Gideon Mantell
3rd Feb 1790 — 10th November 1852

In 1990, on the 200th anniversary of his birth, Lewes celebrated the memory and achievements of one of its most gifted sons: Gideon Mantell, a working doctor and surgeon with a passionate interest in fossils and the geology of southern England.

The occasion was marked by exhibitions, public lectures and a symposium at Sussex University, at which Dennis R. Dean presented and previewed the findings of the detailed research for his seminal book ‘Gideon Mantell and the Discovery of the Dinosaurs’, published nine years later. ‘I soon came to see’, he writes, ‘that the early history of dinosaur discoveries was rather different than had been previously supposed.’

Deborah Cadbury’s ‘The Dinosaur Hunters’ (2000), a less academic and more popular scientific account, reinforced this new narrative, in which Gideon Mantell plays a much more central and important role than had previously been recognised.

Virtually every popular book on dinosaurs, past and present, mentions Mantell only in connection with his — or his wife’s - discovery of an unusual fossil tooth that led him to identify a previously unknown creature, later identified as an Iguanodon.

By contrast, Professor Dean first argues that the geological and paleontological history of life and landforms in southeast England ‘was entirely unsuspected when Gideon Mantell was born in 1790 and known only imperfectly when he died in 1852; a surprising amount of the intervening progress...is attributable to him’.

‘It is not commonly appreciated that he devoted some thirty years to his increasingly accurate reconstructions of Iguanodon, while discovering seven other dinosaurs as well’.

These were: the carnivorous *Megalosaurus* — discovered independently by Mantell and others — the first dinosaur of any kind to be described; *Iguanodon*, the first herbivorous dinosaur; *Hylaeosaurus*, the first armored dinosaur; the huge remains of a *Cetiosaurus*...
(‘whale lizard’), identified by Mantell as a land-based reptilian, wrongly named by its earlier discoverer, arch-rival Richard Owen, who’d assumed it was a marine crocodile; *Pelorosaurus*, a gigantic species of sauropod (‘lizard foot’) dinosaurs; *Regnosaurus* (meaning “Sussex lizard”), a genus of herbivorous dinosaurs; and *Hypsilophodon*, a small agile dinosaur, which Mantell thought was a very young iguanodon.

Mantell discovered also several dozen other prehistoric creatures including prehistoric crocodiles and turtles, molluscs, fishes, insects, sponges and plants. With this broader view, he was able to visualise the primeval landscape the dinosaurs inhabited.

Dean also claims that Mantell ‘was the first person to collect dinosaur bones systematically and over a period of time with the specific intention of restoring the animals’ original appearance’.

Mantell’s natural gifts as a public speaker and writer, combined with his remarkable and extensive fossil collection, with giant dinosaur bones as the centrepiece, thrilled and enlightened scholars, scientists, writers, artists and the inquisitive general public of his day. Dean writes: ‘...far more than anyone else, he impressed the Age of Reptiles upon contemporary minds’.

A hard-working doctor, often on night calls, Mantell survived on little sleep and did most of his scientific work around midnight. As if these demands were not enough, Dean writes that Mantell was also ‘a local and family historian; a productive archeologist and microscopist; a political activist and social climber; a minor poet and artist; and, in his valuable journal and extensive correspondence, an outspoken critic and chronicler of his times’.

An amateur enthusiast and son of provincial tradesman, he had to fight against class prejudice and entrenched opinions. His remarkable achievements were denigrated by a powerful opponent with better political connections. His family life was marked with unhappiness and tragedy and, in his later years, he was racked by pain and distress. It has taken until the 21st century for his pioneering work to be fully recognised.
The Mantells of Lewes

Gideon Algernon Mantell was born in Lewes, the fourth of seven surviving children of Thomas Mantell, a shoemaker, and his wife Sarah Austen, and was raised in a small cottage in St. Mary's Lane.

The name Mantell was on the list of knights that came over with William the Conqueror and later the family held substantial estates in Northamptonshire. Gideon’s father could trace his family tree in Lewes directly back to a Thomas Mantell who was elected Headborough in 1562. Mantell’s father was a radical Whig, friend to the printer William Lee and possibly known to famous pamphleteer Thomas Paine who lived for a while in the town. He was also a Methodist which meant his children couldn’t study at any of the established free schools which were only open to Anglicans.

