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Chapter 1 : Paleontology - Wikipedia

*Raven's Flight (Discoveries in Palaeontology) [Diane Silvey] on blog.quintoapp.com *FREE* shipping on qualifying offers.*

Plants and Animals Taking flight? The skeleton was that of a largely complete, immature, three-metre long carnivorous dinosaur: Interestingly, bidding stopped before the reserve price was reached, so the specimen is still on the open market. Allosaurus Scott Hartman, Author provided The price or value of fossils has a history that is practically as long as the science of palaeontology the study of fossils itself. Mary lived during the early decades of the 19th century and had the knack of finding fossils, including those of seashells â€" bivalves, brachiopods, belemnites and ammonites â€" along the shores of Dorset and in the crumbling Jurassic cliffs, which she then sold. Dinosaurs are fossils and do have a value, but I am only really interested in their value as scientific objects. Here are some of the discoveries that really have made a difference to science. The bones, teeth and jaws were passed to Oxford University Museum , where they still reside, and were studied by the greatest living anatomist of the time Georges Cuvier , who visited Oxford and its custodian William Buckland from Paris to see the material. Buckland as well as Cuvier deduced that the bones belonged to a gigantic reptile, the like of which had not been seen before. Over the next decade and half more large fossil reptile bones were recovered in England and reviewed by the British anatomist Richard Owen. In Owen decided that these fossils were so utterly different from any known reptiles that they deserved to be classified as a completely new group of giant fossil reptiles: Prior to nobody had heard of dinosaurs, the rest is, in essence, history. And Megalosaurus was the first. Archaeopteryx Charles Darwin profoundly disturbed the established Victorian world and galvanised scientific interest in evolution when he published his book On the Origin of Species in With masterly circumspection, his book laid out the reasons for concluding that organic life had changed or evolved over the immensity of geological time. Archaeopteryx restored Robert Nicholls. Sedgwick Museum, University of Cambridge By an astonishing coincidence, a fossil was discovered in a quarry in southern Germany just one year after the publication of Origin. The fossil was extraordinary because around the bones were seen the impressions of feathers which of course implied that this was a bird yet what was also seen in the skeleton were clear traces of teeth no bird has teeth , hands with three well-developed clawed fingers no bird has clawed fingers of that type and its tail comprised a long string of small bones from which radiated a fan of feathers no bird has a long string of tail bones. Not many agreed with Huxley at the time, but he has been proved to have been absolutely correct. Its original remains are preserved at the Natural History Museum , London. Diplodocus Diplodocus Scott Hartman Andrew Carnegie was a profoundly wealthy industrialist based in Pittsburgh, Pennsylvania during the latter half of the 19th century. After he had amassed his fortune, Carnegie began to spend his money philanthropically. News came to him of the discovery of impressive dinosaur skeletons in the American mid-west so he decided he wanted one for his new museum The Carnegie Museum in Pittsburgh. So he financed expeditions to northern Wyoming and southern Utah to find some more dinosaurs. And find them they did, including a near complete skeleton of the biggest dinosaur discovered to date. Deinonychus In the mid s a young palaeontology professor, John Ostrom from Yale University was exploring the badlands of Montana looking for dinosaur fossils. What he found was to change our understanding of dinosaurs, their biology and behaviour in the most extraordinary way. Deinonychus Scott Hartman, Author provided He realised that this animal was a fast moving, highly intelligent, keen-sighted predator not at all the slow, lumbering and slow-witted image of the dinosaur that was current at the time. He also showed that it was remarkably bird-like in its anatomy, and suggested that the bird similarities suggested that birds and small predatory dinosaurs were so closely similar that birds probably evolved from them. These were highly controversial views at the time, even though they echoed the early ideas of Thomas Huxley in the s. They also posed serious biological questions: The debate raged for decades. Scelidosaurus I include this dinosaur, which is somewhat less heralded than the others, because it really ought to have been a dinosaur that changed the world. Scelidosaurus Gregory S Paul, Author provided In dinosaur bones were discovered in the Jurassic cliffs at Charmouth and soon a nearly complete skeleton of this dinosaur was excavated and given to

