

THE PHYSICIAN'S ART

Representations of Art and Medicine

JULIE V. HANSEN & SUZANNE PORTER



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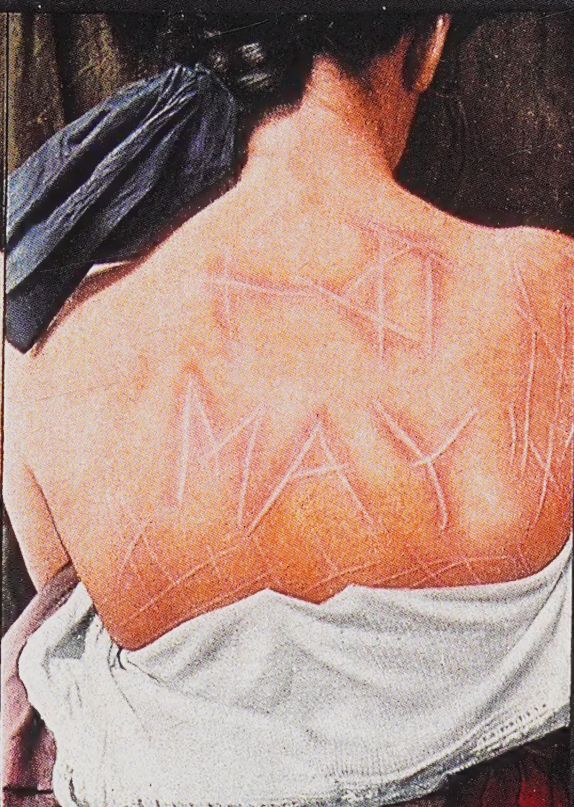
The Physician's Art presents a fascinating perspective on the collaboration of physicians and artists through the centuries. It shows us how the practice of medicine and our understanding of disease and the human body have gone hand in hand with the development of techniques in art, combined with such inventions as the camera and the microscope.

The reader will find here works that range from the fifteenth century to the twentieth, from Europe to the Far East and Africa, from detailed medical illustrations to ivory manikins and an amputation saw. *The Physician's Art* celebrates the diversity and achievement of these objects and their creators.

The book's many vivid photographs and detailed descriptions show us the complex functions that medical artifacts served in their own time and culture, and, by extension, the role they now play in ours. At the same time, they invite us to look at medicine as a practice deeply imbedded in particular cultures, with challenging implications for our view of the visual culture of current medicine.

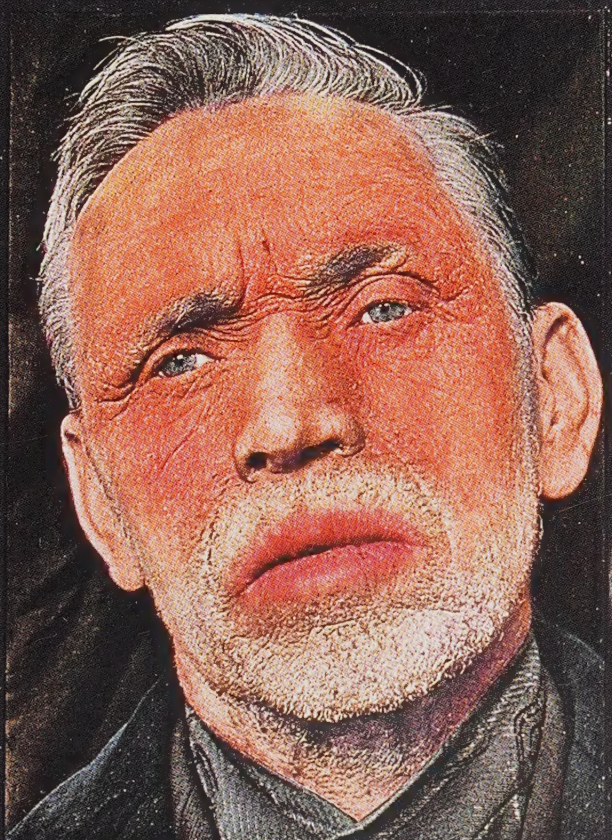
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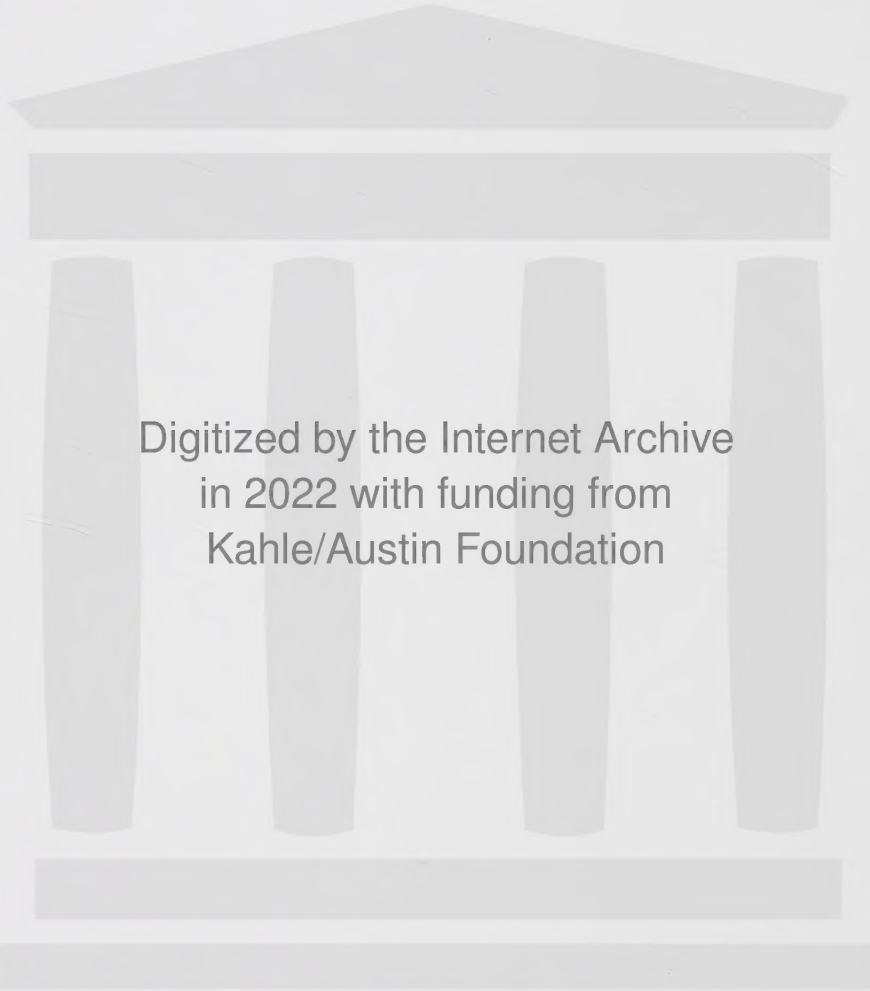
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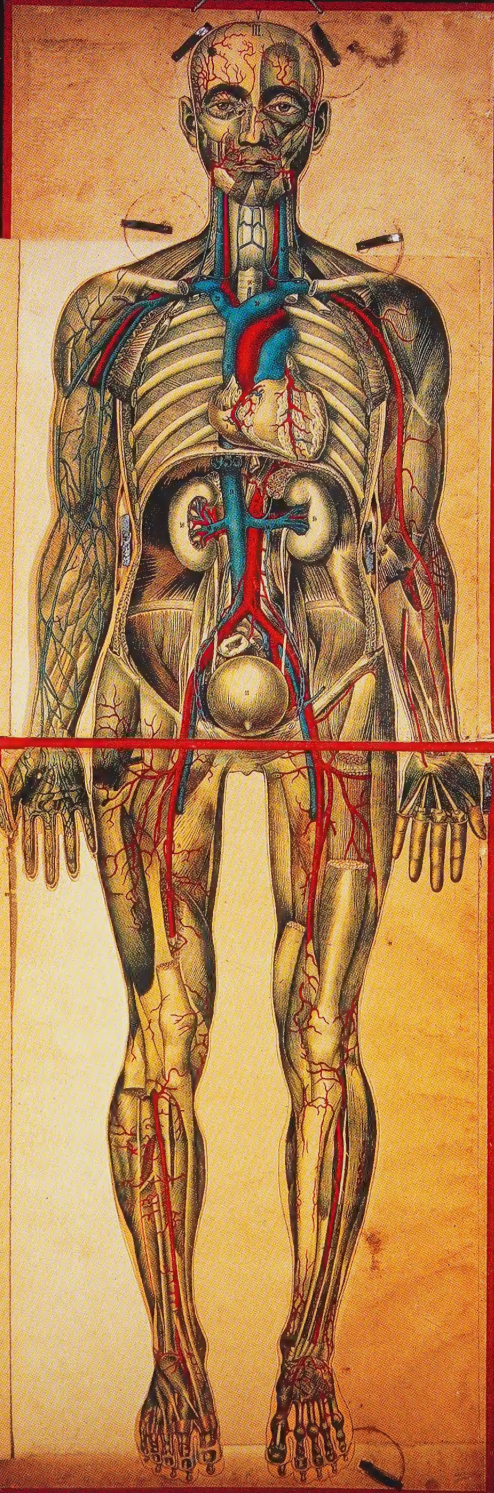
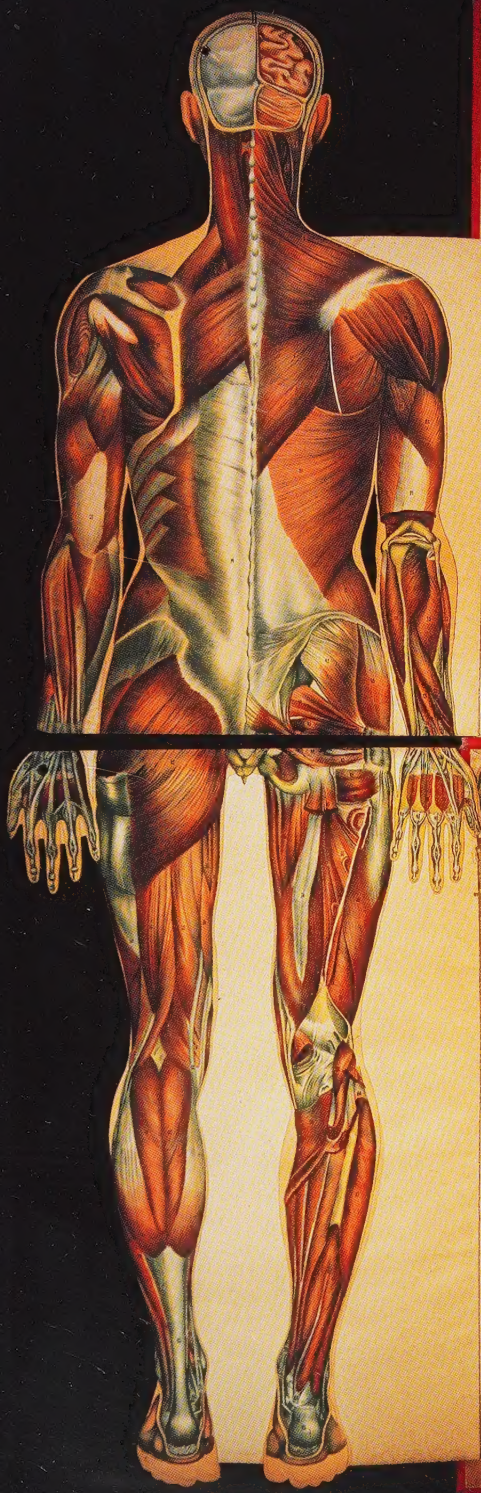
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JULIE V. HANSEN & SUZANNE PORTER

WITH A FOREWORD BY

MARTIN KEMP

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LENDERS TO THE EXHIBITION

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Representations of Art and Medicine

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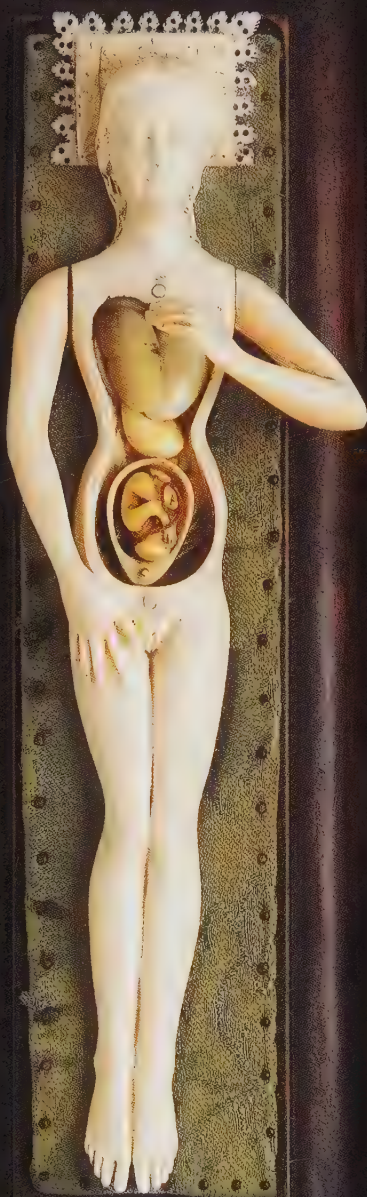
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PREFACE

The exhibition entitled “The Physician’s Art: Representations of Art and Medicine” was born one afternoon three years ago when Dr. Albert Heyman, Professor Emeritus, Division of Neurology, Department of Medicine at Duke University, paid me a visit in the curatorial office of the Duke University Museum of Art. In the course of discussing two Old Master drawings from New York dealers that he was considering for his private collection, he cleverly inserted into the conversation that it would be nice to have an exhibition at DUMA on the subject of art and medicine. He pointed out that a collaboration between the museum and the Medical School in 1999 could coincide with the annual meeting of the Duke Medical School alumni in Durham.

