'EDWARD HERON-ALLEN AND HIS COLLECTIONS'

Edited by
TIMOTHY J. McCANN and JOHN E. WHITTAKER

TALKS DELIVERED AT THE
THIRTEENTH HERON-ALLEN SYMPOSIUM,
BRITISH MUSEUM, LONDON
JUNE 2013

BY
JOHN P. MAHONEY and BARBARA P. MAHONEY,
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PAMELA THOMPSON and DAVID THOMPSON

Opusculum XX
Heron-Allen Society

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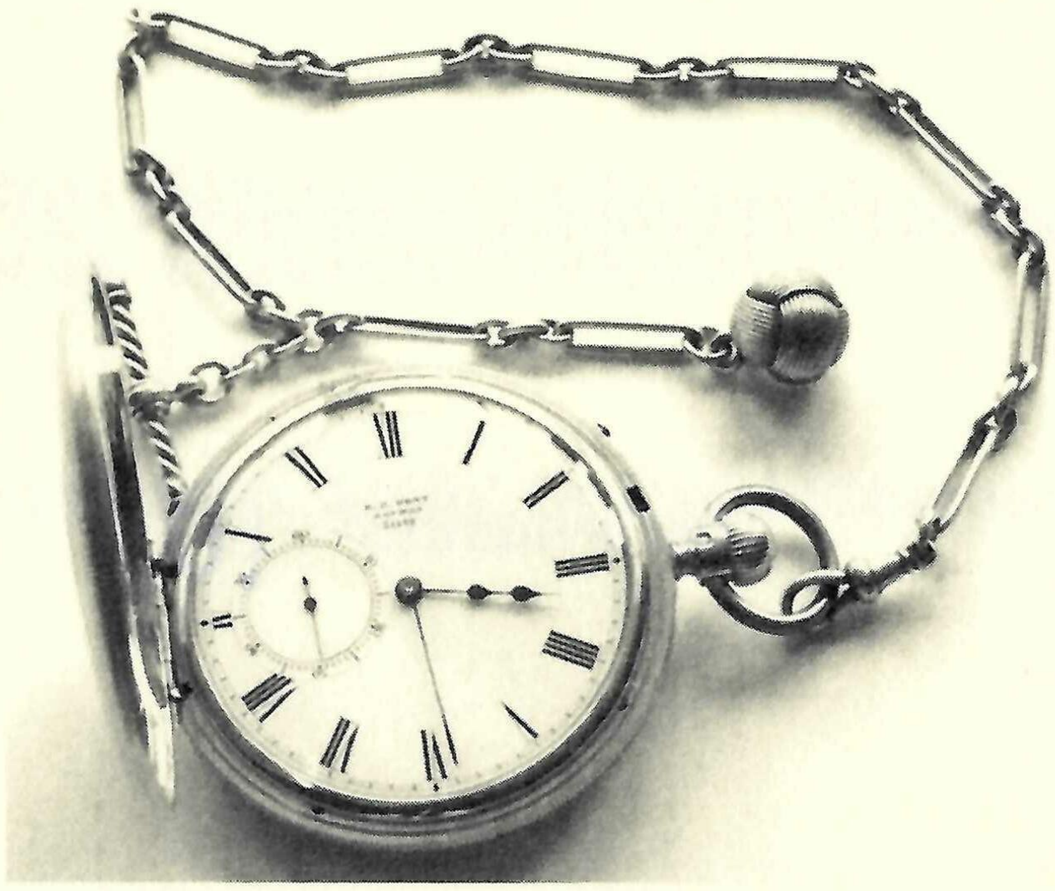

Opusculum XX
Heron-Allen Society

'Edward Heron-Allen and his Collections'. Proceedings of the 13th Heron-Allen Symposium, 2013: Talks delivered by John P. Mahoney and Barbara P. Mahoney, Simon Parfitt, Thomas Hockenhull, Pamela Thompson and David Thompson at the Thirteenth Annual Heron-Allen Symposium, British Museum, London, June 2013.

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This is number 10

Cover: The bones and teeth from the Selsey Mammoth displayed on the beach at Selsey, in front of H.A. Smith's bungalow 'The Hut', March 1909.
Inside title-page: Heron-Allen's half-hunter pocket watch, open.

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INTRODUCTION: THE THIRTEENTH HERON-ALLEN SYMPOSIUM AT THE BRITISH MUSEUM, LONDON

by TIMOTHY J. McCANN and JOHN E. WHITTAKER

In March 2012 Ruth Mariner acquired some photographs at a postcard fair, which were associated with the discovery of a mammoth on the beach near the lifeboat station at Selsey in March 1909. One of the photographs actually featured the original perpetrators and their haul laid out on a table. Edward Heron-Allen who was notified immediately of the discovery, and who took an active part in excavating the mammoth and collecting as much of the remains as he could rescue, deposited the finds with the Natural History Museum in London. So it was entirely appropriate that our thirteenth annual symposium was held in the Sackler Rooms at the British Museum in London (to which in 1909 the Natural History Museum was administratively part, hence its, then full title - the British Museum (Natural History)).

After an introduction by the chairman, John Mahoney introduced us to Dr. Christopher Blayre, under which pseudonym Edward Heron-Allen published a number of books in the 1920s and 30s. He discussed, in particular, the stories published in *The Purple Sapphire*, noting their original publication, the account of the non-publication of *Cheetah Girl*, and the scientific background to the story.

Simon Parfitt (of the Natural History Museum), by reference mainly to contemporary press cuttings preserved in Heron-Allen's *Selseyana* volumes, was able to describe in detail the discovery and subsequent excavation of the remarkable Selsey Mammoth of 1909. In fact it is almost entirely down to Heron-Allen that anything of value was preserved at all (following its discovery by a local fisherman and the subsequent "excitement" it caused). Although the teeth and some bones came to the Natural History Museum in London later in the same year, nothing more seems to have been done with them - until now, over a century later! Only following Ruth Mariner's photographic find and enquiry through the Heron-Allen Society, has the Selsey Mammoth been revisited and researched, as Simon told us. It is not a woolly mammoth, but a steppe mammoth of great scientific importance which lived about 200,000 years ago, at a time when the climate veered from fully temperate episodes when summer temperatures were similar, if not warmer, than today, separated by cold intervals. Heron-Allen, at the time of its find, also had the foresight to contact a number of scientists who were his friends, to help reconstruct the environment of the site, especially the vegetation. It is only recently however, that we are able to improve on this, as well as get a much more accurate date for when the animal lived. More research is planned.

Following a short break, we reconvened to listen to some short talks relating to Heron-Allen's association with the British Museum itself - namely, the collections he bequeathed. First, Thomas Hockenhull, from the British Museum's Coins and Medals Department gave us an illustrated overview of Heron-Allen's donations of ancient coins and First World War French "emergency" bank notes.

Our honorary Treasurer, Pam Thompson, former Librarian of the Royal College of Music, made excellent use of the British Museum's website to introduce us to Heron-Allen's other, mainly archaeological items, donated by himself and other members of his family.

Finally, David Thompson, until recently the Curator of Horology at the British Museum, gave us an illustrated talk about Heron-Allen's pocket watch, enlivened by the presence of both the watch and it's present owner. Additional thanks must go to David for so efficiently organising a most successful and enjoyable meeting at what is such an impressive venue.

The talks were then followed by the Society's Annual General Meeting.

After an extremely pleasant and instructive morning, we took advantage of the local knowledge of the staff of the Museum and went out for a highly enjoyable late lunch at "Il Castelletto" in Bury Street, where we were joined by other Heron-Allen members and supporters.

DOCTOR CHRISTOPHER BLAYRE : SCIENTIFIC AND LITERARY ACCOMPLISHMENTS, 1921 - 1934

by JOHN P. MAHONEY and BARBARA P. MAHONEY

PART 1: A CONCISE HISTORY OF THE WELL-KNOWN LITERARY WORKS OF DR. BLAYRE

Christopher Blayre, Ph.D., D.Litt. (pseudonym for Edward Heron-Allen) and reportedly "the sometimes Registrar in the University of Cosmopoli" put together a variety of fictional scientific and fantasy "records" from various departmental bigwigs of the said University. The collection of eight reports was originally published in 1921 by an obscure publisher, Philip Allan, and titled, *The Purple Sapphire and Other Posthumous Papers: Selected from the Unofficial Registrar of the University of Cosmopoli by Christopher Blayre* (1). The ninth report, "The Cheetah-Girl", was not printed and had the following statement: "The Publishers regret that they are unable to print this MS". But two of the eight stories were actually reprints. Heron-Allen's earliest known stories, submitted with the pseudonym, 'Flavian', were two unusual pieces that appeared in the short-lived *Anglo-French Review* journal: "The Purpura Lapillus" (August 1919), and "The Blue Cockroach" (October 1919) (2). These two stories were reprinted and incorporated with six additional stories under the new 1921 Christopher Blayre edition, *The Purple Sapphire*.

The original April 1921 edition of *The Purple Sapphire* was bound in blue-grey paper on boards and a tan title paper label on the spine with the added words "Seven Shillings and Sixpence". A so-called "Large Paper Copy" (as stated on the spine paper label) was also issued in 1921 as a limited edition of similar construction (⅛ inch greater height and ¼ inch greater width) (3). Our copy states: "Of ten copies of this book printed upon hand-made paper, this is No. 7. Printed for and presented to Bertha Wilson by Christopher Blayre May 1921".

This 1921 book was reprinted without modifications in two separate runs (purple-rose cloth binding with gilt print and purple cloth with black print with no known dust jackets (4, 5). Blayre's antescript was dated "1952".

In 1932, the collection was reprinted and modified with the addition of four new tales and titled, *The Strange Papers of Dr Blayre* (6). All mention of "The Cheetah-Girl" was deleted. Christopher Blayre's antescript was no longer dated "1952". There were two variant dust jackets issued with the second publication run merged with the famous Philip Allan Creeps Series (Figure 1). Both issues had nearly identical binding designs with a light blue cloth hard cover.