Gideon was first tutored by an elderly woman in the locality who taught him to read and write. By all accounts, he was considered something of a child prodigy. Charismatic, with a powerful voice, he first gave a public speech at the age of seven. When his first teacher died, he was educated in 1802 at a Lewes Academy in the Cliffe, founded by John Button, who shared his father’s political beliefs.

Around this time, Mantell developed his fascination with geology and fossils, his first major find being an ammonite which he fished out of the River Ouse. He often explored the numerous pits and quarries in the surrounding chalk downland, discovering the shells of sea urchins, fish bones, and coral.
From 1803, he went to live with his uncle George, a pastor, in Westbury; both then moved to Swindon, Wiltshire, where his uncle took charge of an independent chapel and ran a ‘Dissenting Academy for Boys’ that Gideon attended until 15th January 1805.

Back in Lewes and having just turned fifteen, he managed to secure an apprenticeship with a local surgeon named James Moore, a training that lasted five years. His tasks were varied and numerous: cleaning vials, separating and arranging drugs, making up pills and other pharmaceutical products, extracting teeth, household chores, deliveries and handling the accounts.

When Thomas Mantell died (11th July 1807) at the age of 57, his substantial property portfolio was auctioned and Gideon was left some money in his will. He diligently studied human anatomy before travelling to London to attend medical lectures at St Bartholomew’s Hospital with the famous surgeon John Abernethy. At the age of 21, he was awarded his diploma from the Royal College of Surgeons in April 1811 and, shortly afterwards, also gained a certificate confirming his official status as an accoucheur or midwife.

It was during that spring that Mantell had, writes Dean, ‘a decisive experience that transformed him from a casual hobbyist to a serious original investigator of fossil life’. This was his meeting with James Parkinson (best known now as the discoverer of Parkinson’s disease), a surgeon and political radical and the author of a magisterial work ‘Organic Remain of a Former World’ which influenced Mantell throughout his life.

In the little free time he had, he pursued his passion for geology and fossils and, by 1813, was corresponding and supplying specimens to James Sowerby, a naturalist and illustrator, who was compiling a catalogue of fossil shells. In appreciation, Sowerby named one of the species *Ammonite mantelli*. On the 7th of December that year, Mantell was elected as a fellow of the Linnean Society of London.

On his return to Lewes, he formed a partnership with his former master James Moore and, by 1814, they were renting 3 Castle Place, one of four townhouses newly built by the architect Amon Wilds in Lewes High Street.
During this period, Mantell was dealing with cholera, typhoid and smallpox epidemics, often seeing some 50 patients or more a day and working many nights without sleep. He became expert at delivering babies, at a rate of 200 to 300 a year. As a result, the practice thrived and profits rose from £250 to £750 a year.

On the May 4th 1816, he married the 20-year old Mary Ann Woodhouse at St. Marylebone Church. The daughter of a former patient, Mary shared his interest in fossils, often rode out with him on his geological trips and began doing drawings of his finds.

Mantell’s fossil hunting activities had been limited to the chalk quarries around Lewes but it was during this period that he extended his range into the Weald and discovered, in a quarry at Whiteman’s Green near Cuckfield, deposits of sandstone and limestone that appeared to be much older than the chalk and which yielded fragments of teeth and much larger bones.
By 1818, with Moore in ill-health, Mantell dissolved their partnership, bought Number 3 and the house next door and employed Wilds to join them together to form a substantial home for his medical practice, his family and his burgeoning fossil collection. Their first child, Ellen Maria, was born that year; their first son, Walter followed in 1820.

In 1819, Mantell began to keep a daily journal — what he called ‘a sketch of passing events’ — which he continued until the year of his death in 1852. This journal, which has only recently been published in its entirety, is a prodigious work in its own right, full of fascinating glimpses of Lewes life of the period as well as documenting Mantell’s professional activities and fossil hunting.