Shortly before that encounter with Dr. Heyman, I had met with a local art historian who had just published an article in the *Art Bulletin* on the interaction of art and anatomy in seventeenth-century Amsterdam. When I mentioned Julie Hansen’s work to Dr. Heyman, his ears pricked up; he had found a curator for his show and an author for the catalogue. Subsequently I was contacted by Suzanne Porter, librarian and curator of the History of Medicine Collections at the Duke University Medical Center Library, whom Dr. Heyman wisely sought for help in the proposed exhibition at DUMA. Throughout this project, she has been the perfect exhibition coordinator, acting in communication with others as registrar, loan

negotiator, grants writer, catalogue editor, a communicator par excellence.

With the input of Julie Hansen and Suzanne Porter, the exhibition suddenly took shape. The history of medicine collections in four North Carolina medical schools, Duke, East Carolina University, the University of North Carolina at Chapel Hill, and Wake Forest, would be approached to lend their rich holdings. Duke, for example, owns a seventeenth-century ivory *vinitas* skeleton relief from France; East Carolina a fascinating 1910 stereoscopic skin clinic, consisting of hand-tinted photolithographs; UNC the Renaissance anatomy textbook, by Vesalius, a rare hand-colored example; and Wake Forest a multivolume nineteenth-century anatomy by Bourguery with over seven hundred splendid hand-colored lithographs. Michael Mezzatesta, director of the Duke University Museum of Art, was very enthusiastic and supportive and agreed to devote the main gallery in the museum to the show.

Over one hundred items were identified that would allow an audience of students, faculty, and the general public the opportunity to view the best examples from these important collections. Rarely displayed in their entirety in their individual universities, these items have never before been assembled together. Julie Hansen’s research for the catalogue publishes the four collections’ holdings for the first time within the context of their significance in the history of art and medicine. Her scholarship for this handsomely designed catalogue is a notable contribution to the literature in the field.

Visitors to the exhibition will no doubt be surprised and delighted to learn of the impressive artistic quality of the medical library collections in this area, which cover a wide range of time periods, media, and nationalities. The works of art displayed were originally made to serve the science of medicine. But they have been purchased by or donated to the four universities as examples of the way in which art was and still is being used by teacher-physicians at the medical programs in North Carolina.

The Duke University Museum of Art is proud to host “The Physician’s Art: Representations of Art and Medicine” and to copublish this accompanying scholarly catalogue. The project fulfills DUMA’s dual mission to introduce new scholarship in the history of art and collaborate with a wide variety of departments at Duke University. Michael Mezzatesta joins me in thanking Dr. Heyman for the original suggestion, which gave the museum an opportunity to work with our colleagues in the Medical School. I also wish here to acknowledge the impeccable professionalism and tireless efforts of Julie Hansen and Suzanne Porter, as well as that of the DUMA staff who helped organize, transport, and install the exhibition. Their dedication, and the generosity of our colleagues in the three other history of medicine collections, have ensured this exhibition’s success.

SARAH WALKER SCHROTH
Duke University Museum of Art

FOREWORD

What's medical about an image from the history of medicine? On the face of it, the question is a daft one. An image associated in some way with the history of medicine is bound to be "medical," by definition. But it may not be "medical" in any sense that we may normally mean. We are all likely to have acquired a very definite sense of how images function in modern medicine—seeing their role as broadly educative, ranging from specialist instruction to public information. Some of the items in the exhibition look as if they align themselves unproblematically with modern types of representation. Yet even those that do come closest in function to their equivalent modern image were designed to make their visual effect in contexts distinctively different from modern institutions of medicine.

The visual quality exuded by a historical artifact can be embraced by that most elastic of terms, "style." Like a work of art, a medical image or a piece of medical paraphernalia has a period style. This is not simply a surface gloss, a decorative mode that stands in a superficial relationship to the true function of the item. Function and the "look" of something are not separate, since any action is hedged around by attitudes, hostile and approbatory, and our instinctive visual reaction to any item in a field as highly charged as medicine will be an integral part of the social field within which participants function. The "clinical" look of a ward,

for example, is part of the transaction involved in the conduct of medicine. That such terms as "clinical" and "surgical" can be applied in contexts far beyond medicine—even entering the language of precision bombing—gives some idea of how the rhetorics of medicine have penetrated our styles of thought.

We also need to respect the elasticity of "function" and "functional" within the broad context of cultural analysis. We commonly say that something is "functional" when it is designed to do the job in a no-frills manner. The skillfully etched band of Renaissance-style decoration that runs around the frame of the amputation saw seems obviously redundant in our eyes (exhibition no. 22). And the ritual figure from the Congo may be of interest to anthropologists and students of African art but would seem to have no obvious medical utility when the clinician is faced, say, with a broken limb. However, the "decorative" aspects of the objects are integral parts of the total field within which their roles can be acceptably performed. The stylishness of the saw denotes the status of its operator, since it clearly comes from the upper end of the market for surgical tools, and its elegance acts as a kind of visual anesthetic to the saw's more brutal connotations. For its part, the ritual figure functions as a vital component in the transaction between those who claim access to powers of healing and those who believe in the efficacy of those powers.

Creating an Impression

When we set the schematic diagrams of the blood vessels and nerves of the disproportioned, squatting figure in *Mansur's Anatomy*, which originated in fourteenth-century Persia, beside the compelling presence of the standing skeletons and heroic muscle-men in Vesalius's *Fabrica* in 1543, it seems that we are obviously faced with a huge advance (exhibition nos. 2 and 3). Clearly there is much truth in the standard story of the progress of medical knowledge, but to under-

stand how knowledge arises, how it is broadcast, how it is used, and how different kinds of knowledge function in different kinds of ways in different kinds of social situations, we need to be a good deal more subtle.

Mansur's text and illustrations are concerned with the natural philosophy of the body's systems within the context of the wider systems of the universe. In practical terms, what the fourteenth-century physician or surgeon could effectively accomplish would not have benefited from a more elaborately pictorial exposition of the organs. The long-standing functionality of comparably schematic images in the European West, when more elaborate representational techniques were available, shows that such illustrations did their job effectively within the framework of the knowledge that the person educated in medical matters needed to certify their expertise. And it is clear from the luxurious production of the Islamic manuscript (exhibition no. 2) that the person for whom it was created was of some position and wealth.

Vesalius's anatomical representations seem more obviously functional. Yet his drive to master the science of the human body was fueled and facilitated by a complex series of factors and motivations, at the center of which was a compulsion to disclose the direct evidence in nature of the wondrous machinery of God's supreme creation. Vesalius was one of those, like Leonardo and Copernicus, who was redefining the role of the observer as the "measure of all things." "Man" was the creature for whom God had designed the world system, and direct experience provided as close an insight into the majesty of divine order as was possible on earth. Accordingly, Vesalius's illustrations consciously tell of the grand story of humans in nature, of the drama of life and death, of how one of the greatest goals of the earth-bound human is to "know thyself" — *nosce te ipsum*, as the ancient motto intones. One of his skeletons contemplates a skull atop a kind of altar that is inscribed (from Virgil), "Genius lives; all else perishes." Charles Estienne in France and Juan Valverde from Spain work variations on similar

compounds of heroic self-knowledge, new realism, ancient stylishness, and the ultimate vanity of all material things (exhibition nos. 8 and 9). The seventeenth-century carver of the ivory relief of the grieving skeleton with the discarded paraphernalia of worldly success certainly did not miss the point that *sic transit gloria mundi* (exhibition no. 5). Yet Vesalius, as he clearly hoped, has cheated death through a kind of immortality.

Like many of his successors, Vesalius indulges in special visual strategies to convince us that we are looking at the real thing. His portrayal of tools, ropes, vivisection boards, and so on are all designed to show that we can trust that the great dissector has used his eyes and hands on our behalf. The Dutch anatomist Govert Bidloo and his illustrator, the noted academic artist and theorist Gérard de Lairesse, even included a fly in one of his plates to evoke the dissecting room (exhibition no. 15). The more sober styles of Haller and Hunter in the eighteenth century were no less insistent in their desire to convince the reader of the veracity of their pictures (exhibition nos. 14 and 49). Hunter, in particular, used the "warts-and-all" style of his main artist, Jan van Rymdyk, to portray the particularities of the individual specimen, even if the resulting representation resulted in some details being less clear than if a more synthetic approach had been adopted.

All the anatomists found that achieving the accuracy they desired was not simply a matter of placing artists skilled in naturalistic representation in front of a specimen. Looking and representing are inevitably directed and selective processes, and the deputing of them to other eyes and hands caused inevitable problems. As William Cheselden realized, the difficulties became all the greater when the illustrators were faced with forms that were unfamiliar (exhibition no. 37). This dilemma is particularly severe if we move outside the normal scope of our unaided vision, using such devices as a microscope or X-ray machine. Robert Hooke, the author of *Micrographia* (1667), the first masterpiece of the microscopist's art, well knew the interpretative

struggles in seeing what was what in the amazing world being revealed by the new device (exhibition no. 17).

I have endeavoured (as far as I am able) first to discover the true appearance, and next to provide a true representation of it. . . . I never began to make a draught before by many examinations in several lights, and in several positions to these lights, I had discover'd the true form. For it is exceeding difficult in some Objects to distinguish between a *prominency* and a *depression*, between a *shadow* and a *black stain*, or a *reflection* and a *whiteness in the colour*. (p. [32])

Not surprisingly, the advent of photography in 1839 was hailed by some as providing the kind of unmediated veracity that Hunter advocated. However, the literally superficial detail that the most accomplished black-and-white photograph could achieve proved of limited use in elucidating the grayish mess of a dissection. It is symptomatic that some of the most effective uses of early photography in medicine were for the description of external features, either of whole bodies with afflictions or of skin diseases. The stereoscopic slides of skin diseases by Selden Rainforth play to the inherent strengths of photography, particularly to the way the stereoscopic images in a special viewer can produce a vivid sense of the three-dimensional presence of the actual specimen (exhibition no. 44). However, even such apparently obvious pieces of mechanical realism proved to be fraught with social frissons, particularly with respect to the portrayal of recognizable individuals and the potential for voyeuristic viewing. No image ever exists within a purely neutral field, not matter how hard its originators may think they are trying.

Doing the Job

Alongside the great picture books were the compact handbooks that served practice in a more direct way. The humbler working texts have inevitably received

less attention. Like the more everyday tools of the physician's and surgeon's trades, they are less likely to have survived than the deluxe productions.

