

# THE RHAMPHORHYNCHOID PTEROSAUR *SCAPHOGNATHUS CRASSIROSTRIS*: A "LIVING FOSSIL" UNTIL THE 17th CENTURY?

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## ABSTRACT

The new interdisciplinary science of Paleocryptozoology seeks to study extinct animals based on historical records and artifacts that may be compared with known fossils. The long-tailed flying reptile *Scaphognathus crassirostris* is one such species that may be studied in this manner. Archaeological items and ancient written accounts enable us to understand its appearance. For comparison purposes, the two fossils of that species that have been found are examined. The archaeological artifacts are from Egypt and Europe together with written accounts. Finally, the dimensions of the limbs of the best animal representations are compared with those known from skeletal findings to verify the likelihood that the ancients observed this species. This study helps to establish the recent existence of rhamphorhynchoid pterosaurs; animals that mainstream science believes became extinct about 140 million years ago.

## INTRODUCTION

There is evidence that pterosaurs may have flown the skies a couple thousand years ago. There are numerous depictions precise enough to identify the pterosaur species, *Scaphognathus crassirostris*, from several cultures of antiquity since that species is the only long-tailed species with a head crest. Written accounts provide additional information about the ecological niche of these animals that is consistent with the pictorial iconography. It is interesting that Charles Darwin coined the term "living fossil" for other unexpected living species also found in fossiliferous strata, though he noted that their occurrence contradicted his theory (according to Ward [30, p. 10]).

The order Pterosauria consists of suborders Rhamphorhynchoidea (long-tailed) and Pterodactyloidea (short-tailed pterosaurs). Within the first named suborder is the family Rhamphorhynchidae consisting of a number of genera. The genus that is important for this article is the *S.* which consists of one known species, *S. crassirostris*. Two fossil specimens are currently known; the first described in 1831 by the German professor August Goldfuss (fig. 1). The second is a juvenile and is intact, including the long tail that was missing from the first fossil (fig. 4). The *S.* is easily identified since it is the only long tailed pterosaur with a head crest. Both fossils, currently known, were found in the Solnhofen limestone in southern Germany and display a skeletal head crest. Because the *S.* is the only rhamphorhynchoid pterosaur with a head crest, ancient artifacts enable us to tell what the soft tissue of the head crest looked like and identify ancient *S.* representations with a high degree of confidence.

The remarkable thing about this animal is that it was depicted in several cultures of antiquity. Artifacts identified with this interesting pterosaur species include Roman-Alexandrian coins, an Arabia-Philistia coin, Egyptian seals, a French wood carving, a church tympanum from the British isles, a German statue and coin, a Hungarian coin, an Etruscan bronze, several Middle Ages picture maps, and an enlightening sketch of a mounted animal in Rome. Not all of these will be examined in the present

paper because of space constraints. The visual evidence is bolstered by written accounts from ancient Greek and Latin authors and the leading European naturalists of the early Renaissance.

### **A Creation Perspective on Paleocryptozoology**

Paleocryptozoology is a new science and therefore offers the opportunity to achieve rapid progress and success. Mayor, not a creationist, [25] initially proposed these types of studies of comparing ancient written accounts with museum artifacts and fossils in order to determine what extinct animals may have lived in various cultures at certain times. However, the new science has not been much developed heretofore. In an earlier article, I observed the Egyptian representation of tail vanes with flying reptiles and concluded that they must have observed pterosaurs or they would not have known to sketch the tail vanes [16]. I also matched a flying reptile, observed in Egypt and sketched by the outstanding Renaissance scientist Pierre Belon, with the *Dimorphodon macronyx* species known from the fossil record.

I need to stress that the methodology of Paleocryptozoology is not necessarily to find artifacts that look like modern reconstructions of scientists based on fossils. Indeed, that may be helpful and there may be some accuracy with some of the scientific reconstructions. However, the best method for success is to search for distinct morphological features that are difficult to explain by any other means than that a particular fossil species was observed and accurately described or depicted by its witnesses. An example of a distinct morphological feature is the tail vane of some rhamphorhynchoid pterosaurs. Also, it could be a distinctive skull like that of a *Dimorphodon*. Both of those were described by the present author in another effort [16]. For the S., the distinctive feature is a rhamphorhynchoid pterosaur with a head crest. The S. is the only long-tailed pterosaur presently known from the fossil record with that feature. That will be examined in the present study.

Another species I have found is the *Tyrannosaurus rex* with two distinct bumps on the head, known as pre-orbital spurs (it should be noted that some T-rex skulls have that feature and some do not; that, and perhaps other factors, has led some paleontologists to propose that the T-rex should actually be classified as two species). The T-rex is awaiting further research and publication. Another extinct marine reptile genus I have found good evidence for is the Moasaurus that appears to have had cartilaginous fins, like sharks, that have not been preserved with the fossil record in addition to the four flippers that are known.

It is well known that scientists tend to find what they are looking for. This is certainly true for paleocryptozoology. I believe the reason this new science has had trouble getting started is because scientists are conditioned by evolutionary geological thinking. They only look for animals in locales where fossils have been found and where there has not been a subsequent Ice Age. Also, few have looked for 'Jurassic' or 'Cretaceous' animals, thinking they could not have survived until recently. Therefore many extinct animal artifacts that may otherwise have been spotted have been missed.

