection of organisms found in both the Yixian Formation and the overlying Jiufotang Formation. The Yixian Formation itself is primarily composed of volcanic rocks such as andesite and basalt, interspersed with layers of sedimentary rock that formed in ancient lake environments. These lake deposits have yielded an extraordinary array of fossils, preserving a snapshot of life during this period.

The freshwater lake strata of the Yixian Formation have provided evidence of a thriving ecosystem. Gymnosperm forests dominated the landscape, accompanied by some of the earliest flowering plants. The lakes and surrounding environment were teeming with life, including diverse ostracods, insects, and abundant bivalves and gastropods. The formation is also renowned for its well–preserved fossils of mammals and birds, showcasing the incredible biodiversity of the time. However, the region was periodically subjected to catastrophic mortality events, such as volcanic eruptions, wildfires, and toxic gas releases from the lakes, which contributed to the remarkable preservation of many fossils.

The climate of the Yixian Formation has been interpreted as temperate, with distinct wet and dry seasons. Average yearly temperatures during this period hovered around 10 degrees Celsius, indicating unusually cold winters compared to the typically warm Mesozoic era. This cooler climate may have been influenced by the high latitude of northern China during the Early Cretaceous. Despite these challenges, the Jehol Biota flourished, leaving behind one of the most detailed records of life from the Early Cretaceous.

You might be wondering why Sinosauropteryx is famous and what makes it special. It was not only the first dinosaur discovered in China, but also the first feathered dinosaur found that wasn't directly related to birds. Another specialty about Sinosauropteryx is that scientists used it to determine a dinosaur's color pattern for the first time. Scientists later discovered that Sinosauropteryx was a close relative of another small dinosaur, Compsognathus, which lived in Europe.

There was a legend about this mystic dinosaur, or China's bird. Despite its small size, it holds great significance for the Chinese people and is related to the safety of ancient Chinese society.

Long ago, amidst the vibrant, green landscapes of ancient China, I roamed the earth. This special and unique creature, called Sinosauropteryx, was not an ordinary dinosaur but also a pioneer, highlighting the early connection between dinosaurs and birds. Gracefully navigating the prehistoric forests, its slender form and feather-like structures gave it the appearance of a creature born from the wind.

According to legend, local tribes held Sinosauropteryx in deep reverence, seeing it as a messenger bridging the earth and the heavens. Stories described its radiant plumage, gleaming like the first light of dawn, sparking tales of courage and heroism. Gathered around, the tribes would recount how the 'dragon bird' soared above, guarding them from hidden dangers and keeping watch over their safety.

However, this unique and holy creature disappeared in one night without explanation. After that, it was found by a part-time fossil hunter named Li Yumin. He was a farmer and a part-time fossil hunter who frequently searched for fossils around Liaoning Province and sold his finds to collectors or museums.

One day, while searching for fossils, he found this special specimen. Recognizing its exceptional nature, preserved in two separate slabs, Yumin decided to sell it to two museums in China: the National Geological Museum in Beijing and the Nanjing Institute of Geology and Paleontology.

Ji Qiang, the director of the Beijing museum, quickly realized the importance of the discovery. By chance, Canadian paleontologist Phil Currie and artist Michael Skrepnick visited the museum after leading a fossil tour in the region in early October 1996. They also recognized the specimen's exceptional nature. Moreover, Currie immediately grasped its significance, later recalling to *The New York Times*, saying that, "when I saw this slab of siltstone mixed with volcanic ash in which the creature is embedded, I was blown away."

When Sinosauropteryx was first described, its name was chosen to mean "Chinese Reptilian Wing." However, Chinese authorities initially restricted photographs of the fossil from publication. Despite this, Currie managed to bring a photograph to the meeting of the Society of Vertebrate Paleontology at the American Museum of Natural History in New York in 1996. The image created a stir, drawing crowds of paleontologists eager to discuss the groundbreaking discovery. The news reportedly left John Ostrom, who had championed the theory in the 1970s that birds evolved from dinosaurs, astonished.

Ostrom later joined an international research team that traveled to Beijing to study the fossils. Among the team were feather specialist Alan Brush, fossil bird expert Larry Martin, and Peter Wellnhofer, a leading authority on the early bird Archaeopteryx.

After Yumin's finds, there were more discoveries of dinosaurs in Liaoning Province. In the research of Ostrom and other paleontologists, remarkable fossils were discovered in Liaoning Province, including Sinosauropteryx. This unique "dragon bird" offered a glimpse into the evolutionary link between dinosaurs and modern birds. This discovery ignited a frenzy in the scientific community, revealing that over 40 dinosaur species, including more than 24 pterosaurs, once inhabited this region.

The discovery of “the China dragon bird” reshaped our understanding of the diversity, uniqueness, and complexity of life during the Late Jurassic and the Early Cretaceous periods.

With the appearance of Sinosauropteryx, it made a significant impact on history and science. It is another key piece of the puzzle showing the evolutionary relationship between dinosaurs and modern birds, providing evidence for John Ostrom’s theory that birds evolved from dinosaurs. Consequently, scientists began investigating China’s birds and uncovered many interesting facts about dinosaurs, animals, history, and the world.

The discovery of Sinosauropteryx prima was one of the most important fossil finds of the century. It was the first non−avian dinosaur found with feather−like structures, providing further evidence for the link between dinosaurs and birds. At the same time, its name means “first Chinese lizard wing.”

After the discovery of this “China dragon bird,” some researchers began their investigations by examining fossils of the ancient bird called Confuciusornis, which lived during the Cretaceous period. Using an electron microscope, they analyzed the feathers, searching for microscopic structures known as melanosomes. In modern animals, melanosomes store melanin, a pigment responsible for coloring hair, feathers, and skin. The shape of these melanosomes determines the type of coloration they produce—elongated, "sausage−shaped" melanosomes create black or grey hues, while round, spherical ones result in reddish tones.

The discovery of melanosomes in Confuciusornis feathers suggested that extinct animals likely shared similar pigmentation structures. This finding also implies that similarly shaped melanosomes in ancient species may have generated colors akin to those seen in living animals today.

There is a deeper meaning to Sinosauropteryx that extends beyond its captivating name. Because of its feathered features, researchers reconsider the role of feathers in the evolutionary history of birds. With the discovery of birds, it is suggested that feathers may have initially evolved for insulation or display purposes rather than solely for flight.

The significance of Sinosauropteryx extends beyond its captivating name. Its feathered features prompted researchers to reconsider the role of feathers in the evolutionary history of birds. This discovery suggested that feathers may have initially evolved for insulation or display purposes rather than solely for flight.

Today, the story of Sinosauropteryx and its relatives stands as a testament to the extraordinary diversity of life that once inhabited our planet. The appearance of the “China dragon bird” has provided us with much insight into history and a deeper understanding of the world and dragons. The legacy of the "China dragon bird" endures, sparking the imaginations of scientists and dreamers alike, and encouraging the continued exploration of Earth's ancient and fascinating history.

New Tales of China's Dinosaurs

Immaculate Heart of Mary College, Ying, Cheuk Kiu Cheryl – 16

In Chinese culture, our ancestors crafted enchanting dreams and magnificent legends about dragons. We, as Chinese, take pride in reading these stories and consider ourselves the "descendants of the dragon."

Throughout the five-thousand-year history of the Huaxia Civilization, countless reforms have occurred in various aspects of life, yet our fascination with the dragon—a spiritual symbol of power—remains unchanged. Dragons are not just figures in myths or fairy tales; they are reminiscent of creatures that truly existed around two hundred million years ago: dinosaurs, named for their nature as large reptiles.

When discussing dinosaurs, we should celebrate China's significant contributions to this field. With its unique geographical advantages—such as extensive sedimentary rock formations in the northeast, environmental diversity, and exceptional fossil preservation conditions—China has created an ideal habitat for dinosaurs. As a result, the country has produced 150 new species and thousands of dinosaur fossils, establishing itself as a leader in fossil discoveries. Additionally, the Gobi Desert, the world's largest dinosaur fossil reservoir, has yielded numerous dinosaur footprints and remains, facilitating research on species diversity, diets, and social behaviors.

The journey of uncovering dinosaur fossils began unexpectedly. These ancient relics, once hidden underground, were eventually uncovered through fortuitous discoveries. In the 1920s, American explorer Roy Chapman Andrews and his expedition team arrived in the Gobi Desert while searching for the remains of early humans. By sheer luck, they stumbled upon invaluable dinosaur fossils. To honor this discovery, Andrews named the plant-eating dinosaur Protoceratops andrewsi, which translates to "first-horned face." Unfortunately, their exploration was cut short due to local political turmoil.

For decades, the search for dinosaur fossils was paused due to the political climate. However, during China's political and economic reforms, Canadian scientists were granted opportunities for research through funding and technical training. This collaboration led to the China-Canada Dinosaur Project, which lasted from 1986 to 1991. Although initial efforts were challenging, a breakthrough occurred after three weeks when a Chinese researcher spotted a large cervical rib bone in the Junggar Basin, Xinjiang. The crew faced difficulties as the skeleton lay buried under 100 tons of solid rock. In a moment of inspiration, Dong Zhiming, the leader of the Chinese researchers, proposed using dynamite to remove the overburden. Though risky, his direction ensured the fossils remained intact. These fossils later became the holotype of Mamenchisaurus sinocanadorum, named after both China and Canada.

In August 1996, farmer and part-time fossil hunter Li Yumin unearthed the first fossil specimen of Sinosauropteryx, the first known feathered dinosaur, in the Yixian Formation, Liaoning. He divided it into two pieces, selling one to the National Geological Museum in Beijing and the other to the Nanjing Institute of Geology and Paleontology. This discovery astonished Western scholars and ignited a national fossil boom.

In July 2001, scientists officially named and described Caudipteryx, a feathered dinosaur first found in 1997. This discovery highlighted how dinosaurs and birds are related. The name means "tail feather," and it also honors Zou Jiahua for his work in science. The specimen showed amazing details of its feathers, paying respect to the famous Chinese paleontologist Zhiming Dong.

In October 2004, the International Symposium on Liaoning Fossils, organized by the Chinese Academy of Sciences in Beijing, brought together paleontologists and researchers from all over the world. They shared exciting news about new dinosaur and early bird finds, like Zhangheotherium and Sinosauropteryx. This helped us understand how dinosaurs evolved into modern birds. The symposium looked into the paleoecology of the Yixian Formation,

exploring the variety of life in the area during the Early Cretaceous Period. They discussed dinosaur behaviors, nesting habits, and how they interacted with each other, all based on fossil evidence.

In April 2005, paleontologist Xu Xing found a large thigh bone while shooting a documentary. At first, he thought it was from a sauropod, but after a closer look, he discovered it belonged to ★Gigantoraptor★, a new type of theropod that was officially named in 2007. This find not only added to the list of fossils but also reminded everyone how exciting and unpredictable paleontology can be.
In March 2009, the discovery of Yutyrannus huali, based on fossils from the Early Cretaceous Yixian Formation, provided crucial evidence of feathers in non-avian theropods. Named "feathered tyrant," this species is one of the largest known feathered dinosaurs, bolstering theories about the evolutionary connection between birds and dinosaurs.

From 2010 to 2018, the paleontological landscape in China experienced a remarkable flourishing, with the identification of approximately 50 new dinosaur species. This surge was particularly prominent in the provinces of Liaoning, Xinjiang, and Gansu, regions renowned for their rich fossil beds and exceptional preservation conditions. The discoveries not only enriched the existing catalog of dinosaur species but also highlighted China's growing prominence in the global paleontological community.

In Liaoning, the well-studied Yixian Formation continued to yield significant finds. This area has long been a treasure trove for paleontologists, known for its exceptionally preserved fossils, including feathered dinosaurs that provide critical insights into the evolution of birds. Notable discoveries during this period included species like Guanlong wucaii, a basal theropod that showcased early features of the Tyrannosauridae family, and Microraptor zhaoianus, a small feathered dinosaur that offered valuable clues about the origins of flight.

In Xinjiang, researchers uncovered fossils that revealed a wide variety of dinosaur types, ranging from herbivorous sauropods to predatory theropods. Among these was the discovery of Mamenchisaurus sinocanadorum, a long-necked dinosaur that further demonstrated the diversity of sauropods in ancient ecosystems. The region's unique geology has allowed for the preservation of not just bones but also fossilized footprints and nests, shedding light on the behaviors and habitats of these ancient creatures.

Gansu Province also contributed significantly to this wave of discoveries. The rich fossil deposits in the area have led to the identification of several new species, including Yinlong, one of the earliest known ceratopsians. This finding not only highlighted the diversity of dinosaurs in the Late Jurassic but also provided new insights into the evolutionary history of horned dinosaurs.

Overall, the period from 2010 to 2018 in China was characterized by an unprecedented level of activity and discovery in the field of paleontology, underscoring the country's vital role in unraveling the mysteries of the dinosaur era. Each new species added not only to our understanding of the diversity and evolution of dinosaurs but also painted a more complex picture of the ecosystems in which they lived, making this era a cornerstone of modern paleontological research.
In April 2021, a paleontology team uncovered a well-preserved hadrosaur embryo, dating back 70 million years, in the Ganzhou Basin, Jiangxi Province. Later, they found an oviraptorosaurian embryo named "Yingliang Beibei," believed to date from the late Cretaceous period. Its curled posture provided further evidence of the connection between dinosaurs and birds.

