

Updated Census in USA of First Edition of Andreas Vesalius' 'De Humani Corporis Fabrica' of 1543

ORIGINAL

Abstract

The purpose of this study was to confirm the locations and find previously unreported sites in the United States of America (USA) of the First Edition (1543) of the "De Humani Corporis Fabrica" authored by Andreas Vesalius.

Contacts were made at institutions of higher learning, museums, libraries and an update of locations of the two previous studies by Cushing in 1943 and Horowitz and Collins in 1984.

A total of 64 copies of the 1543 Fabrica were recorded in 47 Universities and Institutional libraries in the USA. Besides confirming their presence at the previously recorded sites, we have found 18 more copies in twelve additional facilities including further two copies with colored and tinted illustrations.

The majority of locations recorded by Cushing seventy years ago and subsequently reported thirty later by Horowitz and Collins are still in their original collections.

Location of first edition Vesalius in private collections were more difficult to locate and have reduced to six from at least ten since 1984 with mainly physician owners.

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Keywords

Anatomy, Bones, Census, Dissection, Human, Vesalius, Printing, Illustrations, Physicians

Introduction

Andreas Vesalius's treatise, *De Humani Corporis Fabrica*, is considered the greatest work on anatomy ever produced. First published in Basel by the publishers, Johannes Oporinus in 1543, when he was only twenty-nine years old, The Belgium anatomist Vesalius's text changed the science of anatomy, the manner taught and standardized the anatomical representation for the next two hundred years. Vesalius

critically reexamined Galen's twelve-hundred-year-old anatomical text, which had been derived largely from nonhuman anatomical sources, and established the dissected body as the reference point for anatomy. Vesalius anatomy was based on firsthand observation and he conducted demonstrations rather than using an assistant.

Five years before he produced the treatise, Vesalius published, at the request of his students, six large illustrations, *Tabulae Anatomicae Sex* (1538), based on his dissections. Three of the drawings were done under Vesalius's supervision by Joannes Stephanus of Calcar, a pupil of Titian (c. 1488-1576). It is also widely believed that Calcar was responsible for some of the illustrations in this 1543 treatise – the three skeletons and in particular the muscle-man sequence.

Presented in an elegant, style with classical references, Vesalius's illustrations used the wood-block technique of printing. The *Fabrica* contains some 660 pages and over 200 illustrations, many of which Vesalius personally chose, whilst supervising the artist's work from his own dissections. The result was a detailed and easily recognizable representation of the body showing the structure of bones and muscles. Folio sheets were laid out in a sequence following an actual dissection. A series of animated skeletons posing in outdoor landscapes, were often juxtaposed with commonly recognized symbols of death, such as a tomb or shrouds. One of Vesalius's skeletal figures is shown in a melancholic position contemplating a skull placed upon a tomb and reprises a common *vanitas* motif, "What I am now, you soon will be." On the subject of the human skeleton, Vesalius offers these lines which open this section of the treatise:

Of all the constituents of the human body, bone is the hardest, the driest, the earthiest, and the coldest; and finally, excepting only the teeth, it is devoid of sensation. God, the great Creator of all things, formed its substance to this specification with good reason, intending it to be like a foundation for the whole body; for in the fabric of the human body bones perform the same function as do walls and beams in houses, poles in tents, and keels and ribs in boats.

Cushing's Bio-bibliography of Andreas Vesalius [1], published in 1943, reports 33 first editions in the USA and lists of that only 15 Institutional and University owners in the Index of Recorded Copies with four privately owned. (Table 1) The later census published in 1984 by Horowitz and Collins [2], listed 46 copies in the USA with an additional ten in private ownership. (Table 1) Other authors including Elly Cockx-Indestege published pre-1800 editions of Vesalius' work in Belgian collections including only four copies of the 1543 edition [3].

This report presents a list of First Edition (1543) copies of *De Humani Corporis Fabrica* written by Vesalius and their University and Institutional locations in the USA approximately 470 years since publication and now celebrating the 500th anniversary of his birth.

Material and Methods

The development of the internet has helped greatly in the searching several hundred institutions in a matter of several weeks. Internet connections such as WorldCat.org, American Library Associations, Universal Short Title Catalogue (USTC), and listservs such as Caduceus and Medlib-L were a help. Letters of enquiry were sent to libraries not yet online, consultation with dealers and collectors, telephone calls, faxes checking Auction Records, original catalogues and other books were vital to the collection and collation of the information.

Table 1. Copies of First Edition of Vesalius Fabrica in Institutions and Universities in USA.