The field books of surgery, aimed at the practitioner who had to treat the wounds of battle in the field (often literally), were the earliest of the humbler manuals to be printed in some numbers. Field surgery was one area of practice in which the surgeon stood some chance of having a genuinely beneficial effect, not least in patching up troops to fight again. Hans von Gersdorff's *Feldtbuch* does not quite fall into the "humble" category—least of all in its colored version—but it does address the practical man in a practical way (exhibition no. 21). This does not mean to say that his illustrations are, strictly speaking, how-to guides. They are more in the nature of little narrative compositions, which ingeniously contrive to depict the essentials of the procedures, the necessary equipment, and the promised result, rather than serve as a blow-by-blow description of procedures. This same qualification applies to genre pictures of medical activity, in which the artist is never simply documenting what a physician does, however realistic the style, but is setting up a narrative that is intended to be seen within a broader context of meaning. Thus the setting and action in the painting of *The Sick Lady and Her Physician* depicts a situation and represents paraphernalia in a way that would have seemed plausible (including the examination of urine in a flask), while the whole ensemble is artificially contrived to stress that the lady is at best lovesick and at worst reaping the fruit of an illicit liaison (exhibition no. 39).

In some cases, the directly instructional quotient in illustrated handbooks was very high. Ambrose Paré's *Ten Books of Surgery* (*Dix livres de la chirurgie*) is a striking case in point, as is Georg Bartisch's book on ophthalmics. Paré's illustrations are marked by their ingenuity in combining the schematic and conventional with the pictorial to provide eloquent visual instruction in key procedures and equipment. His volumes were produced in what we would now call pocket editions, which the more ambitious

military surgeons might carry with them on their journeys. Bartisch's single volume with its almost one hundred woodcuts was rather grander, but it also concentrates very much on the task in hand. Functional though they are in the practical sense, Bartisch's delineations do not neglect social rhetoric. The fashionable costumes of his subjects both convey the air of procedures undertaken on real people and locate his practice within elevated strata of society.

The trajectory of Paré's and Bartisch's careers, both rising from their training as practical, hands-on operatives to prominence as court doctors and authors of noted books, is characteristic of many of the leading figures in what has come to be called the scientific revolution (exhibition nos. 23 and 24). The use of the vernaculars of French and German is also a characteristic sign that book learning was to be allied with more down-to-earth qualities. The brandishing of experience rather than sophistic learning became a common stance for those who entered the scientific and philosophical lists from routes other than those of the university. In many fields—the ballistics of weaponry, the digging of mines, the raising of water, the painting of pictures, and so on—those endowed with practical wisdom were claiming a professional base in which practice was underpinned by theory.

A direct heir of Paré was Angélique du Coudray, whose teachings were aimed at both country practitioners and, in the edition ambitiously illustrated with color engravings, at the students she trained to disseminate good practice across France (exhibition no. 50). Compared to Hunter's great obstetric atlas, which parades realism beyond the call of practical instruction, the level of rhetorical detail in her volumes is greatly reduced in favor of a storytelling directness. Hunter's book is a piece of pictorial philosophy that rejoices in empirical truth. Du Coudray aims at elegant instruction. Her famed use of a life-sized model made of diverse materials reminds us that the three-dimensional device has often played a key role in instruction. Such

models are particularly vulnerable, since they deteriorate in use and take up storage space when they have outstayed their useful life. For every survival like Charlotte Holt's obstetrical models in the exhibition, we have to reckon with numberless losses of those items that have been used and reused for the instruction of generations of medical students and midwives (exhibition no. 53).

If the level of realism in the great picture books initially outstripped the potential of the procedures available to the practitioner, developments in the later eighteenth century began to bring minutely characterized detail into the realm of practice. With the rise of systematic pathology, in which meticulous description of the signs of disease began to be undertaken on the basis of closely observed cases, high levels of naturalism began to assume a new significance. A supreme example is the hand-colored lithograph of lung diseases from Jean Cruveilhier's seminal volumes on pathological anatomy (exhibition no. 45). Significantly, his illustrator, Antoine Chazal, had perfected his skills as a botanist and artist at the Jardin des Plantes in Paris, which (particularly during the era of the great Baron Cuvier) was a hotbed of observational science and a gathering place for those who wished to illustrate all kinds of flora and fauna in a minutely documentary manner. Chazal's diagnostic plates stand alongside the exacting illustrations of fossil bones that served the Cuvier's quest to compare paleontological specimens with living examples.

As the nineteenth century progressed, medical illustration responded to the same kinds of classificatory zeal and professional specialization that were characteristic of the progressive institutionalizing of other sciences and technologies. Detailed representation became an essential tool of the categorizers, whether in pathology, anthropology, or psychology. Jean Étienne Esquirol's compelling visual and verbal portraits of the insane aspired to use the symptoms observable in particular individuals as representative of particular types of mental

condition (exhibition no. 48). The vivid characterizations in Ambroise Tardieu's engravings for Esquirol were fittingly undertaken at the Salpêtrière in Paris, the hospital for the insane in which Théodore Géricault had painted his remarkable portraits of inmates and where Dr. Charcot was later to found his science of psychology on a visual basis, using the new tool of photography to great effect.

The Right Equipment

In any profession, it is clearly important to be equipped for the job. It is equally crucial to be *seen* to be properly equipped. This means not only having the right tools for the trade but also being able to display the right attributes to instill confidence in the recipient of the professional's services.

In the sixteenth and seventeenth centuries, the attributes for the highest member of the profession resided in a far-reaching understanding of the nature of the constitution of the human body and mind in the greater setting of the macrocosm. All maladies and treatments were viewed within the context of humoral medicine, in which the body was thought to be governed by four humors: the blood, yellow bile, phlegm, and black bile. The predominance of one resulted in one of four possible temperaments: sanguine, choleric, phlegmatic, or melancholic. This four-part scheme was set within the wider pattern of the four elements, the four seasons, the four winds, and the "four ages of man," and correlated with other fundamental entities in nature, such as the planets, the times of day, animal types, and so on. Each temperament could be diagnosed through physical signs and "complexions," such as the nature of the individual's skin (color and texture). With this scheme in mind, the extraordinarily elaborate prints of *The Four Seasons* (exhibition no. 10) can be viewed as a kind of visual encyclopedia of the human constitution in God's scheme, such as would have served the physician's professional needs, not only with respect to fundamental

doctrines but also in determining the applicability of procedures at propitious times in the astrological calendar. Above all, it was essential to be able to claim mastery of the most advanced learning of the age.

Amongst the treatments that could restore balance to the humors, the good physician could turn to those herbs that had traditionally been regarded as efficacious in the treatment of specific maladies. The early history of botanical publishing is dominated by medical imperatives. It is in keeping with this tradition that Elizabeth Blackwell's *A Curious Herbal* of 1737–1739 (exhibition no. 42) was founded on specimens in the famous Chelsea Physic Garden. William Withering's treatise on the foxglove (exhibition no. 41) owes its origins to the same kind of medical inspiration, but, published less than fifty years later, it also belongs to the new world of more systematic testing, with its citing of evidence from numerous case studies. The fine folding plate of the flowers was drawn by William Curtis, an early British promoter of that most up-to-date scheme of observational classification, the sexual system of Linnaeus.

Each branch of the medical profession possessed its characteristic paraphernalia, which gave patients reassurance through their characteristic "look." Apothecaries' jars, for example, assumed particular shapes and decorative styles, which spoke to customers of the special properties of their contents (exhibition no. 40). The exotic ancestry of forms and ornamentation derived from Chinese and Islamic ceramics promised a mysterious efficacy in keeping with the often pungent aromas of the jars' contents. Rhubarb root in a prosaic brown jar would have held less promise than in a colorful *albarello* of Turkish lineage. By contrast, the home medicine chest exudes a nineteenth-century air of business-like efficiency with its neat walnut joinery and brass and ivory fittings (exhibition no. 35). The printed labels on some of the bottles carry the authoritative name of "Robt. J. Elliot Ph.D.," while the bottle of laudanum, to which Coleridge became famously addicted, shouts

“POISON” in bold upper case. For the sickly child, the sight of a solicitous parent or nanny carefully weighing the powders for a healing potion in the polished balance would have held its own special comfort.

The design strategy behind the production of such items is basically the same as that adopted by modern pharmaceutical companies when they package their latest over-the-counter nostrums in slick containers decorated with high-tech graphics. The amount spent on design by leading drug producers shows how well they understand that the look of their products is an essential ingredient if the customer is to think that they are spending their money on something that is likely to be effective.

Patronizing the Past

Someone who supports the production of works by current practitioners will rightly be regarded as a patron. Someone who collects work from the past is also a patron of a kind. Hugely ambitious personalities like Bartisch would have cause to be grateful to later collectors like Josiah Charles Trent, who ensured that their works survived. The makers of the more utilitarian items were less consciously making a bid for immortality and can no longer tell us what they think about continued attention devoted to their productions centuries later, but it would only be human if they felt a sense of pride.

Alongside those items that have benefited from purposeful acts of patronage, other artifacts have survived by chance, perhaps overlooked in an unopened cupboard or retained as mementos. All manner of institutions have long-established habits of keeping souvenirs of past members of distinction. A tool used by a great figure from the past may not be special in itself but is more likely to be preserved for its associations than an otherwise identical item. The commissioning and collecting of portraits is part of this memorializing activity. Walking along an ample corridor in a medical

institution, under the stern gaze of custodians of past excellence, their weathered images framed in heavy gilt, we are to be left in no doubt about the pedigree of the present and the virtues to which current practitioners should aspire. Being portrayed in a dignified manner certifies a certain status, as a gentleman rather than a “rude mechanical.”

Within various schools of medicine across the world, collections have sometimes been cherished, sometimes benignly neglected, and sometimes thrown out. The collections that have survived have often enjoyed an ambiguous status. The position of the medical artifact is very different from that of a work of art in a gallery. We do not judge an image of the Madonna and child by Raphael as less or more “right” or “accurate” than one by Titian or by Rembrandt—even if in the past the historical succession was often characterized in terms of progress toward naturalism and the “true” canons of artistic excellence. The medical image, say the portrayal of the brain by Vesalius, can be placed in a succession in which the match between the representation and the object’s physical properties is increasingly elaborate. This story is likely to appeal to a medical practitioner who has some interest in his or her antecedents, and the resulting view of the history of medicine is likely to be dominated by the characterizing of a series of steps toward present levels of understanding. This was indeed the prevailing style of the history of medicine in its early years, written as it was predominantly by authors who came from a background in medical practice. In this style of history, the obsolete notions are regarded at best as fascinating curiosities to be patronized (to use the other sense of the term in my subheading), as charming historical aberrations from an age that did not know better.

More recently, the goal of professional historians of medicine has been to understand how the totality of medical culture in particular places at particular times has arisen in relation to a complex series of intellectual, personal,

social, and institutional imperatives. This is not to say that the story of accuracy has simply faded away. The way that we talk about Paré and Bartisch, for example, can hardly avoid an evaluation of their reception and impact, which is almost bound to carry an implicit sense of progress. I would argue that there is nothing wrong in this view, but that it is just a part of a rich compound of interpretative stances that we can adopt. Above all, we should not pick those “bits” of earlier authors that fit the story of progress and sideline those aspects that seem *retardataire*. Paré, in particular, with his interest in what we would call legendary beasts and monsters, embraces without discomfort fields of enquiry we would regard as nonscientific. One job for the historian is to make sense of habits of mind that are clearly very different from ours — or what we think ours to be.

There are two main reasons for not looking on the past patronizingly and regarding its material remains as engaging curiosities. The first is that the past is continuously being rewritten by the present. As values change, as old wisdoms are replaced by new understandings, so different aspects of the frameworks of knowledge that existed in the past or are sustained by other cultures may seem either prophetic or obsolete, productive or misguided. The second reason is ultimately more fundamental, and does not involve the rewriting of the past within our shifting system of values and knowledge. It involves the difficult quest to understand how interlocking systems of belief and knowledge arise, survive, and develop to points of high sophistication within specific cultural contexts, such that it seems unreasonable for those inured in the culture to question that they represent the truth. The densely interwoven systems in *The Four Seasons* is a notable case in point. So well did the parts of the doctrines reinforce each other, and so deeply were they embedded in institutional beliefs and practices, that each part testified to the validity of the whole. Faith in the rule of the planets over our lives, to take the component that would now seem to us to be

the least sensible to harbour, was not *prima facie* unreasonable, given the striking evidence of the moon’s ability to shift great bodies of water in the tides and the cyclical governance evident in all aspects of the agrarian year. It seems to me that the breakdown in the complex machinery of beliefs in *The Four Seasons* is profoundly associated with the increasing dominance in the eighteenth century of the urban environment, with its growing reliance upon technology and the forging of a lifestyle based upon the desire to manipulate nature through scientific and industrial means.