Also in June 2021, fossil bones of Gandititan cavocaudatus were discovered at a construction site in Ganzhou, representing a type of titanosaurian sauropod and enhancing our understanding of Cretaceous species.

To delve deeper into the fascinating world of dinosaurs, visitors can explore numerous dinosaur parks and museums across China. The Liaoning Provincial Museum, established in 1950, boasts one of the world's most extensive collections of dinosaur fossils, including Microraptor, Yutyrannus, and Sinosauropteryx. The museum features life-sized models, dioramas of ancient ecosystems, and interactive exhibits that highlight the evolutionary significance of various fossils.

Another excellent destination is the Fossil Museum of the Chinese Academy of Sciences in Beijing, which houses over 20,000 fossil specimens, including Sinosauropteryx and Psittacosaurus. Educational programs and guided tours enhance the experience, promoting awareness of paleontology and natural history.

Finally, the China Dinosaur Park in Changzhou, Jiangsu Province, offers an immersive experience with over 100 life-size dinosaur replicas, informative exhibits, and amusement rides, making it a favorite destination for families.

Today, China is not only focused on local discoveries but is also eager to explore paleontological sites in nearby countries. The Institute of Vertebrate Paleontology and Paleoanthropology (IVPP) is outlining its first international expedition in Central Asia, particularly in Kyrgyzstan, Kazakhstan, and Mongolia, known as the "land of dinosaurs." The crew is already conducting paleoanthropological research in Kyrgyzstan, showcasing China's commitment to international cooperation in paleontology.

As the legacy of dinosaurs continues to emerge, revealing the Earth's ancient past, researchers will persist in their quest to uncover the astonishing history of our planet.

Moreover, the study of dinosaurs in China has sparked a growing interest in paleontology among younger generations. Educational initiatives and outreach programs in schools have been instrumental in fostering curiosity about ancient life forms. Workshops, lectures, and fossil exhibitions have made paleontology accessible to students, encouraging them to explore this fascinating field. Such programs not only nurture a passion for science but also cultivate the next generation of paleontologists.

The role of technology in paleontological research cannot be understated. Advances in imaging techniques, such as CT scanning and 3D modeling, have revolutionized the way fossils are studied. These technologies allow researchers to visualize the internal structures of fossils without damaging them, providing unprecedented insights into the biology and behavior of dinosaurs. As technology continues to evolve, it is likely that new discoveries will reshape our understanding of these ancient creatures.

Collaboration between Chinese and international scientists has led to significant breakthroughs in paleontology. Joint research projects and expeditions have facilitated knowledge exchange and the sharing of resources. This spirit of collaboration not only enhances scientific understanding but also fosters friendships across borders, creating a global community of researchers dedicated to uncovering the secrets of the past.

As we look to the future, the ongoing exploration of China's paleontological sites holds great promise. Each excavation could reveal new species and deepen our understanding of dinosaur evolution. The rich fossil record in China not only informs us about the past but also inspires future generations to continue the pursuit of knowledge, ensuring that the story of dinosaurs remains an integral part of our cultural heritage.

A Dive into The Excavations of Dinosaurs in China

King's College, Chiu, Ching Yu Adrian – 15

Introduction:

Beneath the rampant layers of rocks and sediment of China, there lies volumes of mysteries waiting to be discovered. The fossils of these ancient creatures known as dinosaurs have been formed over the course of hundreds of millions of years, undergoing fossilization and decomposition. The repeated eruptions of volcanos throughout prehistoric times have created many layers of fossil beds spanning millions of years, burying and preserving the remains of dinosaurs.

Approximately 250 million years ago starting from the Triassic Period, dinosaurs reigned supreme throughout the Earth. There had been a point in time in which all the continental plates merged and formed the supercontinent Pangea, granting creatures the ability to traverse between continents by land and to find settlements all around the world. Millenniums of the evolution of these creatures trying to adapt to their environment gave different regions their unique dinosaurs. China is of course no exception. From the Himalayan Mountains to the Gobi Desert, and the Manchurian Plains, the heterogeneity of these beasts stands clear.

After the Triassic Period came the Jurassic (~200–145 million years ago) and the Cretaceous (~145–66 million years ago) Periods. The era of these exotic creatures ended when the Chicxulub impactor, an asteroid the size of a city crashed into Earth 66 million years ago, at the end of the Cretaceous period. With such a considerable amount of time passed after the extinction of dinosaurs, some fragments of history inevitably are forever lost in the sands of time. Yet, researchers continue with unwavering passion the uncover what is left buried deep in the crust of our beloved planet.

Now, China is among the most important countries in palaeontology research, attracting the masses of scientists and archaeologists alike. The accumulation of knowledge from research and digging through the collaborative efforts of these people has resulted in our broader understanding of the Mesozoic Era, unveiling new tales from the prehistoric world. Despite this, China is still considered a less-explored country by palaeontologists, having just started its extensive excavation of fossils in the 1990s. Just three years ago in the Ganxian district of Jiangxi, the fossils of Gandititan cavocaudatus, a species of titanosaur was unveiled, showing us that there are many more secrets of the ancient world yet to be uncovered.

A Brief History:

In the 1920s, scientists from the American Museum of Natural History first discovered dinosaurs in Central Asia. Amidst the Gobi Desert of Mongolia, evidence of dinosaur deposits was found. Lamentably, the political state of the region squashed further expeditions in palaeontology, delaying the chance for mass excavation and discovery until stability had been reached. However, it would foreshadow the 'Dinosaur Boom' of China several decades later.

Long before the golden age of palaeontology in China commenced, however, excavations of dinosaur fossils had already been ongoing. Though limited by the political tension during the two World Wars, as well as the Cold War, the pursuit of fossils could not come to prominence, and thus the business of palaeontology was unable to prosper. In the 1930s Yang Zhongjian led the excavation of the Lufengosaurus, one of China's first scientifically recognised dinosaur discoveries. Yang was dubbed the 'Father of Chinese Palaeontology' and founded the Institute of Vertebrate Palaeontology and Palaeoanthropology (IVPP) in Beijing, laying the foundation for future dinosaur research in China. As of now, this organization has built 5,788 museums throughout China.

A remarkable Chinese palaeontologist, Dong Zhiming, crowned the 'Dinosaur King of China', was also laying the groundwork for fossil-hunting in this organisation. His work spanned decades of researching the vast fossil beds of China, and through relentless hard work he stood among not only the leading figures of the IVPP, but also the whole of Chinese palaeontology. His work on sauropods was especially extensive, shedding light on the enormous long-necked herbivores, like the Yanghuanosaurus and the Shunosaurus. He described the Shaximiao Formation in

Xichuan, as well as more than 42 species of dinosaurs, 27 of which are valid today, ranking first in the world in terms of the number of names he gave these creatures. He is regarded as one of the most important figures in palaeontology for his unparalleled efforts in these fields.

Had scientists continued their voyages in Central Asia, perhaps more dinosaurs would have been discovered in Northern China. However, the golden age in fossil excavations wouldn't be until seven decades later, when the farmer, Li Yumin reopened the gates for the unearthing of dinosaurs in Asia, albeit in a different region.

It has only been less than three decades since dinosaurs started being unearthed en masse from the vast lands of China, when a farmer had stumbled upon the fossils of a Sinosauropteryx, the world's first feathered dinosaur. In August of 1996, Li Yumin had gotten his hands on two slabs of siltstone in the province of Liaoning. Yumin, a part–time fossil hunter, at once recognised the significance of these seemingly stale slabs and sold them to the National Geological Museum in Beijing and the Nanjing Institute of Geology and Palaeontology, earning a great sum of money.

And thus began the gold rush for fossils in Liaoning, China. Palaeontologists scrambled to get a piece of the bones of these ancient creatures. To date, this province alone has seen the emergence of more than 40 species of dinosaurs previously unknown to the world. It can be said unanimously that Liaoning has contributed to the discovery of dinosaurs globally and has become a global epicentre for fossil hunting.

The increase in the quantity of dinosaur excavation activities was of course not without improvements in the quality of fossil hunting techniques and technologies. Innovations such as precision excavation tools, ground–penetrating radar, and 3D mapping technologies have revolutionized the way fossils are uncovered, ensuring minimal damage to delicate specimens. Sophisticated imaging techniques, including synchrotron radiation and CT scanning, allow researchers to study fossilized structures in incredible detail, revealing new attributes and appearances of dinosaurs, all the while contributing to the studies of DNA and biotechnology. China has been seen vigorously attempting the push the boundaries of palaeontological research, uncovering groundbreaking findings with each excavation with assistance from cutting–edge tools.

Major finds:

One of China's first found dinosaurs, the Lufengosaurus was named after the area in which it was discovered, namely near Lufeng in Yunnan. There are currently two known species of this dinosaur, namely the 'L. huenei' and the 'L. magnus', with the latter one implying its large size, meaning 'larger one' in Latin. It stands at 6 meters in length which makes it a rather small sauropod (long–necked dinosaur) and weighs 2.3 tonnes. It lived about 195 million years ago during the early Jurassic Period. It was seen with sharp claws and teeth and is speculated to be partially omnivorous. This dinosaur first demonstrated the potential of palaeontology in China, perhaps laying the groundwork for the future of fossil findings there.

In addition, as found by Li Yumin, the Sinosauropteryx is undoubtedly one of the most significant finds. Its name is particularly unique and fitting, with the meaning of 'Chinese reptilian wing'. So far only one species of this dinosaur has been named – the S. prima, meaning 'first', serving as a nod to the fact that it is the first feathered non–avian species ever discovered. It is among the 'compsognathidae' family of dinosaurs, which refers to small carnivores with a conservative countenance (long body and legs with short arms). Being the first ever reportedly feathered dinosaur, it has become a symbol for the golden age of Chinese palaeontology. It was a small theropod, with the longest known specimen being a mere 1.07 metres in length, with an estimated weight of 0.55 kilograms. Its feathers are assumed to be mostly a red–brown colour with alternating dark and light bands on its tail. It lived during the Early Cretaceous Period. This creature has made massive contributions to the study of evolution, fulfilling the role of a major piece of evidence for the link between dinosaurs and birds.

Most recently the newest species of the Titanosaur emerged from the soil of a construction site in Ganzhou, Jiangxi. The Gandititan cavocaudatu stands at a small stature of 14 meters in length, relative to that of titanosaurs. In the name 'Gandititan', 'Gan' refers to the place where the fossils of the sauropod were found, and 'di', means geology in Chinese. It is believed to have existed in the mid–Cretaceous Period and is speculated to be part of a unique clade

with connections to the South American species of titanosaurs. This link is perhaps formed because of the supercontinent Pangea. This species might also hint at a previously unrecognised group of titanosaurs in East Asia. One could only imagine what lies beyond these implications.

Major fossil sites:

As already established, the Liaoning province is a region of paramount importance in palaeontology. Since 1996 when potentially the most notable finding of dinosaur fossils in China took place in Liaoning, numerous sites for fossil hunting have surfaced. The sheer number of volcanic eruptions gathered throughout the years in the Manchurian Mountains had given a pristine state for the preservation of fossils, thus the abundance of excavations and sites. This region contains many Jehol Biota fossils, which include dinosaurs from the Early Cretaceous period.

The Yixian Formation stands as the most renowned site in Liaoning, contributing to many of the first discoveries of dinosaurs in China. It was formed in a lacustrine environment with periodic volcanic activity. It is known for its rich reserves of feathered dinosaurs, like the Sinosauropteryx and the Microraptor. This provided compelling evidence for the evolutionary link between dinosaurs of feather and birds, revolutionizing our understanding of prehistoric life. It has transformed the scientific views on the origin of flight, the development of feathers and early ecosystem dynamics. Another fossil site in this province is the Jiufotang Formation, which has contributed similarly to palaeontology as the Yixian Formation.

In South–Western China, besides the Himalayan mountains of Tibet, the province of Yunan also holds some notable sites, among them the Lufeng Fossil beds, which are of the utmost significance. It became famous for hosting China's first dinosaur discoveries –– the Lufengosaurus, one of the earliest living sauropods that Dong Zhiming had helped find. This site consists of creatures from the Late Triassic to Early Jurassic Periods. It could also be said that this site symbolizes China's rich palaeontological heritage, as it is considered the starting place of Chinese palaeontology.

Inner Mongolia, being a large part of the Gobi Desert also contains many dinosaurs. The region is diverse in terrain, with vast stretches of arid desert, rocky outcrops, grasslands, and semi–arid regions, making it a hotspot for paleontological discoveries. Famous examples of sites here include the Iren Dabasu Formation and the Bayan Mandahu Formation, both burying the remains of dinosaurs from the Late Cretaceous Period. The variety of species found in this region proves that diverse Cretaceous ecosystems exist in arid and semi–arid lands. The Bayan Mandahu Formation is especially well known for its copious amounts of dinosaur eggs coupled with findings of the esteemed Velociraptor. Thus dinosaur lovers in China glimmer with anticipation towards the legendary findings of these vast lands.