	Location	City	State	Cushing (1943)	Horowitz & Collins (1984)
1	University of California	Los Angeles	CA	1	1
2	Stanford University	Palo Alto	CA		1
3	University of California	San Francisco	CA	1	1
4	Denver Medical Society	Denver	CO	1	0
5	Yale University	New Haven	CT	2	2
6	Smithsonian	Washington	DC		1
7	University of Iowa	Iowa City	IA		1
8	The Newberry Library	Chicago	IL		1
9	University of Chicago	Chicago	IL		1
10	University of Indiana	Bloomington	IN		1
11	University of Kansas	Kansas City	KS	1	1
12	Boston Medical Library	Boston	MA		1
13	Harvard University	Cambridge	MA	2	1
14	John Hopkins University	Baltimore	MD	1	2
15	Library of Medical and Chirurgical	Baltimore	MD		1
16	National Library of Medicine	Bethesda	MD	1	1
17	University of Michigan	Ann Arbor	MI	1	1
18	University of Minnesota	Duluth	MN		1
19	University of Minnesota	Minneapolis	MN		1
20	Linda Hall Library	Kansas City	MO		1
21	St. Louis Medical Society Library	St. Louis	MO		1
22	Duke University Medical Center	Durham	NC		1
23	Brooklyn Medical Society	Brooklyn	NY	1	0
24	Cornell University	Ithaca	NY		1
25	Columbia University	New York	NY	1	4
26	Hospital for Special Surgery	New York	NY		1
27	New York Academy of Medicine	New York	NY	1	2
28	Pierpont Morgan Library	New York	NY		1
29	University of Rochester Medical Center	Rochester	NY		1
30	Case Western Reserve University	Cleveland	OH		1
31	College of Physicians of Philadelphia	Philadelphia	PA	1	2
32	The Wistar Institute	Philadelphia	PA		1
33	Thomas Jefferson University	Philadelphia	PA		1
34	Carnegie-Mellon University	Pittsburgh	PA		1
35	University of Pittsburgh	Pittsburgh	PA		2
36	University of Texas	Austin	TX		1
37	University of Texas	Galveston	TX		1
38	University of Texas	San Antonio	TX		1
39	University of Utah	Salt Lake City	UT		1
40	University of Wisconsin	Madison	WI		1
	Private			4	10
Total				19	56

The method of researching copies held in Institutions and Libraries was relatively straight forward. Once ascertained which institutions owned the 1543 First Edition, requests were sent to the relevant librarians for any additional bibliographical details which did not appear in the online catalogues.

This included asking for confirmation of the presence of the Edition, number of copies held, past ownership, type of binding, condition of book, completeness of pages, bookplates present, previous owners, location and bookshelf call numbers, photographs (if possible) and any other relevant information.

The completion of this catalogue was due to the help the librarians provided through their own investigations, comments and cross-referencing of the information. In addition, all of the listed locations in USA by Cushing (1943) and Horowitz and Collins (1984) were contacted to confirm the presence of the book. Discovering copies held in private collections was more involved. Auction houses were discreet regarding purchasing client's identity with catalogue descriptions pre-1980 being brief.

Results

Results are presented as a geographical listing of those volumes held in the USA.

Cushing states that he found 33 copies of the First Edition in USA. From the Index of Recorded Copies however, the list only includes 15 copies in thirteen public locations. (**Table 1**)

Four copies were owned privately ("Private") by physicians and listed as Dr.'s Otto O. Fisher, John F. Fulton, Lewis S. Pilcher and J.C. Trent.

In the 1984 census by Horowitz and Collins, 46 copies are listed in 38 Institutions and Universities.

An additional ten were privately ("Private") owned with seven of the eight listed being physicians and two in New York without names. These physicians were Dr.'s Meyer Friedman, Howard W. Highholt, Arthur E. Lyons, Francis D. Moore, Haskell Norman, Irwin J Pincus and Myron Prinzmetal.

In **Table 2** are the results for the Current Census and the two previously published studies shown for comparison but excludes those held privately. (**Table 2**).

The Call Number or Shelf Mark for the various locations including donors and past owners where available is given in **Table 3**.

The Current Census has found 64 books in 47 Institutions and Universities in the USA. (**Table 2**)

From **Table 2**, it is seen that 13 of 15 copies (87%) listed by Cushing in the Index of Recorded Copies are still present in the libraries in 1984 and 14 copies (93%) in the 2015 Census. Copies are no longer present in the Brooklyn Medical Society, Brooklyn, NY, and Denver Medical Society, Denver, CO. However in the text, Cushing refers to a total of 33 first edition books being in the USA. It is not clear where these additional books are unless they were in other private collections including those he may have owned.

Forty-one of the 46 (89%) books listed by Horowitz and Collins thirty years later are still in the same collections. Columbia University has maintained the second largest collection of four copies. Three volumes are no longer present at the Boston Medical Library, Boston, MA, the Hospital for Special Surgery, New York, NY and the Baltimore Medical Chirurgical Library in Maryland.

In addition during this Census, we found a further 18 volumes, each of the First Edition Fabrica at twelve new Institutions. Brown University in Providence, Rhode Island possessing two copies and Harvard University, Cambridge, Massachusetts up to six copies. The following have one copy each of the Fabrica. These include the University of Alabama (AL), Huntington Library (CA), University of Colorado (CO), Emory University (GA), Universities of Illinois at Urbana and Chicago (IL), Detroit Public Library (MI), University of North Carolina (NC), Princeton University (NJ), Buffalo and Erie County Public Library (NY), University of Oklahoma (OK). (**Table 2**)

Table 2. Copies of First Edition of Vesalius Fabrica in Institutions and Universities in USA.