When we succeed in gaining some insight into the cultural climate of other societies, we need neither assume, as has become fashionable in some quarters, that they are somehow more natural than our ways of proceeding, nor need we feel compelled to measure them patronizingly for rightness against those things we believe to be true. Rather, we can gain respect for the continuing intellectual and social struggle of other cultures to make coherent sense of what we are in the natural world, and a sense of humility that we are, however advanced our technical knowledge, operating within a particular set of self-reinforcing assumptions that need not be those of other societies and later generations. In this way, the material culture of past medical concepts and practice both testify to the techniques and aesthetics of fields of assumption different from ours and alert us to the fact that the visual culture of current medicine will look quite different to those who are outside its institutions in time and place.

MARTIN KEMP
Oxford University

ACKNOWLEDGMENTS

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Finally, a very big thank-you must be extended to our donors, whose support enabled us to realize an idea for this exhibit of art in medicine, showcasing the significant holdings of the four North Carolina medical schools.

SUZANNE PORTER

Duke University Medical Center Library

INTRODUCTION

The professions of medicine, science, and art always have enjoyed a complex, interdependent relationship. From early times, artists have been involved in the life and work of the physician in a variety of fascinating and innovative ways. Members of the medical profession have, in their turn, been central in shaping the visual canon of their profession, from the grandiose drama of the corpse in the anatomy theater to the intricately worked ivory and metal tools of their trade. This catalogue attempts to explore some of the diversity and achievements of this collaboration by looking beyond the traditional boundaries of art to books and physical artifacts used by physicians since the fifteenth century.

Like most other recent exhibitions focusing on medical art, many of the objects pictured in this catalogue are illustrations from medical texts. Ranging from large sixteenth-century anatomical atlases to nineteenth-century colored aquatints and lithographs, these images demonstrate the scope of visual information communicated to doctors and students. In most cases, the illustrations were executed by professional graphic artists working in close proximity with the doctors who wrote the text; in other cases, the doctor-author was also the illustrator-artist. This type of close collaboration, as well as new graphic technologies, such as the invention of copper engraving and color printing, resulted in increasingly accurate images that rendered the body visible in astonishing beauty and detail.

While there were many illustrations of a scientific nature produced prior to the early Renaissance, it was not until then that the picture became of real scientific value to the text. The rise of the technology that enabled the reproduction of repeatable illustrations made it possible to convey invariant information about the structure of the body to a large population of medical professionals, where words could not adequately define or describe. In particular, anatomical images aided in the standardization of dissection procedures and provided visual step-by-step instructions for opening corpses. The first printed medical illustrations were woodcuts, the most notable example of which is Andreas Vesalius's 1543 treatise *De humani corporis fabrica* (exhibition no. 3), which placed animated, classically posed skeletons into pastoral Italian landscape settings. However, by the early 1600s, new line-engraving techniques, which were able to pack more pictorial information into the available space, were preferred for most medical illustration. By the late seventeenth century, an increasing specialization in anatomy and the advent of the microscope led to more fully particularized representations of individual organs and structures. The widespread use of embalming techniques and the growth of anatomical collections also enabled artists to create increasingly realistic models and illustrations, as is evident in Jan Ladmiral's and Borromée's luminous works for Bernard Siegfried Albinus and Claude Bernard (exhibition nos. 19 and 20).

Another facet of the physician's art is demonstrated through a study of the actual physical objects of his (or, as in the case of the eighteenth-century midwife, her) trade. Comprising some of the most interesting works displayed here, a number of exquisitely crafted artifacts are displayed that shed light on the nature of early medical practice. Exhibition no. 11, for example, consists of several tiny ivory manikins used for teaching and diagnostic discussions. One of these figures, dressed in a delicate ball gown, was perhaps inspired by the belief that this pretty, doll-like object would make the

modest female patient feel more at ease. A set of colorful Italian apothecary jars (exhibition no. 40), some still retaining the slight odor of their former contents, and a fully intact home medical chest (exhibition no. 35) offer insight into the types of medicines used prior to modern drugs. Antique surgical tools such as an amputation saw (exhibition no. 22) and the “keys” for tooth extraction (exhibition no. 32) remind us of the horror of operative procedures prior to the invention of anesthesia.

Before the establishment of hospitals and clinics, many doctors treated their patients at home. This is illustrated in two Netherlandish oil paintings (exhibition nos. 38 and 39) which show the early physician practicing his craft at the patient’s bedside. Other paintings are actual portraits of doctors or their patients. Two famous doctors, William Harvey and Valentine Mott (exhibition nos. 33 and 34), are portrayed in very different ways. Dr. Harvey, who discovered the circulation of the blood, is seen as the learned academician dressed in somber black; Mott, in contrast, is represented as the gentleman doctor. Caught in an almost informal pose, he appears relaxed here at home on his country estate. Images chronicling the physical symptoms of suffering patients are also well represented in the exhibition.

Two illustrations from texts by Pierre François Rayer and William Gibson dating from the 1840s (exhibition nos. 46 and 47) depict the visible symptoms of particular ailments ranging from cancer to the effects of silver nitrate poisoning. An even more realistic view is offered in Selden Rainforth’s fascinating photolithographs for his *Stereoscopic Skin Clinic* (exhibition no. 44). Here the doctor-photographer has painstakingly documented comparative case studies of numerous patients treated in his practice. These poignant and evocative portraits offer the viewer an authentic picture of illness and disease in early twentieth-century America.

This exhibition also touches on the place of non-Western cultures in the history of European and American medical practices.

With the advent of colonization and increasing trade practices with Africa and the Far East from the mid-seventeenth century onward, doctors began to express an interest in non-European medicine. Much of this material has ended up in ethnographic collections and was often dismissed as “primitive.” Yet objects such as the African *nkisi nkondi* figure and the Chinese doctor’s lady (exhibition nos. 54 and 56) are beautiful, functional pieces in their own right, and should be appreciated within their own cultural contexts.

There are fifty-nine exhibition entries and over one hundred objects displayed in “The Physician’s Art,” and each one, carefully considered, yields its own particular insight into the nature and meaning of the physician’s world. Taken together, they highlight the variety, complexity, and sheer beauty inherent in medical imagery, a successful merging of form and function, science and art.

JULIE V. HANSEN

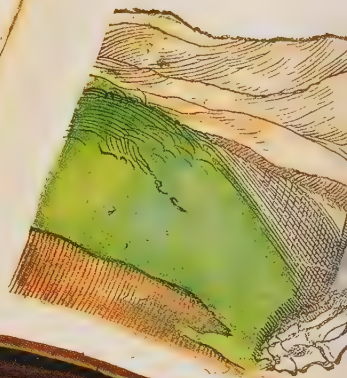
CATALOGUE OF WORKS

subscutis sunt, deest tamen alterius manus digiti, & patella utraq, unâ cum pede altero. Quia
itaq crura & brachia relicto cū rotius corporis trunco, capite) clam repetitis uicibus domum
detulissim, ut thoracē qui catena alte firmabatur nancisceret, extra ciuitatē me uesperī excludi
passus sum: tantoq̃ obtinendorum ossium desiderio & studio ardebam, ut mediā nocte in illa
corporum multitudine quod expetebā diuellerenō horrerim, haud mediocri labore ac in du
stria, sine arbitris, palum cōscendens. Verū detracta ossa procul illinc deferēs, in secretiori loco
condidi, frustatimq̃ altera die per alia ciuitatis portā domū detuli. Porro quū ligamenta rescin
dere cepissem, nihil ob egregiā eorum duriciē promouī, ac illa seruēte aqua cinollitē coactus
sum: utq̃ uori compos redderet, omnia ossa tantē tacite ita coxi, illisq̃ emūdatis illud scleton
extruxi, quod Louanij apud longe amicissimum mihi GISEBERTVM CARBONEM,
insignē ac uario disciplinarū genere instructū medicū, meumq̃ a pūro studiū commilitonē
asseruatur. Atq̃ id scleton adeo prapropere parauī, & manū ac pedem, duasq̃ patellas nō mi
nori labore & industria aliunde conquisiui, ut omnibus persuaserim id me Lutetia aduexisse,
quo omne subreptorū studiū suspiciōē delerem. quamuis eius urbis Prætor possimodū adeo
medicinæ candidatorū studiū fuit, ut quoduis corpus à se impetrari gauderet: ac ipse nō uul
gariter Anatomes cognitione afficeretur, mihiq̃ illic Anatomen administranti sedulo assaret.
Quin igitur primum tentantibus nobis adeo promptē negociū successerit, quid nunc futurū
existimandum, postquam cōponendi quoq̃ rationem alijs descripsimus: & præter subiūgen
das nunc tabulas, in plurimis Academicis, uel nostra opera, sceleta uisuntur. Verū non ho
minis solum ossa, sed, uel Galeni nomine, simiæ & canum, ac Aristoteles etiā gratia auim pi
sciumq̃ & reptilium laboris subterfugisse uidear, non enumeratis appendicibus,
scilicet & reptilium laboris subterfugisse uidear, non enumeratis appendicibus,
sophiæ studiosum esse oporteret. Nisi forte hanc philosophiæ partē ad nos nihil pertinere ar
bitremur, satisq̃ esse nobis persuadeamus, si nostris syrupis, citra Anatomen imponere morta
libus, & loculos opplere possimus.

DE OSSIVM NUMERO.

CAP. LX.

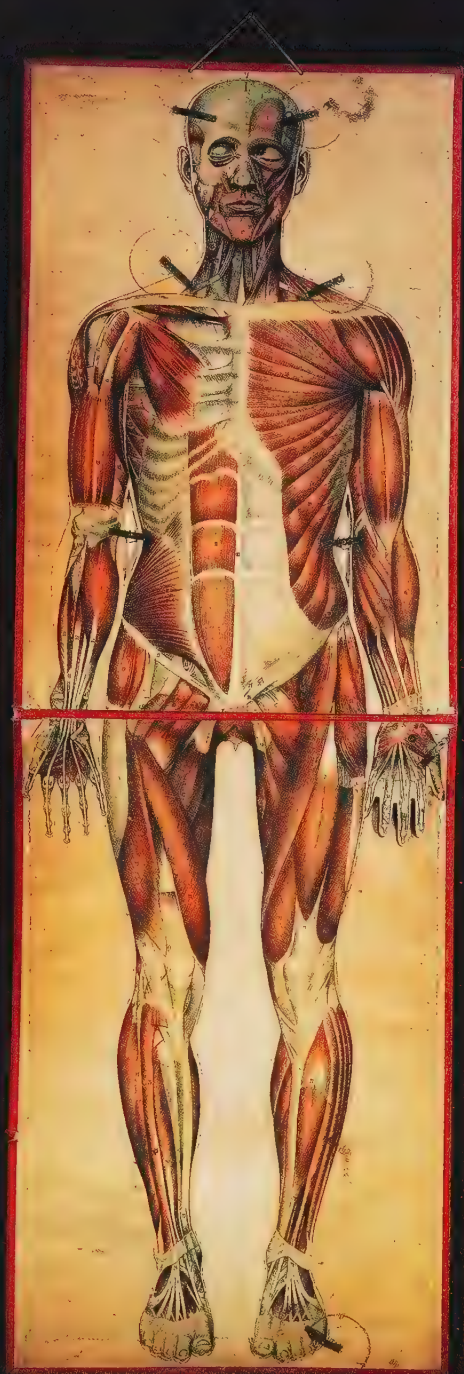
PARVM dubito plerosq̃ alicubi à me ossium quoq̃ numerū desideratū
ros: quibus nullum aliud consiliū dari uelim, quā, ut ex singulis huius li
bri Capitibus illū petant, prolixius enim esset, hīc omnia recēdere. Quāuis
ne tantillum laboris subterfugisse uidear, non enumeratis appendicibus,
& ossibus ita ut in prouectioris ætatis hominibus se habent, cōstitutis, ad
hunc modum ea recensere nihil impedit. Caluariæ ossa uiginti sunt, octo
quidem capitis, & maxillæ superioris duo decim: ita tamen, ut iugalia pri
mumq̃ & reptilium laboris subterfugisse uidear, non enumeratis appendicibus,
scilicet & reptilium laboris subterfugisse uidear, non enumeratis appendicibus,
sophiæ studiosum esse oporteret. Nisi forte hanc philosophiæ partē ad nos nihil pertinere ar
bitremur, satisq̃ esse nobis persuadeamus, si nostris syrupis, citra Anatomen imponere morta
libus, & loculos opplere possimus.