A Creation perspective could be that most fossils were caused by Noah's Flood and therefore the pre-Flood biogeographical distribution is not necessarily the same as the post-Flood biogeographical distribution. Because of that I have been looking for almost any type of extinct species from almost any culture with considerable success. I know that not all creationists believe that the Cretaceous, or Jurassic, are Flood strata. Perhaps then, for some creation scientists, the location of fossils would be considered an important guide for finding extinct animal artifacts. I will suggest, though, that the fossil record is an extremely poor guide for successful locales for paleocryptozoological studies (though a number of the evolutionist scientists I have worked with have all thought that would help them, apparently to their great detriment).

Paleocryptozoology could suggest a total revolution in the understanding of the geologic column where the age of the strata is determined by the fossils found in it. Thus far I have found about 40 species of extinct animals, all thought to be extinct for millions of years, but almost certainly accurately observed by man in the recent past. Therefore the entire idea of the geological succession of *many of the layers of strata* (different ages), based on index fossils, may soon be untenable. Similarly, the idea of a gradual succession of life from simple to complex (Darwinian evolution that was based on the idea of fossil succession) may be challenged since most of the supposed early life forms may soon be demonstrated to have lived recently.

Of course, scientists could believe in geological succession and Darwinian gradualism even though the original basis for those ideas may soon be disproved. They would have to believe that the animals lived for millions, and/or tens of millions, of years without being fossilized again and survived until man killed them off in recent history. Ockham's razor would suggest, though, that all animals were created thousands of years ago and that there is another explanation for the patterns of the geologic strata (perhaps ecological zonation during the Genesis Flood?).

### Correlating Historical Accounts

Herodotus, who visited Egypt from Greece about 450 B.C., is undoubtedly the most important ancient witness. He was a very reliable historian, stating his sources of information and empirically verifying the stories he heard when able to. He cross-checked reports he heard to obtain more accuracy. Lloyd [22], a modern commentator, has said "Herodotus' inquiry is pursued in an astoundingly scientific spirit." He provides the following account:

There is a place in Arabia, situated very near the city of Buto, to which I went, on hearing of some winged serpents; and when I arrived there, I saw bones and spines of serpents, in such quantities as it would be impossible to describe. The form of the serpent is like that of the water-snake; but he has wings without feathers, and as like as possible to the wings of a bat [18; 2, 75-76].

The *water-snake* referred to by Herodotus, udron, is identified as the Grass Snake (*Natrix*) or *Tropidonotus bilineatus*, a non-poisonous European species which attains a length of 1-3/4 meters (Gossen-Steier, cited by Lloyd, [22]). When the Egyptians told Herodotus that the flying serpents had "wings like a bat" they were most likely referring to the similar membrane material used for both animals and not the skeletal frame that is different.

He was also told that "at the beginning of spring, winged serpents fly from Arabia towards Egypt; but that ibises, a sort of bird, meet them at the pass, and do not allow the serpents to go by, but kill them." The ibis (fig. 2) is described as "all over a deep black, it has the legs of a crane, its beak is much curved, and it is about the size of the crex." There are five main species of ibis birds currently breeding in Africa. Meinertzhagen believes this particular one to be the Hermit Ibis (*Comatibis eremita*) often called the Crested Ibis by Egyptologists (cited by Lloyd, [22]). Unlike the other Ibis species, the *Comatibis* does not inhabit watery places, but rocky and desolate mountain ranges, where it feeds on insects, snails and reptiles. The description that Herodotus gives is of the sacred ibis (*Ibis aethiopica* or, popularly, the Black Ibis) and is highly accurate (Lloyd, [22]). This bird is not often found in Egypt since 1800 A.D., but is still common in the Sudan.

When describing Arabia, Herodotus says "winged serpents, small in size, and various in form, guard the trees that bear frankincense, a great number around each tree. These are the same serpents that invade Egypt" [18, 3, 107-8]. Weidemann and Keller have suggested that perhaps Herodotus heard of the *Draco volans* (fig. 3) and that his flying serpent description can be interpreted to match that animal (cited by Lloyd, [22]). There are problems with this: the *D. volans* has never been definitively known in Egypt, Nubia or Arabia; the accounts of the flying serpent traveling long distances in the air; having membraned wings, doesn't match *Draco*; and the pictorial evidence, including some that will be examined below, does not match *D. volans* either.

It is thought that Josephus, the Jewish historian who wrote in the 1<sup>st</sup> century A.D., had access to ancient written records; before the Roman destruction of Jerusalem. He provides the following account of Moses leading an army from ancient Egypt against the Nubians:

...he gave a wonderful demonstration of his sagacity; for when the ground was difficult to be passed over because of the multitude of serpents, (which it produces in vast numbers, and indeed is singular in some of those productions, ... such as are worse than others in power and mischief, and an unusual fierceness of sight, some of which ascend out of the ground unseen, and also fly in the air, and so come upon men at unawares and do them mischief,) ... he made baskets, like unto arks, of sedge, and filled them with ibes [ibises], and carried them along with them; which animal is the greatest enemy to serpents imaginable, for they

fly from them when they come near them; and as they fly they are caught and devoured by them [21, 2, 245].

