

# PROTEUS FOR SCIENTISTS AND TOURISTS. A HISTORY OF ITS 19<sup>TH</sup> CENTURY COLLECTION AND CAPTIVITY

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## Abstract

The cave-dwelling amphibian *Proteus anguinus*, first described in 1768, and possibly pictured as early as the 11<sup>th</sup> century, was by 1800 known to many scholars. From 1814 when the animals were more widely found, they were sold in markets, at inns in Postojna and sometimes outside the cave there; and guidebooks drew attention to their availability. The paper documents all this and examines what happened to the animals. Some were given to zoos; others were kept by amateur naturalists; some went to laboratories; and a few were eaten. One was offered to Darwin.

## Resum

L'amfibi cavernícola *Proteus anguinus*, descrit per primera vegada el 1768, i probablement representat en temps tan remots com el segle XI, era conegut el 1800 per nombrosos savis i erudits de l'època. Des de 1814, quan aquests animals ja havien estat trobats a diverses coves de la regió de Karst (Kras en llengua eslovena), varen ser venuts a mercats, posades i fondes de la població de Postojna i fins i tot, de vegades, a l'exterior de la cova; les guies de viatgers feien referència a la seva disponibilitat. L'article documenta aquests fets i prova d'esbrinar que va ser d'aquells animals. Alguns varen ser donats a zoològics; altres varen ser criats dins aquaris per naturalistes aficionats; altres varen acabar a laboratoris de Biologia; i uns pocs varen ser menjats. Un va ser ofert a Darwin com a obsequi.

## Introduction

Some years ago a long paper on this subject (SHAW, 1999) was published in *Acta Carsologica* whose editor has kindly allowed it to be used as the basis of this one. That paper collected together information about all the cases then known of *Proteus* being sold or given away, quoting extensively from the original publications to make them available to modern readers. It also contained biographical material, here omitted, about the people concerned and their backgrounds.

The present paper concentrates on the broad picture of the way in which specimens were seen, obtained, handled and disposed of, considering representative examples but without seeking to reprint the full original texts. There is also some new material here that had not been traced when the earlier paper was written. The most notable of this are remarks made by Turnbull in 1836 and Kohl in 1850, as well as Humphry Davy's observation of 1818.

Quite apart from its interest from a zoological and evolutionary point of view, *Proteus anguinus* has become well known for other reasons. It was the first cavernicole to be formally described (by J.N. LAURENTI, 1768) and it is one of the symbols of the town and cave of Postojna, used for example on the registration plates of road vehicles.

Now a heavily protected species, *Proteus* in the 19th century was offered for sale to travellers and was sometimes eaten. Those bought in Postojna or at the cave were often taken home just as curiosities, but some were reported upon by naturalists and others were presented to zoos.

Before its zoological description and naming by Laurenti there had been two descriptions of the animal, both written by people who had not themselves seen it. VALVASOR (1689) described what must have been a *Proteus* found in the intermittent karst spring Lintvern near Vrhnika. His information came from the postmaster who told him about "a supposed dragon a small span [c.20 cm] long. Then STEINBERG (1758) recorded that:

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Figure 1: Two supposed *Proteus* carved in a stone well-head of the 10<sup>th</sup> or 11<sup>th</sup> century, once near San Nicolò church at the Lido, Venezia, and now in the Kunsthistorisches Museum in Wien (Inv. No. 6825). Photograph reproduced by permission of the Director.

Figura 1: Dos suposats *Proteus* esculpits a un brocal de pou del segle X o XI. Antigament es trobava a prop de l'església de San Nicolò al Lido de Venècia, actualment al Kunsthistorisches Museum de Viena (Inv. No. 6825). Fotografia reproduïda amb permís del Director.

*"In 1751, at a time of very great flow [from the Malni springs near Planina], Primus Sicherle [Primož Ziherl] caught five unknown fish in the Unica river, one span [c. 23 cm] in length, with snow-white skin and long tails. They each had four feet ... and they cried and wailed as they were put from the net into the boat."*

Such curious creatures, which can be seen at karst springs when they come to the surface in flood conditions, would have been known to country people long before they came to the attention of scholars such as these. Indeed confirmation of this may exist in a carving on an ancient stone well-head from Venezia (Figure 1) which has been thought to represent *Proteus* (VORNATSCHER, 1972). Dating from the 10th or 11th century, this was formerly near the church of San Nicolò on the island of Lido and is now in the Kunsthistorisches Museum in Wien.