DE HVMANI CORPORIS FABRICA LIBER I.
HVMANI COR-
SIMVL COMPACTO-
EX FACIE EXPRES.

163
PORIS OSSIVM
RVM ANTERIORI
SIO.





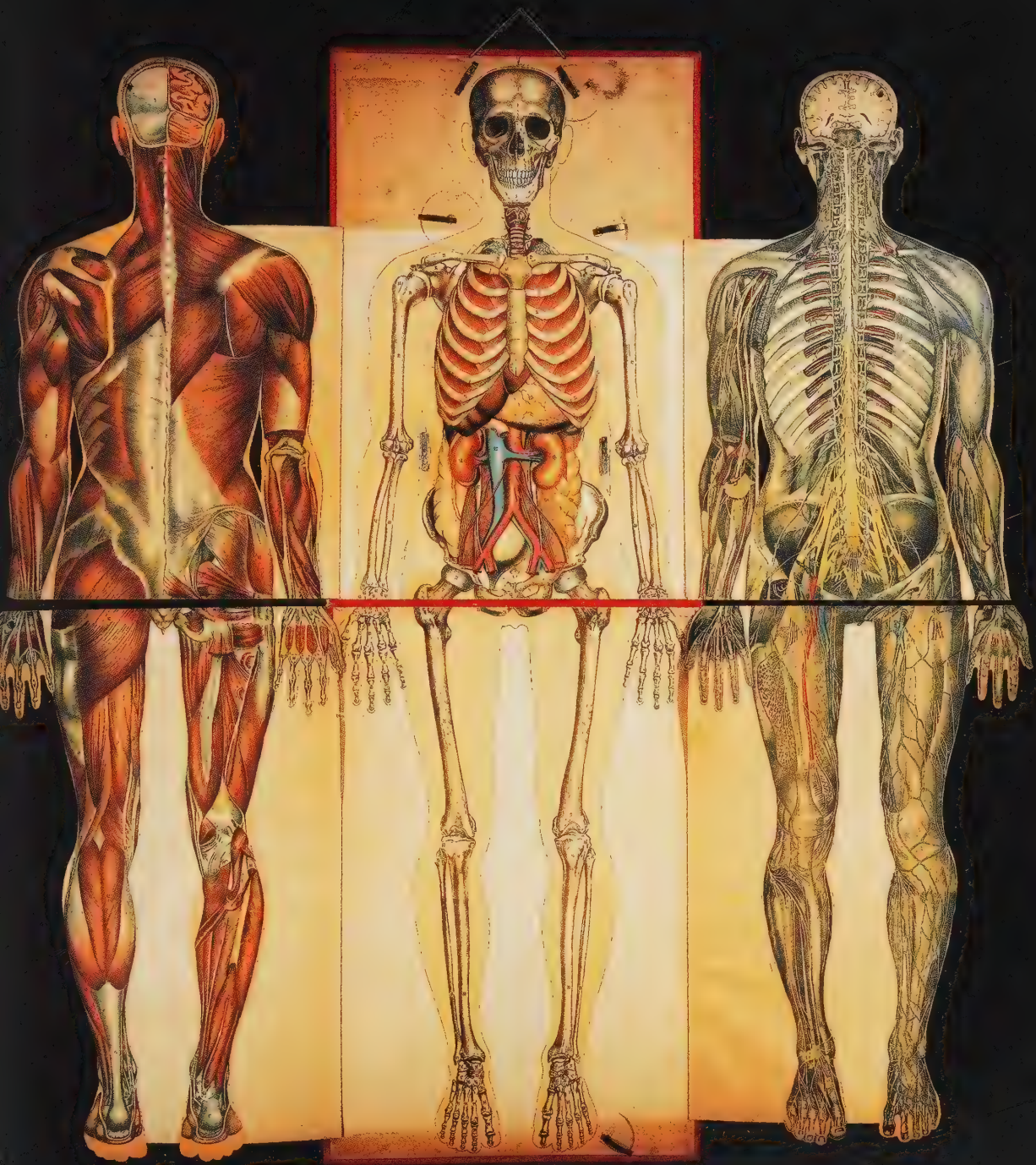
1. ANATOMICAL MANIKIN

Germany, [Pilz], c. 1890–1910

Colored lithograph with folding flaps mounted on pasteboard; opened, 65" x 58"

Health Sciences Library, University of North Carolina at Chapel Hill

Folding portfolios containing life-sized, full-color anatomical manikins printed on paper first appeared in France, Italy, and Germany in the early 1800s and served as the basis for the two-dimensional teaching models still in use today. Although the earliest manikins were expensive hand-colored models issued in small editions, the faster and cheaper medium of lithography made such portfolios more accessible to a greater population of students and teachers. Most portfolio models illustrate the front and back of at least three layers of the body's interior: the organs, the muscles, and the skeleton. This particular model, manufactured in Germany by the renowned Pilz printing family and imported into the States by the American Thermo-Ware Company of New York, folds out in an unusual and elegant design, forming three identically sized anatomical men at different levels with additional flaps displaying the organs. In the closed position, the model demonstrates the circulatory system; when the left flaps are opened, a posterior view of the muscles is revealed; opening the flaps on the right displays the nervous system; in the final position, the skeleton revealed between these two figures contains several additional layers showing the major organs. As a result of their fragile nature, few such anatomical models survive intact in historical collections.



**2. MANŠŪR IBN MUḤAMMAD
IBN AḤMAD IBN YŪSUF
IBN ILYĀS, PERSIAN,
FL. LATE 14TH CENTURY**

The human arterial system

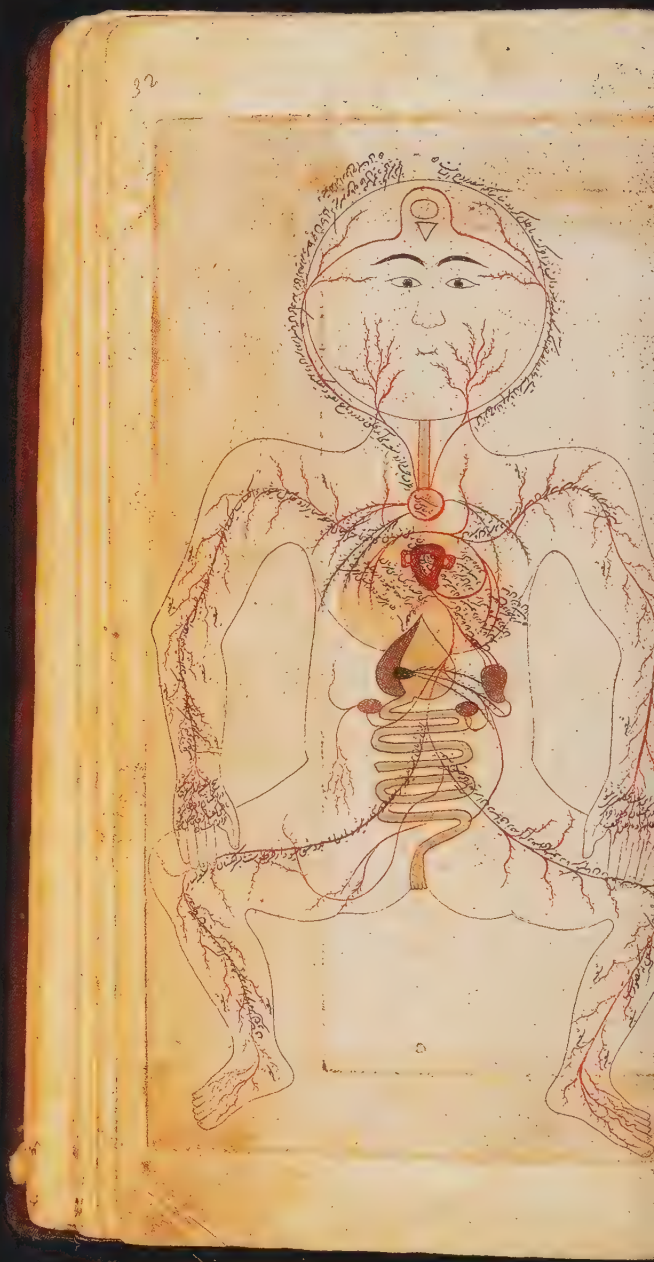
Hand-colored illustration, from

Tashrīḥ-i badan-i insān (17th-century
copy of a late 14th-century
manuscript), leaf 32 recto

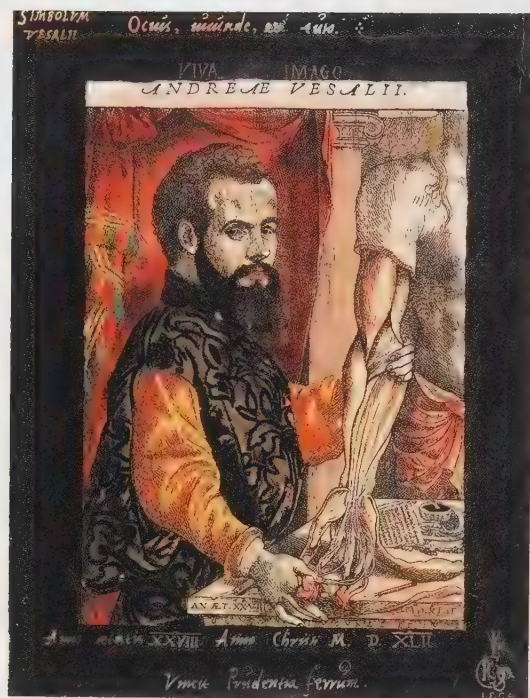
12" × 6 5/8"

History of Medicine Collections,
Duke University Medical Center
Library

This manuscript offers an example of early non-Western anatomical illustration before the advent of Vesalian dissecting techniques. Adopting a highly schematic approach to the body, the work is believed to be a copy of *The Anatomy of the Human Body*, by Manšūr ibn Ilyās. Produced throughout the premodern Islamic world, this type of anatomical manual (*tashrīḥ*), based on the work of the Greek physician Galen, employs a convention of five diagrams corresponding to the five "systems" of the body—bones, nerves, muscles, veins, and arteries. The text was written in Persian in a distinct, elegant script by the calligrapher Muḥammad Saʿīd Lahījī on forty-four leaves of paper dusted with gold. Like most other Islamic anatomy books from the



خصیتی می آید و بعد از آن تمام کرد و در آن شریان بزرگ شریان بزرگ
 و متوقف شود و در اول عروق که در جوار آن مجامعت میست و در
 متوقف می شود و در آنجا و در زیر و در جوار عروق می باشد که خاصه
 و در آن جوار عروق است که کوچک که نهان می شود و در آن
 می باشد و در جوار و در یک و در آن شریان بزرگ چون می باشد
 میست می می شود و از مدی که صاحب اوست قتی از آن طریقه
 راست می آید و قتی طرف چپ و هر یک از ایشان در زیر و در جوار
 عروق و آن که می آید طرف شش میست می شود و در زیر و در جوار
 شصت و آن شریان که در می آید عروق و پای شریان که تنفس می شود و در
 مدی و در شریان که می آید طرف شش و دیگر از طرف شش که طرف شش
 مجامعت می شود و در عروق که مجامعت متوقف می شود و در آن چون
 و در دست یعنی چنانکه او در یک و در او می بیند و در هر یک که شریان
 و در یک و در جوار این بدن شریان حامل و در یک و در او با آن که شرف
 باشد از جهت که شریان از طب رسته است و حامل و حیوانیت است
 باشد از او که در او که رسته است و در طبع و آن که شریان و در شرف
 باشد و در جوار حاملی باشد از آن و غیر از آن از مصداقات
 ظاهره صواب می شود و الحمد لله



3. ANDREAS VESALIUS, BELGIAN, 1514–1564

Above: Portrait of Andreas Vesalius

Facing: Frontispiece of Vesalius's *Fabrica*

Overleaf: Two views of the human skeleton
(side and back)

Hand-colored woodcuts after drawings attributed to Joannes Stephanus of Calcar (1499–c. 1546), from *De humani corporis fabrica libri septem* (Basel: Ioannis Oporini, June 1543), pages [12], [1], 164, and 165

14 $\frac{3}{4}$ " x 10 $\frac{1}{2}$ "

Health Sciences Library, University of North Carolina at Chapel Hill

Andreas Vesalius's treatise, *De humani corporis fabrica*, is considered the greatest work on anatomy ever produced. First published in Basel in 1543, when he was only twenty-nine years old, Vesalius's text revolutionized not only the science of anatomy but also the manner in which it was taught and standardized anatomical representation for the next two hundred years. He critically reexamined Galen's twelve-hundred-year-old anatomical text, which had been derived largely from nonhuman sources, and established the body on the dissecting table as the reference point for anatomy. Vesalius based anatomy on firsthand observation. But more important, he gave the act of dissection a new prestige by insisting on conducting demonstrations

himself rather than relying on an assistant, as had been the custom in the past.