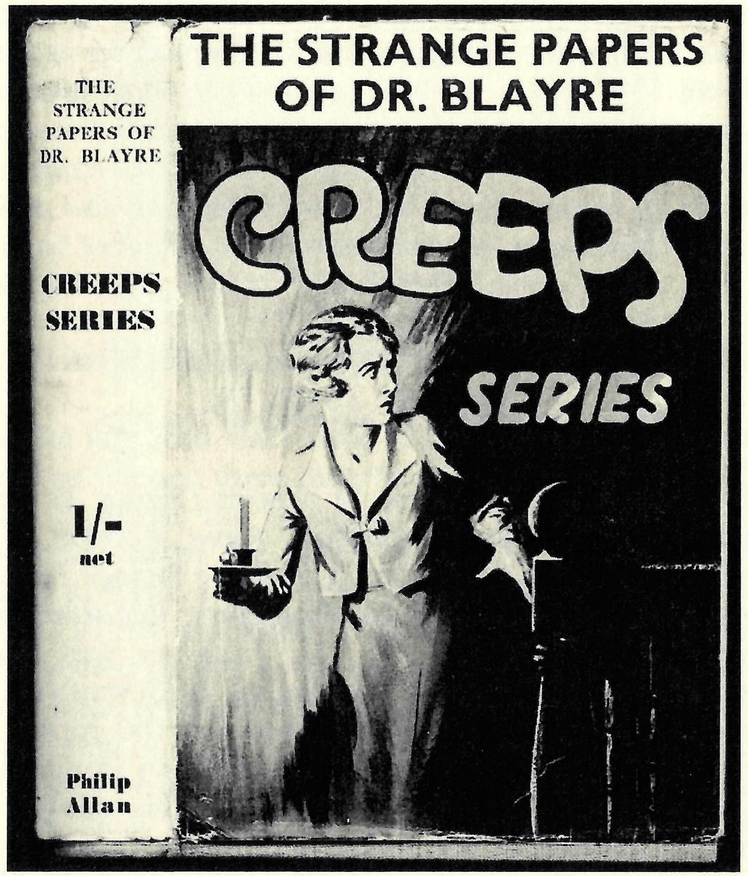
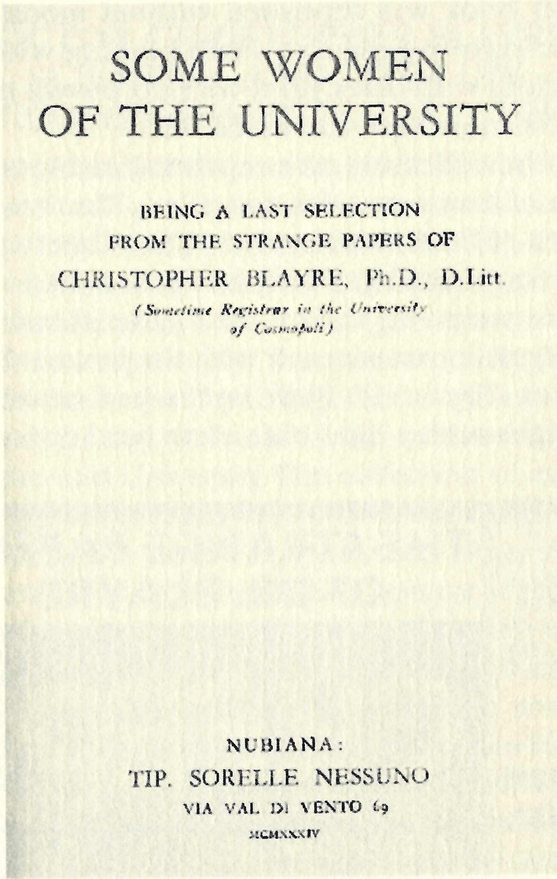


Fig. 1. The Strange Papers of Dr. Blayre, 1932 Reprint Edition, variant Dust Jacket.



SOME WOMEN
OF THE UNIVERSITY

BEING A LAST SELECTION
FROM THE STRANGE PAPERS OF
CHRISTOPHER BLAYRE, Ph.D., D.Litt.
(Sometime Registrar in the University of Cosmopoli)

NUBIANA:
TIP. SORELLE NESSUNO
VIA VAL DI VENTO 69
MCMXXXIV

Fig. 2. Some Women of the University, Title Page.

In 1934, a second volume of reports (Figure 2) with 4 additional records was published, *Some Women of the University being the last Selection from the Strange Papers of Christopher Blayre, Ph.D, D.Litt.(Sometime Registrar in the University of Cosmopoli)* (7). The Publisher was equally obscure, Nubiana: Tip. Sorelle Nessuno, via Val Di Vento 69. This volume had a numbered run limited to just 100 copies. Our copy is a presentation volume, No. 70 to "Helen Patricia Mayo from Christopher Blayre, January 1938". This edition was interesting because of the inclusion of Blayre's postscript, *A Few Words in Explanation of "The Cheetah-Girl"*. Blayre identifies the biological researcher, Professor Barrowdale to the

general public. Blayre claims that the 1921 manuscript incorrectly stated "Deposited by the Professor of Biology" and should have stated "of Physiology" due to a mistyping by his secretary. He withheld publication because the research contained "matters of record of such a nature that it could not possibly be published in a volume destined for general circulation". He allegedly feared bringing the full weight of the laws related to pornography on himself and the publisher.

Blayre then claimed that he lent *The Cheetah-Girl* manuscript in confidence to a friend who in treachery lent it "to a friend of hers" leading to its private publication in 1923 with 20 numbered copies (8). However, this claim did not hold up to the test of time and research. George Medhurst, one of Britain's great collectors of antiquarian science fiction and fantasy, is credited with discovering the true writer with the mysterious name of Christopher Blayre in late 1941. Medhurst confronted Heron-Allen by mail and, in fairly blunt words, Heron-Allen told him to cease and desist and to leave him alone (9). The Cheetah-Girl book clearly was written by the same author of *Some Women of the University* with a nearly identical format and style of *The Purple Sapphire*.

PART II: ADDITIONAL SCIENTIFIC FINDINGS INCLUDING A LETTER BY DR. BLAYRE

In the July 28th, 1921 issue of *Nature, a Weekly Illustrated Journal of Science*, three months after the publication of *The Purple Sapphire*, the so-called "The Professor of Biology" (mentioned under the index of "The Cheetah-Girl" listing) decided to write a book review to the Editor of the *Nature* journal! (10). He lambasted Dr. Blayre for attempting to publish the deposited papers while he, the Professor of Biology and current book reviewer was still alive. The Professor of Biology felt a "feeling of relief when he found that his own document (*The Cheetah-Girl*) had been suppressed by the publishers." His next statement was quite revealing: "It is true that names are sometimes suppressed or modified in the book, but in these days, when the study of the history is rife, it seems a cruelly

thin disguise to refer to a professor by a pseudonym and then proceed to mention one of his well-known discoveries."Where was there any mention of his well-known discoveries in *The Purple Sapphire*? Who was "The Professor of Biology"? *The Cheetah-Girl* manuscript had not even been printed until 1923.

In the December, 2nd 1922 issue of *Nature* Journal, an anonymous author wrote a short review article on *Human Blood Relationships* (11).This review reiterated that tissues of any one species of animal are foreign to any other species. Even within one species such as humans, not every human can

Human Blood Relationships and Sterility.

It is not, I think, generally known that the late Alphonse Milne-Edwards made curious and interesting investigations and suggestions with regard to these matters, but did not live to publish them. A record will be found in Sir Ray Lankester's "Secrets of Earth and Sea" (p. 141). Briefly, his view was that the serums of separated species are toxic to one another—as in the tables given by von Dungern and Hirschfeld and in this country by Back and Edwards, and thus prevent the fertilisation of the ovum of one species by the spermatozoon of another. "He proposed to inject one species by 'serums' extracted from the other, in such a way as seemed most likely to bring the chemical state of their reproductive elements into harmony, that is to say, into a condition in which they should not be actively antagonistic, but admit of fusion and union" (E. R. L.). I would suggest that the perplexing sterility of many normal, healthy young married couples is closely linked up with this question, and it may be that a great future is in store for the surgeon who would boldly adopt the suggestion of Milne-Edwards with the view of harmonising the serums of married persons whose relative sterility would appear to be capable of tabulation after the manner of the hæmolytic charts given by Back and Edwards and by the writer of the article in NATURE of December 2. CHRISTOPHER BLAYRE.

Fig. 3. Christopher Blayre's response to Human Blood Article.

accept blood products from other humans. The article then reviewed the four major A and B blood group characteristics and their donor and recipient compatibilities.

In the December 23rd, 1922 issue of *Nature* journal, Christopher Blayre also wrote his only known letter to a major scientific journal titled, *Human Blood Relationships and Sterility* (12) (Figure 3). He claimed that the late Alphonse Milne-Edwards made unpublished investigations in this topic. Blayre then stated that Sir Ray Lankester recorded Milne-Edwards observations in his recent book, *Secrets of Earth and Science.*

Blayre summarized Milne-Edwards' observations and then hypothesized that perplexing sterility issues of healthy couples are related to these toxic serological issues. The author of the human blood article responded that he doubted the mentioned sterility issues are related to similar issues seen with blood transfusions.

Sir Ray Lankester, F.R.S. was a world renowned English zoologist and a close friend of Edward Heron-Allen who wrote Lankester's obituary in the *Journal of the Royal Microscopical Society* in 1929 (13). In 1920, Lankester published his *Secrets of Earth and Science* (14). His chapter 12 on *The Cross-Breeding of Races* states that man by his interference rarely succeeds in procuring "hybrids" between allied species. Hybrids between species which belong to groups so different as to be considered by zoologists as distinctly separate "families" or "orders" are unknown under any circumstances. Alphonse Milne-Edwards, a famous French mammalologist, claimed that interbreeding between divergent species is prevented by a chemical toxic incompatibility (15). He proposed to Lankester injecting one species with "serums" extracted from another, "in such a way as seemed likely to bring the chemical state of their reproductive elements into harmony." He did not propose a methodology for such a study. The exchange of living or highly organized fluids between a male and female of separate species would assimilate the chemical constitution of one to that of the other species. Then one species could tolerate and fertilize the other. Milne-Edwards never commenced any interbreeding

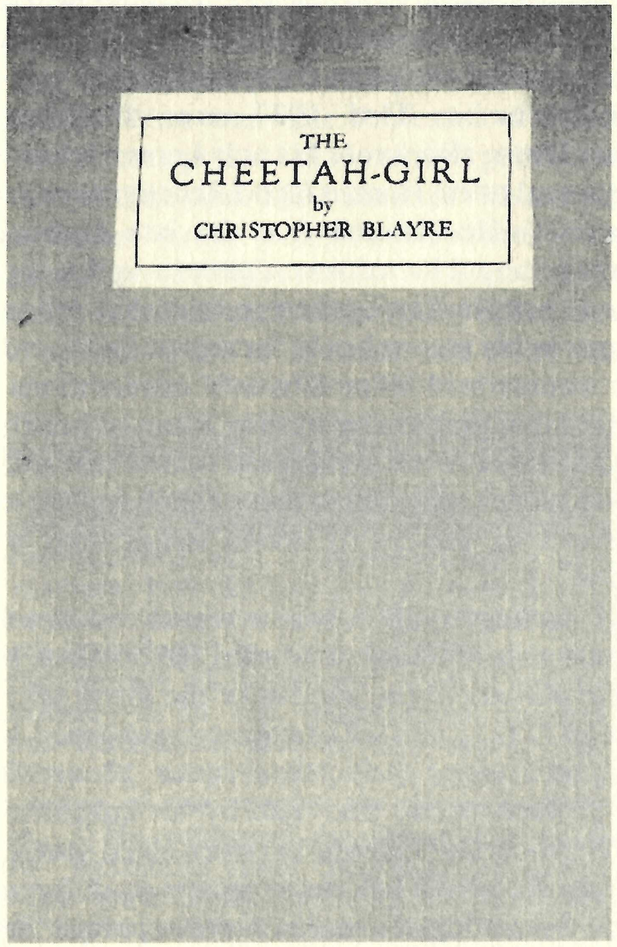


Fig. 4. The Cheetah Girl, 1923 1st edition.

investigations. Lankester agreed with Blayre that same species infertility issues might benefit by such investigation. (Heron-Allen likely 'lifted' the idea from Lankester's book).

In 1923, Blayre's *The Cheetah Girl* (Figure 4) was finally published in a private printing of 20 numbered copies (16). There are copies which allegedly are presentation copies and have the signature of Edward Heron-Allen. In brief, Cheetah-Girl was the offspring of interbreeding between a male cheetah and a human female prostitute producing a hybrid female offspring named Uniqua. Paul Barrowdale was the "Professor of

Physiology" (corrected from Biology). Professor Magley was Barrowdale's pupil who unfortunately later impregnated the 13 year-old Cheetah-Girl and who despite being a hybrid, became pregnant. Uniqua's mother commits suicide and leaves Professor Barrowdale's manuscript to Professor Magley (Uniqua's husband). The manuscript outlines the theories of Alphonse Milne-Edwards concerning interbreeding between species. The manuscript also mentioned Ray Lankester's discussions with Milne-Edwards and the problems related to infertile healthy married couples. Barrowdale also goes into in-depth discussions about the physiology of blood transfusions and their incompatibilities. The Professor then states that he has successfully produced hybrids between widely separated species including the use of man as a form of bestiality experimentation. The report reviews the historical cases of bestiality and the Professor confesses to his fixation on achieving success in this interbreeding project. Barrowdale selected a prostitute, Ursula Clayton who was also a lesbian and willing bestiality subject. The male Cheetah, named Kumar, was Barrowdale's house pet. The Professor conducted serum experiments along the lines mentioned by Milne-Edwards and finally "the blood tests were wholly satisfactory." The actual mating was by natural insemination. Six months later a perfectly formed furry female human child was born.