The specimen seen and described by Laurenti in 1768 came from the springs at Stična some 40 km south-east of Ljubljana, having been brought from there to the Idrinja mine doctor G.A. Scopoli. Laurenti's description was short but sufficient (only 12 lines of print) and it was accompanied by the now classic first illustration of *Proteus* (Figure 2). Mistakenly, he gave Cerknjško jezero as its location, perhaps confused by the fact that Ziherl's find in 1751 was published in a book about that lake. The Cerknica location was to be

repeated several times in the 19th century but *Proteus* has never been found there. The first specimens inside a cave were discovered in 1797 by Josef Jeršinovič von Lowengreif in the Pivka river at Črna jama (then known as Magdalena Grotte). Their true abundance there was not realised until 1814 when Hohenwart also found them there. It was from then on that enough *Proteus* could be caught to be sold commercially.

After a brief discussion of the way in which *Proteus* from Postojna was given to scientists, museums and others in the first few years after its discovery, this paper will examine the various ways in which it was "used" commercially - for sale as a curiosity and as food, and for exhibition as a form of publicity for Postojnska jama with which it rapidly became associated. The role of guidebooks in alerting travellers to the existence of this strange animal, and telling them where they could be bought and how they should best be transported, is also considered.

Next come accounts written by the travellers themselves of how they saw *Proteus* and how and where specimens were offered to them and sometimes purchased. In many cases no more is heard of these particular specimens but some can be traced to the homes of naturalists where they were closely observed and reported on. Some specimens were given by the purchasers to institutions such as universities and zoos.

## Proteus used for...

### FOR GIFTS

Especially in the early days when *Proteus* was a newly discovered as well as a very strange animal, many specimens were sent away from Slovenia as gifts to interested scientists and influential people.

Scopoli, already mentioned as having supplied the specimen that Laurenti described, sent preserved specimens to Carl Schreibers (1775-1852), Director of the Naturhistorisches Museum in Wien, who passed some on to other similar institutions. Later, live *Proteus* were sent there too. Baron Sigismund [Žiga] Zois (1747-1819), who himself studied the animal, also sent specimens to Schreibers and elsewhere abroad, as did a 19th century director of the Ljubljana Museum, Heinrich Freyer (1802-1866).

*Proteus* has been used as a high status gift in more recent times too, as an animal specially associated with Slovenia. Thus in the 1960s about five from Planinska jama were given by President Tito to Emperor Hirohito of Japan, himself a biologist.

### FOR SALE

*Proteus* was offered for sale at least as early as 1816. It was in August of that year that CONFIGLIACHI and RUSCONI (1819) had looked for them in Črna jama and wrote in their Italian monograph:

"... the people of Adelsberg catch *Proteus*, which they call "white fish", [in Črna jama] and they keep them alive in pots to sell later to travellers who come to Carniola and are interested in such things, or else to take to the market at Trieste where they sell quite cheaply, for two or three lire each."

Sale of *Proteus* at Trieste was made known in English when W. A. CADELL (1820) published his account of visiting Postojnska jama in November 1817. Speaking of *Proteus*, he wrote "The country people sometimes bring them alive to Trieste, and sell them as objects of curiosity".

News of it was further spread when Configliachi and Rusconi's statement was reprinted in the several editions of the popular book *The Caves of the Earth* (ANON., 1847).

### FOR EATING

Although Cadell had said that *Proteus* were sold in Trieste "as objects of curiosity", their availability in a fish market suggests that there at least they were sometimes sold as food.

The first documented occasion of *Proteus* eating was in 1834, as reported by HOHENWART (1840). In that year the people of Potiskavec in Dobropolje (Dolenjska) were cleaning out the cave (Potiskavška jama) where they obtained their drinking water and from which the villagers still get their water in times of drought. Along with mud and stones they found several *Proteus* which they put aside to return afterwards. They themselves did not plan to eat the animals which were probably regarded as poisonous like some similar creatures; but a group of gypsies fried and ate them without any ill effect.