Richard Owen the person who invented the Dinosauria at the British Museum in London. Owen had the equivalent of a Rosetta Stone before him, yet he failed to grasp its importance. The probable reason why such an insightful scientist missed such an important moment is that he was simply too busy, including setting in motion the plans to have an entirely new national museum built. Without Owen the Natural History Museum in London, where the original bones of Scelidosaurus still lie, would not have been constructed. In fact, I am studying them at this very moment â€" hence my undoubted bias. Sinosauropteryx In an astonishing discovery was made in Liaoning, China. It comprised a virtually complete skeleton of a small, predatory dinosaur smaller than, but generally similar to, Deinonychus. The conditions of exceptional fossil preservation associated with these rocks in Liaoning seemed to preserve some remnant of the body tissues of the original animal. Most intriguing was the fringe of tissue around the body: The implication was that it had an epidermal covering outer coat , perhaps an insulating layer. We now know that many but not all dinosaurs were feathered, and that some were capable of flight and some were indeed the progenitors of modern birds.

Chapter 2 : New species of â€˜missing linkâ€™ between dinosaurs and birds identified

Raven's Flight (Discoveries in Palaeontology) Paperback - August 2, by Diane Silvey (Author) Be the first to review this item. See all formats and.

Linda Crampton is a teacher who enjoys reading and creative writing. Her favourite genres are classic literature, fantasy, myth, and poetry. This bird plays a significant role in the mythology of the First Nations people in British Columbia. It also continues to surprise scientists as new aspects of its intelligence are discovered. The common raven has a wide distribution in North America and lives in many different habitats. The bird is also found in Europe, Asia, and North Africa. Occasionally I see a pair of ravens that live on a forested mountain near my home and sometimes fly over my neighbourhood. Their appearance is always a treat for me. The call of the raven is sometimes described as a long "croak". I think that the call is haunting and beautiful, however, especially compared to the raucous calls of the local crows. I see crows on a daily basis, but ravens not so often. Although ravens are abundant in some areas, they always seem like slightly mysterious birds to me. The upper half of the bill is curved and points downwards. The bird has longer feathers on its throat, which are known as hackles, and nasal bristles on the first half of its upper bill. Its wedge-shaped tail helps to distinguish it from crows. The average length of an adult common raven from the tip of the beak to the end of the tail is 24 inches. The average weight is around 2. The different subspecies have slightly different body sizes and features. Flight Ravens are very acrobatic fliers. They often glide instead of fly. When they do fly, their wing beats are shallower and slower than those of crows. Ravens often perform somersaults and rolls in the air and are said to be able to fly upside down for short distances. They are frequently seen dropping sticks or other objects in the air and then diving to catch them, an activity that looks very much like play. In some places they may form large gatherings as they forage for food or while they are roosting. They produce a variety of vocalizations to communicate with each other and to send signals to other animals. Ravens are very adaptable birds and are seen in a wide variety of habitats and climates. While its crow cousins forage in areas frequented by humans, the raven prefers wild areas. There are reports that it is becoming more tolerant of nearby humans, however. Ravens have an omnivorous diet and eat many types of foods. These include small mammals, other birds, reptiles, amphibians, insects, fruits, grains, and buds. They also eat mammal carrion, which may be their major food source. They have been observed eating the afterbirth of farm animals. Ravens sometimes cooperate when hunting to draw the prey out into the open. They also cooperate when trying to raid seabird nests. One raven will distract the adult seabird while the other flies in for the kill. A Clever Bird Reproduction Common ravens mate for life. The birds are territorial and protect their territory from interlopers. They reproduce once a year. They generally build their nest in trees or on cliffs, but some birds nest on structures made by humans, such as bridges. The female raven lays her eggs during late winter or spring, depending on the climate. The average number of eggs in a clutch is five. The eggs are incubated for 20 to 25 days before the babies hatch. Only the female incubates the eggs, but both the male and the female care for the youngsters. Their parents continue to feed them, although this activity weakens as the youngsters mature. The juveniles learn important behaviours during this time as a family. The young birds breed for the first time when they are two to four years old. Ravens can potentially live for a long time, but reports of their maximum lifespan are very different. Estimates vary from 13 to more than 40 years, with the higher number representing the lifespan of captive birds. Mealtime The Raven in Haida Mythology Ravens are associated with a rich folklore in many cultures, sometimes in association with crows. Ravens are often depicted as deities or as beings with access to deities in the legends of BC First Nations people. They are also depicted as clever tricksters. In their legends, Raven is a complex character who existed before the beginning of time. He was responsible for releasing humans into the world, which happened in the archipelago of Haida Gwaii. Legend says that Raven found tiny humans inside a clam or oyster shell. He opened the shell, allowing the humans to escape. Here are many Raven legends in Haida mythology. In addition to releasing humans, Raven brought light to the world. There are different versions of the story that describes how this happened. Raven is not always so benign, however. The Raven is the most greedy, mischievous and lecherous creature