Conclusion:

Since the 1990s China has been undergoing rapid development in countless fields, upholding its dominance in the world. With the advancements in technology, combined with its sheer manpower and size, China has rightfully gained its ground as one of the most important countries in palaeontology. With 1.4 billion people residents, as well as diverse sites spanning the entire country, it has consistently provided key evidence and findings to unravel the secrets of the Mesozoic Era.

These achievements highlight the rich history of East Asia and the peoples' curiosity and appreciation for nature. As China continues to explore its fossil–rich landscapes, it may as well stay undisputed as a global leader in paleontological research. As of now, there are still many unknowns concealed underground, awaiting discovery. In time we shall discover what remains beneath the earth, and decipher the tales of China's ancient dinosaurs.

New Tales of China's Dinosaurs

St. Margaret's Coeducational English Secondary and Primary School, Chen, Tsz Ching – 16

China has quietly become the global expert on fossil hunting, transforming our understanding of prehistoric life. In the 1990s, a farmer found the world's first clearly feathered dinosaur in Liaoning Province, an extraordinary discovery in history. Scientists named this ring Mark find sinosauropteryx, meaning " the China dragon bird." At the same time, it is also worth discussing the benefits and drawbacks of dinosaur fossil excavation.

To begin with, this discovery is attributable to advancing technology and scientific knowledge. Dinosaur fossils can provide valuable evidence for learning evolution, helping scientists understand how life on Earth has changed over millions of years. Dinosaurs are a crucial species in the history of the Earth. By studying dinosaur fossils, people can better understand the history of the Earth and the history of life. Moreover, the dinosaur fossil excavation also has some educational value. It inspires future generations, as it sparks curiosity and interest in science among students and the general public, inspiring a love for learning and exploration. In addition, the significant fossil finds can enhance national pride and identity. The discovery of dinosaur fossils by China this time is undoubtedly a huge breakthrough, which is the pride of the nation and the people.

Whereas it remains to be seen whether the dinosaur fossil excavation brings enough advantages, the drawbacks are already surfacing.

The excavation of dinosaur fossils will have a negative impact on the environment. First and foremost, the excavation activities can disturb local ecosystems and habitats, potentially harming plant and animal life. For instance, in the Sichuan Ziyang Dinosaur Fossil Group, without strong protective measures, many dinosaur fossils in the area have been eroded by rainwater, and due to residents' mistaken belief that dinosaur fossils have medicinal value, a large number of fossils have been illegally excavated and sold. This not only damages the fossil itself but also the natural environment in which the fossil is located. In addition, fossil excavation is often expensive and requires significant financial resources and specialized equipment. Therefore, it can be seen that it has brought a certain financial burden to the Chinese government, a substantial expenditure of financial resources. Last but not least, there are still preservation challenges. Fossils are delicate and can be damaged during excavation if not handled properly with care, leading to loss of valuable information. If the fossil itself is destroyed during mining, it will be a huge loss.

In a nutshell,the discovery and excavations of dinosaur fossil it's a new chapter to the ancient narrative preserved in stone. As we continue to explore and learn, the stories of China's dinosaurs will undoubtedly inspire awe independent of appreciation for the natural world.

Fossil–hunting

St. Margaret's Coeducational English Secondary and Primary School, Cheuk, Pak Kiu – 16

China has quietly become the global epicenter of fossil–hunting. In the 1990s, a farmer found the world's very first clearly feathered dinosaur. Scientists called it Sinosauropteryx, which means "the China dragon bird". Since then, more than 40 dinosaur species have been found in the province of Liaoning, including more than 24 pterosaurs – winged reptiles.

Why do scientists crave to find more and non–identical dinosaur fossils? The reason for this circumstance is that this can help our development in all kinds of ways. WE may discover new architecture that's more efficient or stable than how it's now, or maybe even come up with an invention that helps our daily life. We came up with an invention that helps us travel easier and more efficiently after we find out how the architecture of birds helps them fly, which is plane. We as humans crave to find a way to improve our daily life and discover new species that can help us with it.

But we never see that many people doing fossil–hunting even if the benefit is seductive, why? In this society everything is about money, the cost of doing so is so high because you have to spend most of your time in nature with no salary. Even if they get a salary, how much will you be willing to pay them? Most likely just minimum wage. Even with commission, the cost of it is still high because they need to travel all the time looking for a place that has a high possibility of finding one fossil. It is difficult to get a job, this can only be a hobby. This led to fewer people doing so.

Fossil–hunting has so much potential because the benefit that we can get from that is seductive and incalculable. But in our society, this can only be a hobby, making fewer and fewer people willing to do so. We have to be critical and think about the potential of it and try to develop this kind of work, and not just about the money.

New Tales of China's Dinosaurs

St. Margaret's Coeducational English Secondary and Primary School, Lau, Annemarie Erin – 15

China has been the site of some genuinely extraordinary paleontological discoveries in recent years—each one capturing the hearts of the scientists who unearthed them and of the general public. That was the case when Liaoning farmers discovered a beautifully preserved fossil of what would turn out to be an entirely new dinosaur species, the feathered dinosaur Sinosauropteryx. Liaoning's fossil treasure has provided paleontologists with a bonanza of new insights into the appearance and behavior of dinosaurs when they were very much alive and into human ancestors, too, for that matter. Fossils found in Liaoning have bridged significant gaps in understanding the evolution of not only dinosaurs but also of "dragon birds" that have since diversified and gone on to rule the planet's skies throughout the Mesozoic era. The stunning preservation of these fossils—often found in finely grained sedimentary deposits—has given paleontologists an almost unparalleled view of the anatomy and behavior of ancient animals. They have been able to discern feather arrangements and skin textures, and even make educated guesses about the color patterns of some of these long-gone creatures.

That has made China an even more popular destination for fossil hunters and paleontological researchers. And what they are finding is pushing the very frontiers of paleontology. Indeed, in comparison to the rest of the world, such as North America and Europe, China has hardly been investigated at all. This absence of thorough investigation has increased excitement among paleontologists regarding the remarkable fossils that may still await discovery. We might not quite be ready yet to reimagine the world of 100 million years ago, but the finds in China are certainly bringing that moment ever closer.

However, the implications of these discoveries extend far beyond mere academic interest. Fossils provide a great deal of information that help scientists piece together the evolutionary story. They allow us to see how life changed and diversified in a variety of ways in the face of many different opportunities over millions of years. They can also provide a good window into what is happening, or likely to happen in our present-day biodiversity and climate. Moreover, the increasing number of fossil discoveries in China has sparked a rise in public interest and educational initiatives. Museums across the country have begun to showcase these remarkable finds, allowing paleontology to become more accessible to a broader audience. It fosters a new generation of scientists and enthusiasts who are eager to contribute to the field.

As China gradually emerges as a prominent hub for fossil exploration, the international paleontological community is paying attention. Joint initiatives between Chinese and foreign researchers have become more frequent, promoting the sharing of knowledge and methods. It improves the quality of research and deepens the scientific conversation related to paleontology. Moreover, as fossil finds continue to occur, they present a distinct chance for interdisciplinary research. The middle schools, some high schools and even several universities in China are now teaching the same curricula in Earth science, biology, paleontology, climatology and ecological modelling that they teach in the United States. By combining different disciplines, researchers can create stronger models to forecast future ecological transformations.

The world's newfound fossil center is China, a country whose rich geological past nearly assures abundant discoveries. The commitment of Chinese scientists and researchers guarantees that these finds will be thoroughly examined and wisely interpreted. Each of these discoveries promises to bring us a little closer to the big payoffs—the elucidation of the mysteries contained in our planet's deep stratigraphic layers and the anatomy of ancient life. The excitement around China's fossil finds will only grow as we look to the future. With many still-unexplored regions, there's ample opportunity for earth-shaking discoveries. Every fossil tells a story—or rather, every combination of fossils and sediment we can study tells a story. And the revelations provided by these combinations, the interpretations made by those studying them, serve to illuminate the long-gone world that affects the life we live now.

New Tales of China's Dinosaurs

St. Margaret's Coeducational English Secondary and Primary School, Ma, Hei Yee Hailey – 15

In the rolling hills of Liaoning Province, where lush greenery meets the ancient earth, a quiet revolution in paleontology is unfolding. China has emerged as the global epicenter of fossil discovery, revealing a treasure trove of prehistoric life. This narrative explores not just the scientific significance of these discoveries, but also the captivating stories behind them.

The journey began in the 1990s when a humble farmer unearthed what would become a pivotal piece of our understanding of dinosaurs. The discovery of Sinosauropteryx, the world's first feathered dinosaur, sent shockwaves through the scientific community. This small, chicken-sized creature, adorned with primitive feathers, challenged long-held beliefs about the relationship between birds and dinosaurs.

With its intricate feather patterns and small, agile frame, Sinosauropteryx painted a vivid picture of life during the Late Jurassic period. Its discovery was not just about the fossil itself; it symbolized a new era in paleontology where the lines between dinosaurs and birds blurred. This shift ignited a wave of research, leading scientists to reconsider the evolutionary paths of these ancient creatures.

Since the discovery of Sinosauropteryx, Liaoning Province has proven to be a veritable goldmine for paleontologists. Over 40 dinosaur species have been identified in this region alone, each contributing to our understanding of the Mesozoic era. Among these, more than 24 pterosaur species have been unearthed, showcasing the incredible diversity of life that once roamed the skies.

The fossils found here are remarkably well-preserved, often encased in fine-grained sedimentary rock. This preservation allows scientists to study not just the bones, but also soft tissues, feathers, and even stomach contents. The stories these fossils tell are rich and varied, revealing insights into the behaviors, diets, and habitats of these ancient creatures.

In a recent breakthrough, paleontologists discovered a new species of titanosaur in Jiangxi Province. This colossal herbivore, measuring over 60 feet in length, adds to the growing list of titanosaur species found in China. Its massive size and unique skeletal features provide valuable information about the diversity of sauropods in the Late Cretaceous period.

The discovery of this titanosaur sparked excitement among researchers. Its fossils, still encased in rock, hint at a creature that grazed on the abundant vegetation that once covered the landscape. The size of these dinosaurs suggests they played a crucial role in their ecosystems, influencing plant growth and the distribution of other species.

China remains less explored compared to other fossil-rich regions like North America and Europe. This relative inaccessibility has created a sense of anticipation among paleontologists. Each excavation has the potential to uncover species that could redefine our understanding of dinosaur evolution.

Recent expeditions have focused on remote areas, where the geological formations remain largely untouched. These sites hold the promise of discoveries, potentially including species that have yet to be classified. As researchers delve deeper into these uncharted territories, the stories of ancient life continue to unfold.

The fascination with dinosaurs in China extends beyond scientific inquiry. The discoveries have permeated popular culture, inspiring a new generation of enthusiasts. Museums across the country showcase these fossils, bringing the stories of the past to life for visitors of all ages.

Educational programs and interactive exhibits engage children and adults alike, fostering a deeper understanding of paleontology. The connection between ancient creatures and modern society is strengthened through art, literature, and media, highlighting the enduring legacy of these magnificent beings.

China's burgeoning role in paleontology is a testament to the country's rich geological history and the untapped potential of its landscapes. Each fossil unearthed tells a story—of life, extinction, and the intricate web of existence that once thrived millions of years ago. As scientists continue to explore this vast and varied terrain, one can only imagine what new tales await discovery, enriching our understanding of the natural world and our place within it.

In the heart of China, the echoes of dinosaurs resonate, reminding us that the past is never truly gone, but rather preserved in the stones of time, waiting to be uncovered.

Where Dragons Once Walked: A Tapestry of China's Lost Giants

St. Paul's Convent School, Lam, Kei Yi Kaylie – 16

It is a story that melts the ancient past into modernity in the grand and unforgiving vastness called China. Over the past several decades, China has emerged as the global hotbed of fossil hunting, with its secrets buried beneath its soil for millions of years. Each of these finds, starting from the arid deserts of Inner Mongolia to the lush forests of Liaoning, had offered surprises about the life of dinosaurs that roamed this land.

It all started in the 1990s when a humble farmer in Liaoning discovered something quite extraordinary: the world's first clearly feathered dinosaur, which would later be given the name Sinosauropteryx—a name aptly meaning "the China dragon bird." That find started a scientific revolution against the prevailing perceptions of reptilian, scaly-skinned dinosaurs, while some had evolved feathers—an adaptation that would contribute to finally giving rise to the birds of today.

Soon enough, Liaoning became a treasure trove for palaeontologists. In its sedimentary rock layer were dug out more than 40 species of dinosaurs and over 24 pterosaurs. Every fossil had a story to tell about a great variety of life that was flourishing in the region during the Late Jurassic and Early Cretaceous. From the four-winged, agile Microraptor to the massive Yutyrannus, a feathered tyrant, these animals painted a very real picture of a complex ancient ecosystem.