### IN GUIDEBOOKS

Historical facts on the sale of *Proteus* are interesting now but they will not have had any influence on travellers and visitors at the time. Quite different is this statement in Murray's *Handbook for Travellers in Southern Germany*...

"Specimens of the *Proteus* may generally be purchased at the inn at Adelsberg [=Postojna]. The only means of preserving it is by keeping it in water, which should be taken from a river, and should be repeatedly changed, protecting it from the light, which is very hurtful to it, and maintaining an equal temperature about it."

It appeared in the first edition of this guide (MURRAY, 1837) and was repeated in every edition up to and including the 14th, published in 1881. That travellers not only read but acted upon the Murray statements is clear from their repeated references to using river water and changing it frequently during their journey home.

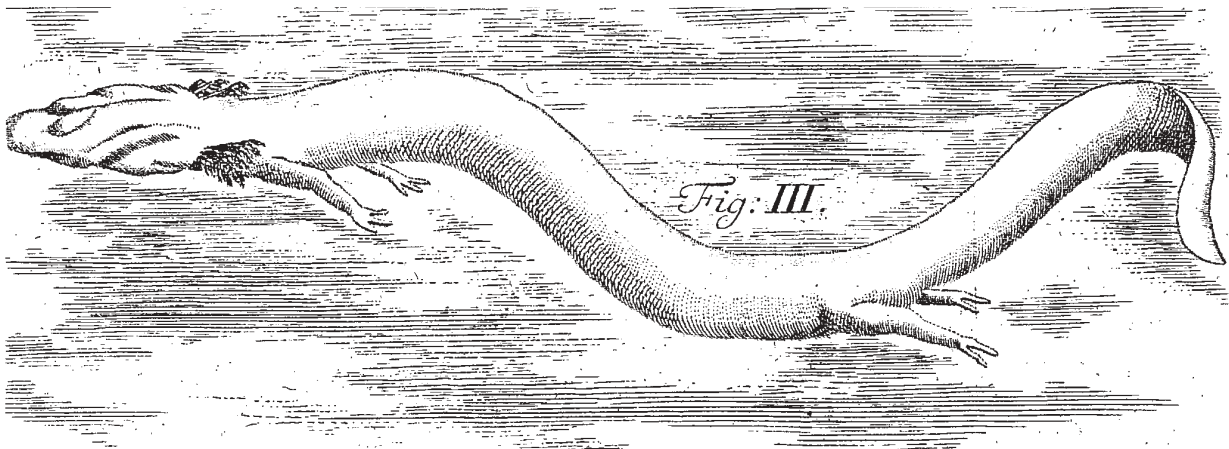


Figure 2: The first picture of *Proteus*, published in LAURENTI (1768).

Figura 2: El primer dibuix de *Proteus*, publicat per LAURENTI (1768).



Figure 3: J.G. Kohl in 1854 (ANELLI, 1940).

Figura 3: J.G. Kohl en 1854 (ANELLI, 1940).

Somewhat similar guidance was offered in a popular book, *The Subterranean World* (HARTWIG, 1871):

*“The best method for transporting the Proteus is now perfectly understood, and living specimens have been conveyed as far as Russia, Hungary, and Scotland. All that they need is a frequent supply of fresh water, and a careful removal of all light. Their food need cause no trouble, as the water contains all they require. It is recommended to lay a piece of stalactite from their native grotto in the vase in which they are transported. When resting or sleeping, they then coil themselves round the stone, as if tenderly embracing it. In this manner they have already been kept above five years out of their caverns. The guides to the Grotto of Adelsberg have always got a supply on hand, and sell them for about two florins a-piece.”*

#### FOR SALE AT THE ANNUAL GROTTENFEST

In 1881 certainly, and probably in other years also, there was a stall selling *Proteus* outside the cave on the day of the annual Grottenfest held in Postojnska jama twice each year, when the cave was specially illuminated and excursion trains brought extra visitors from near and far. In 1881 the Grottenfest was on 6 June and was described in a little book written by the Friulian poet Domenico Pancini:

*“On the road not far from the cave are people sell-*

*ing pieces of stalactite of various kinds and also little fishes in flasks of water that look a bit like lampreys, winged at the head and not beautiful to look at because, without any scales, they have the colour of living flesh and, in addition, they are without eyes. They live in the water which flows through the cave”.* (PANCINI, 1881).