Location	City	State	Cushing (1943)	Horowitz & Collins (1984)	Joffe (2015)
University of Alabama	Birmingham	AL			1
University of California	Los Angeles	CA	1	1	1
Stanford University	Palo Alto	CA		1	1
University of California	San Francisco	CA	1	1	1
Huntington Library	San Marino	CA			1
Denver Medical Society	Denver	CO	1		0
University of Colorado	Denver	CO			1
Yale University	New Haven	CT	2	2	3
Smithsonian	Washington	DC		1	1
Emory University	Atlanta	GA			1
University of Iowa	Iowa City	IA		1	1
The Newberry Library	Chicago	IL		1	1
University of Chicago	Chicago	IL		1	2
University of Illinois at Urbana	Champaign	IL			1
University of Illinois at Chicago	Chicago	IL			1
University of Indiana	Bloomington	IN		1	1
University of Kansas	Kansas City	KS	1	1	1
Boston Medical Library	Boston	MA		1	0
Harvard University	Cambridge	MA	2	1	6
John Hopkins University	Baltimore	MD	1	2	2
Library of Medical and Chirurgical	Baltimore	MD		1	0
National Library of Medicine	Bethesda	MD	1	1	1
University of Michigan	Ann Arbor	MI	1	1	2
Detroit Public Library	Detroit	MI			1
University of Minnesota	Duluth	MN		1	1
University of Minnesota	Minneapolis	MN		1	1
Linda Hall Library	Kansas City	MO		1	1
Washington University	St. Louis	MO		1	2
Duke University Medical Center	Durham	NC		1	1
University of North Carolina	Chapel Hill	NC			1
Princeton University	Princeton	NJ			1
Cornell University	Ithaca	NY		1	1
Columbia University	New York	NY	1	4	4
New York Academy of Medicine	New York	NY	1	2	3
Hospital for Special Surgery	New York	NY		1	0
Pierpont Morgan Library	New York	NY		1	1
University of Rochester Medical Center	Rochester	NY		1	1
Brooklyn Medical Society	Brooklyn	NY	1		0
Buffalo & Erie County Public Library	Buffalo	NY			1
Case Western Reserve University	Cleveland	OH		1	1
University of Oklahoma	Norman	OK			1

College of Physicians of Philadelphia	Philadelphia	PA	1	2	1
Thomas Jefferson University	Philadelphia	PA		1	1
The Wistar Institute	Philadelphia	PA		1	1
Carnegie-Mellon University	Pittsburgh	PA		1	1
University of Pittsburgh	Pittsburgh	PA		2	1
Brown University	Providence	RI			2
University of Texas	Austin	TX		1	1
University of Texas	Galveston	TX		1	1
University of Texas	San Antonio	TX		1	1
University of Utah	Salt Lake City	UT		1	1
University of Wisconsin	Madison	WI		1	1
Total			15	46	64

Table 3. (Shelf Mark) Current Location with Call Numbers and Previous Owners of First Edition in USA.

State	City	Name of Institution	Call Number	Owner
AL	Birmingham	University of Alabama	Rare Book Collection	(Reynolds)
CA	Los Angeles	University of California	BENJ** WZ 240 V631dh 1543	(Belt)
CA	Palo Alto	Stanford School of Medicine	E21H.V57F1 1543	(Barchas)
CA	San Francisco	University of California - San Francisco	Rare Book Collection	
CA	San Marino	Huntington Library	333000	(Bodman)
CO	Denver	University of Colorado -Denver	Flat QS 4 V575d 1543	(Waring)
CT	New Haven	Yale University	IV.A-1	(Cushing) (Flint)
CT	New Haven	Yale University	IV.A-1	(Fulton)
CT	New Haven	Yale University	IV.A-1	(Farquar)
DC	Washington	Smithsonian	fQM21.V57d	(Dibner)
GA	Atlanta	Emory University	QM21.V47 1543	
IA	Iowa City	University of Iowa	QM21.V4 1543a	(Martin)
IL	Champaign	University of Illinois at Urbana/Champaign	Q611 V63d 1543	(Zeitlin)
IL	Chicago	Newberry Library	Case 6A 156	(Silver)
IL	Chicago	University of Chicago	alc QM21.V588 c1.	(Fishbein)
IL	Chicago	University of Chicago	alc QM21.V588 c2.	(Capps) (Freidberg)
IN	Bloomington	Indiana University	QM25.V5 1543	(Lilly)
KS	Kansas City	University of Kansas Medical Center	WZ 240 V575h 1543	(Clendening)
MA	Cambridge	Harvard University	QM21.V63	(Warren Library)
MA	Cambridge	Harvard University	QM21.V63 c2	(White)
MA	Cambridge	Harvard University	QM21.V63 c3	(Sprague)
MA	Cambridge	Harvard University	QM21.V63 c4	(Osler)
MA	Cambridge	Harvard University	Finv 754	(Fogg Museum)
MA	Cambridge	Harvard University	565.43.868	(Houghton)
MD	Baltimore	Johns Hopkins	V575d 1543d c1	(Kelly)
MD	Baltimore	Johns Hopkins	V575d 1543d c2	(Osler)
MD	Bethesda	National Library of Medicine	WZ 240 V575dh 1543 OVR	(Melanchthon)
MI	Ann Arbor	University of Michigan	QM 21 .V52	(Pilcher)
MI	Ann Arbor	University of Michigan	QM 21 .V52	(Wantz)
MI	Detroit	Detroit Public Library	Burton Historical Collection Rare Books	