imaginable, but almost without meaning to, teaches humans the arts of living a good life. In , the archipelago was officially renamed out of respect for its original inhabitants. In the map above, the upper "island" off the coast of mainland British Columbia is the Haida Gwaii archipelago. Raven and the First Humans: A Poem About the Realm of Ravens I think that there is something magical about the top-of-the-world sensation experienced on a mountaintop. The echoing calls of ravens piercing the silence add to the magic. Whenever I think of the quietness of a mountain summit in my part of the world, I always hear the cry of a raven in my mind. I wrote the poem below as part of a writing challenge. Writers were asked to create a poem or story based on their reaction to a photo. The photo showed a woman on a mountaintop looking in apparent awe at the view. I often experience this awe as I look at my surroundings from the top of a mountain. Although I always love the feeling of being connected to nature that I experience, I sometimes hope for a deeper understanding of reality. My character in the poem below is experiencing this desire. These revelations are brought to her by a raven. A Bill Reid sculpture depicting a Haida legend in which Raven opens an oyster shell and finds the first humans Source The Engine of the Soul The summit of her love and awe in majesty.

Chapter 3 : When a group must solve hard problems, it's best to design the team around its learning style

Raven's Flight (Discoveries in Palaeontology) Diane Silvey. Published by Raincoast Books. ISBN 10 Ravens Flight. Silvey, Diane. Published by Raincoast.