Fast-forward to today, and every find continues to get people excited. A team of researchers identified a new species of titanosaur—a group of sauropods known for their massive size and long necks—in Jiangxi province. With unique characteristics such as distinct vertebrae and limb structures, this adds to a Titanosaur roster of dinosaurs that have been continuously being discovered inhabiting China. A discovery of this kind underlines not only how multifarious dinosaur species were but also how promising those regions are that the palaeontologists have not been able to survey as yet.

From the tall Himalayas to the expansive river deltas, the geological diversity of China has set up an ideal setting for fossil preservation. Yet, big swaths of the country remain little known and hint at the possibility of other amazing discoveries. For palaeontologists, the excitement is palpable: every dig site might turn up a creature that rewrites major parts of dinosaur evolution and behaviour.

The stories of these ancient fossils are as interesting as the creatures themselves. They expose dynamics about ecosystems, adaptations that allowed species to thrive, and environmental changes that resulted in extinction. For example, the discoveries of feathered dinosaurs show that the rise of feathers initially served purposes other than flight—perhaps for insulation or display—providing a glimpse into the social lives of these ancient animals.

More importantly, the discoveries in China have repositioned the way dinosaurs are thought about in the rest of the world. The story that dinosaurs were the preserve of North America and Europe is being rewritten, with China now positioning itself as a big contributor in knowledge about such magnificent creatures. Fossils from China are not just specimens but significant pieces of one larger puzzle extending through continents and epochs.

As China continues to attract palaeontologists from around the world, dinosaur study in the years to come is bright. The work between the Chinese and international teams promises to quicken the pace of discovery, with more hints into the past than ever before. Each venture out into the field is an expedition into the unknown, where the unearthing of a new fossil might lead to yet another critical revelation.

While traditional fossil excavation has remained, to a large degree, the same with augmentations in technology, technology has greatly affected paleontological studies. Techniques like 3D imaging and CT scanning have allowed the study of fossils at a resolution previously unimagined, revealing internal structures without necessarily damaging

the specimen. Such marriages of technology and palaeontology increase knowledge about how these ancient creatures lived, moved, and interacted with their environments.

The excitement of dinosaur discoveries in China has translated into a surge of interest in palaeontology from the public. More and more museums and educational institutions have programs that train young minds to take up science as a career. Exhibitions of China's rich fossil heritage not only educate people about the past but spur them to think critically about science and history.

In other regions, paleo parks have been opened to let families take part in fieldwork on simulated sites and in workshops. Such events contribute not only to the popularization of knowledge about China's prehistoric life but also call citizens' attention to the care and conservation of nature.

Ongoing discoveries and research in China continue to remind us that the history of life on Earth is complex, interwoven tapestry. Each discovered fossil added another piece into the great puzzle called evolution, adaptation, and extinction. Every step taken to reconstruct the lives of dinosaurs enlightens us about the environmental changes that took place on Earth millions of years ago.

The tale of the dinosaurs of China is far from over, unfolding as it does in this age of discovery. With each new find, we are reminded that the history of the Earth is replete with life forms that once dominated this planet. As we turn the pages in this most ancient of tales, we can only guess what secrets the next excavation may reveal, knowing full well that beneath the surface of China lies a veritable treasure trove of knowledge waiting to be dug out.

The story of China's dinosaurs is not about the past but a continuing saga that has kept mankind wondering about the earth that harbours them. Every new discovery possesses the power to redefine life on Earth: to question our assumptions and extend our horizons.

Every scratch on the face of the earth, every dent in the earth, gives way not to the fossils but a tale of survival, adaptation, and resilience. Dinosaurs of China, with their colourful lives and intricate ecosystems, have developed into a reminder of the complexity of life on Earth and its constant change. From the feathered flyers to the huge beasts, herein lies the tale of these magnificent creatures, beckoning us to understand the secrets of our past and reflect on the place that is ours in the grand account of life.

It is not only the path to a known past that will be uncovered, but how those ancient tales speak so loudly today in a petition to safeguard the planet and encourage forthcoming generations to start their own journeys into science and discovery. Such will be the unfolding legacy of China's dinosaurs, inviting all who seek knowledge into the exploration of our shared history.

The Discovery of Fujianvenator Prodigiosus

St. Paul's Convent School, Lee, Ching Yee Charlotte – 16

Did it prey on land, or did it wade in water? Details of the Fujianvenator prodigiosus remains to puzzle scientists today.

This extinct species of dinosaur was unearthed in October and November 2022 in the Nanyuan Formation of Fujian Province. Its name is an amalgamation of two separate words 'Fujian', where its fossils were found, and 'venator' which means 'hunter' in Latin. This genus comprises of only one known species, the Fujianvenator prodigiosus. Interestingly, the second part of its name is derived from a Latin word for 'bizarre'. Yet what makes it so bewildering to the paleontological realm?

Its legs are twice as long as its thighs which goes against the norm for most dinosaurs. This seems to suggest that the creature was once an excellent runner since modern animals that run quickly often have elongated lower legs. However, if you consider it as a bird, elongated lowered legs are typical of wading birds such as cranes and storks so scientists believe that the dinosaur once lived in water.

The Fujianvenator weighed only 641 grams, similar to the size of a pheasant. Its forelimb looks like a bird's wing, and it even has three claws on its fingers, a feature that is different from modern birds. Surprisingly, owning a wing doesn't mean that it could fly. Min Wang, study leader and paleontologist at the Institute of Vertebrate Paleontology and Paleoanthropology of the Chinese Academy of Sciences, said that its lack of ability to fly could be gauged from its skeletal features, though the fossils do not guarantee anything.

Although feathers weren't preserved in the fossil, scientists can safely claim that it did possess feathers by taking into account its closest relatives. Paleontologists are optimistic about this new discovery as they believe it is a breakthrough which propels the path towards understanding the origins of birds more completely. At approximately 150 million years old its era is very much that of the first birds to ever roam the earth.

In conclusion, even though there is little known fact about the Fujianvenator prodigiosus, its discovery remains a crucial milestone in the field of paleontology. In the meantime, we may find delight in a light–hearted discussion whether it lived a terrestrial or aquatic life.

China's Revolutionary Efforts in Dinosaur Paleontology – From the 19th Century and Ever Onwards

Ying Wa College, Lam, Bok Man – 15

The recent discovery of a dinosaur fossil in Hong Kong has made China's prominence in dinosaur paleontology more evident than ever before. Over the past two decades, scientists across the country have made countless discoveries and lead many projects in this field. Although it seems that the road our scientists walked upon was smooth, the first steps these pioneers took in the field of dinosaur paleontology were, to say the least, rough. Despite these challenges and adversities, China's paleontologists have still made multiple breakthroughs in this field throughout the years, discovering numerous new species of dinosaurs, ranging from the *Sinosauropteryx*, the world's first clearly feathered dinosaur, to the *Gigantoraptor*, one of the largest dinosaurs ever discovered.

Before we explore China's recent breakthroughs in the paleontology of dinosaurs, we must first ask: How did China manage to make such great progress regarding dinosaur paleontology in such a short time? To answer this question, we need to know China's research on paleontology and fossils in the past century…

China's first steps in paleontology were filled with challenges for the scientists of the time. Of course, with such challenges, the Chinese have not yet recorded a dinosaur fossil discovery. Instead, our scientists began on invertebrates and plant fossils. Before 1920, almost all paleontologists and geologists carrying out research in China were from foreign countries, such as German scientist F. Richthofen during 1868 and 1872, who collected multiple fossils of ancient invertebrates, recording their data in many Chinese provinces. There are some exceptions to this, of course. The first Chinese scientist publishing his research on paleontology was Rongguang Qi in 1871. Being fortunate enough to be sent to America by the Qing government and having been trained in geology and mineral resources, Qi conducted research on invertebrates and plants from the Hebei Province and published his results in 1910. Although these discoveries weren't the most groundbreaking for the time period, this marked the beginning of a great journey.

Apart from these discoveries, the first attempts to teach geology and paleontology at a college level had also been made in the University of Peking. One of the most notable professors in this field was Wenjiang Ding, a 1911 graduate of the University of Glasgow, who started teaching China's first college–level course in paleontology at the Geological Institute, which was founded in 1913. This course gave rise to the first generation of geologists and paleontologists trained locally in China, as well as the National Geological Survey of China that was officially founded in 1916, with Ding as its first director and some of the aforementioned locally trained paleontologists being hired. In addition to Ding's tremendous efforts in teaching paleontology, he has also pioneered the study of fossil plants in China. The establishment of these foundations and the contributions of many scientists helped lay the foundations for dinosaur paleontology in China.

After the first steps were made, the very first dinosaur fossils were finally discovered in China in the 1930s, after the fall of the Qing Dynasty and the establishment of the Republic of China. One of the biggest pioneers to dinosaur paleontology in China is none other than Yang Zhongjian. Graduating from the Department of Geology in Peking University in 1923 and receiving his doctorate from the University of Munich in 1927, Yang dedicated his research on fossil vertebrates, including that of dinosaurs. Yang later supervised the research on dinosaurs in China from 1933 until the 1970s. In this time, Yang led the discovery of some of the most important fossil discoveries in history, with some examples being the first few prosauropods, a family of herbivorous dinosaurs, notably *Lufengosaurus* in 1938, playing a crucial role in giving paleontologists information on the early migration patterns of dinosaurs into Asia, and *Yunnanosaurus* in 1942, with both of these fossils being found in the Lufeng formation located in Yunnan Province. The gigantic sauropod *Mamenchisaurus* was also discovered by him in 1954 being the largest species of dinosaur in China to date. China's, as well as Asia's first stegosaur, the *Chialingosaurus*, was discovered by Yang in 1957. These

discoveries all served as a major milestone in Chinese dinosaur paleontology. Because of these great discoveries, Yang has been called the 'Father of Chinese Vertebrate Paleontology'.

While the contributions Yang made to dinosaur paleontology in both China and worldwide are indisputable, there are still other paleontologists who played a significant role in pioneering the exploration and discovery of dinosaurs in China from the 1950s to the 1960s. One of these examples is Hu Chengzhi. Even though his major focus on paleontology was paleoanthropology, the study of ancient humans, he still managed to discover the first fossil of *Keichousaurus* in 1957, as well as a hadrosaur species, *Shantungosaurus giganteus*, found in the Shandong Province, demonstrating the activeness of Chinese scientists in the research of dinosaur paleontology.

Despite the tremendous efforts and progress Chinese paleontologists have made during the 1930s to the 1960s, China was still just a rising country in terms of fossil count. So, how is China among the top countries in paleontology today? Well, to say the least, the field of paleontology in China has experienced an extremely rapid development in both technology and research in the late 1970s, following the conclusion of the Chinese Civil War and the Cultural Revolution. In addition, the 'Reforms and Opening−up Policy' established in China boosted the Chinese economy, greatly benefiting paleontologists. With that said, we will now take a closer look at the exponential growth that Chinese dinosaur paleontology has experienced, as well as the key breakthroughs our scientists have made.

The 1970s period played a crucial role in the field of paleontology worldwide, mostly because of China's aforementioned leap in technology, seeing a wave of new dinosaur discoveries and a major advancement in our understanding of these creatures. China's research on dinosaurs was perhaps one of the most groundbreaking, with many scientists dedicating their work to them, one of them being Chinese paleontologist Dong Zhiming, a disciple of the previously mentioned Yang Zhongjian and working for the Institute of Vertebrate Paleontology and Paleoanthropology (IVPP). His research mainly focused on the Shaximiao Formation. Located in the small town of Dashanpu in the Sichuan Province, this formation is one that was composed of dinosaur bones from the Middle Jurassic, a period which does not commonly yield fossils. In fact, the dinosaur fossils found here were the first fossils dating to the Middle Jurassic that were found in China! This marked another significant milestone in dinosaur paleontology in China. Apart from these great discoveries in Sichuan, Dong has also made significant contributions in the China−Canada Dinosaur Project (CCDP), one of the largest missions in paleontology. As a result of this project, more than 11 new dinosaur species were discovered in the Junggar Basin of Xinjiang. One of the genus of these species was named in honour of Dong, specifically the theropod dinosaur *Sinraptor dongi*. With many other examples like Dong, it is clear that China's prominence in dinosaur paleontology is on a rising trend.

In addition to Dong's significant discoveries in Sichuan regarding the China−Canada Dinosaur Project, Chinese and Canadian paleontologists have also carried out field work in the Gobi Desert in this project. With the desert's expanse stretching from northern China all the way to southern Mongolia, this region would soon become the largest dinosaur fossil reservoir in the world. After identifying the sites of interest for future excavation, Canadian researchers like Dale Russel and Phil Currie uncovered more than 70 dinosaur fossils near the town of Bayan Mandahu in 1988. The China−Canada Dinosaur Project concluded in 1991, with over 60 tonnes of fossil material collected in China alone, and another 15 tonnes found in Canada. This massive project also had lots of positive impacts on China's progress on science in general, as the National Natural Science foundation of China was established in 1986 in conjunction with the initiation of the CCDP. Another major implication of this collaboration was that it fostered the collaboration of Chinese institutions with foreign bodies, which resulted in three additional dinosaur projects, such as the Sino−Japan Silk Road Dinosaur Expedition in 1992 and the Sino−Belgium Dinosaur Project in 1995. Scientists like Zhao Xijin and other participants of the CCDP still continued to lead international expeditions to the Gobi desert even after the conclusion of the project, proving their dedication to paleontology. It's no surprise Chinese scientists will bring us another groundbreaking discovery very soon…

With the 20th century coming to an end, Chinese paleontologists have made yet another monumental breakthrough. Surprisingly, this precious fossil was not found by a scientist! In the late 1990s, a farmer named Li Yumin uncovered the first fossil of the *Sinosauropteryx* in the Liaoning Province. The *Sinosauropteryx* species was the first clearly feathered dinosaurs outside of Avialae, birds and their immediate relatives. *Sinosauropteryx* was a small, carnivorous compsognathid dinosaur species that lived in the Early Cretaceous period, or about 130 million years ago. What intrigued scientists the most was that it was covered in a coat of filament−like feathers. There were also structures in some of its feathers that indicated colouration, a reddish and light banded tail. This makes it the first non−avialian dinosaurs where colouration has been determined.