#### AS PROMOTIONAL GIFTS BY THE CAVE MANAGEMENT

The archives of Postojnska jama show that some specimens of “*Grottenolm (proteus anguineus)*” were sent to the World International Exhibition at Wien in 1873. Stalagmites were sent also, as they had been to the Paris International Exhibition of 1867, as a form of eye-catching publicity which was to increase later in the century, but no other records of *Proteus* being used in this way have been traced.

The Wien specimens certainly aroused interest, though, for requests for others were made afterwards from Braunschweig and from the Russian consulate in Trieste. Whether these requests were met is not known.

## Proteus purchased or seen by travellers

At least fourteen travellers visiting Postojna between 1816 and 1900 described how they were offered or bought or wanted to buy live *Proteus*, and other records show that many more were purchased.

As would be expected, the constant trade in live *Proteus* reduced their numbers. Johann Georg Kohl (1808-1878) (Figure 3), who had visited the cave on 4 November 1850, wrote:

*“A local writer has estimated that, since Proteus was discovered more than 4000 specimens have been sent all over the world. The guides always have living Proteus in buckets, ready for sale. In Ljubljana I met several nature lovers who kept it in the cellars of their houses ... so that they could more readily observe it.”* (KOHL, 1852).

Kohl was not necessarily aware of the danger of this trade but, unusually for a century that was far from conservation-conscious, a popular book did draw attention to this only ten years later. *The Subterranean World* (HARTWIG, 1871), first published in German in 1863, had this to say:

*“... as hundreds of specimens have since found their way to the cabinets of naturalists, to be observed, dissected, or bottled up in spirits, their number has very much decreased, and the time is perhaps not far distant when they will be entirely extirpated in the grotto, where from time immemorial they had enjoyed an undisturbed security.”*

This book appeared in many editions in at least three languages between 1863 and 1892, so the message was widely read and may have been one of the reasons why sales seem to have declined from the 1880s.



## PIETRO CONFIGLIACHI AND MAURO RUSCONI IN 1816

Configliachi (1777-1844) (Figure 4) and Rusconi (1776-1849) of the University of Pavia, already referred to in connection with the Trieste fish market, seem to have been the first visitors to record their attempts to obtain *Proteus* specimens, only two years after these had first been actively collected in Črna jama:

*"On the 2d of August 1816, the authors, attended by three peasants, furnished with torches, and with a small net in the shape of a bag, fixed to the end of a staff, prepared to enter this cavern [Črna jama]. They saw one proteus, but did not succeed in taking him; and from the water being turbid, and in too great quantity, in consequence of heavy rains the day before, they were obliged to reascend, after having been two hours in the cavern, without taking a single proteus."* (CONFIGLIACHI & RUSCONI, 1819).

Then comes the statement, already quoted, that the peasants "catch *Proteus* ... to sell later to travellers", suggesting that they bought their own specimens at Postojna and took them home to Pavia.

## WILLIAM ARCHIBALD CADELL IN 1817 AND 1818

It must have been these *Proteus* bought by Configliachi and Rusconi that were seen in 1818 by Cadell (1775-1855), a Fellow of the Royal Society who had come from England:

*"I saw one of these animals alive at Pavia, it was kept in a bucket of water in a dark place ..."* (CADELL, 1820).

Cadell had been at Postojna in November 1817 but saw none there.

## HUMPHRY DAVY IN 1818

Sir Humphry Davy (1778-1829), chemist and President of the Royal Society, was a frequent visitor to Slovenia. In 1818 he went to Črna jama and saw five *Proteus* "close to the bank on the mud covering the bottom of the lake" (DAVY, 1830). His manuscript notebook (DAVY, 1818), unfortunately not dated, adds to this:

*"The Proteus in the Madelena Grotto is found on mud in water. ... The proteus that I saw was reposing on the mud & did not move when the light was held over it; but when the water was moved by the man who dipped the net into the water it rapidly hid itself under a stone."*

## JOHN RUSSELL IN 1822

John Russell (c. 1795-1846), a Scottish lawyer, visited Postojnska jama on 11 March 1822 (Figure 5):

*"...Some living specimens, which I saw in the possession of a peasant in Adelsberg, were about eight inches [20*



Figure 4: Pietro Configliachi. Portrait provided by Dr Carlo Violani of the Università of the Università di Pavia.