It is known that Josephus was familiar with Herodotus and it is likely that his mention of flying serpents could have been prompted by the earlier allusion of the Greek historian and traveler. However, that does not discredit the genuineness of Josephus's account. There are at least another dozen accounts of flying serpents from the Middle East including Isaiah 14:29 and 30:6 (NASB, NRSV[20], KJV). They may be found in the author's other study [16]. A partial summary is presented in Table 1. A study of the biblical, archaeological, and linguistic context of Hebrew words for pterosaurs is currently being prepared by the author [15].

**Table 1 -- Correlation of Written Accounts of Flying Reptiles**

| Author    | Date        | Location            | Predator   | Comments                | Nature of threat | Source of information   | Been to Egypt |
|-----------|-------------|---------------------|------------|-------------------------|------------------|-------------------------|---------------|
| Herodotus | 500 B.C.    | Arabia-Egypt        | black ibis | variety/wings membraned | dangerous        | observation oral report | yes           |
| Aristotle | 300 B.C.    | Nubia               |            |                         |                  | oral report             | no            |
| Philae    | 30 B.C.     | Arabia-Egypt        | ibis       | trees (Egypt)           | poisonous        | ?                       | yes-*         |
| Aelianus  | 300 A.D.    | Arabia-Egypt        | black ibis |                         | dangerous        | ?                       | yes           |
| Ammianus  | 400 A.D.    | Arabia-Egypt        | black ibis | marshes                 | poisonous        | ?                       | yes           |
| Mela      | 100 A.D.    | fly to Egypt        | ibis       | variety/mud             | poisonous        | "fact," oral            | ?             |
| Solinus   | 300 A.D.    | Arabia-Egypt        | ibis       | marshes                 | poisonous        | ?                       | ?             |
| Cicero    | 100 B.C.    | <b>Libya</b> -Egypt | black ibis | <b>desert</b>           | dangerous        | oral-*                  | no-*          |
| Josephus  | (1500 B.C.) | Nubia               | ibis       | variety                 | dangerous        | written-*               | no            |
| Isaiah    | 700 B.C.    | Sinai-Egypt         |            |                         | poisonous        | ?                       | no            |

• indicates a *probable* entry.

### EGYPTIAN ARTIFACT EVIDENCE

There are a number of seals with pterosaur tail vanes presented in the author's earlier study [16]. Perhaps most fascinating of all is a statue hidden in a Berlin museum from which I examined xerox facsimiles from a museum photo. I was able to observe legs with toes and claws; three wing claws; a prototagium (a portion of the wing above the arm known from pterosaur fossil impressions); and a tail vane. The pterosaur was hunting a falcon and appeared to have the dental structure of a S. I have not included the picture with this study because of the low resolution of the facsimile and because the head crest of a S. was not definitively present.

### An Interesting Egyptian Seal

There are four pertinent Egyptian seals I have found: three that depict the ibis hunting pterosaurs and one that could be a S. hunting a gazelle. There are several interesting features to the pterosaur hunting the gazelle (fig. 5 from Giveon, [14, p. 70]). The leaf shaped tail vane is unmistakable. The long reptilian head has the double crest of a S. above it. However the domed bony portion of the head crest is not present, so it could be argued that the two "spikes" on the head are ears (though if so, the engraver has exaggerated their size). There are two legs and two wings like expected for a pterosaur. The level of detail is similar to that for the gazelle that is also fairly clear. The pterosaur is clearly hunting the gazelle, the seal dating to c. 1300-1150 B.C. The object towards the right, with three strands hanging, is undetermined. The seal is now in the Tel Aviv University, Institute of Archaeology. There are several Egyptian seals and an artifact that appear to depict the ibis bird hunting pterosaurs.

Perhaps reflecting Moses's strategy, that Josephus recorded, in one seal a seated Egyptian holds the distinctive curved beak of the ibis with a rhamphorhynchoid pterosaur flying overhead (fig. 6). The figure to the left is a terrestrial serpent. According to Josephus, the ibis cleared the ground of both flying serpents and earth-bound serpents.

### **Roman-Alexandrian Coins Depict S.**

The Roman-Alexandrian coin (fig 7) displays pterosaurs with the head crest described by Alpin (see below). The piece of skin, for the head crest, is seen above and behind the bony portion of the head crest. Apparently some species of the S. had a dual flap and some a single. The wing is clearest behind the second pterosaur. The animal is clearly Rhamphorhynchidae, that is long-tailed. As previously stated, the *S. crassirostris* is the only species of this long-tailed suborder to have a crest of any kind on its head.

The coin dates from 137/138 A.D. with the Roman emperor Hadrian on the obverse side. "Triptolemus," a mythological figure, is towed in the chariot. Other Roman-Alexandrian coins with chariots being towed often depict real animals such as panthers, hippos, and elephants. Emperor Trajan also minted an unmistakable S., towing a chariot, depicted by a Roman Alexandrian coin (c. 117 A.D.). Triptolemus is not present in the chariot of the Trajan coin (see author's picture of the coin from the Alexandria, Egypt museum, not included with this study).