MN	Duluth	University of Minnesota	Special Collections (not catalogued)	(Higholt)
MN	Minneapolis	University of Minnesota	Folio 611 V 63 1543	(Wangensteen)
MO	Kansas City	Linda Hall Library	QM 21.V395 1543	(Zarini)
MO	St. Louis	Washington University School of Medicine	QS 17 V575d 1543	(Tyler)
MO	St. Louis	Washington University School of Medicine	V575d 1543	(Ball)
NC	Chapel Hill	University of North Carolina	QS 4 V575 1543	
NC	Durham	Duke University	Rare Book Collection	(Trent)
NJ	Princeton	Princeton University	QM 21.V418 1543P	(purchased)
NY	Buffalo	Buffalo and Erie Public Library	RBR Milestone of Science 192	(Hamilin)
NY	Ithaca	Cornell University	QM21.V57	(Kroch)
NY	New York	Columbia University	QM 21.V471 1543Q	(Huntington)
NY	New York	Columbia University	QM 21.V472 1543Q	(Huntington)
NY	New York	Columbia University	QM 21.V473 1543Q	(Curtis)
NY	New York	Columbia University	QM 21.V474 1543Q	(Curtis)
NY	New York	New York Academy of Medicine	Vault	(Osler)(MacCallum)
NY	New York	New York Academy of Medicine	Vault	(Streeter)
NY	New York	New York Academy of Medicine	Vault	(Lambert)
NY	New York	Pierpont Morgan Library	E2 45 A	
NY	Rochester	University of Rochester	V575 1543	
OH	Cleveland	Case Western	QM21.V47 1543	(Mather)
OK	Norman	University of Oklahoma	History of Science Collection Vault	
PA	Philadelphia	The College of Physicians of Philadelphia	ZAd 25 c1	(Cushing)
PA	Philadelphia	The Wistar Institute	Vault	
PA	Philadelphia	Thomas Jefferson University	611 V575 1543 Folio	(Phillips)
PA	Pittsburgh	Carnegie Mellon University	QM21.V418	(Posner) on loan
PA	Pittsburgh	University of Pittsburgh	Falk Library - Rodman Room	
RI	Providence	Brown University	RARE 2-S QM21.V37 1543	(Lownes)
RI	Providence	Brown University	RARE 2-S QM21.V37 1543 C2	(Bray)
TX	Austin	The University of Texas at Austin	-f- QM 21 V418 1543	
TX	Galveston	University of Texas Medical Branch	Rare Book Collection	
TX	San Antonio	University of Texas Health Science Center	Rare Book Collection	(Fulton)
UT	Salt Lake City	The University of Utah	Q111.H3 Box 127	
WI	Madison	University of Wisconsin	R.128.6 V415	

The Library of Medical and Chirurgical of Baltimore, Maryland sold their volume at a Swann Gallery in 2004 for \$69,000 USD including buyer's premium. This was one of six copies of Fabrica that Sir William Osler acquired and then donated to various libraries. The Carnegie-Mellon volume is on loan to the Pittsburgh University from a private donor, the Henry Posner Memorial Collections.

In this Census six copies are in privately owned collections confirmed by direct inspection or third-

party verification. The one copy is the Haskell-Norman copy sold at a Christie's auction in New York on 18th March 1998. This long-lost dedication copy of the Fabrica was given to the Holy Roman Emperor, Charles V by Vesalius on its publication in 1543. Bound in imperial purple velvet, hand colored and illuminated was shortly thereafter gifted to the French Ambassador, Jacque Mesnage (1509-1556). The book disappeared until purchased in 1963 from Ernst Weil, a book dealer, initially in Munich,

Germany and then London, United Kingdom. Weil in a partnership with Lucien Scheler and Georges Heilbrum, purchased the book in Paris, France from Librairie Thomas-Scheler. They may have initially bought the book from Arthur Laurie, an Italian bookseller in Paris. Following the auction, the book has not reappeared, but is believed to be either in Florida or the New York area.

The National Library of Medicine in Bethesda, Maryland; one of the world's largest medical libraries, owned a 1543 De Fabrica in 1876 when it was displayed at the International Exhibition in Philadelphia. However, the book did not appear in the library's 1872 catalogue implying that it was probably acquired between 1872 and 1876. This historical collection was begun by John Show Billings, the first Director of the New York Public Library and previously director of the library of the Surgeon General's Office from 1865-1895. In 1879 Billings, a surgeon and bibliophile first compiled the index of journal articles, called Index Medicus, which later became MEDLINE. The library was previously known as the Army Medical Library in the Cushing Census [1]. The National Library of Medicine has this copy an online catalog (<http://www.locatorplus.gov>) with scanned images on the website. The two-page Melanchthon manuscript is not digitized, which is unfortunate.

Harvard University has six copies of the 1543 edition. Four in the Countway Library of which two belong to Boston Medical Library. One copy at Fogg Museum previously in the Fine Arts Library in Boston and one at Houghton Library.

The copy, in a contemporary binding, at Huntington Library in San Marino, California was donated by Mrs. Edward Bodman in 1959. Her husband, Dr. Bodman, applied an oil product endorsed by the British Museum to try and restore the binding. Unfortunately the oil product seeped through the entire copy and over the last five years the book was taken apart and is being conserved as best it can. This illustrates the risks of conservation when improperly carried out.

The Health Sciences Library of University of North Carolina at Chapel Hill has a first edition with a colored and tinted front piece, portrait and several additional colored skeletons and other illustrations. The tinting was apparently carried out by George Seyfried (Seifreid) from Wittenberg shortly after publication. The coloring is in red, brown, green and sparing use of blue. An ownership stamp is Dr. Simon Ritter von Haeberl (1772-1831). It is not known how the library acquired the copy.

Table 3 gives the Shelf Mark with Call Numbers of the First Edition (1543) Vesalius in the USA where previous donors were known, they are listed in the last column.

Private owners and collections are more difficult to confirm due to confidentiality and security issues.

Cushing in 1943 listed four owners who were all physicians and are now all deceased. Fulton's book is now at Yale University, Pilcher's at University of Michigan, Trent's at Duke University and Fisher's is now in a private collection. (**Table 4**)

Horowitz and Collins in 1984 (**Table 4**) listed 10 owners of which eight were named, seven were physicians. Some of these books were sold at auction such as Dr. Norman's at Christies in March 1998. The Dr. Higholt copy, incomplete with no index, was purchased at Harrod's in London between 1970-1972 and donated in June 2010 to the University of Minnesota in Duluth. The volume was professionally treated and restored with the title leaf and front piece cut down and remounted. Six of the eight owners listed by Horowitz and Collins are now deceased as of 1st January 2015.