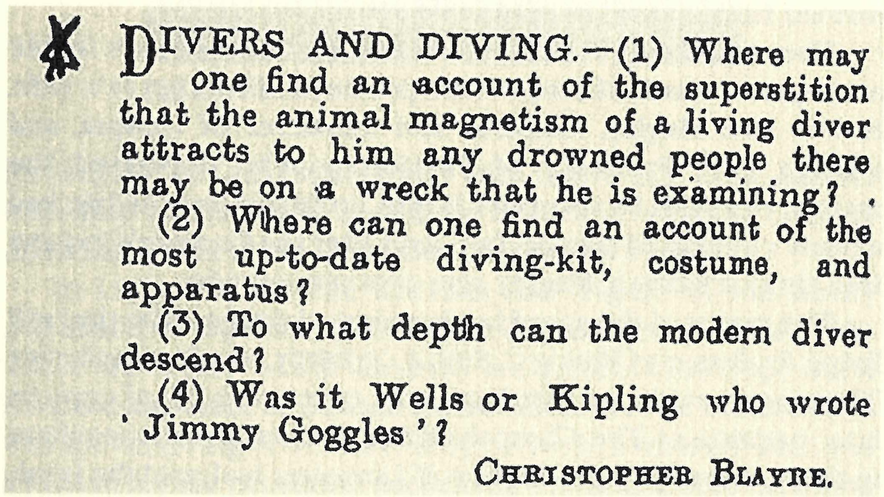
The remaining document related to Barrowdale's feeble attempts to ward off future male pursuers of Uniqua as a wife. It was Rex Magley, husband and murderer of Uniqua, and current new Professor of Physiology who deposited the manuscript with Christopher Blayre. Professor Barrowdale had already committed suicide. Two days after the Coroner's inquest into Uniqua's death, Magley also commits suicide.

The writer of the spoof book review claiming to be the "still living Professor of Biology" almost certainly was Ray Lankester. There is no evidence that Lankester ever saw a proof copy or later printing of *The Cheetah-Girl* or was an active consultant in the manuscript's production. If Lankester had read the book, he might have been apoplectic at his (The Professor's)

documented activities, all in the name of the advancement of Science. Edward Heron-Allen spoke of Ray Lankester's rapier-like exchanges with friend or foe, a style present in this book review (17). To Edward Heron-Allen's credit, these subjects of bestiality, pedophilia, prostitution, lesbianism and sex were not written in a salacious manner. There were background constructions involving reader medical education, history, clinical and straight forward matter-of-fact cases. Heron-Allen delved into complex ethical, unethical and biologic scientific fiction to test the theory of creating a hybrid entity only differing from "humans" in subtle ways. The ten notorious purported pornographic photos found in rare copies of *The Cheetah Girl* were not published by the author, but were added post-publication by parties unknown. These illustrations were typically pasted in the book on blank pages.

PART III: ADDITIONAL LITERARY FINDINGS AND A LETTER BY DR. BLAYRE

The last known public letter of Christopher Blayre (Figure 5) was to the *Notes and Queries* journal on July 30th 1921, a vehicle for the asking and answering of readers' questions. It is devoted principally to English language and literature,



DIVERS AND DIVING.—(1) Where may one find an account of the superstition that the animal magnetism of a living diver attracts to him any drowned people there may be on a wreck that he is examining?

(2) Where can one find an account of the most up-to-date diving-kit, costume, and apparatus?

(3) To what depth can the modern diver descend?

(4) Was it Wells or Kipling who wrote 'Jimmy Goggles'?

CHRISTOPHER BLAYRE.

Fig. 5. Blayre's Notes & Queries, Letter.

lexicography, history and scholarly antiquarianism (18). Edward Heron-Allen was a renowned contributor to this journal with hundreds of questions and answers at least since 1900. The Editors awarded Heron-Allen with the ultimate final answer on August 14th 1943: his obituary notice (19). But why would Heron-Allen submit this fairly uncontroversial query to the journal in 1932 under the pseudonym of Christopher Blayre?

Animal magnetism (mesmerism) is the spirit-like power to either attract others through one's physical presence or the innate power that enables one to induce hypnosis (20). Heron-Allen, aka the Necromancer, certainly demonstrated a long term interest and was a recognized authority in mesmerism as documented in his book, *The Princess Daphne* (21). H.G. Wells wrote the short story on salvage divers titled, *Jimmy Goggles the God* in 1898 (22). The diver describes finding skeletons lying in the passenger cabins of a recent shipwreck, but there was no mention of episodes of animal magnetism in the short story. The story does briefly describe the current state of the diving kit, costume and the diving apparatus in use in 1898. Christopher Blayre did not receive any responses to his four queries by members of the journal.

The answer to why there was this interest in diving issues is partially found on review of Christopher Blayre's later manuscript in *Some Women of the University* published two years later (23). The "Another Squaw?" Manuscript, which was deposited by the Professor of Zoology, detailed the tragic and mysterious death of Miss Jennifer Pendeen, an assistant in the Zoology Department. Her speciality was fishes, especially deep water oceanic angler-fishes called Ceratioids. Her greatest ambition was to capture a living specimen. Blayre goes into a history of the fish including habitat, eating habits, teeth and its unusual reproduction life cycle. He then covers issues related to deep water atmospheric pressure, compressing chambers, and complex deep water fish capture cylinders. A large four-foot long *Ceratias* was captured, decompressed and became her pet in the lab, 'Ysolde'. The female fish was a peculiar species because the male fish, 'Tristan', is a parasitic mate embedded in

the flesh of the female. Miss Pendeen decided to surgically separate the pair (apparently a big mistake in judgment). Tristan, being naturally the weaker sex, died within 1 day. Ysolde was not a happy fish and she did not forgive or forget (animal magnetism in reverse?). Three weeks later, Miss Pendeen was found dead in the bottom of the tank with her arm entangled in the huge teeth of this four foot satisfied fish.

PART IV: CHRISTOPHER BLAYRE AND AGENT M.I.7.B(i.)

In Edward Heron-Allen's 1921 edition of *The Purple Sapphire* (24) the dedication page (verso) had an interesting announcement. It claimed that Dr. Blayre had previously published three of these eight short stories in the *"Anglo-French Review"* journal (Figure 6). As previously mentioned, an outside institution assured us that only two of the earlier published stories were identified in the *Anglo-French Review* journal, submitted with the pseudonym, 'Flavian': "The Purpura Lapillus" (August 1919) and "The Blue Cockroach" (October 1919) (25, 26). There was no mention of Christopher Blayre. We explored the following interesting reference about the Creeps Library UK book series which featured a reprinting of *The Strange Papers of Dr. Blayre*: "The Creeps series began in 1932, though its roots can be traced to a privately printed annual, *The Green Book* (4 issues 1919-1922), issued by a disbanded group of Military Intelligence propaganda veterans, including Philip Allan and Edward Heron-Allen" (27, 28).

Three of the papers in this volume were prematurely published in the "Anglo-French Review"—now some thirty years ago—and I obtained the permission of the Editors to reprint them in the event of this selection being ultimately published.

C.B.

Fig. 6. The Purple Sapphire, Dedication Page.

Philip Allan published Heron-Allen's *The Purple Sapphire* and *The Strange Papers of Dr. Blayre*. Allan later became a member of the Sette of Odd Volumes. Heron-Allen's personal copy of the *Green Book*, a short-lived privately printed publication, survives intact with additional ephemera at the Huntington Library in San Marino, California. (28) (Figure 7). The ephemera includes: a tipped-in editor's personal letter to

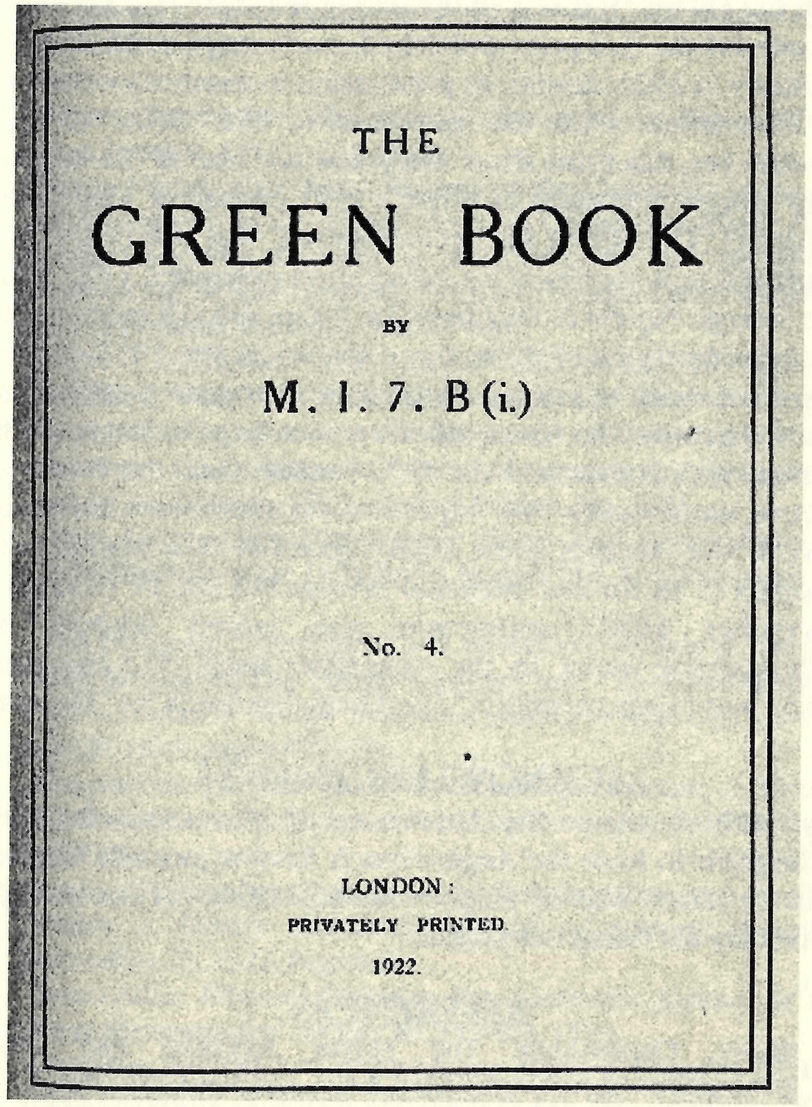


Fig. 7. The Green Book, 1922, Front Cover, Edition no. 4.

Heron-Allen, two playbills each listing Heron-Allen as one of the actors, an event menu and Heron-Allen's table place card. Issue No. 1 contains a short poem entitled "A Fragment" by "E.H.A" and beneath the poem, the manuscript is signed in ink, "Edward Heron-Allen" followed by his characteristic Farsi signature.