### **A Remarkable Account by a 16<sup>th</sup> Century Naturalist**

Most written records of flying reptiles in the middle east are rather generic and contain little distinguishing detail. However, Prosper Alpin, an European scientist who wrote a natural history of Egypt during the years 1581-4, has provided a masterful account. Alpin did not observe these animals but recorded the following account:

...there is nothing for sure about the basilic, but we have heard talk, nevertheless, that there is a small serpent, as long as a palm branch, and thick like a small finger. It has a small piece of skin, like a crest, on its head and, in the middle of the back, two scales placed on one side and the other which serve as wings in order to advance more quickly. Large numbers of people have said that these serpents live in large quantities close to certain lakes in which the Nile has its source. People don't travel close to those lakes because of the well-known danger these serpents represent ... That is what is said by the Egyptians who travel in Ethiopia and in Nubia [3, p. 407 (222)].

The most remarkable facet of this description is the crest and small piece of skin on the head. Alpin's description of the tail, "thick as a finger," is precisely how paleontologist Malcolm Browne described the tails of rhamphorhynchoid pterosaurs [7]. The length, "as long as a palm branch," is correct for this pterosaur we are considering. Many of the ancient reports of these animals place them near water: lakes, swamps, or rivers, corresponding with Alpin's record. Even more ancients speak of these animals being dangerous (like Alpin's informants). It seems obvious that the French scientist was slow to believe what he heard: these animals were unheard of in Europe by this time, but, as he states, he verified these sightings with large numbers of eyewitnesses (very likely with a great deal of independence).

In an extremely important allusion, the French naturalist refers to another morphological characteristic of the S.:

But the natives, who have a premonition of the arrival of the savage beasts prepare a fire of a plant the very Great and very Good God has abundantly grown in that region, as a remedy. Also by virtue of the smell of the fumes, they are prepared and escaped those reptiles and preserve the province from their incursions. The youngster told me that this plant was short and robust, having a *leaf similar to that of the basilic* and exudes a very unpleasant odor (emphasis mine) [3, p. 409]

This is clearly referring to the tail vane of the basilic that resembled the leaf of that particular plant. The Egyptian sculpture's version of the tail vane matches a variety from the fossil record [32, p. 151]. That important detail helps to complete the written description of this animal.

The name *basilic*, was not often used by Latin writers in classical times to indicate a winged reptile (though the Greeks may have intended that meaning), but the word seems to have changed usage by the middle ages (when they were largely extinct). There is one notable exception in the *Symmachi* version of the Greek Septuagint text for Isaiah 30:6 [Greek, basilsk] [12]. (Is. 30:6 is one of the references in the Bible to the "flying serpent" and this translation is correctly made in almost every Bible version except the mistaken NIV [14].) Although the name *basilic* sometimes took on mythical characteristics in middle-age Europe, at times it clearly represents a real reptile with a *crown* or *head crest*. The head crest is probably integral with the Greek word *basilisk*; derived from the Greek word for a king (who wore a crown) *basileu*". In modern times that name, *Basilisk*, denotes a genus of the lizard family, also with a head crest.

Another French *voyageur*, Felix Fabri, who visited Egypt in 1481-1483, a century earlier than Alpin, also mentioned the *basilic* [12]. He mentions it when talking about various dangerous animals that he saw during the day in the very hot regions of upper (southern) Egypt. He does not provide any description.

### **S. on Middle Ages Maps**

A clearly identifiable S. is found on the Genoese 1457 world map at the lakes where the Nile has its source, just like Alpin's informants claimed [2, p. 78]. The flying creature has a long narrow tongue, the dual skin head crest, two wings, two legs, and a long tail. It is colored red and green. Cardanel (cited by Toppell) said the flying reptiles he observed were very colorful (see the last section). There is also a clearly identified giraffe, elephant, and Ethiopian present with the map. The giraffe is accurately colored, brown and spotted, and so is the grey elephant. The Ethiopian is black. There is a mammal and reptile that I am not able to identify at present. The map is a portolano colored on sheepskin. The S. looks just like that of figure 8, next paragraph, except for being in color.

The Borgia world map, of 1435, is named for Cardinal Borgia who bought it for his museum from an antique shop (fig. 8) [2, p. 81]. There are a readily identifiable elephant, camel, and horses. The camel is carrying a load and being led by a caravaner. The S. is just as recognizable as the other three animals. It has a long tail, two legs, two wings, a beard seen on some other reptiles like the iguana, and the dual skin head crest. The appearance of the S. is remarkably similar to the Meyer sketch from Rome (fig. 10). The map may well be from Africa, or perhaps India, since the elephant and camel are both found there and not many other countries. There are also people on the map and those below the S. wear the type of crown of the Ethiopian from the Genoese 1457 world map (see previous paragraph). However, the top left word of the visible area of the Borgia map appears to be 'India.' The little 'castles' represent towns and there are two churches, with crosses, present. There were Middle Ages churches in both India and Ethiopia. Bochart and Cardanel (cited by Toppell) both told of pterosaurs brought from India to Paris (see the last section). The map is engraved on iron and the cartographer is unknown.