Currently we have identified six volumes in private collections of which four are owned by physicians in the USA and five names have been identified. With security risks, privacy and requirement for anonymity, it was difficult to document additional books in private collections. Many of the books previously owned privately listed by Cushing and Horowitz and Collins, have been donated to Universities and Institutions, especially in the USA with tax benefits

Table 4. Copies of First Edition in Private Ownership in USA.

Cushing 1943	Horowitz and Collins 1984	Joffe 2015
Otto O. Fisher, MD	Meyer Friedman, MD	Private
(1884-1961)	(1910-2001)	Dayton, Ohio
Detroit, Michigan	Sausalito, California	
John F. Fulton, MD	Howard W. Higholt, MD	Private
(1899-1960)	(1936-	New York, NY
New Haven, Connecticut	Rolling Hills, California	
Lewis S. Pilcher, MD	Harrison D. Horbit	Private
(1845-1934)	(1912-1988)	Rochester, Minnesota
Ann Arbor, Michigan	Ridgefield, Connecticut	
J.C. Trent, MD	Arthur E. Lyons, MD	Private
(1914-1948)	(1931-	Florida (New York)
Durham, North Carolina	San Francisco, California	
	Francis D. Moore, MD	Private
	(1913 - 2001)	San Francisco, California
	Boston, Massachusetts	
	Haskell Norman, MD	Private
	(1925-1997)	Louisville, Kentucky
	San Francisco, California	
	Irwin J. Pincus, MD	
	(1921-1989)	
	Beverly Hills, California	
	Myron Prinzmetal, MD	
	(1908-1987)	
	Los Angeles, California	
	Private	
	New York, NY	
	Private	
	New York, NY	

to the donor. The recipients include University of Chicago, Harvard University, New York Academy of Medicine, Yale University and University of Minnesota.

Discussion

It is now the 500th year since Vesalius' birth and many academic facilities and non-profit organizations are having symposia highlighting the importance of Vesalius to anatomy and modern day science.

Cushing [1] and Cockx-Indestege's [3] record of the ownership the Vesalius textbooks took over 20 years to complete and Horowitz and Collins [2] 1984 publication probably took a similar period to accumulate and locate copies in their census although it is not disclosed.

The internet has been a great development for the 21st century researcher. There are over 3000 University and Institutional libraries, many of which have catalogues searchable online. These innovations have shortened the time for researchers to find and confirm the relevant information.

The first edition published in 1543 as Cushing states, is probably the “most admired and less read book than any publication of equal significance in the history of science.” [1]

Daniel H. Garrison and Malcolm H. Hast have in 2014 produced an annotated translation into English of both first and second edition texts published by Karger of Basel, Switzerland. [4] Hopefully this will allow more people to read and understand the text. The Swiss platform e-rara.ch has digitized the University of Basel copy allowing the book to be browsed.

At publication in 1543 the market for the *Fabrica* remained strong despite the financial outlay and effort required for its production. The question now is how many copies have survived? An ideal starting point for a Census would be to determine how many copies of any edition were originally printed. In the situation of the 1543 *Fabrica*, the question cannot be conclusively answered as there are no surviving records of the print-run. Then, as now, the number of copies of a book to be printed depended on the potential market and some copies may have been printed to order.

Originally we reported that the 1555 print of the *Fabrica*, with its complexity and numerous illustrations, would have been produced in the order of 800-1000 copies [5a, 5b]. We now believe this number is too high as the *Fabrica* was a rarely used book. The majority of books printed would have survived. Loss of this type of book could be due to theft, fires, bombings, wars, and earthquakes, extensive water damage, stolen or simply misplaced. Thefts of precious and rare books from libraries and private collections do occur. Individuals have been known to borrow and not return a book. During moving of collections rare books may be misplaced or placed in secure storage including safes, vaults or shelving and then forgotten about.

Confiscation of books during wars such as by the Nazis in Second World War and destruction of libraries by bombings occurred during both First and

Second World Wars. Fires either spontaneous or during bombings have destroyed several copies of various editions of Vesalius [6]. Extreme water damage occurs rarely although a ship sunk in the Atlantic Ocean that was carrying a later edition. Most books we believe are misplaced during moving for security reasons, placed in safety deposit boxes or on shelves and forgotten or taken as a temporary loan and never returned. These books occasionally reappear in dealers or auction catalogues. If well documented in terms of binding, bookplates, or written annotations the book can be returned to prior owner(s).

In the Database of the International League of Antiquarian booksellers (ILAB), no antiquarian Vesalius books have been reported stolen or missing amongst the 1500 books listed on 168 pages since 15th June 2010.

Colored and tinted copies of illustrations are very rare. The Imperial copy belonging previously to Haskell Norman has completely colored plates and the volume now in Chapel Hill would be the second copy but probably tinted and colored several years after publication. A third copy with colored plates is at Princeton University with eight contemporarily-colored figures of organs.

In December 2009, Rush University Medical Center sold its collection of 3,700 rare books including the Vesalius 1543 to the Stanton A. Friedberg, MD Rare Book Collection at the University of Chicago. Friedberg graduated from Rush Medical College in 1934, when it was affiliated with the University of Chicago. The University of Chicago, in the early 1980's, merged its rare book collections with the John Crerar Library.

The Buffalo (NY) Museum of Science collected first editions of rare books under the “The Milestone of Science.” The collection was largely assembled in 1937-38 with funds raised from Buffalo's many ethnic groups. The idea was of Chauncey J. Hamlin who in 1942 wrote “we hoped to reach circles which perhaps thereto had not access or seeing rare books”. Hamlin wanted to obtain pic-

tures of one hundred great scientists for display at the museum. The collection eventually number 198 works. Hamlin's intent was to enhance the city's accomplishments of scientists who were also their countrymen [7].