Further discoveries at Whiteman’s Green included the giant femur of some unknown creature which Mantell believed to belong to some kind of fossil crocodile, and the relics of prehistoric plants and trees. Then came the most unusual and important find to date.

The unusual tooth

In 1820 or 1821, whilst accompanying her husband on his medical rounds, Mary spied an unusual object in a pile of stones brought in to fix a road. It proved to be the flattened fragment of a giant tooth unlike anything Mantell had ever seen before. They were able to trace the source of the stones back to the Whiteman’s Green quarry.

Cadbury describes this version of the story as being the most plausible. Dean disagrees. He writes: ‘Just when the first Iguanodon tooth was discovered and by whom, have been obscured by Mantell’s diverse recollection of the event, of which he published several.’

In his first major publication ‘The Fossils of the South Downs’ (May 1822), he confirms that he had at least six Iguanodon teeth by November 1821, ‘several found by his wife’. In later accounts at different times, he attributes the find first to himself and later to Mary. Dean concludes: ‘In all likelihood, the real supplier of Mantell’s first Iguanodon tooth was Leney the quarryman’ who Mantell had paid to find and send him interesting fossils from the quarry.

This tooth threw all Mantell’s previous theories into doubt. This was neither a marine or crocodilian creature, nor a mammal. When
compared and combined with his other finds of large bones, Mantell began to speculate that these were the remains of some kind of giant reptilian lizard, as big as an elephant, that chewed vegetation like a cow. It was to take him the rest of life to establish exactly the nature of this strange beast.

It was not easy to convince other scientists of his conclusions. When he made a presentation of the tooth at the Geological Society in London, the verdict was that it came from a fish or a mammal. Mantell’s friend Charles Lyell, who would become a famous geologist, took the tooth and other bones to Paris to show the eminent French anatomist Georges Cuvier. He initially identified it as the tooth of a rhinoceros, although he allegedly may have changed his mind the next day, a fact not communicated to Mantell in Britain.

For Mantell, this was shattering news. His medical rounds were exhausting, his wife was unhappy living surrounded by bones and fossils and this new rejection pushed him into a deep depression.

Mantell was by now paying the workmen in the quarry to send him fossils they found. In the same geological strata, as if to confirm Cuvier’s conclusion, they found a fossil ‘horn’ which appeared to resemble that of a rhinoceros. But they also sent Mantell a steady flow of the strange herbivorous teeth, which enabled him to assemble an entire series, from young perfect teeth to mature ground down stumps.

Encouraged by this, he resubmitted drawings of this new evidence to Cuvier. His response, in a letter dated the 20th June 1824, read in part: ‘These teeth are certainly unknown to me. They are not from a carnivore...I believe they belong...to the order of reptiles....Might we not have a new animal, an herbivorous reptile?’

On the back of this ringing endorsement, Mantell visited the Hunterian Museum of the Royal College of Surgeons to examine the teeth and jaws of living reptiles. As luck would have it, the collection contained an iguana skeleton whose teeth, though smaller, closely resembled the larger teeth Mantell had found.
Mantell’s paper on the creature he was now calling *Iguanodon* was presented to the Geological Society. Cuvier's confirmation overcame the views of even Mantell’s sternest critics. Shortly after, on the suggestion of colleagues, the creature's name was finally settled as *Iguanodon* (meaning having the teeth of an iguana), only the second such creature to be named. On the 4th February 1825, the day after his 35th birthday, Mantell was installed as a member of the governing body of the Geological Society.

Mantell’s paper on his discoveries was presented to the Royal Society six days later. As a result, the membership was petitioned to elect Mantell into the Society; on the 22nd December, Charles Babbage and John Herschel welcomed him to the membership. One friend later commented: ‘Gideon had ridden on the back of his *Iguanodon* into the Temple of Immortality.’ The amateur shoemaker’s son and country doctor had been proved right and was now considered a scientist and a gentleman.

The fossil collection

Back in Castle Place and emboldened by the recognition of his peers, Mantell began work on his second book which outlined all the evidence he had gained about the giant creatures that inhabited the Weald in prehistoric times when it was a broad river delta fringed with tropical palms and plants.