## **EUROPEAN S. SURVIVORS**

### **A French Wood Carving**

A French wooden image, dating from the 16<sup>th</sup> century, displays remarkable features like the S. (fig. 9). There are two wings that clearly appear to be membraned, not feathered, and two legs slightly behind the wings as is proper. There is a distinct tail vane represented. There appears to be a small head crest above and slightly in front of the eyes and remarkably a hint of the twin skin flap above and behind the bony crest that is much clearer with the Trajan and Hadrian coins, the Egyptian seal, and the animal near Rome.

The nostril is plainly visible toward the front of the snout, with just a hint of it on the Egyptian sculpture. The ear appears faintly just like the Egyptian sculpture on the lower posterior of the skull. The same lateral ridge appears on the dorsal skull, below and in front of the eye, that is seen on the Egyptian sculpture. The legs, just like the Egyptian sculpture, are after the fashion of the back legs of a quadruped. (Some scientists think pterosaurs had bird-like legs with the joint bending in the opposite direction.) The tail is flexible contrary to the assertion that it always was held rigidly straight. (That unrealistic idea is based on the extrapolation of the ossified tendons of the tail found in fossil specimens.) If someone examined the icon in person, perhaps further resemblance could be discovered like the number of toes, etc.. The following account is given:

From the 6<sup>th</sup> century, St. Radegonde, the captive of the royal line that Clotaire had married but wanted the marriage to be annulled, founded in Poitiers a monastery for life to flow with his companions in the practice of all the virtues. But he chanced upon a flying dragon with an enormous tail who customarily lived in a cave (or underground). This had been encountered previously by those who worked in the monastery. and that monster devoured the monks who, too imprudently, approached its privacy. Radegonde punished it: whereas it approached him, it took to wing to run away, it spit to destroy him, but he made the sign of the cross. Tradition has given the name of the dragon "the Grand Goule." ... From olden days in the ancient cities are those who recount that they would assemble in ceremonial parades carrying the representations of the vanquished dragons. In the 15<sup>th</sup> century the good king Rene of Anjou ruled himself the ceremonial procession of the Tarasque and the carrying of the image in Tarescon. Coming immediately after the cross, in the retinue of the parade, are images of the dragons symbolizing Satan vanquished and each his conqueror. Like in the triumphal marches of the victorious Caesars, the king's enemies, subdued and condemned, each bound to the chariot of the conqueror. The ceremonial image of the Grand Goule of Poitiers is actually in the Museum of that town (translated by the author from [8]).

### **Sketch of S. In Rome and a 6 BC Etruscan Bronze**

A dragon was said to live in the wetlands near Rome in December, 1691. The animal lived in a cave and terrorized the local population. A sketch of the skeleton has survived in the possession of Ingegniero Cornelio Meyer (figure 10). The most remarkable thing about the animal is the clear head crest and the dual piece of skin from the crest.

The ear appears to be visible in a manner similar to the Egyptian sculpture (see Goertzen [16]). Five digits were clearly visible for each foot, of the proper length and with the first shorter and offset from the rest as is proper for the S.. The upper arm bone can be seen at the front of the wing as well as the hint of the protagium (in front of the lighter colored upper arm of the near wing). There is a hint of a wing claw on the far wing where it curves forward. The tail vane is not visible, however that is not a skeletal feature and the dermal layer does not appear to have been preserved there. The *aktinofibrils* could be sketched in the wing that is clearly membraned. The wings are in front of the legs, on the vertebrae, matching the fossils.

The femur is properly shown as a single bone. The tibia and fibula, the twin lower leg bones, are visible too. Some have suggested that it could be a fossil or faked composite. It is much too accurate to be considered a fabrication. The survival of the skin suggests that it is not a fossil since it includes accurate wing features, a head crest, and the ears. Detailed measurements are included in the Appendix.

I believe the Etruscan bronze statuette, from the sixth century B.C., is a S. with a head crest and its neck arched back (fig. 11). The jaws are open to the sky. Some might say it is a poorly modeled griffin with two horns and the lower jaw broken. There is a sign of a break there but that could have been from a S.'s double head crest, as is often depicted elsewhere. Another problem with the griffin interpretation is that the griffin's "upper jaw" would be narrow at the base and wider towards the distal point. Griffins did not look like that. On the contrary, S. crests did look like that. Yet another problem would be that the jaws would not meet: there would be a rectangular shape to the inside of the mouth instead of the V-shape of jaws meeting as actually occurs. Finally the neck appears taut and extended on the anterior side, being constricted on the posterior side for the S. arched neck interpretation. Griffin necks were not pictured like that. I have recently seen an Etruscan griffin statue from the same timeframe and it is much different than the *S. crassirostris* statue that is pictured. Based on Meyer's sketch it appears plausible that the S. did intermittently appear at Rome and could have been there in the sixth century B.C.