Later, faced with financial problems, the museum approved for sale the collection in 1994. Following negative press coverage concerning the potential loss of Buffalo's cultural heritage, the museum delayed the sale. The solution was to trade a duplicate copy of John James Audubon's *Birds of America* from the Buffalo Erie Public Library for The Milestone of Science's collection enabling the city to retain its rare book collection, now regarded as a cultural asset by the community. Two of Buffalo's cultural institutions, the Buffalo Museum of Science and Buffalo and Erie County Public Library collaborated to find a solution allowing the city to retain its rare books as a cultural resource. With the collection purchase being in 1937-38 and Cushing's death in 1939, this copy was missed in Cushing's census as well as the 1984 census. It was in the hands of the museum but not yet cataloged.

The importance of rare books in public libraries is increasingly debated as funding pressures have continued. A number of institutions have decided to divest themselves of all or portions of their collections due to ongoing costs of protection, preservation and insurance.

Certain collections with time began to deteriorate and were removed from display. Later these books became unavailable to the public and were largely forgotten. Today, however, Libraries and Institutions are reinvigorating their rare book collections by cataloging and placing information on their websites.

Bookplate and listed ownership of many physicians, in particular surgeons, purchased rare books from dealers or at auction. During life or after death these books were donated to Libraries and Institutions. The majority of these rare books have remained for 30 and 70 years later as shown by this census confirming the previously published reports.

At the turn of the last century, books were purchased by Cushing, Osler and his colleagues. They showed the importance of these books and initiated the early donations to Institutions in the early 1900's. Subsequent physicians were inspired by their colleagues and when contacted by dealers in USA and Europe expanded their collections by the purchase of these books.

Continuing today, Princeton University in New Jersey using special funds, in August 2011 purchased a copy bound in contemporary German calf over wooden boards, vestiges of clasps with contemporary colored figures.

The New York Academy of Medicine has three copies of the 1543 Edition. One from Sir William Osler, imperfect but passed through several other libraries and not in original binding; one from Samuel Lambert in limp vellum wrapper as if a temporary binding with slits cut into the wrapper and one from Edward Clark Streeter, bound with alum tawed pigskin over boards with clasps. The copy donated by Lambert is known as the "Fugger Copy" which was sold in 1933 by Karl and Faber from Munich, Germany and then offered to Cushing by a New York dealer for \$800. Cushing states it was the "finest untrimmed copy" he had ever seen.

We have not included in the census the Variant copy in the Library of Congress, Washington, DC, which was presented by Lessing J. Rosenwald, retired chairman of Sears Roebuck and Company in 1943. The variant issue, one of five, was probably an intermediate issue between the First and Second Edition, produced and distributed by the printer Oporinus between 1546 and 1551 but possibly nearer 1548 to 1549. The variations are mostly typographical and found in the six preliminary sheets of the *Fabrica*.

The first copy of the 1543 Vesalius arrived in the Americas in the sixteen hundreds from Spain and placed in the Palafoxiana Library in Pueblo City, Mexico where it still resides nearly complete. This

probably is the earliest First Edition to arrive in the America's within a hundred plus years after its publication in Basel, Switzerland. On September 6, 1646, Palafox Y. Mendoza donated 5000 books to the library on condition they were made available to the general public. This donation probably included this Vesalius copy.

The copy in the National Library of Medicine in Bethesda, Maryland has bookplates and ownership records show the book was in possession of Ambroise Firmin-Didot (1790-1876), a Parisian printer and art collector. Didot's library was sold in the 1870's. Other bookplates include Johann Wilhelm Schlegel (1774-1812) and Christian Erhard Kapp (1739-1827). A German by the name of Philip Melanchthon also was an owner and pasted a signed two-page manuscript of a poem dated 1551 on the front fly leaf called "De Consideratione Humani Corporis." Melanchthon (1497-1560) was a religious reformer who collaborated with Martin Luther. Other bookplates cannot be easily identified.

Christies on 4th Dec 2014 auctioned 1543 edition bound in 17th century blind stamped pigskin over wooden boards, brass clasps and catches which include bookplates of Dr. Otto Oren Fisher, Michael Sharpe and Dr. Richard Green. The book was sold by the dealer Jeremy Norman to Green about 35 years ago. Green sold the book to Michael Sharpe, a dealer and collector and then bought it back again at Christies auction, New York in June 2008. This book is listed in the Cushing Index of Revised Copies of 1943.

Bexar County Medical Society in San Antonio, Texas acquired in 1943 a First Edition for \$765.00 from Henry Schuman, a bookseller in Detroit and later New York. The purchase was facilitated by Dr. Pat I. Nixon (1883-1965). The 1543 edition was donated in 1970 to the library in the University of Texas Medical School, later part of UT Health Science Center at San Antonio. The bookplates include the Yale Medical Library, a second labelled 'ExLibris John Farquar Fulton' indicate that the book was

initially in Dr. Fulton's collection, loaned or donated to Yale Medical Library from where it was probably deaccessioned or returned to be sold.

Occasionally Universities will sell off duplicate editions. The University of Pittsburgh Medical Library (Falk) in 1980 sold to a private buyer a 1st edition previously owned by Henry N. Donaldson, MD (1837-1938). Additional owners include the Wistar Institute, Calboni Agostino Milano with a date of 1873 and Achilles P. Gasser (1505-1577) dated 25th September 1566. The final leaf has a notation by Gasser, who was a German physician and astrologer, with his initials and date 1543. This may indicate that Gasser bought his book at the time of publication.