Issue No. 4, 1922, of the *Green Book* contains a short story, "The Mirror that Remembered" written by Christopher Blayre with the initials, "E.H.H.A" at the end of the story. Had we finally uncovered the 3rd prior published manuscript as claimed by Dr. Blayre in 1921, despite its publication in another journal and its association with the pseudonym, M.I.7.B(i.)? (29-30). Possibly. Yet, this third short story was not one of the original eight stories published in Blayre's 1921 edition of *The Purple Sapphire*! "The Mirror that Remembered" was one of the four additional new stories in his subsequent expanded 1932 book, *The Strange Papers of Dr. Blayre*. Dr. Blayre did not mention the prior publications of these three stories in the 1932 edition. This third story, as printed in these two separate publications, differed in that *The Green Book* version lists Dr. Blayre as the manuscript's author and the 1932 version lists "the Professor of Pure Mathematics". We requested, via interlibrary university loan, all four volumes of the *Anglo-French Review* journal to be shipped to us for our personal review. Volume IV (August - December 1920) apparently was issued without an author/article index. In the November issue (31), the third article was finally identified, "The Thing that Smelt" by "Flavian".

ACKNOWLEDGEMENTS

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EDWARD HERON-ALLEN AND THE DISCOVERY OF THE SELSEY MAMMOTH, 1909

by SIMON A. PARFITT

On March 20, 1909, Selsey's East Beach was throbbing with activity. As low tide approached, a workforce of about a dozen men dug frantically to clear a thick layer of shingle with the aim of uncovering the skeleton of a mammoth. The workers assembled with the help of Edward Heron-Allen (who had recently moved to his newly-built residence, 'Large Acres' in Selsey) were watched over by a distinguished group of gentlemen that included Dr Arthur Smith Woodward F.R.S.,

Fig. 1. Bones and teeth of the Selsey mammoth displayed in front of Henry Arnell Smith's bungalow 'The Hut', which backed on to the beach where the mammoth was found. From a photograph in the possession of Ruth Mariner, and reproduced by kind permission. On the right is James Lawrence, the local fisherman who first made the discovery; the other is believed to be Smith himself. Smith's bungalow was one of a number of similar huts on East Beach that incorporated decommissioned railway carriages conveyed via the Selsey Tramway when its Beach Station was open (pre-WWI).

Keeper of Geology at the British Museum (Natural History), Professor Gregory of Appledram, and the Reverend John Cavis-Brown, incumbent of St Peter's Church, Selsey. Despite valiant efforts to shift the shingle, the site was quickly swamped by the sea, and all but 'an ankle bone and sundry pieces of bone' could be rescued from the waves and added to the haul of bones recovered a few days earlier.

The discovery attracted considerable excitement and interest among both palaeontologists and the general public. Although it was well publicised at the time, and the centenary of its find was noted in the prestigious scientific journal *Nature*, no comprehensive publication combining all aspects of the investigation has ever appeared.

The Selsey Mammoth remained all but forgotten until March 2012, when an intriguing contemporary photograph (Figure 1) was brought to our attention by Ruth Mariner, then Chairman and Archivist of The Selsey Society. Shown in the photograph are two of the key figures in the discovery, displaying a selection of their finds. The photograph prompted a number of questions. What is the story behind the discovery and who were the protagonists? What role did Heron-Allen play in the events? Why does so little of the mammoth skeleton survive? And can the surviving remnants yield further insights into the life and times of the Selsey Mammoth and the early prehistory of Selsey?

'LEVIATHAN ON THE BEACH'

The sequence of events from the discovery of the mammoth to the eventual donation of bones to the Natural History Museum in London can be pieced together from contemporary newspaper reports, correspondence in Heron-Allen's archive, and from his recollection of events published in *Selsey Bill: Historic and Prehistoric* (1911a).

The first published report of the discovery describes how, on 16 March 1909, a local fisherman, James Lawrence, 'found on the beach [at Selsey], opposite Mr H.A. Smith's bungalow, and some 25 feet below low water mark, a mass of red clay, in

which were embedded the remains of what appears to be a mammoth. [For a contemporary photograph of the East Beach site, see Figure 2]. The bones seem to be those of an animal 30 feet in length and some that have been removed weigh in all between ten and twelve cwt. Two great teeth have been brought to our office in Chichester, where they may now be seen. We are at present at a period of neap tides; it is hoped that during the spring tides of next week it will be possible to make a more careful examination of the remains. It is supposed that the easterly wind which has been prevalent for weeks has had much to do with causing the mass of clay to move and become uncovered'. Under the heading: 'Leviathan on the Beach' this report in the *West Sussex Gazette* of 18 March 1909 heralded a great deal of local excitement.

The *Sussex Daily News* of the same date carried very much the same story, and added that James Lawrence lived at North Road in Selsey. It also recorded that four teeth were recovered, two of which were taken to Chichester and exhibited.

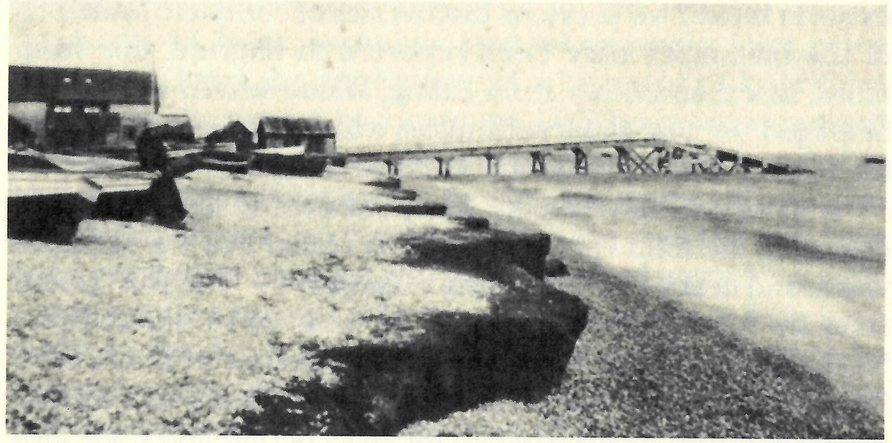

Fig. 2. East Beach in the early 1900s. From an undated postcard (reproduced by kind permission of Ruth Mariner). She dates it as no earlier than 1902 (when the split-back first appeared on postcards, separating message from address) and no later than 1920 when the second lifeboat house was built. It is therefore just as it was when the mammoth was discovered. At the actual site the beach was located at the end of the "slip way", showing how much coastal erosion has taken place since; it would now lie some 200 metres seaward from the existing sea wall and about 270 metres north of the current Lifeboat House.

The following week, on 23 March, *The Globe* carried a report that expert assistance was quickly drawn to the site.... 'Dr A. Smith Woodward, Keeper of Geology in the British Museum, has examined the remains of a mammoth found below high-water mark on the beach at Selsey Bill, in a fresh water deposit of black clay, which is usually covered with a thick bank of shingle. The bed has not been exposed before within the memory of the present generation of fishermen, and is rapidly disappearing again'.

At this stage Heron-Allen's involvement becomes apparent. *The Globe* continued.... 'Extensive digging under the direction of Mr E. Heron-Allen and Mr H.A. Smith have now shown that although a large part of the skeleton must have been originally present, the bones are scattered and broken, and in many cases water-worn. The molar teeth of both jaws are well preserved, and indicate that the animal was an ordinary mammoth, not full grown. It agrees with most examples of this extinct elephant in not being larger than the closely related species which still exists in India. Two previous discoveries of complete skeletons of the mammoth have been reported in England, one from Ilford, Essex, and other from Ealing, Middlesex. To the former belonged the fine skull, with tusks, which is now exhibited in the Natural History Museum, South Kensington'.

A more extensive report was published in the *Chichester Observer* the following day, which revealed that the skeleton was found near to 'Mr H.A. Smith's bungalow - "The Hut", about sixty six feet from the sea bank'. It went on to report that... 'although only about twenty or thirty portions of bones have been discovered to the present, there is no doubt that further excavations will be made when the tides permit, and some idea of the size of the animal may be gained from the fact that the tract over which the bones appear measures about thirty feet'. The report also revealed that Mr Smith had received a letter from Arthur Smith Woodward, intimating that if it proved to be a good one it would be a desirable specimen for the British Museum and advised that the removal of the bones should not be undertaken by inexperienced people who might destroy it.

Dr Smith Woodward visited the site on Saturday 20 March 1909, at the low spring tide, as reported by *the West Sussex Gazette* on 25 March, accompanied by Professor Gregory of Appledram, the Reverend J. Cavis-Brown of Selsey and Mr Heron-Allen and expressed the opinion that '... the animal in all probability died where it was found ... and that it was quite likely that the remains were 4,000 years old [*sic*].'

The report goes on to describe the attempts to recover the remaining parts of the skeleton. 'Operations were commenced about three p.m. by a party of nearly a dozen men under the direction of Mr H.A. Smith and [James] Lawrence, the fisherman who first found the bones. Unfortunately, the easterly gales which laid bare the remains had been succeeded during the few days previous by heavy south-westerly weather, which had covered the remains with a thick layer of shingle, and much obscured the outline in the sand. The better part of an hour was occupied in removing this, by which time very little time remained before the returning tide rendered further investigation impossible. However, in the interval several fragments of bone, including part of an ankle joint, were unearthed. From the appearance of a fragment of knee joint, previously discovered by Lawrence, Dr Woodward expressed the opinion that the mammoth was probably a young one of its kind, although nobody knows to what age mammoths used to live. Dr Woodward also considered that the skeleton may have been previously exposed and partly washed away by marine action. Another attempt at further excavation was to have been made on Sunday, at low tide, but the place was found to be covered again with several feet of shingle, and it is probable that nothing more will now be done till the next spring tides'.

The discovery of the remains of the mammoth at Selsey was reported in *Nature* on 25 March and 22 April 1909. The former report mentioned that.... 'Mr E. Heron-Allen informs us that the whole of the bones recovered at Selsey have been collected by him, and will in due course be deposited in the Natural History Museum, South Kensington. The presence among the remains of the right and left patellae and a metatarsal bone, all three

flawless, will enable experts to judge accurately the size of the animal when living. Mr Heron-Allen adds... 'a superficial microscopical examination of the mud in which the skeleton was found has been made by Mr Clement Read, F.R.S. and by myself, and proves the deposit to have been fresh-water'.

In his first *Selseyana* volume (p. 103) (a series of bound press-cuttings and ephemera, preserved in the West Sussex Record Office, Chichester), Heron-Allen recorded (20 March 1909) a list of plants identified from the site (see p.37, below), and added that: 'the bones were lying 132 ft from the brow of the shingle, at right angles to the high-water mark, due S.E. from the S boundary of H.A. Smith's bungalow "The Hut", [in] a black sandy clay lying upon the alluvial loam, with red bands of clay running through it, ?obtruded from lower beds'. Three pages further on in the volume is a fine photograph of the remains which was published in *The Sphere* on 27 March 1909 and in *The Graphic* on 1 May (reproduced herein on the front cover of this *Opusculum*).

Rather surprisingly, despite the fact that he was the local secretary of the Sussex Archaeological Society, Heron-Allen did not submit a report on the discovery of the Selsey Mammoth to *Sussex Archaeological Collections*. There is no substantial account of the discovery in his 'Large Acres' Visitors' Book either and, so far, no mention of the find has been found in his correspondence. However, he devoted three pages of his *Selsey Bill: Historic and Prehistoric* (1911a, pp. 54–56) to the subject. '... Exactly opposite Mr H.A. Smith's bungalow .... a Mammoth skeleton and teeth were exposed at extreme low-water mark after strong easterly gales in March 1909, in a black and brown fresh water clay, containing Pleistocene wood and roots, and seeds of fluviatile plants. Unfortunately the bed in which the bones were found was only exposed for a few days, and then only for about three-quarters of an hour at a time, and an impression having got abroad that money might be obtainable for any fragment of the skeleton, the moment the bed was exposed a seething mass of inhabitants, armed with every conceivable digging implement, attacked it, and the skeleton

which might have been a most valuable "find" had the inhabitants consented to allow it to be dug out systematically by experts, was brought up in small fragments by anyone who could seize hold of a piece, being in an extremely soft and friable condition. Fortunately by the foresight of Mr H.A. Smith, the major portion of the earliest recovered bones and teeth were brought together, and we subsequently acquired from various sources all the available portions. They are now in the Natural History Department of the British Museum at South Kensington. Some of the most perfect of the bones, from which an accurate estimate of the size of the animal could be arrived at, are represented in Plate VIII, together with the first and second molar teeth of the lower jaw. The knee caps (Figs. 3 and 6) the toe-joint (Fig. 5) and the chin-bone (Fig. 8) enable us to say that this was a young mammoth standing about nine feet high'.