Pterosaurs Pterosaurs were the first vertebrates to achieve powered flight, and lived in the skies above the dinosaurs during the Mesozoic. This group has recently undergone a revival, with more research on pterosaurs happening now than ever before. Where are they found? How diverse was this group? How did they evolve? Research associate and palaeoartist Dr. Mark Witton from the University of Portsmouth is well-known in the pterosaur community, and answers some of these questions and more in this episode. If you want to learn more about pterosaurs, check out Episode 42 with Colin Palmer on Pterosaur Aerodynamics. The leading edge of the wing is comprised of the forelimb bones and a single, enlarged finger the fourth , which supported a series of membranes anchoring to the legs and body. The wing membranes are complex structures, the internal structure of which has been determined through detailed examination of well-preserved pterosaur fossils. The evolutionary development of pterosaurs from their reptile ancestors is not currently demonstrated by any fossils. However, we can hypothesise some stages of this pathway by reconstructing how they may have developed flight adaptations. Some of these stages are suggested here, taking us from a sprightly pterosaur ancestor not unlike the animals which also gave rise to dinosaurs A through climbing and gliding forms B-D to a fully fledged pterosaur E. We often think of pterosaurs as just different heads and necks bolted onto the same body, but the truth is that they are enormously diverse and varied, their forms likely reflecting a range of habitat preferences and lifestyles. We know of well over pterosaur species now, the major variants of which are shown here. How to make Dimorphodon macronyx fly: Some hypotheses of pterosaur flight suggest Dimorphodon may have been a less effective flier than other pterosaurs, and it may have only taken to the air to travel long distance or escape danger. There are two extremes of pterosaur anatomy: The latter features are typical of a group we call pterodactyloids. The first pterosaur specimen known to science, representing an animal named Pterodactylus antiquus. The wingspan of this Jurassic German specimen is about 45 cm. A small flock of Pterodactylus antiquus, represented by small juveniles left up to big adults right scope out foraging options in a Jurassic marsh. The animal on the right is luring prey to the surface through paddling forefeet, a behaviour common to at least several modern gull species. The range of animal sizes and soft-tissue structures shown here are based on known specimens of this animal. Some pterosaurs were the largest flying animals of all time. Here, the 10 m wingspan azhdarchid pterosaur Arambourgiania philadelphiae stands alongside a bull Masai giraffe, which stands 5. Skeletal reconstruction of the 2. There is compelling evidence that pterosaurs mostly relied on the tremendous power of their flight muscles and arm skeletons to initiate flight rather than using, as seen in birds, a take-off strategy mostly reliant on hindlimb strength. Though bizarre and unfamiliar to us, forelimb-dominated launch is practised by several modern bats and is actually a much more efficient way of achieving flight than the avian approach. Launch strategy is probably one factor of several permitting the evolution of giant size in several pterosaur groups. Where can you find pterosaur bones? Pterosaur fossils can be found all over the world but are much rarer than those of other Mesozoic animals. Certain sites â€” such as those labelled here â€” are relatively rich in high-quality pterosaur fossils, and discoveries from these localities have been crucial to our modern understanding of pterosaur anatomy and diversity.

Chapter 4 : Diane Silvey - Books, Biography, Contact Information

Raven's Flight (Discoveries in Palaeontology) by Diane Silvey. Raincoast Books, Paperback. Good.