Cushing (1869-1939) does not recall when his interest in Vesalius was 'first aroused' but on reading Moritz Roth's biography in 1900 and probably at a presentation at the Johns Hopkins Historical Club at the time. In autumn of 1903, W.G. MacCallum bought an imperfect copy of the 1543 *Fabrica* at the back of a blacksmiths shop in Rome which he gave to Cushing. Whilst abroad at this time, Osler (1849-1919) purchased three copies.

Ultimately Cushing and Osler having "bought everything available" had six copies of the first edition which were distributed to libraries including McGill in 1907 which had received a copy from Osler a few years earlier, and the Boston Library Association, Library of New York Academy of Medicine and University of Missouri. (See later discussion)

The success of the 'Fabrica' was predicted in March 1543 by Hieronymus Gemusaeus (1505-1544), a Professor of Medicine before it was printed. Antonio Fumanelli on August 1, 1543 hailed Vesalius as a leading anatomist.

The 'Fabrica' was sent by Oporinus to his friend Vadianus in St. Galen at the end of July 1543. The messenger fell into a river and the book was swept away. A second copy was then sent. By the end of 1543, all copies had been sold to booksellers at the Leipzig Fair in Germany.

By 1546 there were at least three copies in circulation in Oxford, United Kingdom. Philip Melanchthon (1497-1560), the Lutheran reformer and head of the University of Wittenberg, read and annotated his copy from cover to cover. He was delighted that he wrote on the flyleaf of the book in Latin a poem praising Vesalius. This book is now in the National Library of Medicine, Bethesda, Maryland.

Despite being referenced in both Cushing's Bio-Bibliography and the Osler's Bibiliotheca Osleriana, as one of the six copies Osler laid out on his dining room table in the presence of Cushing in December 1903 was erroneously noted as a First Edition. According the both men's account, Osler gave his third-best copy to "W. J. Calvert, a recent graduate who had just been appointed Professor of Pathology at Columbia, Missouri." After consulting with the librarian at the University of Missouri, we discovered that the Calvert copy is actually a Second Edition that had received a modern binding with "1543" inscribed on the spine. Once this mistake was uncovered, the Calvert copy was removed from the Cushing total in this Census. It is unlikely that Osler did not know the difference and probably grabbed the wrong book by mistake.

Osler states that "Copies are numerous and very often appear in sale catalogues at prices ranging from £10 to £20 varying with conditions." [8]

Osler also states that he and Dr. Cushing "bought everything of Vesalius that was offered" and goes on to say "we cannot have too many copies in America and no medical library is complete without one."

The following section attempts to determine the location(s) of copies of the First Edition described by Osler when meeting with Cushing in 1903. "Several copies ... were spread for comparison on his dining room table one evening not long after the opening of the winter semester". "One evening we had six copies of the First Edition (1543) on exhibition... or maybe five."

Copy 1

This was a wedding present to Dr. Lewllyn F. Barker (MD), who was going to the University of Chicago and subsequently to John Hopkins. This copy could be the one copy at John Hopkins in Baltimore.

Copy 2

Osler swapped this book with Cushing for his imperfect MacCallum copy. This copy was donated by Osler to the Medical Faculty library at McGill University, Canada.

Copy 3

This copy was sent to Dr. W.J. Calvert at University of Missouri Medical Library, but is a Second Edition mistakenly sent as a First Edition.

Copy 4

This copy went to the Baltimore Medical Society in 1909 –6 years later, with a letter to Harvey Cushing from Marcia C. Noyes, then librarian of the Medical Chirurgical Facility of the State of Maryland, stating "Our copy of the 'Vesalius' was purchased by Dr. Osler on his Italian holiday if my memory serves me correctly, he paid \$500 for it... From whom it was purchased I am unable to say, but do know it was present to the Library at the time of the dedication of Osler in May 1909".

Subsequently the Medical Chirurgical Faculty Library in Baltimore, Maryland sold this copy at Swann Auction on 19th February 2004 went at an estimate price of US \$30,000-\$50,000 [4] and not known where it went. [9]

Copy 5

This copy initially went to the Boston (Medical) Library Association but Osler had already given a copy to them. This copy is one of the Editions now at Harvard University

Copy 6

This is the "MacCallum" copy which has the following long involved history but worth describing in some detail. Dr. W.G. MacCallum spent a year in Europe and whilst in Rome bought the incomplete 1543 Vesalius edition from a blacksmith. The book was "lugged" home and presented to Cushing. In 1903 Osler receives the book after a swap with Cushing at the dining room table. Osler attempts to donate the book to McGill University, who already had received a copy from him as confirmed by the librarian, Dr. Shepherd. Osler then presents the book to the Boston (Medical) Library Association but here again, the libraries Dr. Farow shows him a previous copy he had donated with a card beneath it stating "The gift of Dr. Osler."

The Volume finally found a "resting place in the Library of the Academy of Medicine" in New York. In the fore leave is written "Medical Faculty, McGill College from Wm. Osler, October 29, 1903, the original edition of the greatest medical work ever printed." [1]

This copy of the Fabrica's binding is in half leather with cloth over boards in the New York Academy of Medicine (NYAM) with the following information:

Osler gave the book to the medical faculty at McGill on October 29th, 1903, but it did not stay there. McGill's library had a fire and this copy was removed from the library and the book had water damage. There is a book plate from the McGill library from 1903. In a note from Osler to Mr. Brownne (John Brownne), who was the librarian at NYAM, from July 14, 1909, explaining that he was sending a reproduction of the portrait of Vesalius to be inserted into the copy, which it did not contain. This never happened. The note is pasted to one of the free end papers of the copy.