Figura 4: Pietro Configliachi. Retrat facilitat pel Dr. Carlo Violani de la Università di Pavia.

*cm] long; but they have been found of twice that length. ...They appear most frequently in certain small streams which issue from the mountain at Sittich [Stična], in the neighbourhood of Laybach, being hurried forth from the caverns within by the force of the stream, when the internal reservoirs have been swollen by heavy rains, or a long continued thaw. Those which I saw had been taken in the small subterranean lake which terminates the Magdalene grotto [Črna jama], not far from that of Adelsberg."* (RUSSELL, 1825).

## CHARLES BABBAGE IN 1828

Charles Babbage (1792-1871), professor at Cambridge and best known for inventing a mechanical computing machine, visited the cave on 17 July 1828:

*"When I visited the caves of Adelsburg, ... I inquired whether any of these singular creatures could be procured. I purchased all I could get, being six in number. I conveyed them in large bottles full of river water, which I changed every night. ..."*



Figure 5: The visitors' book entry for Russell's visit to Postojnska jama on 11 March 1822.

Figura 5: Registre al llibre de visitants de la visita de Russell a Postojnska Jama, amb data 11 de Març de 1822.



Figure 6: Hugh Edwin Strickland in 1837 (JARDINE, 1858).

Figura 6: Hugh Edwin Strickland en 1837 (JARDINE, 1858).

*The first of these pets died at Vienna, and another at Prague. After three months, two only survived, and reached Berlin, where they also died ...* (BABBAGE, 1864).

### AN AMERICAN PRIEST IN 1833

An unidentified "American clergyman" wrote (ANON., 1833):

*"One of the guides brought for sale four very extraordinary animals, in shape between a lizard and an eel, transparently white, with a tinge of rose-colour about their heads. They were of the species called the Proteus anguillaris, and were very active in the wide-mouthed bottle of water in which he brought them. I saw some at Trieste, which had been kept in that way for several months, by changing the water every day, and giving them occasionally a few crumbs of bread."*

### WILLIAM JOHN HAMILTON AND HUGH EDWIN STRICKLAND IN 1835

Hamilton (1805-1867) and Strickland (1811-1853) (Figure 6) were English geologists who visited Postojnska jama and Črna jama on 25 and 26 August 1835. Strickland wrote (JARDINE, 1858):

*"As we had a great deal to do on the morrow, we resolved on visiting the cave of Maddalena the same night, much to the astonishment of our landlady ... This cavern is terminated by a stream of water, said to be the same as the Pinka [sic], which is swallowed up in the*

*other cave. It is in the stream that the singular reptile Proteus anguinus is found; when the water is clear they are not unfrequently seen, but the stream was so muddy that none were visible, and after groping about with my scoop-net for some time, I was obliged to give up the pursuit. On our return to Adelsberg I procured one from the guide, who had three or four alive. They may be kept for a year or two, and require no food, though they will occasionally eat a worm. The only precaution necessary is to change the water often, and keep them from the light, which always renders them uneasy. Had I been on my way home I would have tried to keep my specimen alive, but situate as I was, my only alternative was to put my Proteus in spirits."*

### PETER EVAN TURNBULL IN 1836

Turnbull (1786-1852) on 1 April 1836 visited both Postojnska jama and the nearby Črna jama. In the latter:

*"One of the guides, however, stationed at the bottom with his torch and hand-net, endeavoured to capture two or three of the protei, but on his attempting to take them they escaped under the rock.*

*On our return to the inn at Adelsberg, I saw some of these creatures alive in a decanter of water, where, by changing the water every day, and without any other food, they had lived (as their owner told us) more than a twelvemonth ... It is evident from the length of time that they have lived in the bottle, that the light and air of this upper world is not destructive of their vitality. Those which we saw were moving about with activity over each other, and climbing with a sort of reptile motion along the sides of the glass. Whether their propagation has been attempted in other places, I know not. Some were transported to the St. Catherine [Adelsberg] cave and placed therein, mostly in the river, but partly also in small standing pools. Those in the former may still exist: the water is too deep and dark to allow the fact to be ascertained with certainty; but none have been seen or caught. Those in the pools have disappeared – stolen, it is supposed, by the strangers on Whit-Monday [Grottenfest]. ...*