The first of these were initially described as simple filamentous protofeathers, which were reported in dinosaur lineages as primitive as compsognathids and tyrannosauroids. Some researchers have demonstrated the presence of color-bearing melanin in the structuresâ€"which would be expected in feathers but not collagen fibers. However, the multiple skeletal features also shared by the two groups represent the more important link for paleontologists. Furthermore, it is increasingly clear that the relationship between birds and dinosaurs, and the evolution of flight, are more complex topics than previously realized. For example, while it was once believed that birds evolved from dinosaurs in one linear progression, some scientists, most notably Gregory S. Paul , conclude that dinosaurs such as the dromaeosaurs may have evolved from birds, losing the power of flight while keeping their feathers in a manner similar to the modern ostrich and other ratites. Comparisons of bird and dinosaur skeletons, as well as cladistic analysis , strengthens the case for the link, particularly for a branch of theropods called maniraptors. Skeletal similarities include the neck, pubis , wrist semi-lunate carpal , arm and pectoral girdle , shoulder blade , clavicle , and breast bone. A study comparing embryonic, juvenile and adult archosaur skulls concluded that bird skulls are derived from those of theropod dinosaurs by progenesis , a type of paedomorphic heterochrony , which resulted in retention of juvenile characteristics of their ancestors. In theropod dinosaurs carnivores that walked on two legs and had birdlike feet flexible soft tissue air sacs likely pumped air through the stiff lungs, as is the case in birds. From these methods, the authors found that: There was one possible patch with animal cellular structures. The authors found their data supported identification as a concretion of sand from the burial environment, not the heart, with the possibility that isolated areas of tissues were preserved. Reproductive biology[edit] When laying eggs, female birds grow a special type of bone in their limbs. This medullary bone forms as a calcium-rich layer inside the hard outer bone, and is used as a calcium source to make eggshells. Because the line of dinosaurs that includes Allosaurus and Tyrannosaurus diverged from the line that led to Tenontosaurus very early in the evolution of dinosaurs, this suggests that dinosaurs in general produced medullary tissue. Gizzard stones[edit] Both birds and dinosaurs use gizzard stones. These stones are swallowed by animals to aid digestion and break down food and hard fibres once they enter the stomach. When found in association with fossils , gizzard stones are called gastroliths. Molecular evidence[edit] On several occasions, the extraction of DNA and proteins from Mesozoic dinosaurs fossils has been claimed, allowing for a comparison with birds. Several proteins have putatively been detected in dinosaur fossils, [93] including hemoglobin. Mary Higby Schweitzer and her team announced the discovery of flexible material resembling actual soft tissue inside a million-year-old Tyrannosaurus rex leg bone of specimen MOR from the Hell Creek Formation in Montana. The seven collagen types obtained from the bone fragments, compared to collagen data from living birds specifically, a chicken , suggest that older theropods and birds are closely related. This study utilized eight additional collagen sequences extracted from a femur of the "mummified" Brachylophosaurus canadensis specimen MOR , a hadrosaur. No other peptides of a Mesozoic age have been reported. In , it was suggested that the presumed soft tissue was in fact a bacterial microfilm. Origin of avian flight Debates about the origin of bird flight are almost as old as the idea that birds evolved from dinosaurs , which arose soon after the discovery of Archaeopteryx in Two theories have dominated most of the discussion since then: A more recent theory, "wing-assisted incline running" WAIR , is a variant of the cursorial theory and proposes that wings developed their aerodynamic functions as a result of the need to run quickly up very steep slopes such as trees, which would help small feathered dinosaurs escape from predators. In March , scientists reported that Archaeopteryx was likely capable of flight , but in a manner substantially different from that of modern birds. This hypothesis proposes that some fast-running animals with long tails used their arms to keep their balance while running. Nopcsa theorized that increasing the surface area of the outstretched arms could have helped small cursorial predators keep their balance, and that the scales of the forearms elongated, evolving into feathers. The feathers could also have been used to trap insects or other prey. Progressively, the animals leapt for longer distances,

helped by their evolving wings. Nopcsa also proposed three stages in the evolution of flight. First, animals developed passive flight, in which developing wing structures served as a sort of parachute. Second, they achieved active flight by flapping the wings. He used Archaeopteryx as an example of this second stage. Finally, birds gained the ability to soar. Tetrapteryx, Archaeopteryx, Hypothetical Stage, Modern Bird Current thought is that feathers did not evolve from scales, as feathers are made of different proteins. Feathers are very common in coelurosaurian dinosaurs including the early tyrannosauroid Dilong. The most widely suggested original functions of feathers include thermal insulation and competitive displays, as in modern birds. The hands of coelurosaurs, however, are formed by digits 1, 2, and 3 thumb and first two fingers in humans. Wing-assisted incline running[edit] The wing-assisted incline running WAIR hypothesis was prompted by observation of young chukar chicks, and proposes that wings developed their aerodynamic functions as a result of the need to run quickly up very steep slopes such as tree trunks, for example to escape from predators. Note that in this scenario birds need downforce to give their feet increased grip. This small dinosaur already had feathers, which were co-opted by evolution to produce longer, stiffer forms that were useful in aerodynamics, eventually producing wings. Wings would have then evolved and become increasingly refined as devices to give the leaper more control, to parachute, to glide, and to fly in stepwise fashion. The arboreal hypothesis also notes that, for arboreal animals, aerodynamics are far more energy efficient, since such animals simply fall to achieve minimum gliding speeds. Anchiornis is particularly important to this subject, as it lived at the beginning of the Late Jurassic, long before Archaeopteryx. This study determined that the amount of toe claw curvature of early birds was more like that seen in modern ground-foraging birds than in perching birds. As a result, discussion of the evolution of birds and of bird flight centered on Archaeopteryx at least until the mids. The supracoracoideus works using a pulley-like system to lift the wing while the pectorals provide the powerful downstroke. There has been debate about whether Archaeopteryx could really fly. It appears that Archaeopteryx had the brain structures and inner-ear balance sensors that birds use to control their flight. Other small feathered coelurosaurs from the Cretaceous and Late Jurassic show possible precursors of avian flight. These include Rahonavis , a ground-runner with a Velociraptor -like raised sickle claw on the second toe, that some paleontologists assume to have been better adapted for flight than Archaeopteryx, [] Scansoriopteryx , an arboreal dinosaur that may support the "from the trees down" theory, [] and Microraptor , an arboreal dinosaur possibly capable of powered flight but, if so, more like a biplane , as it had well-developed feathers on its legs.

