

Siemens machine, and the spring which it works, are arranged on a walnut cross-piece. In addition, it is held by stretched ropes, which may be tightened at pleasure by tension, and which connect the four extremities of the framework with the upper and lower cross-pieces of the car.

When rotating with great velocity, the vibrations are avoided by this method of attachment.

The use of such a machine in the car of a balloon is comparatively simple. When every thing has been prepared on the ground, there is nothing to do but to plunge a little copper fork into the mercury-cup of the commutator, and the screw begins to turn.

From fear of fire, and from the change of position, which affects the altitude of the balloon when once poised in the air, the operator must have no manual work to do: electricity alone supplies all the fundamental conditions of the aerostatic motor-force. After the winter, when favorable weather comes, the first electric balloon will again take its flight.

GASTON TISSANDIER.

A NEW AND STRANGE DINOSAUR.

PROFESSOR MARSH continues his studies of the Jurassic dinosaurs of America by giving, in the last number of the *American journal of science*, an account of a new family of Sauropoda founded upon the genus *Diplodocus*, which he places between the Atlantosauridae and the Morosauridae. The chevrons of the caudal vertebrae, which have both anterior and posterior branches, have suggested the name *Diplodocus*; and the ischia of the pelvic girdle are intermediate in form and position between the families heretofore recognized, the shaft being straight, and not twisted nor apically expanded.



FIG. 2. — The same skull, front view.

But the best preserved portion is the skull, of which we reproduce Professor Marsh's excellent figures. It was of moderate size, the figures being one-

sixth the natural size, and showing clearly the characteristic features. It has two pairs of ante-orbital openings, the small front pair not having been seen before in dinosaurs. The brain inclines backward, and has a very large pituitary body, enclosed in a

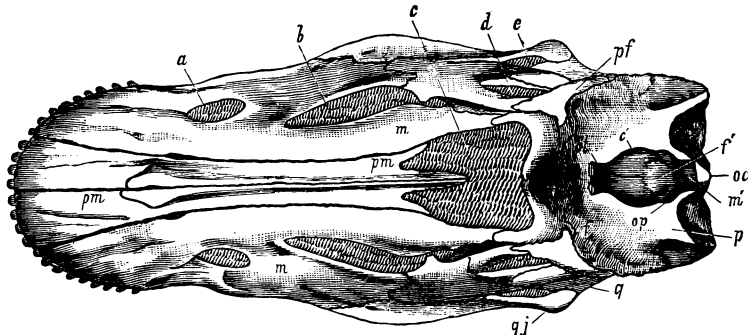


FIG. 3. — Skull and brain cast of the same, seen from above. *a*, aperture in maxillary; *b*, ante-orbital opening; *c*, nasal opening; *c'*, cerebral hemispheres; *d*, orbit; *e*, lower temporal fossa; *f*, frontal bone; *f'*, fontanelle; *m*, maxillary bone; *m'*, medulla; *n*, nasal opening; *oc*, occipital condyle; *ol*, olfactory lobes; *op*, optic lobe; *p*, parietal bone; *pf*, pre-frontal bone; *pm*, pre-maxillary bone; *q*, quadrate bone; *qj*, quadrato-jugal bone.

capacious fossa below the main brain-case, — a very different condition from that holding in the other families of Sauropoda. The size of the skull indicates an animal probably forty or fifty feet long: the weak dentition shows that it was herbivorous, and its food was probably such succulent vegetation as an aquatic life would enable it to procure.

In looking at these figures, and noting their strange resemblance to a horse's skull, one finds it hard at first to recall the fact that the nearest living allies of *Diplodocus* are the crocodiles.

THE FALSE PROPHET OF THE SUDAN.

THE religious movement in the Sudan has a special interest for ethnologists on account of its parallelism with the events by which the faith of Islam was originally propagated. A recent letter from Khartum informs us that Mohamed Ahmed, the Mahdi, was born at Dongola in the year 1260 of the hegira. His parents, Abdellahi and Amina, were poor, and had two older sons. From the age of seven he was taught in a Mussulman school to read, write, and commit to memory the Koran. At the age of twelve he knew the latter perfectly. In the same year his father died; but his brothers continued his education while he pursued studies of the Mussulman law, foreseeing eminence in store for him. After the death of his mother, having completed his studies, he repaired to the Isle of Aba on the White Nile, to be near his brothers, who were boat-builders. For nearly fifteen years he inhabited the isle, venerated as a holy man by all who knew him, before making claim to the title of Mahdi or Mussulman Messiah. He then wrote to all sheiks and grand dervishes of the region, that the prophet