### **A Pterosaur, Perhaps a *S.*, on a British Isles Church Tympanum**

The most vivid depiction of *S.* is on a church tympanum from the British isles (fig. 12). It is Norman architecture and is from a dismantled church at Netherton, England. The tail vane is distinctly visible above the wings. The hint of a head crest is there, although its front appears to be chipped. The skin extension of the head crest, being toward the back, is not shown because of the frontal view. The two feet are behind the wings as is proper. The proportions appear to match a rhamphorhynchoid pterosaur very well. Because of the oblique angle it is not feasible to measure for comparison (see the Appendix). The depiction is vivid though simplified.

Cooper [11, pp. 141-142] mentions references from the Anglo-Saxon Chronicle of winged reptiles in 793, 1170, 1177, 1221, 1222, 1233, and 1532. The latest entry, in 1793, says:

In the end of November and beginning of December last, many of the country people observed ... dragons... appearing in the north and flying rapidly towards the east; from which they concluded, and their conjectures were right, that ... boisterous weather would follow.

There is also a very sober Welsh account of these animals mentioned by Cooper [11, pp. 131-132]. In addition there are the *Beowulf* allusions to these animals from 6th century continental Europe (see Cooper [11]).

### **S. Depicted by a German Artifact and Coin**

The bronze sculpture is on display at the Metropolitan Museum of Art, NYC, and is a middle ages artifact from Germany (fig. 13). The dual head crest appears to be clear, although the domed bony structure is absent. There also appears to be a pterosaur's tail vane. There are two legs as is proper for a pterosaur. The coin is a 1622 Taler from the German city Mansfield. A German knight has dispatched the *S.* with a pike (fig. 14). The *S. crassirostris* of the coin has two legs and two wings, only one of which is pictured. There is clearly a long reptilian tail for the rhamphorhynchoid sub-order and an unmistakable head crest, with a single flap of skin, for a *S. crassirostris*.

Gesner, the leading German zoologist of the 16th century, recorded that in 1543 within Germany near Stiria, serpents with wings and legs did bite and wound many men incurably (recorded by Topsell [28]). The mention of poisonous flying reptiles matches many ancient accounts. Luther provides a fascinating description of an apparent *S.* when talking about the cherubim guarding Eden in Gen. 3:23-24[23, p. 230]. He says, "Similarly in Acts 2:3 it is related that the tongues of the apostles appeared to be divided, like fire; such is also the appearance of the flying dragons." That appears to be a certain mention of the twin head crest of the *S.* looking like the tongues of fire on the heads of the apostles in Acts. It should be noted that the bronze artifact has the dual head crest and the Mansfield coin represents the *S.* with a single head crest. Perhaps the best picture to see what Luther was describing is Meyer's sketch (fig. 10) or the Borgia map (fig. 8).

### **European Accounts of Pterosaurs**

Aldrovandi [4], considered the leading naturalist of the early Renaissance, tells us:

Julius Scaliger described a savage type of serpent of four feet in length, and thick as a human fore-arm and was told that flexible wings of gristle are attached.

Edward Topsell [28], English naturalist and one of the top five zoologists of 16th century Europe, mentions the following accounts of flying serpents (some of them may have come from Gesner):

Neither have we in Europe only heard of dragons and never seen them but also even in our own country there have (by the testimony of sundry writers) many been encountered and killed. And first of all there was a dragon or winged serpent brought unto Francis the French king when he lay at sanction by a certain country man who had slain the fame serpent himself with a spade when it set upon him in the fields to kill him. And this thing was witnessed by many learned and credible men which saw the same and thought it was not bred in that country but rather driven by the wind from some foreign nation.

Among the Pyrenees also, there is a cruel kind of serpent, not past four feet long and as thick as a man's arm out of whose sides grow wings much like unto gristles.

Cardanel [in **De Varietate Rerum**] also describeth certain serpents with wings which he saw at Paris whose dead bodies were in the hands of Guilielmus Musicus. He says that they had two legs and small wings so that they could scarce fly. The head was little and like to the head of a serpent. Their color was bright and they were without hair or feathers. They did not exceed the size of a cony and they were said to be brought out of India. [Bochart, see next paragraph, says that a certain Lutetiae saw them and that they are similar to animals described by Megasthenes (Megasthenes wrote an account in Greek of a trip to India that briefly mentioned flying reptiles; c.300 BC) The Borgia map, fig. 8, may indicate the existence of the S. in India The 'bright color,' described by Cardanel, could correspond with the S. depiction on the Genoese map (see above).]

Bochart (writing in c.1650) was an outstanding scholar, competent in Greek, Hebrew, Arabic, and Latin and wrote, perhaps, the most outstanding study of biblical animals ever penned. After arguing that the flying serpents of Isaiah 14:29 and 30:6 were still alive, he relates several accounts [6]:

To what extent the flying snakes are ... remaining is confirmed by many of our generation: and in fact in France itself toward the Pyrenees Bigerrones there is a genus of serpents usually hiding, with pointed wings spread out appearing to be made of cartilage.

And Odoardus Barbosa from mountain territory who separated them into *Malabar* [apparently from the Latin word *mala* meaning "jaws of death"] and *Narsinga* [apparently derived from the Latin *naris* which means "nose"].

If on your travels you encounter the serpent with wings who circles and hurls himself at you, the flying snake, hide yourself because of its reputation. Lie down when the snake appears and guard yourself in alarm for that snake's manner is to go away calm, considering it a victory (the *Malabar* I believe).