By the time ‘Illustrations of the Geology of Sussex’ was published in 1827, Mantell and his wife had had two more children — Hannah (Nov 1822) and Reginald (Aug 1827). He was under pressure from two fronts: his colleagues were urging him to give up his medical practice and make science his priority whilst his wife Mary was arguing the reverse.

As a result, in 1829, he reduced his medical workload by sharing his practice with a younger doctor named George Rickworth, to give him more time to spend with his family and to devote himself to his fossil collecting. Nearing forty, he was also in poor health. With Rickworth’s partnership fee, he was able to fund the building of a new room on the top of Castle Place, specifically designed to house his fossil collection, officially opening his free museum on the 17th September that year. Dean claims that ‘England had no other private collection of equivalent scope.’
This only increased the tension between himself and his wife. With the domestics in the basement, his medical practice on the ground floor, his collection in fine new cabinets now took over the upper rooms leaving less space for the family. There were a constant stream of visitors and more cartloads of fossils arriving by the day.

In June 1830, George IV died and the new king William IV with Queen Adelaide decided to make their home at the Brighton Pavilion. In October, Mantell received notice that they would visit his collection at Castle Place, which bolstered his hopes of royal patronage. In fact, they did visit Lewes but not his collection. Mantell was able to give the King a copy of the two volumes of Horsfield’s History & Antiquities of Lewes and its Vicinity during a brief audience. Volume I includes an appendix of the Natural History of Lewes by Gideon Mantell FRS.

The age of reptiles

In early June 1831, Mantell published his first popular account of his findings under the catchy title ‘Age of Reptiles’ which began: ‘there is none more extraordinary and imposing than the discovery that there was a period when the earth was peopled by oviparous quadrupeds of a most appalling magnitude, and that reptiles were the Lords of the Creation before the existence of the human race!’

By now, Mantell had found an almost complete skeleton of Hylaeosaurus but was still trying to assemble an Iguanodon out of the pile of loose bones he had collected. At that stage he wasn’t even sure what kind of animal it was. He plumped for an animal based on a living iguana and estimated that it was 70ft long (mainly tail) and 9ft-high at the head, with the ‘horn’ located on its nose.

His many discoveries and publications had by now earned him
respect and praise in Britain, Europe and America but, despite his best efforts, he still had no patron and had earned no money from his geological works. To make matters worse, a brilliant young anatomist Richard Owen was making his mark and would soon have Mantell’s eminence in his sights.

Highly ambitious and politically ruthless, Owen first took over running the Hunterian Museum, was elected to the Royal College of Surgeons, the Royal Society, the Zoological Society and the new British Association for the Advancement of Science. Cadbury writes:

‘His razor sharp mind and raw energy were attuned not just to dissecting animals but to manipulating power within each institution he joined...It took time...for people to recognise the ruthless streak beneath the charming veneer. His enormous skill...was to build a power base in each institution he joined, so that his scientific ideas allied to his political astuteness ensured that he was always the man of the moment.’

**The move to Brighton**

By 1833 Mantell had become convinced that Brighton would be a more superior location for his collection. With the financial help of the Earl of Egremont, who gave him £1000, he agreed to lease No 20, The Steine, a five-floor house situated opposite the Brighton Pavilion and moved his collection and family there in December. His collection was opened to the public in January 1834 on every Tuesday, for free.

He also began giving lectures in the town, one of which attracted some 400 people but, when the “season” ended and the court left the Royal Pavilion to return to London, the town was quite empty. Mantell had neglected his core business as a surgeon and he found himself with the most famous fossil collection in England but no patients.

His circumstances were revived briefly when he acquired the Maidstone Iguanodon — a huge cluster of bones embedded in a large chunk of Kentish Rag stone. For ten years he had been speculating on the appearance of the Iguanodon and now, for the first time, he had enough connected pieces — including hands, hips and vertebrae — to make a better guess as to the creature’s size and stature. He now
estimated it was 100ft in length. He wrote ‘Like Frankenstein, I was struck with astonishment at the enormous monster which my investigations had called into existence.’ (Interestingly, Mary Shelley, the author of ‘Frankenstein’ had visited his collection in Lewes some years before)

When exhibited in September 1834, it attracted crowds so large that Mantell had to extend visiting times. Among his distinguished visitors was John Martin the biblical/apocalyptic painter of giant canvases, who would illustrate one of Mantell’s later books. In October that year, the distinguished Louis Agassiz (a Swiss expert on fossil fish), Charles Lyell (Mantell’s long-term friend) and the brilliant scientist Michael Faraday came to pay their respects.