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 the treatise—the three skeletons and the magnificent muscle-man sequence in particular.

Presented in an elegant, emblematic style replete with classical references, Vesalius's illustrations exploited the possibilities inherent in the wood-block technique.¹ The result was a detailed and easily recognizable schematic representation of the body stripped down to its frame of bones and muscles. Employing folio sheets laid out in the sequence followed in actual dissections, he shows a series of animated skeletons posing in pastoral landscapes, often juxtaposed with commonly recognized memento mori symbols, such as tomb shrouds or classical ruins. One of Vesalius's skeletal figures (see overleaf) is shown in a melancholic pose 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."²

1. The *Fabrica* also contains some 660 pages and over 200 illustrations, many of which the anatomist chose personally, since he supervised the artists working from his own dissections.

2. Andreas Vesalius, *The Bones and Cartilages*, bk. I of *On the Fabric of the Human Body*, trans. William Frank Richardson and John Burd Carman (San Francisco: Norman Publishing, 1998), 1.



ANDREAE VESALII
BRUXELLENSIS, SCHOLAE
medicorum Patavinæ professoris, de
Humani corporis fabrica
Libri septem.

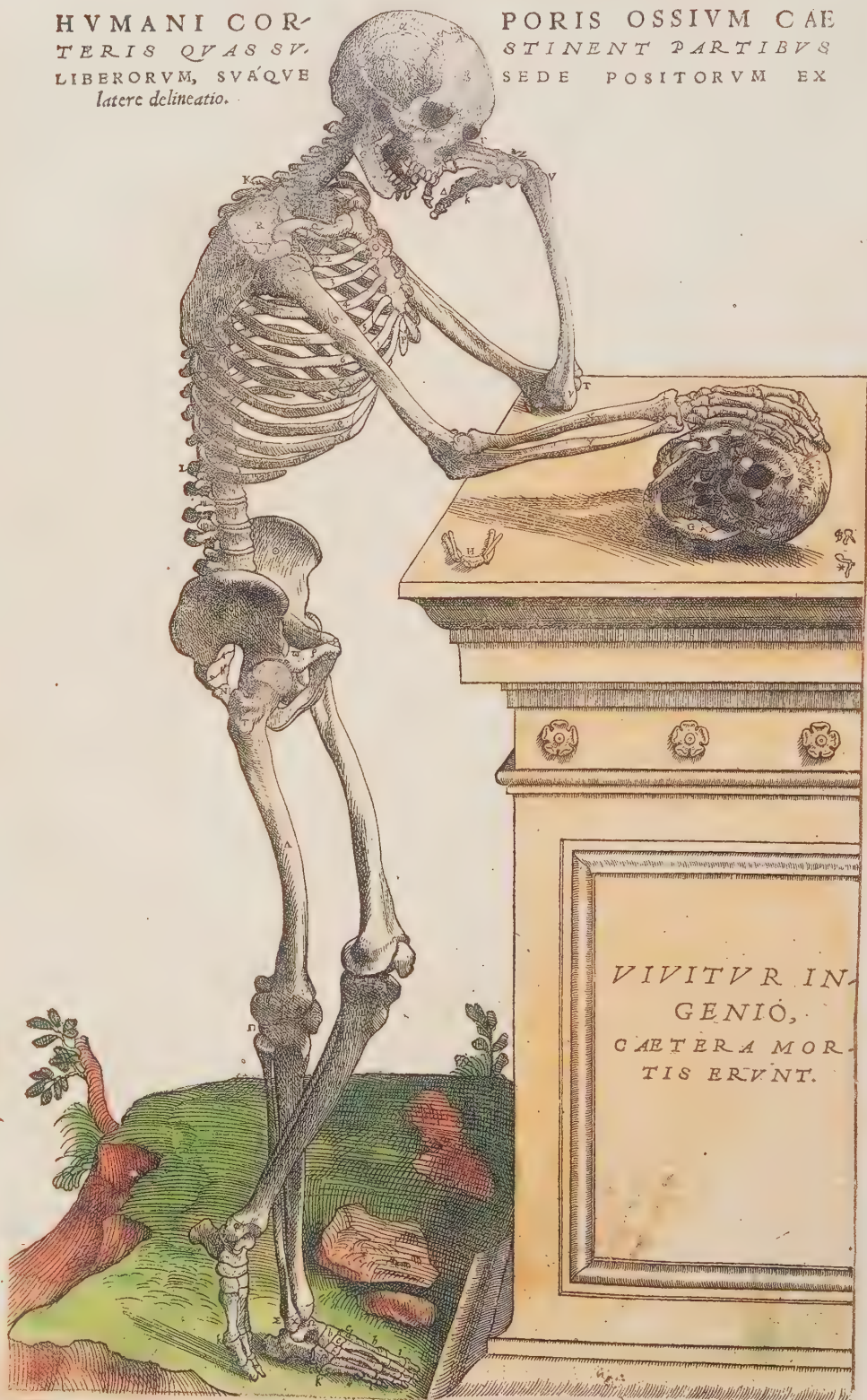
CUM CAESAREAE
M. dieb. Galliarum Regis, Senatus Veneti gra-
tia & privilegio, ut in diplomatis eorundem continetur.



B A S I L E A E. Ex libris Georgij Seifridi Kistner

HVMANI COR-
TERIS QVASV.
LIBERORVM, SVAQVE
latere delineatio.

PORIS OSSIVM CAE-
STINENT PARTIBVS
SEDE POSITORVM EX





4. ÉCORCHÉ (FLAYED MUSCLE-MAN)

Origin unknown, 18th century

Cast lead with a bronze patina, 21 ½" including base

History of Medicine Collections, Duke University Medical Center Library

Derived from a popular northern art tradition of the *écorché*, or flayed human figure, this type of sculpture was very popular in the sixteenth and seventeenth centuries, particularly when the work offered a well-articulated presentation of the muscles. Although earlier representations in art had dealt with the subject of flaying in historical or mythological subjects (such as Apollo's flaying of Marsyas or the martyrdom of St. Bartholomew), the flayed man served as a showcase for current medical knowledge and offered artists the opportunity of experimenting with ever more evocative representations of the body.³ Standing with the right arm raised, this figure with its carefully articulated layer of muscle and finely detailed bone structure represents an accurate view of current anatomical knowledge of the period. Similar to the small anatomical bronzes produced around 1600 in Florence by the Italian mannerist sculptor Lodovico Cardi (1559–1613), known as Cigoli, this work is undoubtedly a later copy.

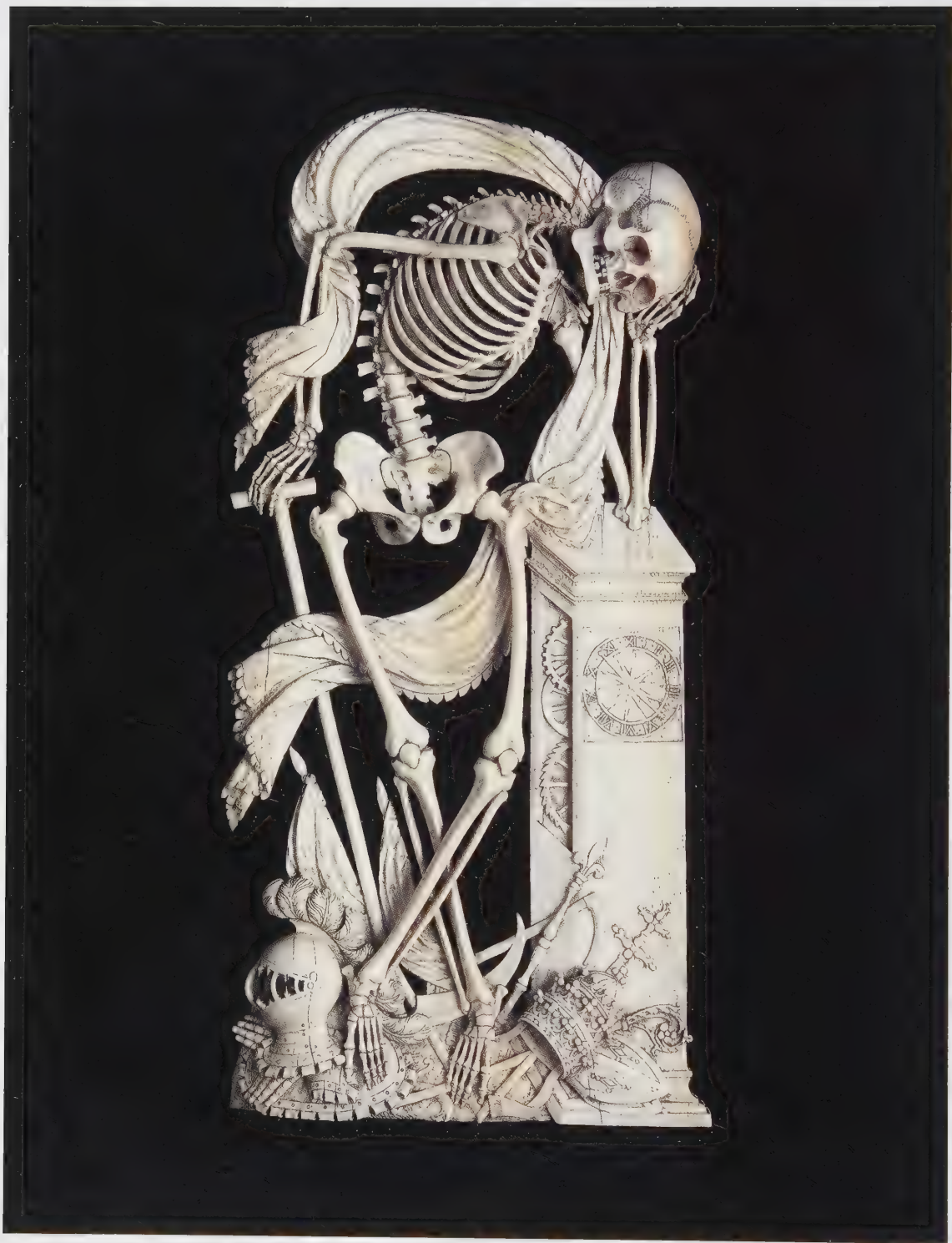
The pose of this *écorché* can be traced to eighteenth-century portraits of surgeons and anatomists connected with the Royal Academy of

Arts in London. Similar statues appear in portraits of William Hunter (exhibition no. 49) and John Sheldon (1752–1808), two professors of anatomy at the school.⁴ This sculpture and the smaller statuettes depicted in the same pose in the portraits were all copies after a life-sized *écorché* used for teaching in the Royal Academy of Arts. An image of the full-sized model may be seen in the back of the school's life-drawing room in a painting by Johann Zoffani (c. 1733–1810), *Gathering of the Members in the Life Room of the Royal Academy in London*.

3. The *écorché* derives from mythological and Christian imagery depicting protagonists who were flayed alive. Marsyas was flayed by Apollo as a punishment for his pride in defying the god. This was a popular theme in Italian sixteenth- and seventeenth-century painting. St. Bartholomew earned the same fate for his devotion to Christ and is sometimes shown in art holding his own skin, as in Michelangelo's *Last Judgment* in the Sistine Chapel in Rome.

4. L. Price Amerson, "The Problem of the Ecorché: A Catalogue Raisonné of Models and Statuettes from the Sixteenth Century and Later Periods," Ph.D. diss., Pennsylvania State University, 1975, 349–354.