It seems that Heron-Allen was instrumental in collecting the remains that were photographed and dispatched to the Natural History Museum: 'I'm sending off today "all of the mammoth there was" as Kipling says. He is in two champagne cases, one containing the more, & the other the less, interesting bones.' (Heron-Allen to Smith Woodward, 4 June 1909). Pasted into his *Selseyana* volume is a letter of receipt from Smith Woodward, dated 7 June 1909, posted to Heron-Allen's London house, 3 Northwick Terrace in Marylebone:

> Dear Mr. Heron-Allen,
>
> With very many thanks, I have safely received the two boxes of bones & teeth of the Selsey mammoth, and you will receive an acknowledgement of your kind present after the next meeting of the Trustees. We shall be pleased to arrange for a photograph at any time.
>
> Yours sincerely,
>
> A. Smith Woodward

It is clear that not all the finds were sent up to London though, because there is a tooth from the mammoth among the Heron-Allen Collection in Chichester District Museum (now The Novium); other specimens remained in private hands.

THE MAMMOTH

From the foregoing accounts, it appears that many of the mammoth bones were dispersed among the local inhabitants or inadvertently destroyed before Heron-Allen's attention was drawn to the find. Nevertheless, it appears a substantial part, if not a complete skeleton was originally present, as shown by the surviving remains that include at least portions of some of the limb bones and teeth. Heron-Allen's account notes that the local inhabitants inflicted considerable damage with picks and shovels, though Smith Woodward commented that '... the skeleton may have been exposed some years ago, and part of it washed away by the sea'. He goes on to note that '[t]he frame of the complete carcass was, however, quite distinct' (*Worthing Evening News*, [24 or 25 March] 1909). Smith Woodward's comments, therefore, suggest that some of the bones were at least partly associated, if not articulated, in the deposit.

The major elements displayed by Lawrence and Smith (Figure 1) are those currently in the Natural History Museum (registered accession numbers M10176-10180). Unfortunately, it has not been possible to trace some of the larger pieces (probably uninformative ribs and long-bone shaft fragments) amongst the Museum's collections. These may have been discarded during an initial sort of the material shortly after it arrived at the museum. The portion of an unworn molar at the front of the table is probably the mammoth tooth donated by Heron-Allen to the Chichester District Museum.

Of the postcranial skeleton, the surviving elements include (Figure 3) the ends of some of the principal long bones (humerus, femur and tibia), both patellae and two foot bones (navicular and metapodial). Interestingly, the foot bones do not appear to be amongst the specimens illustrated in the photograph with Lawrence and Smith (Figure 1); it seems likely

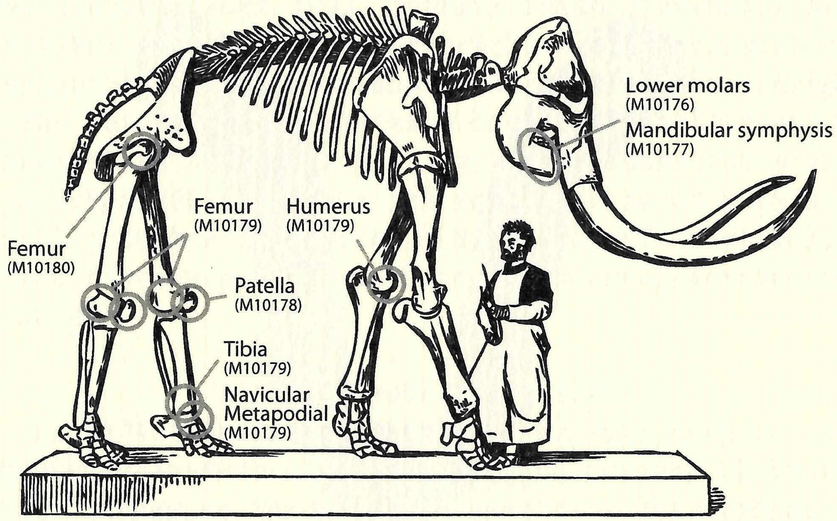

Fig. 3. Diagrammatic representation of the skeleton of a mammoth, showing positions of the bones found in 1909, circled with the Natural History Museum's catalogue numbers.

that they were the bones found during the excavation observed by Smith Woodward and held separately by Heron-Allen. A full listing of the identifiable material in the Natural History Museum is provided in the Appendix.

The extant teeth in the Natural History Museum consist of the left and right lower second and third molars (M10176) shown in Figure 4, where the tooth-row has been reconstructed with the symphysis ('chin') of the mandible (M10177). The chewing surface of the teeth show the essential features of elephant molars, which are constructed from a series of laterally compressed and elongated enamel plates each with a dentine core surrounded by a layer of cementum. The teeth provide an efficient shearing and grinding surface suited for processing grass and other abrasive fodder. Normally only four cheek teeth are present in the mouth at any one time. As this set of teeth becomes worn, it is pushed forward and replaced by another set. This system of successive tooth replacement helps prolong the life of the teeth and enables modern elephants to live to an age of 60 years. The Selsey Mammoth shows this process in action, with the second molars

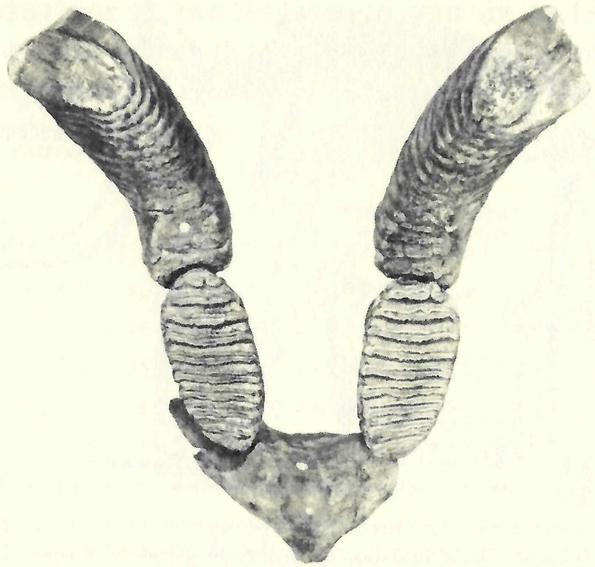

Fig. 4. Part of the lower jaw and molars of the Selsey Mammoth. The relatively thick enamel and widely spaced plates match those of 'steppe mammoth' (*Mammuthus trogontherii*); the more familiar woolly mammoth (*M. primigenius*) has thinner enamel and more closely spaced plates, an adaptation to grinding tough plant food including grass. Scale divisions = 1cm. (Photo: Natural History Museum, London).

in an advanced state of wear and erupting third molars, which are just coming into wear. According to the stage of eruption and wear of the molars, it is possible to estimate that the Selsey Mammoth was about 30 years old, based on living elephants of known age.

As noted by Smith Woodward, the mammoth was not fully grown. This he inferred from the femur head which had not yet fused to the shaft. This epiphysis is one of the last long bone epiphyses to fuse in living elephants and mammoths, fusing between the ages of 40 and 45 years in males, whereas in females, growth and fusion are completed by 25 years. In the absence of the pelvis, it is not possible to establish the sex of the mammoth, but considering the individual's unfused femur, at a dental age of around 30 years, it is probable that the Selsey Mammoth was a male that had attained about 80% of its final

size (Adrian Lister, pers. comm.). Smith Woodward also provided an estimate of the height of the mammoth by comparing its bones with those of elephants of known height in the Natural History Museum's osteological collection. His comparisons suggested that the Selsey Mammoth was a relatively small individual, which would have stood at about '9 ft' (2.7 m) high at the shoulder. In the absence of complete long bones it is not possible to improve on Smith Woodward's estimate.

'AN ORDINARY MAMMOTH'?

Smith Woodward regarded the Selsey Mammoth as '...an ordinary mammoth ...', the archetypal denizen of 'frozen steppe' relying on 'the scantiest vegetation ... for sustenance.' (*The Graphic*, 1 May 1909). This was the prevailing view that recognized only one mammoth species ('*Elephas primigenius*') as living in Britain during the 'Ice Age'. We now know that mammoth evolution is far more complex and nuanced (Lister, 2014).

The origins of the mammoth lineage can be traced to sub-Saharan Africa at the end of the Pliocene, some 4.5 to 4 million years ago (Figure 5). Fossil finds as far apart as China and East Anglia show that the migration of the mammoth from Africa to Eurasia took place around 3.5 million years ago. Once out of Africa, the ancestral mammoth spread rapidly, colonising large parts of the Eurasian continent and, by about 1.5 million years ago across the then existing land bridge into North America. These early mammoths include the 'ancestral mammoth' *Mammuthus rumanus* and its descendent, the 'southern mammoth' *Mammuthus meridionalis*, both of which are represented in the British fossil record (Lister, 2008). The southern mammoth was a colossal animal, standing as much as 4 metres at the shoulder (as compared with around 3 metres for modern African elephants). It possessed robust but relatively short, inwardly twisting tusks, one of the defining features of the mammoth lineage. The low-crowned molar teeth - wide with widely-spaced enamel ridges - indicate adaption to

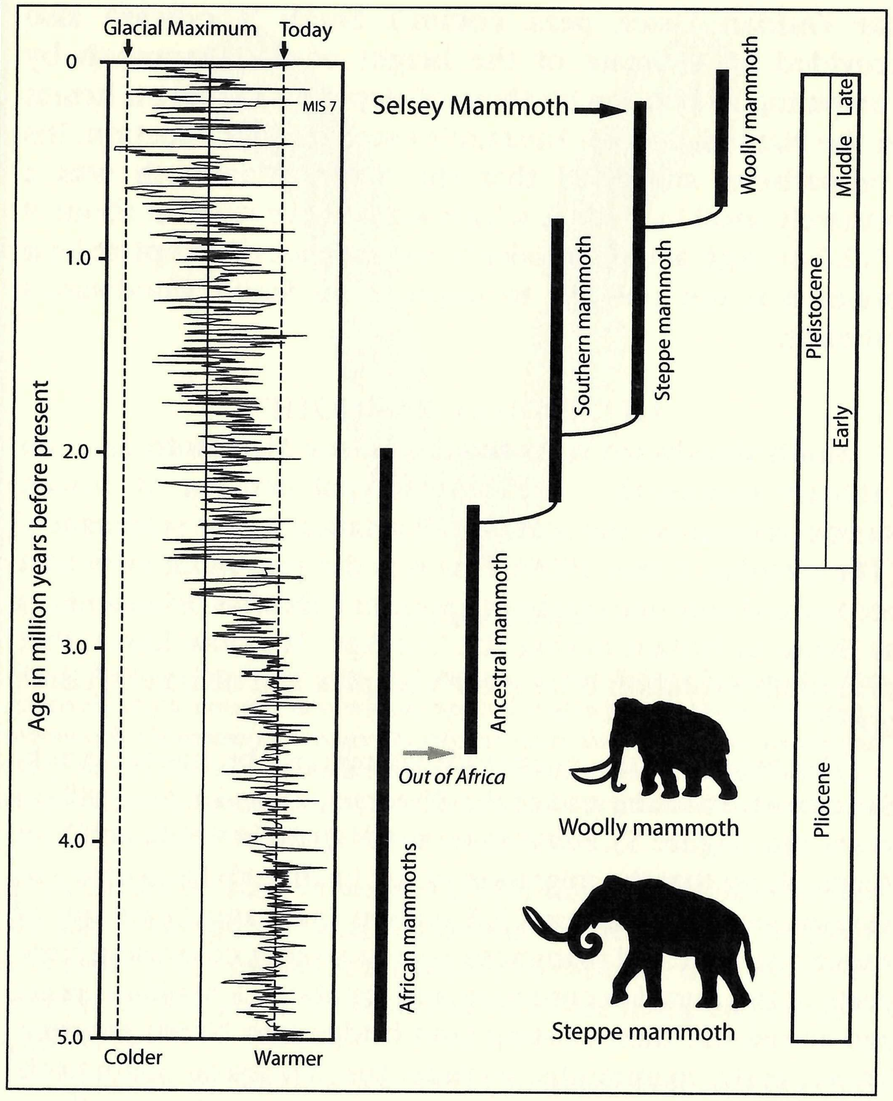

Fig. 5. Family tree of Eurasian mammoths and global climatic evolution. Around 700,000 years ago a new species, the woolly mammoth, evolved from the steppe mammoth in north-eastern Siberia. The steppe mammoth survived in western Europe up to the end of a major temperate stage between 243,000 and 191,000 years ago – the probable age of the Selsey Mammoth.

browsing on trees and bushes. Remains of plants and molluscs found with these mammoths show that they lived in relatively warm environments (Lister, 2014).