There are winged and flying serpents that can be found who are venomous, who snort, and are savage and kill with pain worse than fire, their reputation is (the *Narsinga* I believe).

And Vincent le Blanc says in **Peregrinationum** chapter 25; At the eastern lakes of Chiamay [Chamonix, I think] there are large forests and vast swamps, and there among them is danger: there are serpents who are very degenerate and, just as it becomes evening, they fly rising over the land, and rest on the end of their tail, rapidly going into motion. They are set in motion around that location at times in large numbers in a desolate area of the province.

The size of the Pyrenees pterosaur roughly matches the adult S. fossil that is known (66 cm.). It also fits Alpin's description (the length of a palm branch). The wings are clearly membraned and not feathered for both the Pyrenees serpent and the Paris specimens. These accounts are contemporary with the French carving. The legs are mentioned for the German animals and the corpses from India. The body (as thick as a fore-arm) is accurate for the S. if it is distinguished from the tail that was thinner than that.

## CONCLUSION

The remarkable correlation of the head crest from the French carving, Meyer's animal near Rome, the Hadrian Roman-Alexandrian coin, the Mansfield taler, the Borgia map, and other artifacts matching Alpin's and Luther's description is remarkable evidence for the soft tissue appearance of S.. The evidence indicates that the ancient Egyptians and Europeans did indeed observe the rhamphorhynchoid pterosaur *S. crassirostris*.

The detailed indigenous accounts that were carefully investigated by a practicing Renaissance naturalist (Alpin) can best be identified as the very animal of the statue and fossils examined by this article; especially by virtue of the long tail, tail vane, and small head crest. Luther's description of the dual head crest, like a divided tongue of flame, occasionally represented with artifacts, is also

fascinating. Other, less specific accounts from other 16<sup>th</sup> century naturalists, who are acknowledged to have been the scientific leaders of their generation, could have been the *S.* or, perhaps, other rhamphorhynchoid pterosaur species. In light of the archaeological and corresponding paleontological evidence, their accounts must now be taken seriously.

Mainstream scientific interpretation of the geologic column gives a most recent age of about 144 million years before present for the *S.* according to Wellnhofer [32, p. 166]. The formations in which Rhamphorhynchoid pterosaur fossils are found are the Triassic and Jurassic. If these artifacts and Alpin's corresponding description (as well as other scientists like Meyer) are considered to be strong evidence for the recent existence of *S.*, then mainstream science is faced with 144 million years of silence for these animals, followed by their sudden reappearance.

The model of a young earth, recently created and with most fossils formed during a worldwide flood, is a more tenable hypothesis in light of the "living fossils" that have been found. Pterosaurs were very likely preserved on Noah's ark and survived in Egypt and Europe (and probably elsewhere) until recent times. The careful paleocryptozoological study of many nations around the world could probably reveal similar evidence for the survival of pterosaurs and other "Jurassic" species. Indeed there are many other species I have found that are awaiting further work and publication.

Paleocryptozoological studies have the potential to establish the recent existence of many fossil species. When that is done, the basis of Darwinian theory of change over time in the fossil record may be strongly challenged and a different model for historical geology will be needed. We may also learn much about the ecological niche, biogeographical distribution, and soft-tissue appearance of extinct species from careful study of the archaeological evidence and the corresponding paleontological information.

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## APPENDIX -- Detailed Specific Comparisons

This appendix will attempt to compare the detailed measurements of the two available *S.* fossils with the dimensions of the Berlin sculpture. All numbers for the Berlin sculpture have been based on a height of 35 cm. for the falcon and have been measured from figure 5. The Berlin sculpture is found in my other pterosaur article [16]. This is the maximum height of the Lanner falcon which is commonly found in Africa and Europe. The exact numbers are 38 cm. for Europe and 33 cm. for central Africa (Grossman and Hamlet, 1964, p. 391). The fossil numbers are from Wellnhofer [31].

**Table 2 - Detailed Measurements**

|                 | Head  | Neck | Tail | Forewing | Wing finger | Femur | Tibia & Toe |
|-----------------|-------|------|------|----------|-------------|-------|-------------|
| Juvenile fossil | 64.5  | 45.5 | 129  | 102      | 156         | 29    | 44.5        |
| Adult fossil    | 116.5 | 83   | -    | 174.5    | 286*        | 55    | -           |
| Meyer sketch    | 64.5# | 54#  | 232# | ***      | ***         | 33.5# | 56.8#       |
| Berlin statue   | 95    | **   | 350  | 175      | 280         | 60    | 110         |

# The size of the Roman animal may not be determined at present so the raw data in millimeters from the sketch has been normalized to the juvenile fossil.

\* This number is based on two of the four phalanges extrapolated to the total length, which is assumed to be the same proportions on the adult and juvenile fossils.

\*\* The neck is proportional to the skull on the statue as compared to the *appearance* of both of the fossils. This appearance does *not* correspond with Wellnhofer's numbers for the neck measurements. (There is probably something I have not yet understood about this.) It should be noted that the neck extends below the prototagium of the wing on the statue.