So, why is the discovery of the *Sinosauropteryx* such an important one? Well, this discovery revolutionized our understanding of dinosaurs. Now, you may ask: How is this dinosaur fossil so special and important? Well, it is special simply because of one prominent feature: The presence of feathers.

The discovery of a feathered dinosaur has multiple implications on the study of dinosaurs as a whole. To begin with, the *Sinosauropteryx* gave new insights into the biology of dinosaurs, specifically those of the theropod family. The presence of feathers was a direct counter−example of the traditional view of dinosaurs of them being 'reptiles with scaly skin', completely changing scientists' perceptions of dinosaurs. This also indicates that these dinosaurs had enhanced heat insulation and thermoregulation capabilities than their predecessors from earlier periods such as the Jurassic. It is most likely that these feathers were used as an early form of thermoregulation by trapping heat to maintain a more stable temperature. This need for sustaining body temperature suggests that some dinosaurs from the Cretaceous period like the *Sinosauropteryx* were no longer purely cold−blooded.

Speaking of sustaining body temperature, some dinosaurs being warm−blooded also has a big impact on our understanding of the metabolism and activity levels of dinosaurs in the Cretaceous. Feathers are metabolically costly to produce and maintain, implying a higher level of energy consumption and metabolic rate in these dinosaurs, making them more similar to modern animals.

Apart from this, another significance of this discovery was that it suggests the use of camouflage in dinosaurs. The colouration of the *Sinosauropteryx* showed distinct banding patterns in its feathers. This kind of colouration, now known as a countershaded colouration theme, is also seen in many of today's birds, as well as other animals like sharks. This demonstrates that small, feathered dinosaurs like the *Sinosauropteryx* may have evolved similar strategies to blend into their environment and ambush prey.

Most importantly, the *Sinosauropteryx* provided scientists with crucial information regarding the evolution of dinosaurs into modern birds. The *Sinosauropteryx* possessed skeletal features such as a relative high skull, as well as primitive feather structures that are estimated to have evolved into modern birds, and thus serving as a transitional form between non−avian dinosaurs and the first true birds, specifically the clade Aves. Although the feathers found in *Sinosauropteryx* were relatively simple and primitive when compared to the birds we see today, it still laid the basis for flight in avian species.

Entering the 21st century, the many positive impacts of the discovery of *Sinosauropteryx* has kickstarted the exploration of feathered dinosaurs.

Closely following the discovery of the revolutionary *Sinosauropteryx*, Chinese paleontologists continued research in the Liaoning Province, the same province where *Sinosauropteryx* was discovered, with one of the most notable scientists being Xu Xing, a paleontologist known for naming more dinosaurs than any other living paleontologist, proving his massive contributions to Chinese paleontology. Some of his discoveries included feathered dinosaurs, such as the *Microraptor* in 2000 and the *Mei long* in 2004. These two dinosaurs, just like the *Sinosauropteryx*, showed primitive characteristics of birds as well as those of previously existing dinosaurs, giving further evidence of

how dinosaurs evolved into birds, helping to bridge this evolutionary 'gap'. Additionally, Xu studied the genus *Anchiornis*, which was found in the fossil beds of Liaoning. The *Anchiornis* was a four-winged theropod dinosaur which had feathers covering almost the entire body. What is also interesting is that it came around 10 million years before the first recognized bird, the *Archaeopteryx*. This, in addition to the *Sinosauropteryx*, was another crucial clue towards how the first birds evolved into existence.

While the discovery of feathered dinosaurs in China marks an important milestone in both national and global scales, other breakthroughs our scientists have made in the 21st century are not to be neglected.

One major contribution China has made is none other than the development of new technology and techniques for studying fossils. Chinese researchers have collaborated with other international experts in order to apply various cutting-edge technologies like CT scanning, a non-destructive method of analysing fossils, allowing for the study of fossils while preserving its original form; isotopic analysis, which is the analysis of chemical isotopes present in a fossil. Such isotopes of elements include those of carbon, nitrogen and oxygen, notably the use of carbon-13 in dinosaur teeth and bones to study the ecological and dietary habits of dinosaurs; as well as biomechanical modeling to study the biomechanics of locomotion in dinosaurs, such as walking, running and other movement patterns in different dinosaur species. These technologies allow scientists to do further research on how dinosaurs lived.

Another major contribution China has made is on the field of dinosaur paleoecology, the study of the ecosystems and the interactions between dinosaurs. Recent studies and explorations of Chinese dinosaur fossil beds have provided unprecedented insights into the ecosystems and food webs of dinosaurs, as well as the relationship between dinosaurs and other organisms, deepening our understanding of the roles of dinosaurs in ancient ecology.

In conclusion, Chinese paleontologists have taken multiple great leaps in the study of dinosaurs since the 19th century with fascinating discoveries, ranging from the revolutionary *Sinosauropteryx* to the gigantic *Mamenchisaurus*. Throughout these two centuries, our scientists have only been advancing in both technology and knowledge more and more rapidly, proving China's prominence in the field of dinosaur paleontology. With new dinosaur species being discovered in various regions of China at an astonishing rate, there really is no knowing what the next groundbreaking discovery will be — whether it be a new technology or a species that changes our view on dinosaurs yet again — yet one thing is to be certain: China's paleontologists will continue to push the boundaries of our understanding of these prehistoric giants that once dominated the Earth like we did, unravelling the ancient mysteries these fossils hold.

Creative Writing

Non-Fiction

Group 4

New Tales of China's Dinosaurs

Chan Sui Ki (La Salle) College, Mok, Cheuk Lam – 16

China has long been recognized as a treasure trove for dinosaur fossils, yielding some of the most significant discoveries in paleontology. The country holds many diverse geological formations such as rich fossils which have produced many dinosaur species, many of which were previously unknown to mankind. Recent advancements in technology and advanced excavations projects fueled by human curiosity have opened a new chapter in the understanding of these prehistoric creatures, shedding light on this unknown category, behavior, and evolution. In this essay below I will lightly delve within the topic and describe the new tales of Chinese dinosaurs.

China, known as the land of dinosaurs, once inhabited a wide array of dinosaurs ranging from the late Triassic period to the late Cretaceous periods. This vast span of time is seen through the species and diversity of the dinosaur fossils discovered. With such a rich land for excavation, there are bound to be distinguished discoveries. For example, in one of the most prestigious and famous sites for fossil hunting, the Lianing province, has yielded a plentitude of well–preserved fossils with the Jiufotand and Yixian formation which has presented a lineup of feathered dinosaurs that has helped the understanding of birds and dinosaurs, these exciting discoveries have prompted scientists to rethink evolutionary pathways of such creatures further inciting the progression in uncovering the unknown.

Within the ever–growing technological advancement, modern technologies such as 3D imaging and computer simulations, have enhanced the study of dinosaur fossils. Researchers can now create detailed models of dinosaur anatomy, allowing for a better understanding of their integral structure, feeding habits, and ecological roles. For instance, the use of CT scanning has revealed previously hidden structures in fossils, providing insights into the growth and development of dinosaurs. One notable application of technology is in the study of dinosaur eggs. China has one of the richest deposits of dinosaur eggs, with thousands of fossils discovered across various regions. Advanced imaging techniques have allowed scientists to study the internal structures of these eggs, leading to discoveries about nesting behaviors and reproductive strategies.

As paleontological techniques continue to advance and excavations expand, the future of dinosaur research in China looks promising. The country's commitment to scientific exploration and conservation of fossil sites ensures that new discoveries will continue to emerge. Collaborative efforts between Chinese and international researchers are fostering a global exchange of knowledge, enriching the field of paleontology. This is undoubtedly a motion worth applauding, with the new era determined to fathom out the mysteries of prehistoric creatures that have laid foot within the soil of the same Earth, evolutionary biology headway is a sure success.

As we continue to explore the rich fossil beds of China, the stories of these magnificent animals will undoubtedly become even more intricate, providing a deeper appreciation for the complexity of life on Earth. The legacy of China's dinosaurs is not just one of extinction but of a vibrant and dynamic past that informs our understanding of evolution and the interconnectedness of life.

New Tales of China's Dinosaurs

Chan Sui Ki (La Salle) College, Wong, Ho Yin – 17

Introduction

With more than 5000 years of history, China is a land steeped in culture and history. In the last couple of decades, especially in vast landscapes, many dinosaurs that once lived in Xinjiang have been discovered by scientists. With a thriving paleontological scene, China has been a crucial hub for dinosaur research, becoming the most significant fossil discoveries in this planet earth.

Fossil of new dinosaur species discovered in SW China's Yunnan

An article published in Global Times by writer Li Hang talks about a recent find in China's Yunnan. A new genus and species of non−sauropodan saurodomorph, Lishulong Wangi, has been identified from a fossil discovered in the Lower Jurassic Lufeng Formation in Southwest China's Yunnan Province. The discovery features the largest cranial material in its group from this formation, measuring approximately 40 centimeters in length.
You Hailu, lead researcher from the Chinese Academy of Sciences, highlighted this find enhances the diversity of dinosaurs in southwest China and offers insights into the evolutionary traits of early sauropodomorphs. The discovery suggests that these dinosaurs experienced rapid expansion and maintained diversity during the Early Jurassic period in China.
Overall, Lishulong Wangi is recognized as the largest sauropodomorph from the early Jurassic in China, providing crucial evidence of the presence of early sauropodiform lineages in the region during this period.

Cultural Significance in China

Dinosaurs have been revered in the history of Chinese culture. The ancient Chinese regarded this gigantic, menacing beast through the lens of myth. The word "dragon, which is predominant in the Chinese culture, seems to have an origin in the finding of dinosaurs till nowadays. Many ancient fossils were believed to be of dragons, which gave rise to the worship of such beings in China's ancient folk stories.
A more specific local and more recent view, however, might say that dragons are just the snakes that family brought us rain on the thirsty plains. This worship of dragons has resulted in an intriguing drama between the creatures in ancient times and the societies in the present, leading to countless legends and artworks.

Contributions in Science

China's contributions to paleontology extend beyond fossil discoveries. The Chinese scientists have made major improvements in deciphering the behaviors and physiology of dinosaurs, among other things. Research projects often involve taking part in an international collaboration that incorporates experts from various parts of the world and provides an opportunity to explore the enigma of these ancient animals further. One such important event was the discovery of the large feathered dinosaur yutyrannus, which offered valuable knowledge during the evolution of feathers as well as their utilization. Findings such as these have altered the way dinosaurs are said to have evolved, adding greater detail as to how they have evolved.

Technology impacting the Study of Dinosaurs in China

Together with the technological advancement, the paleontological scene in China is also advancing. For instance, 3D modeling enables the researchers to examine fossils in much greater detail, revealing hidden data. These methods are revolutionizing how dinosaurs are studied and their behavior portrayed, which are giving rise to some new theories.

Conclusion

The scientific community and the rest of the population ought to know the numerous scientific discoveries and stories that certainly lie behind the in the background concerning Chinese dinosaurs. Such a range of stories spans from the ancient times, where dinosaurs are seen as dragons, to present−day stories addressing 'moral' issues that, as said above, serve to remind us as to what the ancient world was made of and the dominions in it.

Thus as we continue to peel the layers that surround the past, these accounts also serve to encourage us in safeguarding the environment and the reasons behind that.

The Unveiled Mystery of China's Fossils

Chan Sui Ki (La Salle) College, Wong, Yik Chun – 18

China has emerged as a significant player in the field of paleontology, contributing to our understanding of the history of life on Earth through its remarkable fossil discoveries. The history of paleontological research in China dates back to the late 19th century, with early explorations often led by foreign scientists who recognized the country's potential for yielding significant fossils. However, it wasn't until the late 20th century and into the 21st century that Chinese paleontologists began to make substantial contributions, uncovering fossils that have reshaped our understanding of evolutionary history and provided insights into the diversity of life during the Mesozoic era.