Chapter 5 : Dinosaur Discoveries | Carleton Newsroom

It is reported this week in the Proceedings of the National Academy of Sciences by Jingmai O'Connor of the Institute of Vertebrate Palaeontology and Palaeoanthropology, in Beijing.

Ravens from the South Island were slightly larger, and are considered a different subspecies C. Paul Martinson New Zealand raven. New Zealand raven Corvus antipodum. Weighing up to one kilogram, they were two of the largest songbird species, a group which comprises more than 5, bird species worldwide. Only the common raven of the northern hemisphere, thick-billed raven of Africa, and superb lyrebird of Australia are heavier than 1 kg. Most ravens and crows have similar body shapes, plumage and behaviour, and so the New Zealand raven was probably glossy black, omnivorous and aggressive. They had relatively long, slender legs, a long, broad, pointed bill and retained strong powers of flight. Once common around coastal New Zealand, ravens were probably a raucous feature of seasonal seal, sea lion and seabird colonies, where they would have eaten unprotected pups, eggs, chicks and offal. The diet probably also included fish, snails, shellfish, skinks, insects, invertebrates and fruits. They became extinct before European contact. The presence of bone remains in midden sites shows that they were eaten by humans, and they may have been impacted by the rapid extirpation of mainland seal and seabird colonies following human arrival. Distribution and habitat New Zealand ravens were common around coastal New Zealand, including Stewart Island, and bones have been found at a few inland sites close to the coast. There is an anomalous record of a single raven bone from subantarctic Enderby Island in the Auckland Islands, found near an archaeological site. How this bone got there is uncertain: Weblinks References Gill, B. Osteometry and systematics of the extinct New Zealand ravens. Journal of Systematic Palaeontology 1: Extinct birds of New Zealand. Te Papa Press, Wellington. The lost world of the moa: Canterbury University Press, Christchurch.

Chapter 6 : - Raven's Flight (Discoveries in Palaeontology) by Diane Silvey

Diane Silvey is a published author of children's books and young adult books. Some of the published credits of Diane Silvey include Spirit Quest, The Kids Book of Aboriginal Peoples in Canada (Kids Books of), Raven's Flight (Discoveries in Palaeontology).

Chapter 7 : Origin of birds - Wikipedia

Ravens are associated with a rich folklore in many cultures, sometimes in association with crows. I'm especially interested in their role in the myths of the indigenous people of British Columbia. Ravens are often depicted as deities or as beings with access to deities in the legends of BC First Nations people.

Chapter 8 : Chatham Island raven | New Zealand Birds Online

Fossil discoveries in China are rewriting the history of flight. Hidden feather patterns tell the story of birds Birds incorporate metals like zinc and bromine into feathers as they grow.

Chapter 9 : Ravens: Facts, Photos, Videos, and Mythology | Owlcation

In a paper released Wednesday, scientists are saying his find led to one of the most important discoveries ever in paleontology. Ray Stanford was dropping his wife off at work in Maryland in