*In the stomach of one Proteus has been found a small shell mollusc, thus showing what food the creatures will take in when free; but they have never been brought to eat in a state of captivity. Yet in that condition they will live for a very long period. Of some which were presented to the Zoological Society, one continued alive for four years, and the others for not much shorter periods, without any food except what might be supplied by the water in which they were kept. They lived in tubs, the water of which was changed daily; and they appeared to have an aversion to light, as they habitually sheltered themselves under a blanket which was thrown over a portion of the tub."* (TURNBULL, 1840).

### EDMUND SPENCER IN 1836

Edmund Spencer was an English army captain, long resident in Germany, a historian and a traveller. He was at Postojnska jama on 14 April 1836 and wrote as follows about *Proteus* (SPENCER, 1836):

*"In a state of freedom it is voracious, feeding on*

small fish and insects, particularly the *helix therma*; but, once a captive, it instantly and steadily refuses all nourishment, although it lives to a great age if kept in partial darkness, and clear water, about eight degrees of Reaumur; which however, must be changed every five or six days. It is not less susceptible of cold than heat; for, if a piece of ice is thrown into the water, or the reptile is exposed to great cold, it sickens and dies in a few hours. ...

On my return through Laybach, I was introduced to a gentleman who kept several in a large stone basin in his cellar; they had been already in confinement four or five years, and seemed very healthy, but diminished to half their natural size."

#### JOHN OLIVER IN 1837 AND 1852

John Oliver (1804-1883), a priest whose English translation of Schaffenrath's 1834 book on Postojnska jama remains unpublished (SHAW,1981), visited the cave on 4 June 1837 and again in September 1852. He remarked, in a note of his own attached to the translation, that in Pisani rov,

"On the right hand side, are to be found several small Pools, formed by the Water-droppings from

above, & from which, originally a larger Bason or Reservoir was formed, & stocked with a number of *Protei*, brought from the Magdalena Grotto, for the inspection of scientific & curious Visitors desirous of observing this singular reptile-fish; but at the present time, however, not a single Specimen is to be found therein." (OLIVER 1856).

This must have been one of the pools mentioned by Turnbull the year before.

The Oliver manuscript is notable also for the water-colour of two *Proteus* bound into it (Figure 7). The animals are shown crawling over some mud just above the water. An almost identical drawing appears as an engraving in the 1851 edition of Sir Humphry Davy's *Consolations in Travel* (DAVY, 1851), suggesting that such pictures were then commonly sold at the cave, as postcards were to be later. Oliver probably acquired his picture about the same time, during his 1852 visit.

#### JAMES DAVID FORBES IN 1837

Professor Forbes (1809-1868), geologist and glaciologist, spent two hours in Postojnska jama on 23 September 1837. His unpublished diary (FORBES, 1837) records:



Figure 7: Watercolour of two *Proteus* in John OLIVER's (1856) manuscript.

Figura 7: Aquarel.la amb dos *Proteus*, al manuscrit de John OLIVER (1856).



"Saw several *Proteus* which are not nearly as active as I expected. They are sluggish and easily caught."

These, again, are likely to have been in one of the pools in which Turnbull states that some had been placed. Their uncharacteristic sluggishness suggests ill health, which may explain their decline in these pools.

#### FRANCIS GALTON IN 1840

Sir Francis Galton (1822-1911), English scientist, African explorer and Fellow of the Royal Society, visited the cave on 22 September 1840 (Figure 8).

"I bought two of the curious creatures called *Proteus*, that live in these underground waters. ... They were the first living creatures of their kind brought to England. ... I went from Trieste by steamer to Venice and thence by diligence to Milan, whence I travelled by diligence to Geneva with the bottle containing the two *Proteus* under my thin coat, for fear of the water freezing while crossing the Alps." (GALTON, 1908).

Galton's were not, in fact, the first living *Proteus* to come to England. Those had been brought (ANON., 1833) by the Rev. Francis Lunn (1795-1839) who had been at Postojna on 27 June 1832.