5. VANITAS SKELETON TOMB SCENE

Origin unknown, c. 1650

Carved ivory bas-relief, 6" x 11 1/2"

History of Medicine Collections, Duke University

Medical Center Library

Across Europe, but especially in the North, artists drew inspiration from local art traditions of *vanitas* and *memento mori* imagery for anatomical subjects. Their paintings and sculpture usually contained a number of symbolic objects such as skulls, bones, hourglasses, extinguished candles, decaying flowers, and other motifs that were meant to suggest the vanity of earthly things and man's mortality. Extremely popular during the later sixteenth and seventeenth centuries, such imagery was also deemed highly appropriate for medical illustration where a new artistic form—that of the anatomical *vanitas*—gradually took form. Adapting prevailing art styles, anatomical authors following in the footsteps of Vesalius could present current medical information in an engaging and fashionable way for sophisticated patrons. A passage from a Dutch poem by Caspar Barlaeus (1584–1648), written before 1639 for an anatomy theater in Holland, illuminates anatomy's connection with *vanitas* themes:

*On the Anatomical House Which Can be Visited
in Amsterdam*

... This house we found for Death, this hall is rigid with skins forcibly removed. Here, keenly intent, we behold whatever we are inside, and that which is hidden in the midst of our bodies' *fabrica* is brought to light. This structure is the seat of the soul, this is the venerable tabernacle of the mind, this insignificant receptacle contains divinity concealed. Whatever we were we are no longer. Behold, a life's span has withered. And once the light has been extinguished, man disintegrates into decayed flesh. Behold this, O citizens, and tell your Magistrates that here you can learn the ways of death and a desire to shun it.⁵

Carved from a single piece of ivory, this *vanitas* composition is clearly derived from Vesalius's earlier skeletal tableau (see exhibition no. 3); however, in this case the tomb has been replaced by a marvelously elaborate standing clock—a metaphor of the inevitability of passing time. Little is known about the origin or function of this work, although the melancholy pose of the skeleton suggests that it could have been part of a tomb memorial, perhaps a commemorative decoration for a wealthy physician. The artist clearly demonstrates some knowledge of anatomy (although the spine is impossibly curved and has too many vertebrae). Most likely, the sculptor worked directly from Vesalius's illustration or a somewhat distorted copy, which may explain the exaggerations of scale and proportion; however, the skull, the hands, and the feet are particularly well carved. Ivory (usually from elephant or walrus tusk, or whale bone) was a popular medium for luxury items beginning in the Middle Ages. Being soft-grained, it lends itself particularly well to low relief and delicate, complex detail. Ivory's natural luster, translucence, and warmth are all qualities of which this artist has made excellent use.

A number of other objects that reflect different social and economic classes are also included in the composition: at the skeleton's feet are a crown and scepter (with the French fleur-de-lis) of a monarch, a pope's crown and crosier, the helmet of a knight, and the scythe of a peasant. The moral message implied by the presence of these objects is that no one can escape the eventuality of death: the richest king will look no different from the pauper when his mortal remains are decaying in the earth.

5. Trans. from Barlaeus's *Poematum Miscellaneorum / Elegiarum Libri*, 2 vols. (Amsterdam, 1645–46), 114, in William Heckscher, *Rembrandt's Anatomy of Dr. Nicolaas Tulp: An Iconological Study* (New York: New York University Press, 1958).

40

MARIS VISCERA

PARTICVLARIVM FIGV.
RARVM DESIGNATIO.

41

7. JOHANNES DRYANDER, GERMAN, 1500–1560

A flayed skull

Woodcut attributed to the workshop of Hans Brosamer in Frankfurt, from *Anatomiae, hoc est, corporis humani dissectionis pars prior* (Marburg: Eucharius Cervicornus, June 1537), leaf e₁; recto

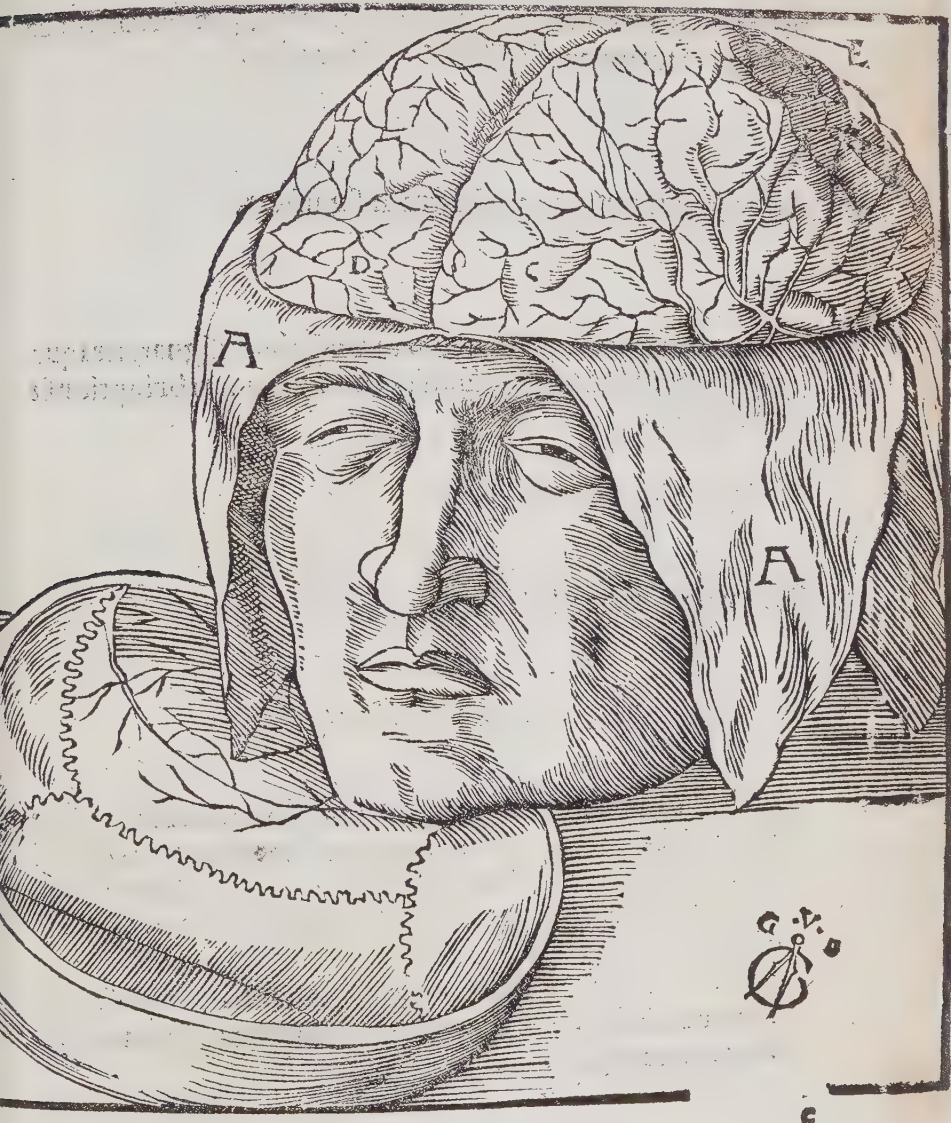
7 ³/₄" × 6 ¹/₄"

History of Medicine Collections, Duke University Medical Center Library

Johannes Dryander (also known as Eichmann), professor of medicine and mathematics at Marburg, performed some of the first public anatomies in Germany in the 1530s. Dryander studied for five years in Paris, where his visit coincided with that of Vesalius; he eventually received his medical doctorate from Mainz. At the age of thirty-five, he received an appointment at the newly founded Protestant University in Marburg, where he continued his work in anatomy. Dryander's first illustrated work, *Anatomia capitis humani* (The Anatomy of the Human Head) published in 1536, reflected the knowledge he gleaned from his early dissections. The text shown here, *Anatomiae, hoc est, corporis humani dissectionis pars prior* (The First Part of the Anatomy, That Is, the Dissections of the Human Body), was published a year after the earlier treatise and contains additional woodcuts combined with material from other authors. Dryander's illustrations of the human head, many drawn from his own studies, are highly detailed for this period.

Representing the successive stages of dissection in a clear and systematic way, the illustrations begin with the removal of the scalp and skullcap, then continue with the cerebral hemispheres to the cerebellum, and finally, to the base of the skull. In keeping with the religious tone of the university where he worked, the motto *Inevitable fatum* (inevitable fate) appears on several of the woodcuts in Dryander's text. This warning for readers to remember their own mortality was a common artistic theme in anatomical art and literature during this period.

HVMANI CAPITIS, FIG VRA TERTIA.



8. JUAN VALVERDE DE AMUSCO, SPANISH, c. 1525–1588

An anatomist dissecting, with multiple views of the heart

Copperplate engraving by Nicolas Beatrizet (1515–c. 1589) from the drawing attributed to Gaspar Becerra (1520–1570), from *Anatome corporis humani* (Venice: Iuntarus, 1607), page 237

12 1/4" x 8 1/2"

Dorothy Carpenter Medical Archives, Wake Forest University School of Medicine

Juan Valverde de Amusco, a Spaniard from the kingdom of Leon, studied anatomy in Padua with Realdo Colombo (c. 1515–1559), Vesalius's successor, and Bartolomeo Eustachio (c. 1500–1574) in Rome. There he also became the personal physician to Cardinal Juan Alvarez de Toledo, the son of the duke of Alba, Spanish governor of the Netherlands. His greatest contribution to anatomy came in the publication of this book dedicated to his patron, the cardinal. Originally published in the Spanish language as *Historia de la composición del cuerpo humano*, the volume appeared in many editions and was translated into other vernaculars as well as into Latin. Although he acknowledged that he had borrowed freely from Vesalius by redrawing the woodcuts and engraving them in copper, the text he produced, using Vesalius as a guide, was entirely his own and in fact contained some corrections and improvements. Valverde explains his appropriation in his foreword to the reader: "Although it seemed to some of my friends that I should make new illustrations without using those of Vesalius, I did not do so in order to avoid the confusion that could follow, not knowing clearly in what I agree or in what I disagree with him, and because his illustrations are so well done it would look like envy or malignity not to take advantage of them."⁷

Significantly smaller, cheaper, and less scholarly than Vesalius's *Fabrica*, Valverde's book was popular among medical students and allowed those desiring more detail to approach Vesalius with greater understanding. While many of the figures he used are exact copies of illustrations

from Vesalius, others have been reworked or combined to create more interesting images. One in particular is that of a flayed muscle-man holding his own skin in one hand and a knife in the other. The illustration on view here is among the fifteen non-Vesalian illustrations in the book. Gaspar Becerra, an artist who specialized in small anatomical figures in plaster, has been suggested as the artist who composed the original drawings for the illustrations. The engravings may have been completed by French engraver Nicolas Beatrizet, as the initials NB appear on several of the prints.⁸ Ten small diagrams outlining the sequential stages of the dissection of the heart appear in the lower part of the print. Above these in the center lies the fascinating image of an anatomist, who himself has been dissected, dissecting another cadaver, in a reference to the "know thyself" (*nosce te ipsum*) moral common in anatomical literature. Gazing heavenward, the anatomist is presumably acknowledging God's secrets, which are being revealed to him in his current object of study. Images like this one, containing such overt theological themes, would have been deemed highly appropriate in this pious period of history.

7. Francisco Guerra, "Juan de Valverde de Amusco," *Clio Medica*, 2 (1967): 355.

8. Ludwig Choulant, *History and Bibliography of Anatomical Illustration in Its Relation to Anatomic Science and the Graphic Arts*, trans. and ed. Mortimer Frank (Chicago: University of Chicago Press, 1920), 205.