\*\*\* The wing cannot accurately be measured from the sketch.

Notes on the Numbers: The *Forewing* numbers for the fossils are the sums of the *Humerus*, *Radius*, and *Mc IV (Metacarpal 4)* from Wellnhofer (1975). Sculpture numbers for the *Forewing* include a slight upward adjustment for curvature toward and into the body. The *Tibia & Toe* numbers are added together from Wellnhofer and are for the second toe on the statue, not the third (as per Wellnhofer) since it is not pictured. I'm not sure exactly where the *Tail* originates for the Berlin artwork.

Analysis: Both the forewing and the wing finger match very well. The skull is a little short on the statue, that probably causing the slight misplacement of the eye, nostril and crest. The femur is slightly too long on the sculpture, but proportional with the tibia and toe (as measured on the juvenile). The tail is considerably too thick in the artwork, probably because of the limits of the mode of artistic expression. Although the adult fossil tail is not available for comparison, the one on the statue is undoubtedly too long. It should not be forgotten that different members of the same species could possess considerable variation in size and even proportions as witnessed, for example, in the human family. Given this fact, all of the numbers for the sculpture are well within the realm of credibility.



Figure 1. Goldfuss's sketch of first *Scaphognathus* fossil from the Solnhofen limestone, from Wellnhofer[31], common domain.



Figure 2. Sketch of ibis bird, after Hornemann[19]



Figure 3. Sketch of *Draco volans*, author

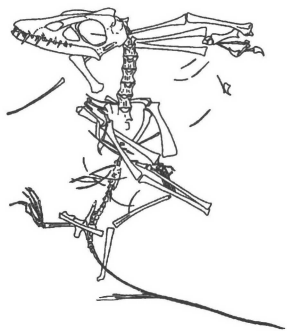


Figure 4. Sketch of juvenile *S.* with head crest, from Wellnhofer [32]



Figure 5. Seal with Rhamphorhynchoid pterosaur, perhaps a S., hunting a gazelle, copyright Giveon[14], used with permission.



Figure 6. Sketch of Egyptian seal with an Egyptian holding an ibis by the beak, a serpent to the left, and a rhamphorhynchoid pterosaur flying over head. The seal appears to reflect Mose's strategy recorded by Josephus. Kestner Museum, Hanover, Germany, public domain.



Figure 7. Roman-Alexandrian coin minted during Hadrian's reign. Two S. pulling a chariot with Triptolemus inside, picture by author, author's collection.



Figure 8. Engraved iron world map (1435AD) with a S., camel, elephant, and horses from Allen/Griffiths[2], common domain.

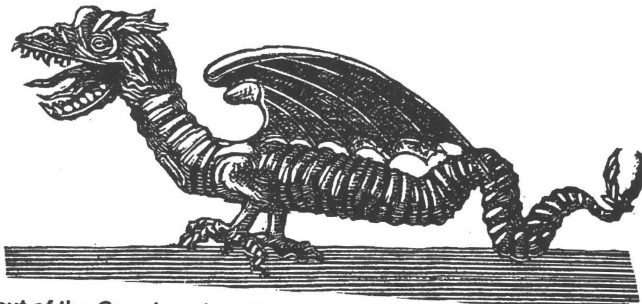


Figure 9. Woodcut of the *Grand goule*, a S., from L. Charbonneau-Lassay [8].



Figure 10. Italian taxonomist Meyer's 17th century sketch of flying reptile near Rome (S.), from Allen/Griffiths[2] common domain.



Figure 11. Picture of Etruscan bronze statue of S., picture by author, author's collection.



Figure 12. British Norman church tympanum with pterosaur having a clear tail vane and, Perhaps, a schematic head crest, from Collins [10] common domain.

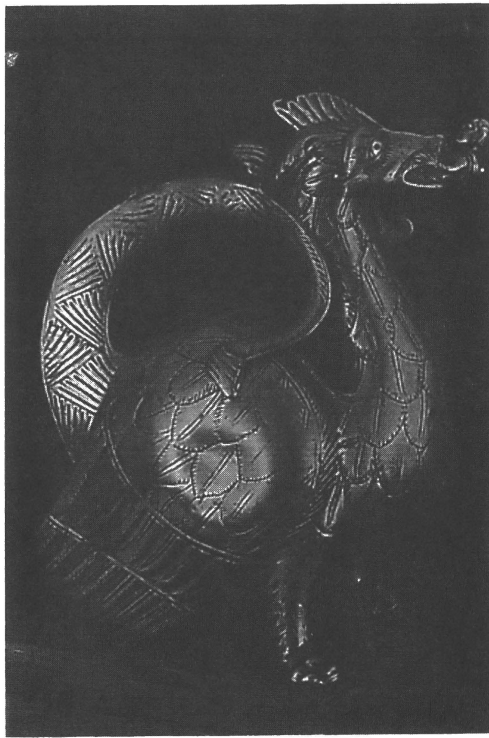


Figure 13. Metal sculpture of a S. with a dual head crest and tail vane from 13th century Germany. On display at the Metropolitan Museum of Art in New York City.



Figure 14. Taler from Mansfield, German, 1622; a knight dispatching a S., picture by author, author's collection.