The subsequent history of the mammoths is a story of increasing specialization to coarser foods and harsh environments. About 2 million years ago, a major transition in this direction occurred with the evolution of the 'steppe mammoth', *Mammuthus trogontherii*, which evolved to exploit the vast open steppe grasslands which were being created as the climatic changes of the 'Ice Age' intensified. The steppe mammoth differed from earlier mammoths in having much higher-crowned molars that combined additional plates in its back teeth with thinner enamel. These dental changes resulted in a greater shearing capacity and mark a major transition of feeding strategy in mammoths from browsing to grazing abrasive silica-rich grasses and herbs. It evidently had broader tolerances than its predecessors, being associated both with relatively warm wooded conditions as well as seasonally cold grassland.

By 700,000 years ago, further evolutionary changes led to the differentiation of the highly-specialized, cold-adapted woolly mammoth (*Mammuthus primigenius*) in north-eastern Siberia. By the start of the penultimate glaciation, about 190,000 years ago, the woolly mammoth range covered most of northern Eurasia and perhaps also North America, fully replacing the steppe mammoth across its former range.

In Britain, mammoth fossils are particularly plentiful from the Last Cold Stage (from about 115,000 to 11,700 years ago) and the late Middle Pleistocene (*c.* 400,000-125,000 years ago). Many of these finds can now be dated with greater precision than was possible even a few years ago. Recently, interest has focussed on the penultimate interglacial (243,000-191,000 years ago or Marine Oxygen Isotope Stage (MIS) 7 – see footnote[1]), when the mammoths were notably common in Britain (Figure 5). The largest examples come from sites in the Thames valley, such as Ilford (Essex) and Stanton Harcourt (Oxfordshire). The mammoths from these sites are an unusual form, known as the 'Ilford-type mammoth', combining small size with distinctive molar morphology more reminiscent of steppe mammoth than woolly mammoth (Lister, 2008; in press). The 'Ilford mammoth' is unique to MIS 7.

The interglacial in which this late form of steppe mammoth lived was unusual in terms of climate, with at least three fully temperate episodes (when summer temperatures were similar to, or warmer than, those of today) separated by cold intervals. For much of the time, however, the climate was continental with very cold winters, but warm summers. These changing conditions allowed the straight-tusked elephant *Palaeoloxodon antiquus* to thrive during the deciduous woodland stages, with more open conditions during transitional/continental phases favouring the steppe mammoth. As conditions continued to deteriorate at the end of the interglacial, both of these 'temperate' elephants were ultimately replaced by the woolly mammoth.

Where does the Selsey Mammoth fit into the evolutionary history of the mammoths? The first clue is provided by Smith Woodward's observations on the small size of the animal. Examination of the molars, moreover, shows that they exhibit 'primitive' features, notably rather widely-spaced plates and thick enamel (Figure 4). This combination of features place its affinity very definitely with the Ilford-type mammoth - a late survivor of the steppe mammoth lineage - most likely dating to between 243,000 and 191,000 years ago.

Unbeknown to Heron-Allen and his associates, they had discovered the first skeleton of steppe mammoth to have undergone scientific scrutiny.

GEOLOGICAL AND ENVIRONMENTAL CONTEXT OF THE SELSEY MAMMOTH

To put the Selsey Mammoth in context we can start with the well section recorded by Heron-Allen in the grounds of 'Large Acres', 1.5 km to the west of the mammoth site (Figure 6). Digging to a depth of 74 ft (22.5 metres), the well diggers first encountered a shallow (1.2 metre) layer of brown silty clay known as 'brickearth'. The brickearth at Selsey, which is visible in the cliffs on both sides of the peninsula (Figures 6 and 7) was deposited during the Last Cold Stage (about 115,000 to 11,700 years ago). It contains wind-blown dust ('loess') derived

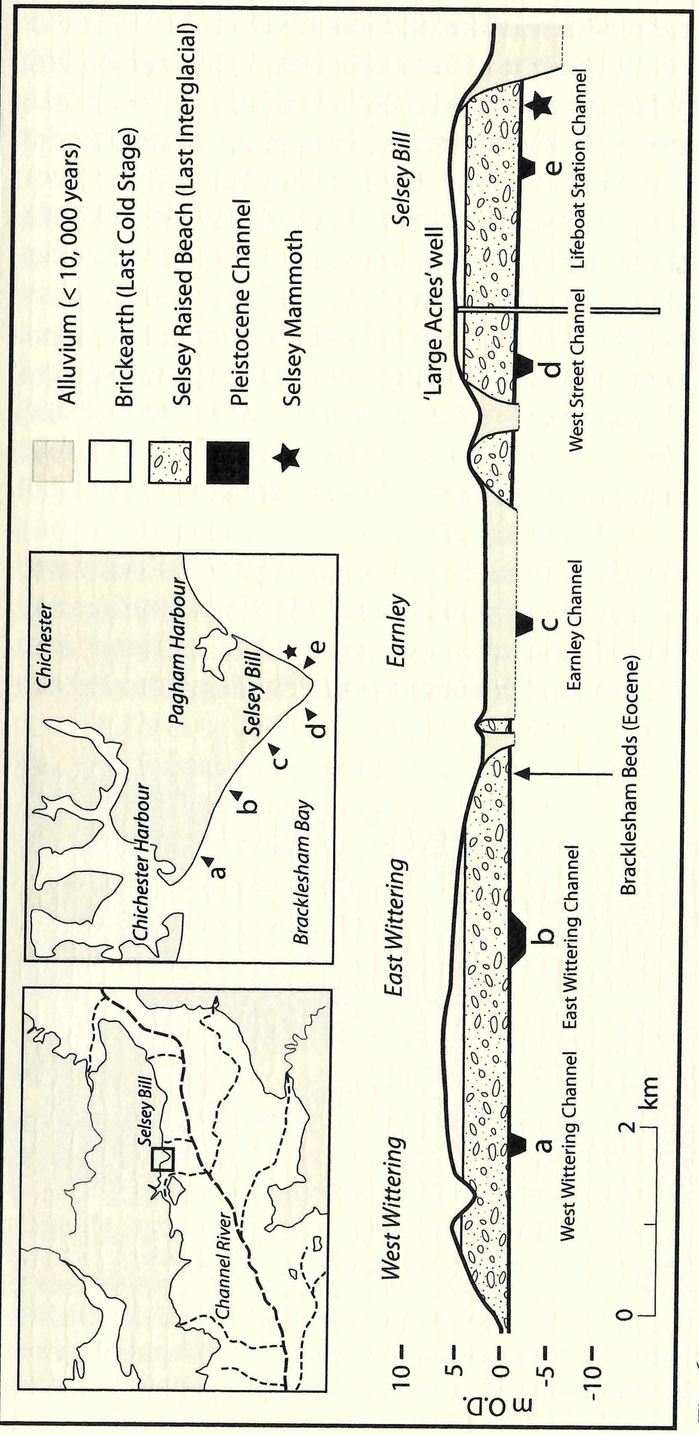

Fig. 6. Maps and geological section of the Selsey Peninsula, showing the location of Heron-Allen's mammoth site and other Pleistocene channels exposed on the the foreshore between Chichester Harbour and Pagham Harbour. The famous Lifeboat Station Channel contained the skeleton of a straight-tusked elephant excavated in 1961 by palaeontologists from the Natural History Museum with the help of local volunteers (Bates, 2011; West & Sparks, 1960). The straight-tusked elephant dates broadly to the same interglacial complex as the Selsey Mammoth, but the former lived in a very different environment of deciduous woodland, at a time when summer temperatures were warmer than those of the present day.

from the floodplains of glacial rivers flowing from an ice sheet that extended as far south as the Norfolk coast and the Gower in south Wales. At the height of Last Glaciation, around 22,000 years ago, Selsey and its surroundings would have resembled a barren arctic desert. To the west, the Peninsula overlooked a large river (the so-called 'Solent River') that flowed across a gently undulating plain between what is now the Isle of Wight and the mainland. As the sea-level was much lower than today - it dropped whenever there was a glacial - the English Channel was occupied by a vast braided river system known as the 'Channel River'. This river incorporated the Thames and Rhine, flowing through a deep rock-cut gorge off Dover and merging with the Somme, 'Solent River', and Seine before eventually reaching the Atlantic to the west of Cornwall (Figure 6).

Beneath the brickearth cover, the well-diggers encountered a much deeper sequence of raised beach deposits, comprising 6 metres of stratified sand and well-rounded shingle cut into the surface of the Eocene Bracklesham Beds (deposited about

Fig. 7. Coastal exposure, looking north-west from West Street, showing recent beach deposits piled against a low cliff of raised beach pebbles overlain by brickearth. The earliest scientific account of fossil elephants in the Selsey area is that of Dixon (1850) who described the discovery of the skeleton of a mammoth (subsequently re-identified as a straight-tusked elephant) from the foreshore at West Street (Heron-Allen's zone XV. See figs. 8 and 10 in Bates, 2011). (Photo: A.J. Sutcliffe)

46 million years ago - see Bone, 2011). The so-called 'Selsey Raised Beach', which can be traced in cliff sections right around the peninsula (Figure 7), was deposited during a prolonged period of warm conditions and high sea-level in the Last (Ipswichian) Interglacial, about 125,000 years ago. During the Ipswichian, much of West Sussex was cloaked by oak-dominated woodland and extensive tracts of open parkland inhabited by hippopotamus, lion, spotted hyaena and straight-tusked elephant. Unusually for an interglacial, early humans were absent from Britain during the Ipswichian. This probably results from their failure to recolonize northern Europe before the Strait of Dover was flooded, severing the land connection between Britain and Europe.

