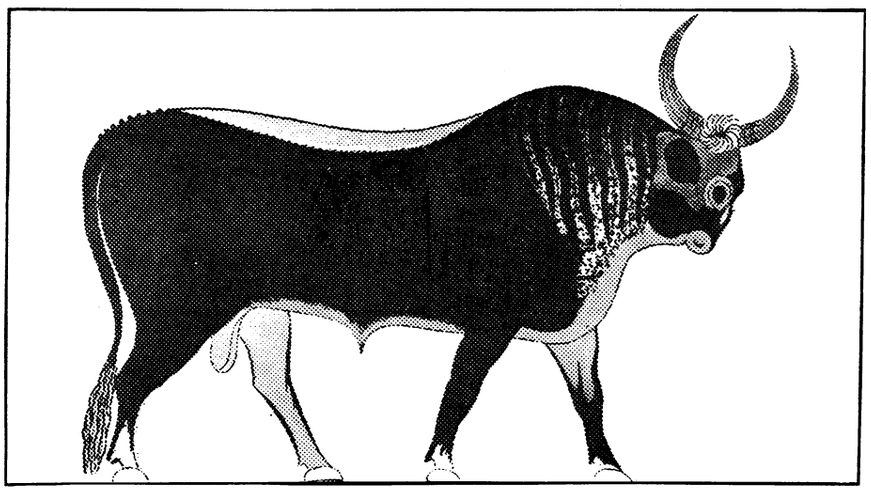
# Classics of Science: Discovery of the Serapeum



*Painting on an Egyptian tomb of an Apis, one of the sacred bulls buried in the Serapeum*

The following account of one of the earliest discoveries in Egyptology by its first scientific explorer shows the finds which it was possible to make there in 1850, something of the attention to detail which an explorer needs, and something too of the personality which made Mariette successful in the face of many and varied difficulties.

*THE MONUMENTS OF UPPER EGYPT, a translation of the "Itinéraire de la Haute Egypte" of Auguste Mariette-Bey by Alphonse Mariette, London, 1877.*

### The Serapeum

The Serapeum is one of the edifices of Memphis rendered famous by a frequently quoted passage of Strabo, and by the constant mention made of it on the Greek papyri. It had long been sought for, and we had the good fortune to discover it in 1851.

Strabo, in his description of Memphis, expresses himself thus: "One finds also (at Memphis) a temple of Serapis in a spot so sandy that the wind causes the sand to accumulate in heaps, under which we could see many sphinxes, some of them almost entirely buried, others only partially covered; from which we may conjecture that the route leading to this temple might be attended with danger if one were surprised by a sudden gust of wind."

If Strabo had not written this passage, in all probability the Serapeum would to this day lie buried under the sands of the necropolis of Sakkárah. In 1850 I had been commissioned by the French Government to visit the Coptic convents of Egypt, and to make an inventory of such manuscripts in Oriental languages as I should find there. I noticed at Alexandria, in M. Zizinia's garden, several sphinxes. Presently I saw more of these same sphinxes at Cairo, in Clot-Bey's garden. M. Fernandez had also a certain number of such sphinxes at Geezeh. Evidently there must be somewhere an avenue of sphinxes which was being pillaged. One day, attracted to Sakkárah by my Egyptological studies, I perceived the head of one of these same sphinxes obtruding itself from the sand. This one had never been touched, and was certainly in its original position. Close by lay a libation-table, on which was engraved in hieroglyphs an inscription to Osiris-Apis. The passage in Strabo suddenly occurred to my mind. The avenue which lay at my feet must be the one which led up to that Serapeum so long and so vainly sought for. But I had been sent to Egypt to make an inventory of manuscripts, not to seek for temples. My mind, however, was soon made up. Regardless of all risks, without saying a word, and almost furtively, I gathered together a few workmen, and the excavation began. The first attempts were hard indeed, but, before very long, lions and peacocks and the Grecian statues of the dromos, together with the monumental tablets or stelæ of the temple of Nectanebo, were drawn out of the sand, and I was able to announce my success to the French Government, informing them,

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## Study of Quake Risk Urged

An immediate investigation of the earthquake situation in the Mississippi Valley was urged here this afternoon by Commander N. H. Heck, in charge of the seismologic work of the U. S. Coast and Geodetic Survey.

Calling attention to the fact that one of the great earthquakes of all history occurred in the New Madrid region of the Mississippi Valley in 1811-12, Commander Heck intimated that there was a possibility that history would repeat itself, although it can not be foretold what the future will bring. Occasional minor earthquake shocks have been felt in the Mississippi Valley and along the Ohio River in past years and one of the sharpest of these shocks was on April 9, 1917. Another occurred at the time of the great Mississippi flood. Probably the fact that flood and earthquake came at the same time was merely a coincidence that serves to call attention to the damage that would be done by a major earthquake in that region today.

"Thorough examination of the situation in the entire Middle Western region subject to earthquakes is desirable," Commander Heck said. "There is little doubt that the first investigation should be confined to the area surrounding the New Madrid region. Dr. James B. Macelwane, S. J., director of the Jesuit Seismological Association, has proposed such a plan, and it is endorsed by Dr. Arthur L. Day, chairman of the Advisory Committee of Seismology of the Carnegie Institution of Washington, who is in charge of the earthquake investigation in California which is being made with the cooperation of the national government, various state institutions, including the universities, various other groups and the citizens of California. This organization has all that it can take care of in the California problem and the Government activity as carried on by the United States Coast and Geodetic Survey is fully occupied with taking care of earthquake information for the United States and the regions under its jurisdiction, and operating its own observatories so that it is left for the Middle West to work out its problem. Its rapidly growing cities make it important that this problem be attacked.