#### JOHN CALL DALTON ABOUT 1853

It is not clear whether John Dalton (1825-1889), an American physiologist, visited Postojna himself but his description of *Proteus* does provide some new information on their capture:

"The *Proteus* is taken in small hand-nets by the peasants, who watch for the animal as he lies almost motionless near the bottom of the pool [in Črna jama], and capture him by a sudden motion of the net. They are not very abundant, however, and as they can be taken only when the water is perfectly clear, it is seldom that more than 15 or 20 are obtained during the course of a year. The animals should be kept afterward in obscurity, and at a temperature as nearly as possible resembling that of the grotto. It is necessary, also, to change the water in which they are kept regularly every day. With these precautions it is said they may be preserved alive for an indefinite length of time. I have myself kept one of them for several weeks." (DALTON, 1853).

#### WILLIAM HENDERSON IN 1862

William Henderson (1813-1891) (Figure 9) visited the cave on 14 October 1862 and the extract here deals with the way in which his specimen travelled with him to England.

"On leaving Adelsberg I first placed him in a soda-water bottle, and this again in a small leathern bag hung outside my coat ... Heat and change of temperature are obnoxious to his constitution. ... and five days in an open carriage, along the shores of the Mediterranean, under a blazing sun, might have been expected to produce a catastrophe; but he is a brave little fellow, and survived it all. The extreme heat and occasional exposure to light produced, however, a great change in his colour; his skin became a dark cinnamon brown with blotches of bright scarlet, nor was it until after several days of careful exclusion of light that it resumed its usual pale flesh-colour." (HENDERSON, 1866).

#### HENRY EDMUND BUXTON IN 1863

H. E. Buxton (1844-1905) wrote of the way in which the *Proteus* are caught and sold. His visit to Postojnska jama was on 6 January 1863:

"I procured it, with another specimen, at the caves of Adelsberg, near Trieste, which I visited about a month ago, in company with Mr Gurney, M. P., who has the other specimen. We did not catch them ourselves, but bought them of the guides in the caves, who evidently thought them of very little value, and were very glad to sell them for a few shillings, though they said they had before sold several specimens to Englishmen and others. ... The guides told us that the protei are only to be obtained after several weeks of drought, when the water in the cave is very low. They have landing-nets on very long poles, and with these, when the water is shallow enough for them to reach the bottom, they generally succeed in catching one or two. From this it appears that the proteus frequents the deepest parts of the pool... We brought them to England without any difficulty, only changing their water daily, and keeping them as much as possible in the dark, as any light is said to be very injurious to them." (BUXTON, 1863).

## Gifts to learned Institutions and Zoos

From the very nature of any living animal, the majority of *Proteus* gifts have been to zoological societies or to museums associated with or possessing a zoo. Some however went to universities where they could usually be kept alive in the zoology department.



Figure 8: The visitors' book entry for Francis Galton on 22 September 1840.




Figure 8: Registre al llibre de visitants de Francis Galton, amb data 22 de setembre de 1840.



## UNIVERSITIES

Charles Babbage's visit to Postojnska jama in 1828 resulted in his buying six live *Proteus* as already described. They all died en route to England, though, and their fate was: "*When their gloomy lives terminated I preserved them in spirits, and sent the specimens to the collections of our own universities, to India, and some of our colonies.*" (BABBAGE, 1864).

Francis Galton bought two specimens in 1840 and successfully brought them back to England: "*I gave them to King's College; one died, the other lived and was yearly lectured on, as I heard, until fate in the form of a cat ended him.*" (GALTON, 1908).

The King's College in question would have been King's College, London, at whose medical school he had studied. The medical school did keep live animals in its museum and ten years later the curator there presented two *Proteus* to London Zoo.

In the 20<sup>th</sup> century Reginald Smithson Julian Hawes (1911?-1963) studied cave fauna in Slovenia before World War II and took several *Proteus* back to England. He was at King's College, London at that time and collaborated with Leonard Harrison Matthews (1901-1986) at the University of Bristol. It is probably these *Proteus* that were in the zoology department at Bristol around that time. Some of them were released about 1940 in Read's Cavern on the Mendip Hills. Others of the Bristol specimens were preserved: two of them remained at Bristol until 1998 when they went to the Natural History Museum in London. Those now at the University of Exeter, where Hawes later worked, are probably also some of those he collected in the 1930s.