Sandwiched between the raised beach and the Eocene bedrock is a complex of buried channels filled with freshwater, estuarine and fully marine sediments (Figure 6). Although channel deposits were not encountered in the well, they can be seen on the foreshore when the cover of modern beach sands and gravels has been stripped away during storms. Heron-Allen (1911a, 1911b, 1912), in his description of the Eocene beds of the Bracklesham Bay and Selsey area, mapped the channels as a series of sectors ("zones"); from west to east, 'I' near Bracklesham, to 'XXXIV', near the entrance to Pagham Harbour. Pleistocene deposits are recorded from 10 sectors, the most important being: sector I, flints embedded in Pleistocene clay with rotten tree roots and stumps (probably an early record of the famous Earnley Channel); XV, Dixon's (1850) 'mammoth deposit', with additional proboscidean remains found in 1908; and XXII (the Selsey Mammoth site). The channels (forerunners of the 'rifes' (streams) and tidal inlets of Chichester and Pagham harbours) contain a wealth of fossil material (West & Sparks, 1960) that document fluctuations between periods of glacial cold and warm interglacials and the resulting changes in plant and animal life of Selsey Bill. The Selsey Mammoth is located in one of these channels of the ancient drainage system.

In *Selsey Bill: Historic and Prehistoric*, Heron-Allen (1911a, p. 54) describes the sediments at the mammoth site as 'black and

brown freshwater clay, containing Pleistocene wood and roots, and seeds of fluviatile plants' – a clear indication of a channel context. The fact that the skeleton was in primary position suggests that it had died in relatively shallow water and was rapidly buried. Heron-Allen realised that the sediments containing the mammoth had remained in a waterlogged and anerobic state, and that these conditions were ideally suited for preserving fragile plant remains. These he was able to extract successfully by carefully washing the samples over a fine-meshed sieve, using techniques that he had developed for recovering microscopic foraminifera. The resulting seeds and macroscopic plant remains (identified by Clement Reid of the Geological Survey of Great Britain) are listed in a marginal note in *Selseyana* (p. 103).

From the specimens provided by Heron-Allen, Reid identified a range of aquatic, waterside and damp-ground plants. These suggest a submerged flora of water-milfoil (*Myriophyllum* sp.) and horned pondweed (*Zannichellia* sp.), an emergent-leaved (i.e. rooted below water but appearing on surface) community in still or slowly moving water of pondweeds (*Potamogeton* sp.) and water crowfoot ('*Ranunculus aquatilis*' = *R.* subgenus *Batrachium*) grading to marginal shallow water and damp, marshy ground that included mare's tail (*Hippuris vulgaris*), common spike-rush (*Elocharis palustris*), cinquefoil ('*Potentilla comarum*') and water dropwort (*Oenanthe* sp.); nearby, drier ground supported stitchwort (*Stellaria* sp.) and sedges (*Carex* sp.).

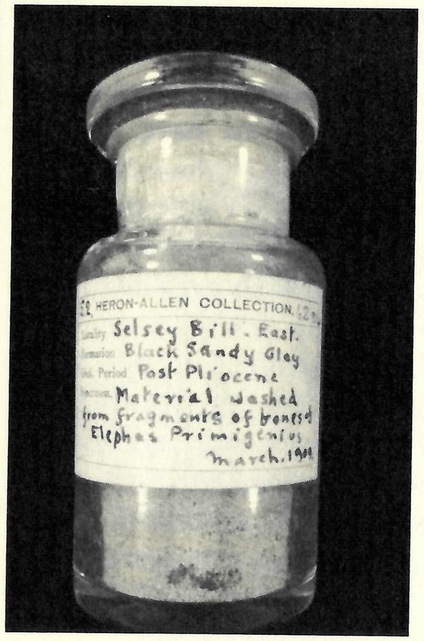

Fig. 8. Glass bottle containing one of Heron-Allen's sediment samples from the Selsey Mammoth site.

As well as collecting plant fossils, Heron-Allen also took sediment samples from the site, which he stored in sealed glass bottles, carefully labelled to record location and geological information (Figure 8). Heron-Allen's bottles have now been opened and provide an unexpected source of new information on the vegetation from an analysis of pollen and spores preserved in the sediments. The first sample recently analysed for pollen was from bottle 'S2', containing a sample of the 'Clay underlying shingle' described as 'Brown bands in black sandy clay from which the mammoth bones were taken. March 1909 ' (Sample A). A second smaller sample (B) was scraped from the roots of one of the lower molars (M10176). Both samples have yielded well preserved spores and pollen grains (Nick Branch, pers. comm.). The following plant taxa were identified:

	Sample A	Sample B
Trees		
Betula, birch	+	+
Pinus, pine	+	+
Shrubs		
Rosaceae, rose	+	
Herbs		
Apiaceae, umbellifer	+	+
Artemisia, wormwood	+	+
Asteroideae/Cardueae	+	
Caryophyllaceae, campion	+	+
Cirsium type, thistle	+	
Cyperaceae, sedge	+	+
Galium type, bed-straw	+	
Filipendula, meadowsweet	+	
Lamium type, dead-nettle	+	
Poaceae, meadow-grass	+	+
Polygonum type	+	
Serratula type, saw-wort	+	
Typha latifolia, bulrush	+	+
Lower plants		
Dryopteris type, fern	+	
Trilete spores		+

The two pollen spectra are broadly similar and suggest a pine and birch dominated vegetation mosaic in the vicinity of the site. As well as the tree pollen, there is evidence of wetland plants, steppe grassland and tall herb communities, with grasses being particularly well-represented. There are no true saltmarsh species suggesting that sea level was lower than at present and that the coastal plain at Selsey was far from the tidal reach of the Channel. Taken together, the pollen and plant macrofossil evidence suggests a low-lying landscape with a slow-flowing fluvial network characterized by channels and pools, lakes and marsh, with drier ground supporting a mosaic of boreal woodland and herb-rich habitats. In short, this was a good place for a mammoth to live.

The contemporary climate is more difficult to interpret from the plant evidence alone, but it may be significant that this 'community type' can be seen today at the edge of lakes in northern Sweden and Norway (Mike Field, pers. comm.), suggesting that the mammoth was not living during the peak of an interglacial.

CONCLUSIONS

As so often in the history of palaeontological discoveries there was an element of chance involved in the discovery of the Selsey Mammoth. An unusual track of easterly winds in March 1909 had stripped the beach along the eastern side of the Selsey Peninsula, to expose an expanse of clay beds that had not been seen for a generation. The mammoth was discovered by a local fisherman, James Lawrence, in this recently exposed clay, and it was he who collected some of the teeth and parts of the more-robust bones. By further lucky coincidence, Edward Heron-Allen had only just moved to Selsey when the bones were found virtually on his doorstep. There is no doubt that, had Heron-Allen not been present, we would know next to nothing about the context of the skeleton. He was responsible for recording the geology at the findspot, and he mapped its precise location on the foreshore. Moreover, Heron-Allen was instrumental in organizing the formal

excavation of the site as well as engaging the foremost authorities at the time, who commented on the mammoth and the associated plant fossils. His actions also ensured that the bones were saved by donating them to the Natural History Museum.

Now, more than a century after its discovery, the true significance of the Selsey Mammoth is apparent. A re-assessment of the few surviving bones and teeth suggests that it was a late form of the steppe mammoth lineage; a find of great significance given that less than a dozen complete or largely complete skeletons referable to this species are known to date. These span a vast geographical area, from West Runton in Norfolk to northeastern Kazakhstan (Russia), and more than half a million years in time (Lister & Stuart, 2010; Table 1). The skeleton from Steinheim (Germany), found in 1910, is generally credited with being the first steppe mammoth skeleton to be discovered. This distinction now must lie with the Selsey Mammoth, which was found the previous year.

In chronological terms, the Selsey Mammoth represents an interesting period in European mammoth evolution, one which is still poorly understood, and for which there is little in the way of sound ecological context. Thanks to the Heron-Allen's foresight in collecting plant remains and sediment samples it is now possible to add a new dimension to the ecology of the steppe mammoths from this time period. The seeds and pollen evidence show that the mammoth inhabited a grass-dominated landscape interspersed with birch-pine woodland and extensive wetlands. The climate was likely somewhat colder than today and possibly analogous to parts of northern Scandinavia at the present day. This ecological context adds immeasurably to the importance of the find and corroborates evidence for ecological flexibility, which enabled the steppe mammoth to survive in a range of habitats from fully temperate climates with deciduous woodland to steppe grassland in continental situations with harsh winters.

Today, less than 4% of the skeleton survives in the Natural History Museum. What happened to the rest of the skeleton is

a matter of conjecture. We believe that some of these fossils donated by Heron-Allen were discarded by museum curators who considered them uninformative. Contemporary accounts describe how the site was also 'ransacked' by curio-hunters shortly after it was discovered. What survives are some of the teeth and parts of the more-robust bones; there were almost certainly much more complete bones in the ground, but perhaps these were all that could be saved under challenging conditions from a tangle of crushed and damaged remains. But this may not be the whole story. In the 1960s, an "elephant" scapula (shoulder blade) was found loose on the seabed by a diver spear-fishing less than a hundred metres from the 1909 findspot – is this one of the missing bones from the Selsey Mammoth, or had the sea exposed bones from another elephant buried beneath East Beach? Intriguingly, there are persistent local rumours that bones and teeth from the Selsey Mammoth were kept by villagers as curios or used as door-stops and paper-weights. Perhaps more of the Selsey Mammoth remains to be 'discovered'.

ACKNOWLEDGEMENTS

I am grateful to the late Antony Sutcliffe for sharing his insights into the geology and fossils of Selsey Bill. My colleagues at the Natural History Museum, Pip Brewer, Andy Currant, Mark Lewis and Adrian Lister, gave freely of their time and provided invaluable help and discussion. Nick Branch (University of Reading) kindly undertook the pollen analysis of samples from Selsey and Bracklesham Bay. Mike Field (Leiden University) commented on the botanical evidence. I thank Timothy McCann and John Whittaker, who helped compile the historical narrative. Anooshka Rawden (Chichester District Museum, now The Novium) provided additional information and located Selsey elephant fossils in her care. The photograph of the Selsey Mammoth and its finders is reproduced here by kind permission of Ruth and John Mariner, as is the contemporary postcard of East Beach and the early lifeboat station. I am greatly indebted to the Editors, Timothy McCann and John Whittaker, for providing sound advice and encouragement. The research was made possible by a grant from the Calleva Foundation.

FOOTNOTE

[1] The geological period know as the Quaternary (often popularly misnamed the 'Ice Age') spans the last 2.5 million years of geological time and is characterized by numerous comparatively sudden changes in global climate (Figure 5), with associated major changes in the global distribution of plants and animals. The succession of climatic alternations from cold glacial to warm interglacial conditions is recorded in deep-sea cores from the ocean floors in different parts of the world. Oxygen-isotope variation in the shells of foraminifera (marine microfossils, so beloved of Heron-Allen) in these sediments demonstrates a consistent pattern of oscillating cooler and warmer periods of sea temperature. These are considered to reflect the complex sequence of glacial advances and recessions (interglacials) especially evident in the northern hemisphere during the last 500,000 years. In the marine record the isotope stages are numbered sequentially from the present interglacial (= Marine Oxygen Isotope Stage 1, abbreviated to MIS 1).

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APPENDIX

Inventory of the Selsey Mammoth bones donated by Heron-Allen to the Natural History Museum, in 1909.

M10176: right m2, m3, left m2, m3.

M10177: mandibular symphysis.

M10178: left and right patella.

M10179: distal left humerus, distal right femur, distal left femur, left navicular, distal left tibia, metapodial.

M10180: proximal femur (unfused epiphysis) .

EDWARD HERON-ALLEN'S COINS AND NOTES IN THE BRITISH MUSEUM

by THOMAS HOCKENHULL

Between 1911 and 1937 Edward Heron-Allen presented and, on occasion, sold a diverse group of objects to the Department of Coins and Medals at the British Museum. The earliest objects to enter the collection were from the Selsey Hoard of Iron Age coins, including coins of Tincomarus, dating to between 20BC and AD10. Tincomarus was an enigmatic ruler in pre-Roman Britain about whom little is known beyond the coins which bear his name.