This transformation is particularly evident in regions like Liaoning Province, which has yielded exceptional fossils from the Jehol Biota, a biodiversity hotspot from the Early Cretaceous period. The Jehol Biota is renowned for its well–preserved fossils, including feathered dinosaurs, early birds, and various plants, providing a glimpse into the ecosystem of that era. The discoveries made in this region have profoundly influenced the scientific community's understanding of the evolution of birds and the relationship between dinosaurs and their avian descendants. For instance, the discovery of *Archaeopteryx* in Germany had long been considered the pivotal link between dinosaurs and birds. However, the findings in China, such as *Microraptor*, which exhibited both feathers and primitive wings, suggested a more complex evolutionary pathway. These fossils not only demonstrated that feathers likely evolved for purposes other than flight, such as insulation or display, but they also indicated that the origin of birds was likely more intricate than previously thought.

In addition to feathered dinosaurs, China has also produced a wealth of fossils from other groups, including mammals and reptiles. The fossil beds in Shanxi Province, for example, have revealed a diverse array of early mammals that lived alongside dinosaurs. These discoveries have provided crucial insights into the evolution of mammals, showing how they adapted to the changing environments after the mass extinction event that wiped out the dinosaurs. The fossil record indicates that while dinosaurs dominated the Mesozoic era, mammals were quietly evolving, laying the groundwork for the diversity we see today. This has led paleontologists to reconsider the narrative of mammal evolution, which was once thought to be a tale of survival in the shadows of dinosaurs. The emergence of various mammalian lineages in China, including early primate ancestors, has added depth to our understanding of how mammals diversified and adapted in the wake of the dinosaur extinction.

Moreover, the discovery of dinosaur eggs and nests in China has provided valuable information about the reproductive behaviors of these ancient creatures. The findings suggest that some species exhibited parental care, indicating complex social behaviors that were previously unrecognized. The sites in Henan Province, where numerous dinosaur eggs have been found, have become important for understanding the life cycles and reproductive strategies of these animals. Such discoveries highlight the importance of fossils in reconstructing not only physical attributes but also behavioral patterns of extinct species. The presence of large nesting colonies, where multiple species laid their eggs, suggests that these dinosaurs may have engaged in communal nesting, further indicating a level of social organization that challenges previous assumptions about dinosaur behavior.

China's paleontological contributions extend beyond terrestrial findings, as marine fossils have also unveiled the rich history of life in ancient oceans. The limestone formations in Guangxi Province have yielded an abundance of marine reptiles, including the well-known *Nothosaurus* and *Mamenchisaurus*. These fossils have provided insights into the adaptations of marine reptiles, demonstrating how they evolved to thrive in aquatic environments. The presence of diverse marine life during the Mesozoic era emphasizes the interconnectedness of terrestrial and marine ecosystems, offering a broader perspective on the evolution of life. Marine fossils have also revealed the existence of various cephalopods, bony fishes, and prehistoric sharks, illustrating the biodiversity that thrived in oceans millions of years ago.

The collaboration between Chinese and international paleontologists has been instrumental in advancing the field. Joint research projects have facilitated knowledge exchange and fostered a deeper understanding of fossils from both local and global perspectives. This collaboration is evident in the numerous conferences and symposiums held in China, where researchers from around the world gather to share their findings and discuss the latest developments in paleontology. Such interactions have not only enriched the scientific community but have also positioned China as a leader in the field. The establishment of research institutions dedicated to paleontology, such as the Institute of Vertebrate Paleontology and Paleoanthropology in Beijing, has played a crucial role in training the next generation of paleontologists and fostering a vibrant research environment.

As paleontological research in China continues to flourish, the role of technology has become increasingly prominent. Advanced imaging techniques, such as CT scanning and 3D printing, have revolutionized the way fossils are studied. These technologies allow researchers to examine internal structures without damaging the specimens, providing new insights into the biology and anatomy of extinct species. For instance, the use of CT scans has enabled scientists to reconstruct the skulls of ancient reptiles and birds, revealing details that were previously hidden. This technological advancement has not only enhanced our understanding of fossils but has also opened new avenues for research. The ability to create 3D models of fossils allows for detailed analysis and comparison, enabling researchers to test hypotheses about evolutionary relationships and functional morphology.

China's paleontological landscape is also shaped by its rich cultural heritage. The country's long-standing fascination with fossils can be traced back to traditional Chinese medicine, where certain fossilized materials were believed to possess healing properties. This cultural backdrop has fostered a sense of pride in paleontological discoveries, with many local communities actively participating in fossil hunting. The enthusiasm for fossils has led to the establishment of numerous fossil parks and museums, which serve as educational platforms for the public and inspire future generations of paleontologists. These institutions not only showcase the fossil heritage of China but also engage the public in the scientific process, fostering a greater appreciation for the natural world.

In recent years, the Chinese government has recognized the importance of paleontology for scientific research and tourism. Initiatives to protect fossil sites and promote paleontological tourism have gained momentum, attracting visitors from around the globe. This not only boosts local economies but also raises awareness about the significance of paleontology in understanding Earth's history. Museums dedicated to paleontology, such as the Beijing Museum of Natural History, showcase the rich fossil heritage of China, providing an opportunity for the public to engage with

the past. These museums often feature interactive exhibits, allowing visitors to participate in hands-on learning experiences that highlight the scientific principles underlying paleontological research.

Despite these advancements, challenges remain in the field of paleontology in China. The rapid pace of development and urbanization poses a threat to fossil sites, with many being destroyed or damaged in the name of progress. The need for sustainable practices and conservation efforts has become increasingly urgent to ensure that future generations can study and appreciate these invaluable resources. Advocacy for the protection of fossil heritage is essential, as it not only preserves scientific knowledge but also honors the cultural significance of paleontological discoveries. Collaborative efforts between scientists, policymakers, and local communities are crucial in balancing development and conservation, ensuring that the fossil record is safeguarded for future research.

The future of paleontology in China looks promising, with ongoing research efforts and a growing community of scientists dedicated to the study of fossils. The possibilities for new discoveries are vast, as many regions remain underexplored. The combination of traditional fossil hunting and modern scientific techniques has the potential to yield groundbreaking findings that could reshape our understanding of evolutionary history. As the field continues to evolve, the contributions of Chinese paleontologists will undoubtedly play a crucial role in unraveling the mysteries of the past. Ongoing excavation projects in remote areas, where fossils have yet to be discovered, hold the promise of unveiling new species and expanding our knowledge of prehistoric life.

In addition to traditional fossil sites, the rise of citizen science initiatives has empowered amateur fossil hunters to contribute to paleontological research. These grassroots movements encourage local communities to participate in fossil collecting and documentation, fostering a sense of stewardship over their natural heritage. By providing training and resources, paleontologists can engage the public in scientific research, allowing for the discovery of previously unknown fossils and enhancing the overall understanding of the fossil record. This collaborative approach not only enriches the field but also builds a strong connection between scientists and the communities that cherish their fossil heritage.

In conclusion, China's journey in paleontology has transformed it into a global leader in the field. The remarkable fossil discoveries, coupled with advancements in technology and collaborative efforts, have enriched our understanding of the history of life on Earth. From feathered dinosaurs to early mammals, China's fossil record offers a window into the past, revealing the complex interplay of evolution. As the nation continues to invest in research and conservation, the future holds immense potential for further discoveries that will continue to illuminate the story of life on our planet. The legacy of paleontological research in China is not just in the fossils unearthed, but also in the inspiration it provides for generations to come. As more young scientists are drawn to the field, the ongoing exploration of China’s rich fossil heritage promises to keep the narrative of paleontology vibrant and evolving. The commitment to understanding and preserving this heritage will ensure that the story of life on Earth continues to be told, one fossil at a time.

New Tales of China's Dinosaurs

Chan Sui Ki (La Salle) College, Yip, Chun Wai – 17

China has quietly become the global epicenter of fossil–hunting. In the 1990s, a farmer found the world's very first clearly feathered dinosaur. Scientists called it Sinosauropteryx, which means "the China dragon bird". Since then, more than 40 dinosaur species have been found in the province of Liaoning, including more than 24 pterosaurs – winged reptiles. In this essay, I am going to talk about the new Dinosaurs found in China.

The dinosaur called Jiangxititan was discovered in sediments of the Nanxiong Formation near Jiangxi Province, southern China. The specimen consists of the three posteriormost cervical vertebrae with two cervical ribs, articulated with the first four dorsal vertebrae with three dorsal ribs. Also, there are a lot of species of Jiangxititan, such as xianshanosaurus, daxiatitan.

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Not only this dinosaur that China has discovered, scientists have confirmed the discovery of two massive new dinosaur species in northwest China. There are Silutitan sinensis and xinjiangensis. The researchers have since determined that two that two of those specimens were from previously unknown species, which they have named Silutitan sinensis – "silu" meaning "Silk Road" in Mandarin and Hamititan xinjiangensis. The Silutitan specimen is estimated to be over 20 meters long, while the Hamititan specimen was 17 meters long. We can see that these dinosaurs are as large as a big shark.

The Gobi Desert and Xinjiang regions have also contributed significantly to dinosaur research. These areas have yielded fossils from diverse prehistoric periods, providing comprehensive data about dinosaur migration patterns, environmental adaptations, and evolutionary transitions. The preservation quality in these sites allows researchers to study intricate details of skeletal structures, skin impressions, and potential behavioral characteristics.

Additionally, the fossil of a tiny bird–like dinosaur with surprisingly long lower legs has been discovered in China. It was named Fuijianvenator prodigious, which means Bizarre hunter from Fuijian in Latin. This dinosaur weighted at around 1.4 pounds. In modern animals, an elongated lower leg is associated with species that can run quickly, suggesting that Fujianvenator may have a been a high–speed runner.

That is some of the new tales of dinosaur, I think we need to protect all of the dinosaur and other animals so as to protect the environment. This is our responsibility and I hope China can discover more about dinosaurs, and bring us to a better world.

New Tales of China's Dinosaurs

Chan Sui Ki (La Salle) College, Yung, Leroy Lon Hei – 16

Throughout the years, China has made many discoveries in various fields of operation, such as, astronomical, manufacturing, shipping, etc. However, if you ask me, I will mention the long−forgone residents of earth, in other words, dinosaurs.

In recent years, paleontologists have made great strides, historical creatures had been dug up, and findings has never been more successful, multiple rare species of dinosaurs had been "brought back to life", including some which humans had never been in contact with. These discoveries helped China become the top−notch country in this field of aspect and brought China into a new tale of dinosaurs.

Possibility of Coexistence Between Dinosaurs and Humans: Can Modern Technology Counter Their Absolute Strength?

HD Beijing School (JinZhan Campus), Lv, Yiyi – 14

The idea of dinosaurs and humans sharing the planet is thrilling but somehow exciting. Dinosaurs, who dominated Earth millions of years ago, were unmatched by any other living organism that appeared later in their physical capabilities, while humans have since developed technologies that shaped and controlled our modern planet. Then, what would happen if the two dominators of Earth met? Would our technologies enable us to manage their immense, ancient power and adapt to such a challenging reality? Would dinosaurs be able to coexist with us? I would like to explore this potential circumstance, focusing on dinosaur's physical strengths, human's technological resources, and the ecological and ethical dilemmas that might arise, while at the same time adding my own imagination.

Absolute Strength of Dinosaurs

Dinosaurs were evolutionary powerhouses full of physical traits that helped kept their rule over Earth under extremely competitive and cruel environment. Tyrannosaurus rex, one of the most formidable predators, possessed a bite force of approximately 35,000 Newtons—strong enough to crush bones. Its muscular build and acute sensory abilities made it a nearly unstoppable predator. On the other hand, herbivorous dinosaurs like Triceratops were advanced in defense, with their sharp horns and protective frills capable of repelling even the largest carnivores alive now. Meanwhile, flying ones such as Pterosaurs, with wingspans exceeding 10 meters, commanded the skies, hunting from above and covering territories with ease.

The capabilities mentioned above suggest that dinosaurs would be formidable opponents in any ecosystem. Their massive size and strength would make them difficult to control or deter, and their instincts for survival—likely similar to modern-day apex predators such as lions or crocodiles—could pose significant threats to human and our living environment. The physical and behavioral adaptations that allowed them to thrive in harsh, prehistoric environments would undoubtedly pose a difficult challenge for humans to defeat or control.

Modern Technology: Defense & Adaptation

We, however, have developed a range of technologies that might leave the topic some room for argument. Advanced weaponry, such as missiles and firearms, should theoretically be capable of threatening most dinosaurs. Autodrones with surveillance tools could also track dinosaurs, monitor their movements, and intervene without direct human involvement. Such technologies could be crucial in ensuring safety in our ability for now.

Beyond immediate defense, genetic engineering might provide a more sustainable and soft solution, though these can be complicated and very expensive. Using CRISPR and other advanced biotechnologies, scientists might have the ability to modify dinosaur's genetic traits to make them less aggressive or reduce their size. This could lead to a more controlled coexistence, transforming those once fierce, dangerous monsters into manageable creatures just like alligators or bears. Furthermore, behavioral studies on modern reptiles and birds, which are the closest relative to dinosaurs we can find, could help us understand how to deal with their actions.

Infrastructure can also adapt for this unprecedented battle. Cities could incorporate "dinosaur–proof" designs, such as reinforced walls, electric fences, and motion–detection systems to create safe zones for humans while allowing dinosaurs to roam freely in designated areas (stimulated habitats). By using our technologies to a correct extent, people could try to establish boundaries that enable coexistence without compromising safety for both sides.