There are two other notes that are pasted onto the free end papers. One, dated July 7th, 1909, also to Brownne, saying the following:

Miss Charlton will se[sic] you from[sic] the Academy Library a first edition of Vesalius, which please present to the Academy with my compliments. Unfortunately, it lacks a page portrait, but I have asked Lang & Co. of Rome to send their reproduction, will you please insert it at page [blank]

The cover is a bit warped, otherwise it is a very fine copy.

With kind regards.

Sincerely yours,

Wm Osler"

The second note is dated June 15th, 1909, to Miss Laura Smith who probably worked in the New York Academy of Medicine rare book room:

Dear Miss Smith,

Will you please tell your Superior Mr. B. that I hope to send him the Vesalius edition this week? Miss Charlton is arguing hard about it, but I was obdurate and she was not good enough to be allowed 2 copies of so great a work. The portrait is missing but I will ask Lang & Co. of Rome to supply one from a number of facsimiles which they issued.

Many thanks for your kindness in showing us your [cannot make out last word].

Yours sincerely,

Wm Osler

In an extract from July 1, 1939 letter, to Archibald Malloch, who was then the librarian at the Academy, from Dr. W.G. MacCallum:

Dear Archie,

From your letter I don't know exactly what you want me to say. The history of the 1543 *Fabrica* of Vesalius which you have is as follows. In 1903 I was walking toward a bridge over the river in Rome & saw a blacksmith shop with the blacksmith in a shower of sparks hammering on the anvil – through the shower I saw a bench covered with old books. I went in and found the first edition of Vesalius' *Fabrica* 1543 and bought it. On my return I gave my copy to Harvey Cushing as he was so greatly interested in Vesalius. Sometime afterward Dr. O., who had three, I believe, gave one to Barker as a wedding present, one to Cushing and took mine and sent it to McGill. From there it was sent to your library. I am still indignant to find it there when I found it & paid for it even if I did give it to Harvey. I don't remember about the writing on the title page.

I'm just sending Cushing a list of the *Vesalianna* in the Welch library since he is engaged in writing about him. You can I am sure tell him with certainty that the one you have is the one I bought in Rome in 1903 even though Dr. O. may have gotten others in Rome or elsewhere in 1909..."

(The above letters and notes relating to Copy 6 are courtesy of the New York Academy of Medicine Library)

In **Table 4** it is listed the four copies in Private Ownership found by Cushing (1943). It has been determined that the Fulton copy is now at the University of Yale, the Pilcher copy at Vanderbilt and the Trent Copy at Duke University.

The fourth copy owned by Dr. O.O. Fisher and has passed through several owners including Sharpe, Green, and Norman and recently sold by auction at Christies as Lot No. 260, on 4th of December 2014 to a dealer or private owner for US\$ 300,000. One hundred years ago a First Edition sold for \$100.00

which gives a compounding interest rate of return of 8% per annum.

It is interesting to speculate when '*de Humani Corporis*' of 1543 first arrived in the USA. We believe the earliest appearance of the 1543 Edition in the USA was just before 1764 at Harvard University (Founded 1636) in Cambridge, MA. The next recorded copy would be at the library, now known as the National Library of Medicine in Bethesda, MD, which had a copy between 1872 and 1876. Finally in 1903 Cushing owned 2 to 3 copies and Osler had accumulated 3 to 6 copies from various sources which were then donated or given as presents.

In the census published in 1943 but at the time of Cushing death in 1939, nineteen copies were recorded of which fifteen were in Universities or Public Institutions. Horowitz and Collins in 1984 reported forty-six in similar locations with private ownership increasing to ten from four. Our census of 2015 has found sixty-four copies in 47 locations in University and Institution libraries and six private owners.

Gingerich in his annotated census of Copornicus's "*De Reveloutionbus*" which was published in the same year as the *Fabrica*, lists 276 known copies of the First Edition. He assumes by utilizing various techniques – a survival rate of about 50 percent and estimates that about 500 copies of this book was printed by Petreius in Nuremberg [10].

Horowitz and Collins in their census listed 154 copies of the "*Fabrica*" and by extrapolation estimated 250 to 300 First Editions were still in existence [2].

Pozeg and Flamm in 2009 cautiously estimated that Oporinus printed 500 to 600 copies in 1543 of the First Edition of '*de Humani Corporis*' [11].

Often a census is incomplete and misses locations or addition volumes are purchased. From a previous publication we estimated 40% of the 1555 Editions were in the USA [5a, 5b]. If we use this sim-

ple mathematics it would indicate 175-200 volumes are located worldwide with an estimate of 350 to 500 of the First Edition having been initially printed in 1543 in Basel, Switzerland.

Conclusion

This article presents an updated list of the 64 copies of Andreas Vesalius' 1543 first edition of '*De Humani Corporis Fabrica*' held in 47 University and Institutional Libraries in the USA.

Most of the original first editions recorded by Cushing in 1943 and Horowitz and Collins in 1984 are still present in the original collections. Private ownership appears to have decreased.

It is estimated that over the last 450 years since published nearly half of the 1543 edition of the '*de Humani Corporis*' have survived, and of these, the majority are in University and Public Institutional Libraries with very few now remaining in private collections.

Funding

This work was supported by Stephen N. Joffe, MD, FRCS, FACS with no funding agency or grant.

Competing Interest

The authors declare that they have no competing interests.

Acknowledgements

To Lisa Blaker; grateful thanks for her masterful help in determining the location of many of these books and undertaking the basic research.

To Doris Haag, MSLS, Head of Henry R. Winkler Center for the History of the Health Professions at the University of Cincinnati Medical Center for helping to facilitate this project.

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