This success led him to be invited to many local social events but it was all glory and no money and for the first time Mantell started having to consider selling his collection. He had been unable to sell Castle Place and, despite the popularity of his lectures and the collection itself he had few patients. This created further tensions with Mary.

The short-term solution proved to be renting the house and the collection on a three-year lease to the newly-formed Sussex Scientific and Literary Institution. Members would have access to the Mantellian Museum and a library and reading room plus regular lectures by significant experts. Mantell and a curator had a room each at the top of the house. Mantell’s family had to go and live in a rented cottage in the Southover district of Lewes. Mary’s anger at this turn of events may have affected the children’s attitude to their father. Later Mary moved back to Brighton to be near him. Hannah’s health became a concern.

On May 12th 1837, Mantell lectured on the Iguanodon to an audience of 700 at the Royal Society and met Charles Darwin. By now he’d decided to buy another medical practice in London and announced he would be leaving Brighton within a few months.
In order to pay for this, he had to sell his collection. He hoped to offer it to the Institution for £3,000 so that it could stay in Sussex. The money was to be raised through shares but when his chief patron the Earl of Egremont died, those plans fell through. He made the same £3,000 offer to Brighton Council who turned it down.

In 1838, the collection was next offered to the British Museum for £5,000, who came to Brighton to catalogue it. Ironically, Mantell’s book ‘The Wonders of Geology’, a summary of his Brighton lectures, was published that April to great acclaim. It went into eight editions and became the best selling popular geology book in Victorian Britain and an influence on the poet Tennyson and novelist Thomas Hardy amongst many others.

Having bought a practice from a retiring surgeon in Clapham Common, Mantell felt some sense of optimism which was dashed when, on April 28th, Parliament refused to give the British Museum the purchase price for Mantell’s collection. As the lease was soon to run out on the Brighton property, Mantell’s friends marshalled support, persuaded the Government to change their mind, a deal for £4000 was agreed, to be paid in 1839, and on the 19th December the collection was efficiently moved by 90 horse-drawn vans to London.

Mantell moved to a house on the south side of Clapham Common and soon became very busy with medical matters but continued to suffer with poor health and low spirits.

**Owen strikes back**

On March 4th, 1839, his wife Mary Ann left her husband for ever after a turbulent 23 years of marriage punctuated by long separations. On the 13th of September, his son Walter sailed for New Zealand and never saw his father again and his daughter Ellen Maria left to live in Dulwich.

His younger daughter, Hannah Matilda, who had been in poor health for some time, died on the 12th March 1840. This left Mantell (now 50) heartbroken and with only his 13-year old son Reginald for company.

Later that year, Mantell began to find some energy again and began taking up his geological interests, giving talks and writing papers.
Over a 20-year period he had found the remains of some 70 iguanodons and now asserted that the creature stood upright and used its smaller forelimbs to pull foliage from trees. Later the ‘horn’ on the head was relocated correctly to a ‘thumb spike’ on the hand.

Owen too had been busy and, says Dean, ‘the two men were frequently compared, and this as yet friendly rivalry was stimulating for a time, a useful prod to further original research’. But Owen’s star was on the rise and he began to use every opportunity to sideline and denigrate Mantell’s achievements and establish himself as the leading expert on the giant fossil reptiles.

Having worked on reclassifying many groups of fossils, Owen announced the establishment of a new classification for a distinct tribe or suborder of saurian reptiles he called Dinosaurians (from the Greek meaning ‘fearfully great lizards’). He later coined the English term Dinosaur.

Thus it was that Mantell’s reputation as the first major hunter, discoverer and designer of dinosaurs was overshadowed by Owen’s.