## ZOOLOGICAL SOCIETY OF LONDON

The Society was founded in 1826 and its Zoological Gardens (the "Zoo") were opened two years later.

Prof. Rudolph Wagner (1805-1864) had sent one live *Proteus* to be exhibited at a meeting of the Society on 14 November 1837 (WAGNER, 1837) but there is no trace of it being given to the zoo itself. The first *Proteus* recorded there was presented in 1839.

Gifts of animals were recorded in manuscript on daily sheets headed "*Occurrences at the Garden*", bound up into annual volumes. A total of 31 *Proteus* are recorded as having been received there between 1839 and 1887. The information on *Proteus* arrivals derived from the published and unpublished sources described above is summarized by SHAW (1999). Records of only a very few deaths have been traced, namely three on either 7 or 11 July 1852. In any case it would not be possible to calculate even approximate ages at death because until about 1906 the individual animals were not separately identified and their ages on arrival were not known.

## THE OFFER TO DARWIN

One specimen, received in 1861, has a notable provenance. The English geologist Hugh Falconer



Figure 9: William Henderson in 1876 or before (HENDERSON, 1879).

Figura 9: William Henderson en 1876 o potser abans (HENDERSON, 1879).



Figure10: Charles Robert Darwin, probably in the early 1860s. Reproduced with permission from a photograph in the archives of the Geological Society of London (P.56/box PE4).

Figura 10: Charles Robert Darwin, probablement en els primers anys de la dècada del 1860. Reproduït amb permís a partir d'una fotografia dels Arxius de la Geological Society of London (P.56/box PE4).

(1808-1865) visited Postojnska jama on 5 June 1861 when he purchased the *Proteus* which on 27 June he presented to the London Zoo. Between these two events there had been an exchange of letters between him and Charles Darwin (1809-1882) (Figure 10).

Falconer had arrived back in England late on 22 June and on the next day he wrote to Darwin offering him the animal. This offer was not just evidence of a close friendship; it was particularly apt as Darwin had referred to *Proteus* in *The Origin of Species*, remarking that it had been able to survive in caves “owing to the less severe competition to which the inhabitants of these dark abodes will probably have been exposed.” (DARWIN, 1859).

Darwin felt that he could not provide a good home for the animal and suggested that London Zoo would be a better place for it. And so it was presented to the Zoo.

### MUSÉUM NATIONAL D'HISTOIRE NATURELLE, PARIS

Armand Viré (1869-1951), French cave explorer and biospeologist, had obtained his doctorate in that subject and was director of the underground laboratory set up in the Paris catacombs by the Muséum National d'Histoire Naturelle. He visited caves in Slovenia in the second half of April 1900 and obtained 30 specimens of *Proteus* for the Museum.

“I have the honour to present to this meeting of naturalists [on 1 May 1900] some specimens of the famous *Proteus anguineus* ..., which I was able to obtain last week in the caves of Carniola. We intend to study their habits in the laboratory in the Catacombs and no doubt we shall have several reports to present here.

Besides this, visitors to the Jardin des Plantes [the Paris Zoo, which was part of the Muséum] will be able to see several specimens in the Reptile Gallery and to examine this curious animal at leisure.” (VIRÉ, 1900).

No further reports on these specimens have been traced.

### ZOOLOGISCHER GARTEN, BASEL

Even during World War II, *Proteus* were being given to suitable institutions. A letter in the archives of Postojnska jama, sent from the zoo at Basel on 29 December 1942, acknowledges the safe arrival of five *Proteus* in good condition. They were exhibited in the new aquarium where they had been given a “special place near the entrance, among the most interesting animals”.

### NEW YORK ZOOLOGICAL SOCIETY

Also in the 20<sup>th</sup> century eight *Proteus* were received in New York Zoological Park in November 1961, in exchange for some young alligators and caymans sent to the Maribor aquarium eight years before. The last of these eight died early in 1967. Another exchange was arranged in 1965 and four more *Proteus* were taken to USA; they were all dead within a year due to an accident where they were kept in Yale University (SULLIVAN, 1967).

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