The acquisitions register in the Department records a number of interesting objects acquired from Heron-Allen in the early 1930s, including a Parthian coin of Gotarzes II's, adopted son of Artabanus II. He was a ruler renowned for his bellicosity, who ruled for only eight years in the mid-first century AD in what is now northern Iran. The reverse features the seated king receiving a diadem (banded crown) from the female deity Tyche, or Fortuna, a statement of his divine right to rule the Parthians. He wears leather trousers, typical of the sort of loose-fitting Parthian clothing worn whilst out riding by these nomadic horsemen.

Also from Heron-Allen is a silver denarius of Antoninus Pius (Figure. 1), shown in typical bearded pose in the style of Hadrian, his adopted father. The reverse features the she-wolf suckling the twins Romulus and Remus, in reference to the legendary founding of Rome in 753BC. It is possible that the coin, minted in Rome between AD140 and AD144 during Antoninus' third consulship, was issued in anticipation of the nine-hundredth anniversary of the city's foundation which was due to occur a couple of years later, in AD147.

In December 1937 Heron-Allen made a donation of more than thirty notes to the collection. This was significant because the banknote collection numbered only a few hundred in the 1930s and, in fact, the British Museum only systematically

Fig. 1. BM1933, 0902.2. Denarius of Antoninus Pius, AD140-144. ©Trustees of the British Museum.

collected notes from the late 1970s onwards (today it numbers about seventy thousand). The notes are all French *notgeld*, or 'emergency money', produced by France as well as other countries in Western Europe from about 1914 until the early 1920s. Their issue coincided with a lack of available metal for coin as well as a shortage of workers at the Paris Mint, owing to the vicissitudes of war.

The notes were typically issued by decentralised non-government authorities such as the French Chamber of Commerce, which included on the notes the city or town in which they were valid for redemption. This enables us to map out the issuing town of the notes collected by Heron-Allen and, by inference, the places he may have visited in his travels during the First World War. The majority of the notes collected by Heron-Allen were issued in the towns of northern France in the Pas-des-Calais region, whilst a number were issued in the southwest near the Pyrenees (Figure 2), as well as at Toulon on the Mediterranean: none of the notes was issued in central France or in Paris.

The notes arrived at the British Museum during a tumultuous period in its own history: within eighteen months

Fig. 2. BM1937, 1211.5. Chambre de Commerce de Bayonne franc note, January 1918. ©Trustees of the British Museum.

the entire collection of Coins and Medals, including the material acquired from Heron-Allen, was evacuated to a stately home in Northamptonshire, later moving to a secret location at Westwood quarry in Wiltshire. The evacuation proved fortuitous since the Department was completely destroyed by fire caused by incendiary bombs in May 1941.

EDWARD HERON-ALLEN'S OTHER COLLECTIONS IN THE BRITISH MUSEUM

by PAMELA THOMPSON

This is a wholly fraudulent presentation, as I have no expertise whatsoever in this subject! It just seems wrong when we are meeting at the British Museum not to mention the donations from Heron-Allen, other than the coins and banknotes which are being presented separately here. So, extensive use of the British Museum website has enabled the garnering of this information - and all credit to the Museum for having it there and readily accessible.

There is just one item which Heron-Allen sold, rather than donated, to the Museum (in 1926): a 4th century AD pewter jug found near Church Norton. The price is not recorded. Most of the donations to the Museum were made by Heron-Allen himself, but there are two items donated in 1910 by Mrs Edith Heron-Allen - an iron-age vessel found in Chichester and three ceramic fragments of indeterminate age found in Selsey.

Many of Heron-Allen's subsequent donations, from between 1928 and 1934, were, not surprisingly, found in either Chichester or Selsey, but pleasingly with fairly exact locations reported. The Chichester find was a Romano-British copper-alloy figure of a horse found in East Street. There is a flint pick from Aldwick. But it was in Selsey that most items were found: there are neolithic and bronze age flakes, scrapers and picks found in Danner Field, Clayton's Field, S.H. Day's Field, Wilshire's Croft, Fish Lane, and Woodman's Field.

Perhaps more exciting are several groups of jugs and flasks, found east of the low cliffs at Selsey, mostly from the 5th-7th centuries BC. They are of various provenances: Attic, Italic, Greek and Iron Age, as well as one Coptic interloper. There are also pottery Roman lamps, again found east of the Selsey low cliffs.

The most exotic items are two "found or acquired" in the Sudan and donated in 1928: a knife/dagger of iron, ivory and

copper wire, and a sheath made of skin - a crocodile's leg with claws. I'm sorry that there are no pictures of these. What the Sudanese connection was is a mystery.

So, it's a small but interesting collection. For the future, it might now be useful to have a list of institutions with Heron-Allen collections on our Website, with links to their catalogues. We know of the London Library's Omar Khayyam collection, the Royal College of Music's collection of writings on string instruments, the Natural History Museum's collections, the National Music Museum at the University of South Dakota, the Bodleian's watch papers - and more smaller collections. We should, I feel, make them more accessible by advertising them on our Website, and try to track down any other useful links online. To this end, all have now been added to the website, September 2013.

HERON-ALLEN'S POCKET WATCH

by DAVID THOMPSON

Of interest to all those who follow the life and work of Edward Heron-Allen is a watch which bears the Heron Allen family crest engraved on the back cover. The watch is of half hunter style, i.e. one with a cover over the front in which there is a small glazed aperture to reveal the hours and minutes against a chapter ring engraved around the opening (Figure 1). Engraved in a circular reserve in the middle of the case back is the Heron-Allen Crest, *on a ducal coronet a horse's head couped* (Figure 2).

Opening the case reveals the white enamel dial with a subsidiary seconds dial (Figure 3). The double swell hour hand is a characteristic of half-hunter watches .

The movement of the watch is a typical English-made ¾-plate with a ratchet-tooth lever escapement and temperature compensation balance (Figure 4). Less common, however, is the fact that it utilises an early form of keyless winding and hand-setting, operated by turning the pendant button for winding and depressing a small stud in the case band at the 11 o'clock position. This early form of keyless mechanism was patented by Adolphe Nichole in London in 1844[1].

The watch was retailed by the well-known firm of Dent, a company founded by Edward John Dent in 1840 at 82, Strand, London[2]. The movement is inscribed *E.J. Dent London Watchmaker to the Queen, No. 21132 Patent* but its style and quality suggest that it was almost certainly made by Nicole & Capt, the London makers who supplied many London firms with high-quality movements.

The gold hunter case bears the London Assay Office hallmarks for 1854, the Dent number 21132 and the casemaker's mark AN in an oval cameo punched inside the case back and inside the inner dome. This is the mark of Adolphe Nicole & Jules Capt of 80B, Dean Street and later at 14, Soho Square, London[3]. The style of the movement, the design of the keyless work and the case maker, show that the whole watch was made by Nicole & Capt for retail by Dent[4]. That is with the exception of the finely made white enamel dial which was very likely made by Willis, the well-known watch dial makers[5].

Given that Edward Heron Allen was born in December 1861 it was clearly not owned originally by him, unless in later years he bought an old watch. It is much more likely that the watch was purchased by his father George Allen born in 1823, who then passed it down to his son Edward, perhaps when he died in 1911. It is a pity that none of the surviving portraits of Edward Heron-Allen shows him wearing this watch.

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[1] Adolph Nicole's patent keyless winding. Patent no. 10348, 14th October 1844, enrolled 15th April 1845 and signed over to E. Dent & Company by 1846, as sole licensee for its manufacture.

[2] The company was founded by Edward John Dent (b.1790 - d.1853). See Vaudrey Mercer, *Edward John Dent and his Successors*, Antiquarian Horological Society, Ticehurst, 1977.

[3] See John Culme, *The Directory of Gold and Silversmiths, Jewellers and Allied Traders, 1838-1914*, Antique Collectors' Club, Woodbridge 1987.

[4] A similar Dent watch in a private collection no. 10523 hallmarked 1848 is marked on the movement plate AN over JC for Adolphe Nicole and Jules Capt. Another similar movement in a gold case hallmarked 1860 is signed Robert Roskell, Liverpool, showing that Nicole & Capt were making for others to retail as well as for Dent.

[5] John and Thomas Willis, in business from about 1800, and whose business was at various addresses in Clerkenwell until the end of the 19th century. See *Britten's Old Clocks and Watches and their Makers*,, 9th edition, Bloomsbury Books, 1990.

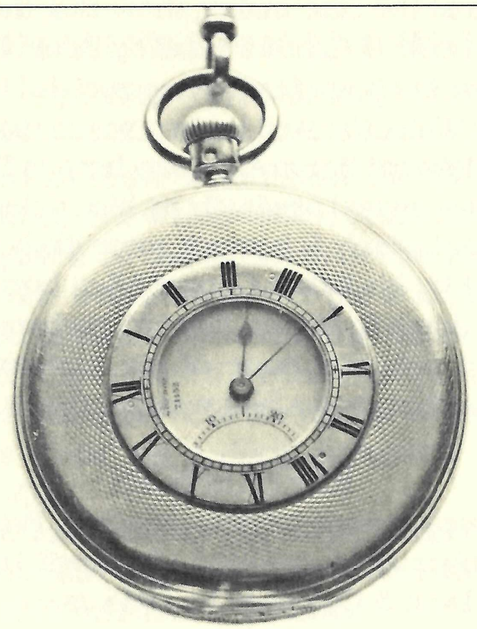

Fig. 1. Heron-Allen's half-hunter pocket watch, cover closed

Fig. 2. Watch case back with Heron-Allen crest.

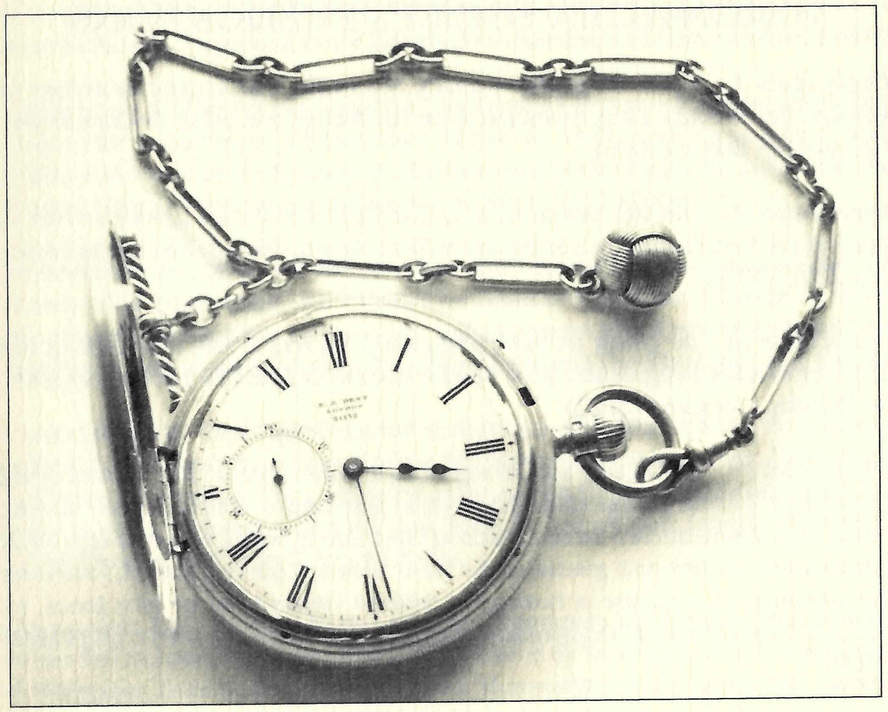

Fig 3. Heron-Allen's half-hunter pocket watch, open

Fig. 4. Watch movement.

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