Coexistence Scenarios

It would be interesting to imagine scenes of humans and dinosaurs coexisting since it would create unique opportunities and challenges. Thinking positively, dinosaurs could be usefully integrated into various aspects of our life. Imagine large herbivores employed in agriculture or construction, using their strength to open up land or transport heavy materials. Flying dinosaurs like Pterosaurs (mentioned above) could revolutionize traveling, providing eco–friendly alternatives for short–distance journeys. These possibilities pushed back the boundaries of what carbon based organisms can do – creatures can be much more powerful than expected!

However, the ecological implications of coexistence would be significant. Dinosaurs, with their enormous dietary needs of prey that no longer exist, could disrupt food chains and ecosystems by an outperformance over every other specie when competing for food or other resources. A single herbivorous dinosaur, for instance, might consume vegetation at rates that's unsustainable for local ecosystems, leading to deforestation and loss of biodiversity. Similarly, carnivorous dinosaurs could pose huge threats to livestock and even human populations (both physically and mentally), requiring constant monitoring and intervention.

Challenges and Ethical Considerations

Despite some potential benefits mentioned, the challenges of coexistence would be enormous. One of the most pressing concerns is ecological balance, but the technological risks associated with reintroducing dinosaurs also need thorough consideration. Technology mentioned, such as genetic engineering, had a lot of uncertainty and is not fully developed yet. Accidents such as mutations could result in more aggressive or resilient dinosaurs, making it almost impossible to control them again. Moreover, we can see from previous experiences that over–reliance on technology leads to catastrophes and failures, if systems appear to be malfunctioned or misused.

As a conclusion, the question of bringing dinosaurs back and surviving with us on the same planet is filled with ethical complexity. Do we have the right to bring back and possibly torture species that nature has already made extinct? What responsibilities would we have toward them? Treating them as purly rivals or resources could lead to inevitable abusement, questioning the moral justification for their resurrection. Ensuring their well–being, though, will require significant sacrifices and commitments from human societies.

Citations:

American Museum of Natural History. (n.d.). Defensive structures in large herbivorous dinosaurs. Retrieved from https://www.amnh.org/

Nature. (n.d.). Research on dinosaur bite forces. Retrieved from https://www.nature.com/

Nature. (n.d.). Overview of gene editing technology. Retrieved from https://www.nature.com/subjects/genome-editing

PLOS. (n.d.). Ecosystem dynamics and large animals. Retrieved from https://www.plos.org/

ScienceDirect. (n.d.). Advancements in drone technology. Retrieved from https://www.sciencedirect.com/

ScienceDirect. (n.d.). Ethical implications of genetic engineering. Retrieved from https://www.sciencedirect.com/

Nature. (n.d.). Impact of large herbivores on modern ecosystems. Retrieved from https://www.nature.com/

Chinese Dinosaurs: Why They're so Awesome

HD Beijing School (JinZhan Campus), Ma, Jiankai Tiger – 14

Dinosaurs in China? Yup, they're everywhere! China is home to some of the coolest dinosaur fossils in the world, and scientists are constantly making new discoveries. With so many fossils being found here, it's like China has its very own dino treasure chest. From feathered dinosaurs to giant long-necked creatures, China has helped us learn so much about the dinosaurs that once roamed the Earth. So, why are Chinese dinosaurs so special? Let's dive in and explore why they're so awesome.

1. What Makes Chinese Dinosaurs Special?

China's geography and geology are like perfect conditions for preserving dinosaur fossils. Some places in China, like Liaoning, Sichuan, and Inner Mongolia, are full of fossils that are super well-preserved. Imagine walking into a museum and seeing dinosaurs that look almost alive!

Feathers on Dinosaurs?: In places like Liaoning, scientists found fossils of dinosaurs with actual feathers. For example, *Microraptor* and *Confuciusornis* were dinosaurs that had feathers, and they were basically like the cousins of birds. I remember reading about these fossils and thinking, "Wait, dinosaurs had feathers? That's so cool!" It's one of the biggest pieces of evidence that birds came from dinosaurs.

Diverse Species: China has a ton of different dinosaurs, from big guys like *Mamenchisaurus* to small, bird-like creatures like *Microraptor*. These fossils help us understand that dinosaurs weren't all the same—they came in all shapes and sizes, and some even laid eggs that have been preserved too! It's like a dino family reunion.

China's fossils are important because they tell us so much about life millions of years ago, and they help scientists all over the world learn about dinosaurs.

2. Why Chinese Dinosaurs Are a Big Deal for Science

The discoveries of Chinese dinosaurs have completely changed what we know about dinosaurs. They've answered some huge questions that scientists had about evolution.

Did Birds Evolve from Dinosaurs?: Before, scientists weren't sure if birds actually came from dinosaurs. But fossils like *Microraptor* and *Confuciusornis* proved that birds did evolve from dinosaurs. It's like one of those *"Aha!"* moments in science. Imagine learning that your pet bird is related to a tiny dinosaur—pretty wild, right?

Learning About Dino Life: The cool thing about Chinese fossils is that they don't just show us bones. In some cases, scientists have found things like dinosaur nests, eggs, and even imprints of feathers. For example, a nest of *Shu Long* (a dinosaur) was discovered with eggs in it, which helps scientists understand how dinosaurs took care of their babies. It's crazy to think that we can learn about their parenting skills through fossils!

Discovering New Species: China has helped scientists discover new species that we never knew existed. Dinosaurs like *Yutyrannus* (a fluffy dinosaur) and *Mamenchisaurus* (a long-necked giant) were named after fossils found in China. These discoveries help complete the dinosaur family tree and give us a better understanding of how dinosaurs lived.

3. Why Chinese Dinosaurs Are So Cool in Culture

Chinese dinosaurs aren't just for scientists—they're also a big part of pop culture. Have you ever seen a dinosaur-themed movie or show? A lot of the inspiration comes from these incredible fossils!
Dinosaur Museums: There are some awesome dinosaur museums in China. For example, the Zigong Dinosaur Museum in Sichuan has some of the best dinosaur exhibits in the world. I can imagine how cool it would be to walk through the museum and see fossils that are millions of years old. It's one of the best places to visit if you're into dinosaurs!
Movies and Cartoons: Dinosaurs show up in movies, cartoons, and even toys. Shows like *Dinosaur Train* and movies like *Jurassic Park* have made dinosaurs famous. It's pretty cool that China's dinosaurs have inspired so many people around the world. Every time I see a dino character in a cartoon, I think, "Hey, that could be a Chinese dinosaur!"

Conclusion

Chinese dinosaurs are definitely some of the most fascinating fossils in the world. They're well-preserved, diverse, and have helped answer some of the biggest questions in science, like whether birds came from dinosaurs. These fossils have also inspired movies, cartoons, and museums, making them a huge part of global pop culture.

When I think about it, Chinese dinosaurs are more than just ancient creatures—they're a link to the past that helps us understand the evolution of life on Earth. Who knows what we'll discover next? Maybe we'll find a new dinosaur that changes everything!

The Extinction of Dinosaurs

HD Beijing School (JinZhan Campus), Ning, Sichao Scott – 16

When I carefully helped to sort out a large number of historical materials, beside a dozen old cardboard boxes, I found an ancient history book, which told an amazing story about the coexistence of ancient Chinese people and dinosaurs. This incredible record was like a heavy stone forcefully thrown into the calm lake of my heart, instantly causing countless ripples. My gaze was fixed on the yellowed and tattered pages of the book, and my thoughts were involuntarily drawn into that mysterious, fantastical, and long-forgotten ancient era, as well as those written records.

The majestic mountains soared into the clouds, and the rugged peaks were often shrouded in mist, giving people a mysterious feeling. The winding river elegantly wound through the vast land, constantly flowing through deep valleys and vast plains. That land boasted both magnificent and awe-inspiring scenery, as well as potential dangers, where the primal power of nature held an unparalleled and supreme position.

In that boundless and uncultivated wilderness, various creatures thrived and multiplied, but none of them were as large and fierce as dinosaurs. Those enormous creatures had astonishing variations in form and size. There were huge herbivores moving like living mountains, their every step shaking the solid ground like a thunderous rumble, and agile carnivores that seemed to glide through the air with a nimble, almost otherworldly elegance, cleverly concealing their intimidating bodies. Dinosaurs undoubtedly ruled the food chain with iron-like and unyielding authority, and dominated that land with their terrifying existence.

In the past days, there were many hardworking human tribes scattered across this vast land. These people possess a tenacious and steadfast spirit, as well as a strong will to survive. They live in a united tribal community and barely make a living through arduous hunting and gathering tasks every day. Every day is a difficult struggle against the forces of nature, an endless battle. They need to find enough food to satisfy their roaring stomachs and seek shelter to protect them from the ruthless invasion of the wilderness.

That tribe has its own unique way of life, and the elders enjoy a highly respected status. These respected elders are steadfast guardians of tribal knowledge and long-standing traditions. People often sit around warm and flickering campfires. And those elders were telling dinosaur stories under the crackling campfire.

The elders in the tribe, whose voices had carried a mysterious aura for many years, sat in a solemn circle, with flickering flames casting dancing shadows on their weathered faces. They began to tell the story of their encounter with dinosaurs with serious expressions. The children widened their eyes, gazed curiously, filled with awe and reverence, and then squeezed closer, holding their breath and eagerly grasping every word. Especially those huge and dangerous carnivorous dinosaurs, like the sword of Damocles hanging over the fragile heads of the tribe. When they appeared, thunderous footsteps echoed on the ground, and the spines of the tribe members trembled with fear. Their chilling roars were like sharp blades cutting through the terrifying silence of the night, enough to freeze the blood in a person's heart and make their spine cool. The warriors of the tribe remained vigilant at all times, knowing that they bore a heavy and solemn responsibility to protect the people. Once there were signs of dinosaur attacks, piercing alarms would sound—piercing cries would make brave soldiers rush out with a sense of urgency. They would quickly gather together, wielding rough but effective, sturdy stone axes and sharp spears, forming a defensive line around the tribe, their hearts pounding with fear and unwavering determination.

Over time, human tribes slowly but surely began to change and evolve in an extraordinary way. As they learned to better adapt to challenging environments, their numbers gradually increased. They became more proficient in making tools, producing sharper and more efficient axes that could easily pass through dense trees, as well as spears with stronger and more lethal tips that could pierce the hard skin of thick animal hides. Their shelters also became stronger and more durable, and they gained a deeper understanding of how to withstand harsh weather conditions.

With the growth of knowledge, people gained new confidence. Some members of the tribe, those bolder, more adventurous, and more curious, began to believe that dinosaurs were not only unbeatable, insurmountable, and terrifying enemies, but also potential obstacles to their further expansion and prosperity.

Among those tribes was the Xia tribe, a group known for their intelligence, resourcefulness, and superior wisdom. They spent countless hours observing dinosaurs, studying their every move, habit, and behavior with keen eyes. People noticed that although dinosaurs were strong, they had a key weakness. During the dry season, when water sources became scarce, dinosaurs heavily relied on certain specific water pits. Those puddles were like lifelines to them, gathering places where they could quench their thirst and cool down their massive bodies. The tribal elder proposed a bold and dangerous plan.

The tribe stated that they might attempt to contaminate those important water sources with a mixture of toxic plants grown in large numbers in nearby mountainous areas. Other groups were both shocked and hesitant about that idea. They were very aware of the power and anger of dinosaurs and were concerned about the unknown consequences of such intense actions. What if dinosaurs were not weakened but instead provoked and launched more fierce attacks on the tribe? What if this disturbance to nature brought about other unforeseeable disasters?

However, as the threat of dinosaurs continued to escalate, people's determination began to waver. Attacks on their livestock had become more frequent, and many brave hunters had been bitten to death by carnivores. The survival of that tribe seemed precarious. After careful consideration, they finally agreed to the plan.

Under the cover of the moonless night, a group of the bravest warriors in the tribe, led by their leader, began their dangerous mission. They carried bags filled with crushed poisonous plants. Those plants were carefully collected and prepared according to the precise instructions of the shaman. Every step they took was filled with tension, and they perked up their ears, searching for any sounds that could indicate the existence of dinosaurs.

When they finally arrived at the nearest water pit where dinosaurs often roamed, the scene was both eerie and majestic. The calm water reflected the starry sky, surrounded by silence, only the occasional rustling of leaves in the breeze. The soldiers held their breath and quietly sprinkled the toxic mixture into the water, carefully spreading it evenly to ensure optimal results.

In the following days, dinosaurs began to show signs of trouble. The herbivorous animals that drank water from the poisonous water pit were the first to show signs of disease. Their once strong movements became sluggish, and their huge bodies seemed heavier than ever before. They no longer grazed enthusiastically as usual but stood listlessly, their eyes dull, their cries faint, and their moans echoing sadly on the plain.

Carnivorous animals that preyed on those sick herbivores also lacked immunity. When they feasted on weak prey, they also began to ingest venom. Their hunting ability was severely impaired. Their once rapid and deadly attacks had become slow and clumsy, losing their usual aggressiveness. They not only didn't wander around with a threatening expression but also seemed somewhat confused, as if they didn't quite understand what was happening to them.