Still no-one really knew what these huge animals looked like. Mantell’s paper about the Iguanodon’s upright posture was forgotten and the dinosaurs were depicted as quadrupeds until much later in the 19th century when complete skeletons were discovered for the first time.

**The final chapter**

On the 11th October 1841, came the incident that would mark the beginning of the end of Mantell’s career. Whilst on his way to visit a patient, his coachman lost control of the reins and Mantell impulsively leapt out of the moving coach, fell badly and grazed his head on the wheel of the carriage. As a result, he suffered numbness in
his foot and paralysis in his legs, which lasted for twelve weeks. He then developed intense back pain caused by a tumour on his spine which was twisted. He began self-medicating with strong doses of laudanum and prussic acid.

Owen’s attacks on Mantell began just before the accident and continued throughout the next ten years. Mantell’s considerable reputation was still being honoured and celebrated by his friends and colleagues in Britain, Europe and the United States but, writes Dean, ‘It is a tragedy that during the same years he was also menaced by an unscrupulous, unnecessarily competitive adversary who did what he could to deprive Gideon of still further rewards.’

Time and again, Owen belittled Mantell’s achievements, criticised his findings and, in one incident, argued that Mantell was ‘nothing more than a collector of fossils, furnishing specimens to distinguished scientists like himself.’

Yet Mantell must have gained some small comfort in March 1848, when the then owner of the quarry near Cuckfield unexpectedly sent him a new find—the lower jaw of an Iguanodon. ‘Here after thirty years’ search,’ he wrote, ‘is an unequivocal portion of the dental organs of that marvellous reptile.’

Despite his failing health, Mantell continued for the next few years his patient documentation of the Iguanodon, correctly identifying in detail, the small size of the creature’s upper limbs. His lifetime of work was recognised by the award of a Royal Medal from the Royal Society on November 30th 1849. Owen’s best efforts to prevent this came to naught and the following year, when he claimed Mantell’s illustrations as his own work, Owen was caught out and his duplicious behaviour was exposed and condemned.

Despite his ill health, Mantell was a regular visitor to the Great Exhibition at the Crystal Palace in London, which opened on 1st May 1851. When the Exhibition was relocated to South London, it was Mantell who was asked to work with the sculptor Benjamin Waterhouse Hawkins to realise a group of life-sized dinosaurs, including an iguanodon. He declined the honour: ‘Very good for nothing. In truth, I am used up.’
In February, shortly after his 62nd birthday, he wrote ‘I have been suffering and existing, that is all.’ Mantell kept writing and travelling until September when he made a final pilgrimage to his daughter Hannah Matilda’s grave and a last visit to Lewes and Brighton. On the 8th of November he gave his final lecture and rushed home exhausted. The next day he was in constant pain, went to bed early and took two large draughts of opiates. Found unconscious the following morning, he died that afternoon.

In his will, Mantell asked for a post-mortem, which revealed that he had suffered all these years with a badly curved and distorted spine and an incurable tumour. Part of his spine was removed and exhibited at the Hunterian Museum — ironically, run by Owen — for almost 90 years until the building was bombed during the World War II. The rest of his body was interred in the grave next to his daughter Hannah in a sarcophagus designed by Amon Wilds in West Norwood cemetery (Plot 273, square 99).

Owen went so far as to write an anonymous obituary demeaning Mantell’s work. He later took charge of Mantell’s entire collection which was meant to be housed in the new Natural History Museum he had founded. Instead he made sure that most of it was dispersed as gifts and loans to other museums to ensure it could never be viewed in its grand entirety.

In the end, Darwin and others proved that most of Owen’s findings were false. When he died in 1892 his reputation was tarnished, condemned for his treatment of his rivals. By contrast, Gideon Algernon Mantell has become more celebrated and valued as time has gone on — the true father of our understanding of the Age of the Reptiles and a remarkable Lewesian.
Mantell’s Grade II listed grave (pictured here) was restored by the Friends of West Norwood Cemetery and English Heritage in the late 1980s.

References:


Dean, Dennis R. Gideon Mantell and the Discovery of Dinosaurs. Cambridge University Press, 1999


For more information on Gideon Mantell and his life and works see https://gideonmantell.wordpress.com/