Earthquakes are due to sliding continents afloat upon viscous layers of rock deep within the earth, Frank B.

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## Quake Study Urged

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Taylor, geologist of Fort Wayne, Ind., told the Geological Society of America recently.

Many students of earthquakes have noted that most of these earth disturbances are concentrated in the areas, such as those circling the Pacific Ocean, in which young or relatively recent Tertiary mountains were built.

Mr. Taylor has found that most of the world-shaking earthquakes have their centers not on the land where the mountains were born but out at sea where the continental land mass slopes downward to join the sea bottom.

"If the mountain ranges of the Tertiary belt," Mr. Taylor said, "are being made by a sliding of the continental crust sheets from high toward lower latitudes, it is easy to see how stresses would be set up in the compression belt, and would cause earthquakes when they were relieved by sudden fracture or slipping. The whole mass of North America north and northeast of the Rocky Mountains is sliding constantly southward and southwestward, without perceptible jar, on a deep seated basal film or layer of rock which is made potentially viscous by great vertical pressure and by heat, but is made actually viscous only in a relatively thin layer by the tremendous power of the added horizontal stress arising from the main crustal movement.

"Where the basal thrust-planes emerge in the ocean bed beyond the shore of the front range, suboceanic earthquakes are produced. Nearly all major earthquakes are caused in these ways. Only a few are caused by sudden fracture and relief of tension in high latitudes. The process is the same in all of the moving continents: the body of the continent slides without a jar. Earthquakes occur only where the basal planes emerge through the non-viscous, fracturable crust.

"Although Africa is the second largest of the continents, it is not moving horizontally, and hence has remarkably few earthquakes. Asia, which is the largest of the moving continents, and moves at the highest rate, has more intense and constant seismic disturbances in its Tertiary belt than any other continent."

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An international shorthand system has been devised by a German professor.

## The Serapeum

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at the same time, that the funds placed at my disposal for the researches after the manuscripts were entirely exhausted, and that a further grant was indispensable. Thus was begun the discovery of the Serapeum.

### The Excavation

The work lasted four years. The Serapeum is a temple built without any regular plan, where all was conjecture, and where the ground had to be examined closely, inch by inch. In certain places the sand is, so to speak, fluid, and presents as much difficulty in excavating as if it were water which ever seeks its own level. Besides all this, difficulties arose between the French and the Egyptian Governments, which obliged me several times to discharge all my workmen. It was owing to these circumstances (to say nothing of other trials) that the work proved so long, and that I was compelled to spend four years in the desert—four years, however, I can never regret.

Apis, the living image of Osiris revisiting the earth, was a bull who, while he lived, had his temple at Memphis (Mitrahenny), and, when dead, had his tomb at Sakkárah. The palace which the bull inhabited in his lifetime was called the Apieum; the Serapeum was the name given to his tomb.

As far as we can judge by the remains found during our researches, the Serapeum resembled in appearance the other Egyptian temples, even those which were not funereal in their character. An avenue of sphinxes led up to it, and two pylons stood before it, and it was surrounded by the usual inclosure. But what distinguished it from all other temples was that out of one of its chambers opened an inclined passage leading directly into the rock on which the temple was built, and giving access to vast subterranean vaults which were the Tomb of Apis.

### The Ruins Discovered

The Serapeum, properly so-called, no longer exists, and where it stood there is now nothing to be seen but a vast plain of sand mingled with fragments of stones scattered about in indescribable confusion. But the most beautiful and interesting part of the subterranean vault can still be visited:

The third part is that which is now so well known. Its history begins with Psammetichus I. (XXVI$^{th}$ dynasty), and ends with the later Ptolemies. . . . These galleries cover an extent of about 350 metres, or 1,150 English feet; and from one end to the other the great gallery measures 195 metres, or about 640 English feet. Moreover, granite sarcophagi have been used here. Their number throughout the whole extent of the galleries is 24. Of these only three bear any inscription, and they contain the names of Amasis (XXVI$^{th}$ dynasty), Cambyses and Khebasch (XXVII$^{th}$ dynasty). A fourth, with cartouches without any name, most probably belongs to one of the last Ptolemies. As to their dimensions, they measure on an average 7 feet 8 inches in breadth, by 13 feet in length, and 11 feet in height; so that, allowing for the vacuum, these monoliths must weigh, one with the other, not less than 65 tons each.

**August Ferdinand Francois Mariette** was born February 11, 1821, at Boulogne, France, and died January 19, 1881, at Cairo, Egypt. He began teaching at the age of eighteen, but soon became interested in archæology. The deciphering of Egyptian inscriptions had been going on since Thomas Young and J. F. Champollion had worked out the characters of the hieroglyphic writing from the Rosetta stone, discovered in 1799. Mariette here tells of his mission to Egypt to buy up ancient papyri, and what came of it. Henceforth the life of the Egyptians was studied not only from their writings, but, at first from their temples and monuments under Mariette, later, under Sir Flinders Petrie, from the articles of every day use which have been found. From 1858 Mariette made his home in Cairo, and worked unceasingly to, literally, dig up the history of his adopted land. Bey was Mariette's title under the native government.

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All fish, and trout in particular, are cannibals.

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Ancient physicians believed that use of honey prolonged life.

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There are less than 8,000 Chinese women in the United States.

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Tussah silkworms feed on leaves of dwarf oak trees in eastern Manchuria.

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Beavers can profitably be raised for fur in a controlled if not fully domesticated state.

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A camera that takes slow motion pictures of automobile engines has been invented.

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A new breed of sporting dog is the wire-haired daschund, which has been developed in Germany.