The tribes watched everything unfold with awe, fear, and a strange sense of guilt. They had initiated a series of events that were now beyond their control, and they could only watch as the once powerful dinosaurs, the owners of that land, began to waver and decline. The actions of the Xia tribe quickly spread to other tribes. Some people praised their boldness, believing it was a necessary step to ensure their survival in a world dominated by such terrifying creatures. However, others held a critical attitude, fearing that this blatant interference with nature might lead to greater disasters in the long term.

With the continued impact of toxins, the number of dinosaurs began to decline at an alarming rate. The large group of herbivores that once roamed the plains became smaller and smaller, until only a few scattered individuals remained. Terrifying carnivores became increasingly rare. The once thunderous roar of dinosaurs had now turned into a terrifying silence.

For countless generations, the ecosystem balance centered around dinosaurs was now in a state of turbulence. With the disappearance of large herbivores, the vegetation they once controlled through grazing began to grow uncontrollably. The area that used to be an open plain was now covered with shrubs and forests, making it difficult for tribes to cross and hunt as they did in the past.

Carnivorous animals became thirstier for food in a weakened state. As the prey dwindled, even when sick, they began to shift their attention more frequently to the tribe. The warriors of the tribe had to be more vigilant than before, as sick and dying dinosaurs remained a huge threat.

Despite facing these challenges, the tribe has adapted to this way of life. They learned to clear areas overgrown with weeds and use fire to open up new pastures and hunting grounds. They developed new strategies to deal with the remaining dinosaurs, realizing that simple poison methods are not sustainable solutions.

As time passed, the decline of dinosaurs became increasingly apparent. The last Tyrannosaurus rex lame walking through a barren plain. Its once strong body bent downward, and its eyes filled with pain and confusion. It looked up at the sky and then fell down forever. Roarrrrrr!

Finally, after years of slow and painful genocide, dinosaurs completely disappeared from Chinese Mainland. The world known to human tribes has changed forever. The vast landscape once dominated by the thunderous footsteps and roars of dinosaurs has become so quiet, except for the sound of the wind and birds chirping.

The tribe witnessed this huge upheaval and stayed behind to reflect on everything they had done. Some people believed that taking action against dinosaurs was the right thing to do, as it could ensure their own survival and the future of their tribes. Others felt guilty and realized that they may have intervened too much in the natural order of things.

In the years following the extinction of dinosaurs, human tribes continued to evolve and develop. They built larger settlements, cultivated land, developed more complex social structures, and formed China's first dynasty——the Xia dynasty.

Later on, people told the story of dinosaurs to future generations. The story became legend, the legend became myth, and finally formed the myth of the Loongs.

Reference:

Poisoning deaths of 350 elephants linked to climate change – Earth.com
Xia Dynasty – World History Encyclopedia
Why humans kill animals and why we cannot avoid it – ScienceDirect

History of a Cruelly Ritual in Ancient China

HD Beijing School (JinZhan Campus), Yuan, Yueke Candy – 14

Dinosaur, an ancient animal, but also an outdated culture.

Dinosaurs, the giant beasts that once ruled the earth, have been extinct for tens of millions of years, but their influence in human culture and tradition is profound and lasting, and those Chinese ancient feudal traditional culture, also subtly affect the thoughts of many future generations in China.

The ancient martyrdom system was a shocking and an extremely brutal ritual of burying the living to death, and this is all due to the superstition and feudalism in ancient Chinese society. This corrupt custom has lasted for a long time, it was since the period of Shang Dynasty, people has been forcing or encouraging to die, and most of them were forced by, these “sacrifices” would be killed by some special method and then buried into a tomb.

Most of these methods are inhumane, the "chopping"（伐） sacrifice of beheading, and the "singeing"（燎） sacrifice of burning people are the most commonly used sacrificial methods.

It was all since the death of the emperor of Shang dynasty, the ritual of buried alive became popular, the powerful emperor or the majesty would often get a lot of people who buried with them when they died, there’s not only their wife and concubines, but also their ministers, some loyal servants would be willing to die with their master, but there’s also the master, that was too cunning and try to guide the people who has been loyal to him step by step to die with him. The ninth emperor of Qing dynasty, Duke Mu of Qin, once drinking with the princes, he suddenly said: “We Kings and ministers, rejoice together in life, must mourn together after death”. All the ministers heard has shown their attitude, they immediately said they were willing to die with Duke Mu, you must mean it when you say it, then when the day of Duke Mu’s burial came, all of them were buried in the grave with him.

The first emperor of China, also the first emperor of Qin, when he died, tens of thousands of people were ordered to be buried with him, those who had no children, and even those who had not step out of the imperial harem to see the outside world were all required to be buried with him, that’s an extremely cruel behavior. Revolting, monstrous, inhumane are the perfect words to illustrate this……

Another example in "Wu Yue Spring and Autumn" records that Lu's daughter committed suicide because she was angry with her father, then after heard the death of his daughter, Lu was extremely sad, and put a lot of effort on making her tomb, and he found a lot of fancy jewelry as the funerary object, when the day of her burial ceremony came, and the flashy and ostentatious decoration had attracted a lot of people to see, and they followed the parade, and when they arrived the graveyard, the men and women who followed the watch were ordered to be driven into underground, and then the tomb door was blocked. In this way, these watchers were buried in the tomb and became the martyrs of the daughter of Lu, this violent method was even darker and more inhuman than the burial system of the first Emperor of Qin.

I have seen a very weird way to build connection between the living people and the people who already died before, it is horrible and inhumane, that was came from some families with old superstition, and this families usually has a son who has already died, and they were all single, and the other family members will put a piece of money randomly on a place, whoever picked up, will be the bride of that died man, (but it must be a girl who picked it up),

then people from the dead will find the unfortune girl and kidnap her, and somehow get her to "stay" with her groom, and the method for this is definitely very cruel, how could the families of a young girl like that live for the rest of their life. Why does the dead's family would like to do this kind of things, it was all due to their superstition, they were basically wanting someone to stay with their child and don't let him feel lonely, but I can bet they have never thought about the fate of the chosen girl, otherwise there won't appear such a tragedy. The ritual of the "ghost marriage" are more cruel than human traffickers, they are not only superstitious, but also have no humanity, no correct cognition, which is the most terrible.

So in conclude, the ancient martyrdom system has involved a lot of aspects, religions, society, laws, and etc.… It deeply reflect the how the power is important that can even let a millions of people to die with them, and also shows the society structure in the past. People used to be very big about death, and they had a lot of rituals and rules about it, the concept of death and the afterlife must have changed a lot between the people now and before. With the progress of society and the improvement of human rights awareness, the culture of martyrdom has been gradually replaced by more civilized and humane funeral customs. And that is what we really want to changed.

Dinosaurs of Ancient Chinese Society

HD Beijing School (JinZhan Campus), Xie, Xinyi Sarah – 15

Dinosaurs, those ancient bosses, with their enormous bodies, inviolable strength, and potential danger, have become a formidable presence in nature. Imagine a giant dinosaur standing before you, blocking the entire sky with its gigantic head, as lofty as a mountain. Its huge claws, sharp like Xiphos, could bring devastating harm with a slight touch; they could press their prey down into darkness.

Back in China's old society, the feudal system was an oppressive force casting a long shadow over the lives of women. Just like how dinosaurs dominated the earth with their overwhelming power, the feudal structure loomed over women's lives, passing down threats and constraints for every generation. This oppressive system, with its deeply held beliefs, reduced women to men's accessories and denied them their basic rights. Facing these feudal systems, women were like weak creatures living under the shadow of dinosaurs, with their huge claws and inviolable power, firmly controlling the fate of women. Those feudal concepts were like the remnants of the dinosaur era, deeply imprinted in every corner of society.

The feudal concept dictated that women had no independent rights and status, they were banned from getting educated, barred from participating in social activities, and forbidden to have a job, their only expected role was to stay at home and serve their husbands and kids. This unequal treatment forced women at that time to leech on to their husbands and then were despised by the very society that placed them in this position. This giant dinosaur oppresses its huge body on women and left them struggling for air, and were locked in this shadow for a long period of time.

The feudal system enchains and puts strict restrictions on women like a giant claw pressed down on meek prey. The arranged marriage system is an example of these notorious ancient concepts, women are unable to choose their partners and are forced to accept the arrangements from their parents or family. Like a T−rex opening its jaw and devouring women's happiness and freedom into the dark abyss. Once married, women's status in the family was most of the time precarious, and are often abused by their husbands and family members. Domestic violence was rampant, further reinforcing women's subordinate position, like the claws of dinosaurs, constantly threatening the lives and safety of women.

These dinosaurs not only took away liberty and basic rights from women but also seriously hindered the development of the society at that time. Because of them, women could not fully present their talents and were unable to contribute to society. Women's exclusion from education, work, and society undoubtedly hindered the progress of back then society, as half the population was systematically silenced and marginalized. It was as though society itself was trapped in the shadow of a dinosaur and was unable to move forward.

However, just as those ancient creatures eventually went extinct, these outdated federal concepts are going to be crushed someday. With the progress of society and the development of time, people started to acknowledge the importance of women being treated equally, working hard to break the old concepts. As women began to claim their right to education, work, and social participation, this shift marked the beginning of a new era, just like the Earth's transformation after the age of dinosaurs. New ideas and values begin to emerge, promoting the growth and renewal of Chinese society.

Finally, the journey toward equality has not been done with its challenges, even as progress is made, remnants of feudal thinking continue to linger in corners of the society, like the fossils of dinosaurs that remind us of a bygone era. However, the momentum of changes was undeniable, women in China today have far greater freedoms and opportunities than before, participating in society and proving their worth in countless fields. Their achievements are a testament to the resilience and strength of those struggling to break free from the shackles of the past.

The extinction of the dinosaurs brought up the rise of new life forms and led to the rich diversity we see on Earth now, similarly, the collapse of feudalism and the rise of women's rights have ushered a new area of equality and progress of today's society.

Someday, we hope that all remnants of oppression will be completely abolished, and every woman around China will enjoy the freedom and equality they have long deserved, just as the Earth moved beyond the era of dinosaurs to create a brighter future, humanity too may evolve.

Is Cloning Dinosaurs Possible?

HD Beijing School (JinZhan Campus), Xu, Hao Yuan Eric – 14

Dinosaurs, creatures with massive and cool appearances, mysterious theories about their extinction, and portrayal in movies like Jurassic Park have fascinated people for centuries. The curiosities sparked people's interest in these ancient creatures, which also led to the idea of bringing them back to our world by cloning them. However, this is a super complex task in science, but nevertheless, it is worth exploring and finding if it is possible.

To clone an organism, the creature's DNA is needed, which is a blueprint for constructing its life. Although it is relatively easy to get the DNA of a currently living organism, such as a sheep, keep in mind that dinosaurs went extinct about 66 million years ago, making its DNA very difficult to retrieve. Since over such a long time, the leftover DNA segments have already broken into tiny pieces, lost all over the earth, or disappeared completely. Fossils are the remaining evidence of the existence of dinosaurs on our planet, but they usually do not preserve DNA information. Instead, they're just mineralized remains, like stone copies of bones. Lack of a good whole dinosaur DNA, it is nearly impossible to clone the creatures.

Even if we could gather some dinosaur DNA, there would be other issues to consider. Cloning in today's technology involves placing the DNA of one organism into the egg of a related species. For instance, scientists could clone a sheep by using the egg of another sheep. However, with dinosaurs, there are no creatures of similar species living today. Although animals, like birds, are descendants of dinosaurs, they have evolved so much that their eggs might not be able to carry dinosaur embryos. Without a suitable host egg, the cloning process cannot be done.

On top of the scientific challenges, there are also ethical and environmental questions to address. Suppose that we managed to successfully clone a dinosaur, where would we place it? The ecosystem now is very different from the those dinosaurs used to live in. Also, placing the dinosaurs in nature could disrupt the current environment or even harm existing species. Furthermore, keeping such a huge, powerful, and potentially dangerous creature in a lab or a cage would raise significant moral concerns and worries.

Although technically cloning dinosaurs might not be possible with today's technology, scientists are exploring other possible alternatives. One idea is to continue working with birds, although it isn't a suitable host egg, it is still the most relative species to dinosaurs. Studies of bird gens show the possibility of mimicking certain traits of dinosaurs, such as claws, teeth, or long tails. This approach is called "reverse engineering", which is still in the early stages of development, but it offers a creative way to bring some aspects of dinosaurs back to life.

Another alternative is to use new technologies to recreate dinosaurs virtually or through robotics. For example, using advanced animation and bionic robots can show us how these creatures might have behaved. These methods allow us to study and appreciate dinosaurs without the risks of cloning them.

In conclusion, cloning dinosaurs is not possible in today's world due to the lack of DNA and difficulty in finding a suitable host egg. However, other alternative methods, like studying birds or creating realistic simulations, can help us learn about the dinosaur's motion behavior and satisfy human curiosity. The circumstances of cloning dinosaurs are beyond the scientific challenges, the approaches remind us of the incredible diversity of life that has existed on our planet and the importance of protecting the species we have today.