Mohamed had appeared to him in a dream, and informed him, as from Allah, that he was the long-promised Mahdi; that the Turkish supremacy was at an end, the reign of the Mahdi begun; requesting their assistance, and further predicting wars and insurrections for the Sudan. For himself, at the proper time, he proposed to go to Mecca to receive recognition from the grand sheriff. These predictions were circulated at Khartum a year before they came to the knowledge of the local authorities. Finally Raïf Pasha, governor-general, decided to send a deputation, headed by the famous Abu Süüd, to confer with the new prophet. The latter was found in a large hut surrounded by his dervishes, but declined to go to Khartum or to perform miracles, the time for which, he said, was not come. Abu informed him that he would be forcibly taken to the governor if he did not come willingly; but, discovering several men with drawn swords in his rear, he retreated precipitately to his despatch-boat and to Khartum. He was sent back with two hundred soldiers, commanded by an adjutant-major, to bring the Mahdi forcibly. These soldiers landed at night in mud up to their middles, lost all courage, and, arriving at the hut, were confronted by a mob of whirling dervishes. One of these was shot by the commander as a signal for attack, when the remainder, with thousands of Arabs who had remained in ambush, threw themselves upon the little troop, and exterminated them. The boat was next attacked, and was obliged to retreat to Cava. On the 20th of August, 1881, a large force was collected at Cava to crush the insurrection before it gathered strength. Meanwhile the Mahdi and his people left the Isle of Aba under the very eyes of troops who dared not oppose him, and made his way toward the mountains of Gadir. Here, in November, 1881, he was attacked by Rashid Bey and the king of the Shiluk tribe with five hundred soldiers, who were destroyed, almost to a man, in a few moments as it were. Raïf Pasha being superseded, Giegler Pasha, a European civil officer temporarily in charge, declared that he could preserve order with the troops at his command, and declined re-enforcements. In order to carry out this boast, he concentrated the garrisons of Kordofan, Kashoda, Sennaar, and Khartum, and despatched them from the latter place against the Mahdi, under command of Yusuf Pasha. They comprised about seven thousand men, mostly untrained conscripts, with six cannon.

Three days after their arrival at Gadir they were attacked by fifty thousand insurgents, commanded by the brothers of the Mahdi; and only about a hundred and twenty-four private soldiers escaped from the general massacre. The troops of the Mahdi suffered severely, and both his brothers were killed. Meanwhile the other provinces, from which the garrisons had been withdrawn, began to rise against the authorities. Sennaar revolted: the few soldiers there were slain, with all the Europeans, and their goods looted. El Kerim Bey came to the rescue of the government with three thousand Arabs. He was killed, his men slain or dispersed, his villages were

burned, and all the inhabitants put to the sword, without regard to age or sex.

At this juncture Abdelkader Pasha was named to the governorship; and the Mahdi marched on El Obeid, capital of Kordofan, putting the inhabitants of the villages on his way to the edge of the sword. A Catholic mission, consisting of two priests, two sisters, and two lay brothers, were taken prisoners by the Mahdi, and tortured for three days, in a vain attempt to force them to renounce their religion. In September the Mahdi attacked El Obeid with a hundred and ninety-two thousand insurgents. Assisted by a trench, the defenders held their ground for two hours, after which the Mahdi retired, leaving twelve thousand of his men on the battle-field. He proceeded to invest the town, and in four months and a half reduced it by famine, on Jan. 17, 1883. All the Europeans were obliged to embrace Islamism to escape death. Their goods were confiscated. The mission was demolished; the missionaries, male and female, put to the torture. The archives were burned; the merchants of the town, and all the principal functionaries, sold into the interior as slaves. The females suffered rapine.

Before this, thirty-seven hundred soldiers, commanded by Ali Bey, had been sent to succor El Obeid. They were attacked by thirty thousand insurgents under Mama, the grand-vizier of the Mahdi. A thousand escaped to Bara, where they capitulated to the rebels two weeks before El Obeid. But the career of victory was not wholly unchecked. Karkodi on the Blue Nile, the headquarters of the trade in gum and lentils, was captured by the rebels, and partly burned. Four hundred soldiers and merchants were massacred. However, in thirty-five days, the rebels were driven out by the Egyptian troops, and order re-established. A revolt on the White Nile at two large villages, ten hours from Khartum, was crushed, with heavy loss to the rebels, and the death of their leader and his three sons.

Up to this time the insurrection had cost more than a hundred thousand lives in the Sudan. At the time this letter was written, Hicks Pasha and his army were just arrived, and were expected to restore order. Their rout and massacre occurred later. At this date the Egyptian government, under pressure from England, is about to abandon the Sudan to the hordes of the Mahdi; and the unfortunates who are holding a few outposts in the faith of rescue will be left to their fate. The story reads like a page from the middle ages; and it seems hardly credible that such events can characterize any part of the nineteenth century. Unless the strong arm of Abyssinia intervenes against the forces of the false prophet, it is quite possible that even for Egypt proper the end is not yet.

THE GEOGRAPHISCHES JAHRBUCH.

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THIS *Jahrbuch*, an outgrowth of Petermann's *Geographische Mittheilungen*, was first pub-