TABVLA

LIBRI IIII

II

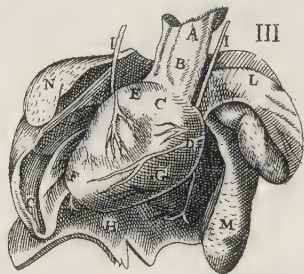
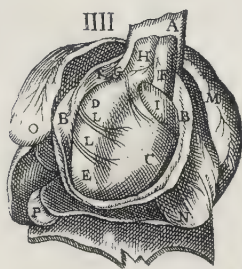
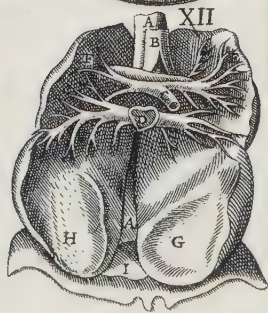
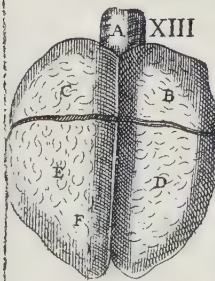
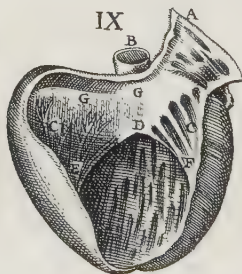
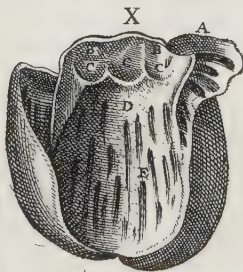
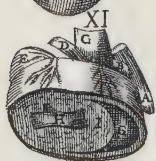
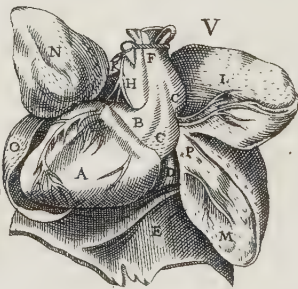
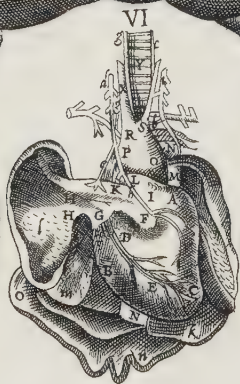
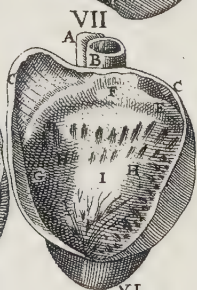
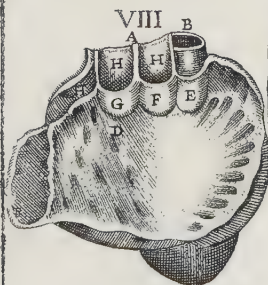
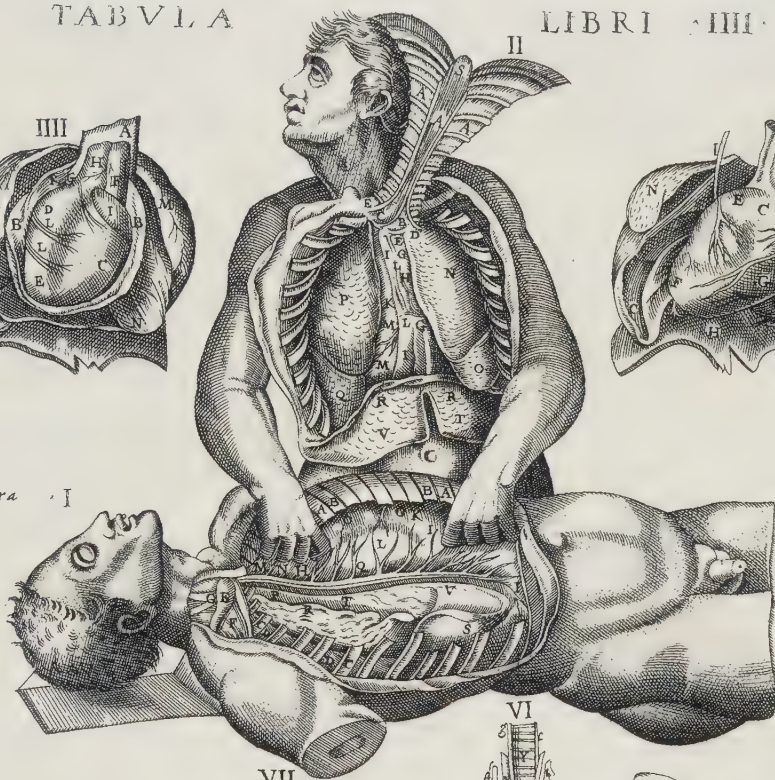


Figura I



9. CHARLES ESTIENNE, FRENCH, C. 1504–1564

The nervous system

Woodcut, from *De dissectione partium corporis humani* (Paris: Simonem Colinaeum, 1545), page 59

13 1/2" x 9 1/4"

History of Medicine Collections, Duke University Medical Center Library

Charles Estienne's *De dissectione partium corporis humani* is one of the most magnificent anatomical atlases of the sixteenth century. Although Estienne's work appeared two years after Vesalius's *Fabrica*, it actually predates it in composition. Estienne, also known as Carolus Stephanus, was born into the family of a celebrated printing house. When his father died in 1520, his mother married Simon de Colines, who later published his stepson's anatomical works (including this one). Having studied medicine at Padua, Estienne returned to Paris in 1535 to study with Jacques du Bois (1478–1555), also known as Sylvius. There he joined fellow students Vesalius and Servetus (c. 1511–1553) and received his medical degree at the University of Paris in 1542. In 1550 Estienne's brother, the publisher Robert Estienne, was accused of Protestantism and fled to Geneva leaving Charles in charge of the family business. Forced to give up his medical practice, he nevertheless went on to print dictionaries, geographical works, and natural histories. A poor businessman, he was accused by Robert's heirs of squandering their father's inheritance and spent the last years of his life in prison for debt.

De dissectione was executed in the 1530s and early 1540s while Estienne was still a young physician in Paris. Working with his friend, the surgeon Estienne de la Rivière, Charles Estienne

reworked a number of existing anatomical woodblocks he had found in his father's printing house. Unfortunately, the friendship soured, and Rivière filed a lawsuit against his former colleague claiming the author's right to credit. With publication delayed for six crucial years, the book might well have been more successful had it been printed before Vesalius's work. It was divided into three sections, the first two of which are illustrated with splendid full-page woodcuts. Eight of the woodcuts are signed by the famous Parisian engraver, François Jollat; others, however, have been traced to the workshop of Geoffroy Tory (c. 1480–c. 1533). Reflecting the prevailing idea that anatomical characters should reflect religious ideals, Estienne's figures, like those of Vesalius, have a poignant and melancholic character. Often depicted in unusual poses—hanging from trees, slumped in chairs—and surrounded by beautifully realized background details, Estienne's macabre anatomical models remain superior artistic examples of the period.



10A-D. THE FOUR SEASONS

Germany or Flanders, mid-17th century

Copperplate engravings with flaps mounted on pasteboard, approximately 20 1/4" x 16"

History of Medicine Collections, Duke University Medical Center Library

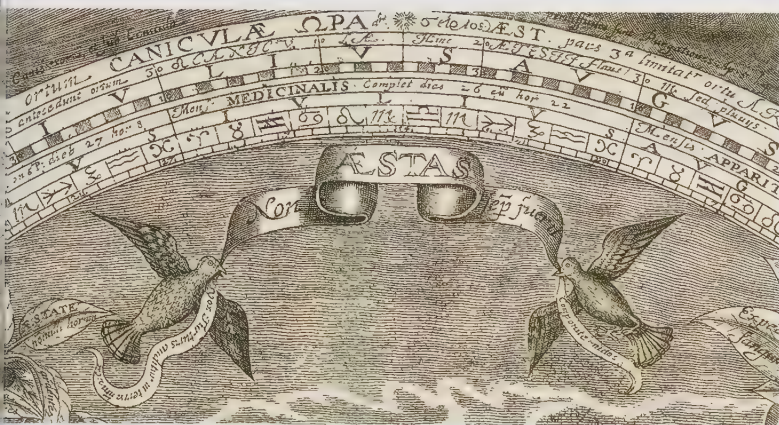
The Four Seasons, shown on pages 50 to 53 with details right and facing, are four seventeenth-century copperplate engravings of probable German or Flemish origin,⁹ each presenting a season of the year as a metaphor for one of life's stages—birth, youth, adulthood, old age (*Ver*/Spring, *Aestas*/Summer, *Autumnus*/Fall, *Hyems*/Winter). Although the works primarily illustrate human anatomy within the Christian story of Paradise and the Fall of Man, they are also densely laced with allusions to what are today known as alchemy, astrology, astronomy, zoology, botany, geography, physiology, uroscopy, and palmistry. Each engraving contains a number of complex parts involving multiple layers of superimposed paper flaps and *volvelles*.¹⁰ This is believed to be the only copy of this series in existence. Little is known of the origin of these works, and they remain something of a scholarly mystery. Previously in the possession of Sir D'Arcy Power, the engravings were sold on his death in 1941 by Sotheby's and eventually made their way into the collection of Duke physician Dr. Josiah Charles Trent. In March 1992, Dr. James H. Semans, and Mrs. Mary Duke Biddle Trent Semans, Dr. Trent's widow, formally presented these enigmatic works to the History of Medicine Collections.

In the first print, *Spring*, the season is represented by an infant and four other figures suggesting various stages of childhood; in the other three prints, only two figures (Adam and Eve, or a man and woman) are depicted. All are full frontal poses, except in *Winter* in which the man has turned his back and the woman in right profile is in the act of stepping down into the grave.



Autumnus (detail), pregnancy calendar volvelle

The figures in all four prints are framed by a staggering amount of detail. At the top of each print is a complex, multilevel arch of zodiacal and other symbols related to the time of year represented. Directly beneath the arch are birds, which are distinctly different in each print: swallows for spring, turtle doves for summer, a stork in the fall, and a crane or cormorant for winter. At the bottom, a wide variety of botanical plants and flowers are shown, each corresponding to the appropriate season, with the single exception of tobacco which reflects the connection of the winter print with the New World. To the right and left of the figures are various astrological tables and globe maps, the latter representing the continents of Europe, Africa, Asia, and the Americas. Two trees laden with flowers or fruit flank the figures in each plate. In general they symbolize the Tree of Life and the Tree of Knowledge in Paradise, but they also have a very specific identity and symbolism for each season: an almond and mulberry for spring; a cherry and an apple



Aestas (detail)



Hyems (detail)

for summer; a pomegranate and grapevine for fall; and an olive, or perhaps mistletoe, with an unidentifiable and dormant tree for winter. In the background, the artist has created pastoral landscapes replete with animals that reflect the place, as well as tiny, pleasing vignettes of village life. Most of the figures hold flasks that probably refer to the Galenic medical concepts of the four humors. Amidst each print are various pennants and ribbons inscribed with proverbs and Hippocratic mottoes.

The seasonal calendar was a popular moralistic theme beginning in the Middle Ages and continuing into the seventeenth century. The somewhat primitive anatomical representation shown here indicates that the artist was most likely using older texts for his models, perhaps illustrations

from Jakob Rüff (1500–1558) or Eucharius Rösslin (d. 1526). One scholar has suggested that these prints may be bloodletting calendars which were particularly popular with doctors and barber-surgeons in northern Europe and were used for calculating the appropriate time and duration of treatments.¹¹ Another has postulated that the flasks are containers for urine specimens, and the information contained in the suite of engravings served to facilitate the analysis of urine over the course of a year and ultimately a lifetime.¹² Analysis of the color, odor, content, and quantity of a urine specimen served as an important diagnostic tool. A costly possession, these prints most likely belonged to a prince or nobleman who may have purchased them in one of the printing centers in the Netherlands.

9. Mimi Cazort, Monique Kornell, and K. B. Roberts, *The Ingenious Machine of Nature: Four Centuries of Art and Anatomy* (Ottawa: National Gallery of Canada, 1996), 173–178. Bruce Hugh Russell presents a case for attributing the plates to the Englishman Robert Fludd (1574–1637).

10. *Volvelles* are moveable concentric paper discs rotating on string pivots and surrounded by either graduated or figured circles. Two *volvelles* appear in the *Autumnus* engraving. At bottom center is a lunar aspectarium, which was used to compute the position of the moon at the moment an illness began (called “decumbiture”) in order to aid the physician in treatment. On the lower right is a pregnancy calendar.

11. Antonie M. Luyendijk–Elshout et al., *The Four Seasons of Human Life: Four Anonymous Engravings from the Trent Collection*, Duke University, Durham, North Carolina (Rotterdam: Erasmus, forthcoming).

12. Bruce Hugh Russell, in Mimi Cazort, Monique Kornell, and K. B. Roberts, *The Ingenious Machine of Nature: Four Centuries of Art and Anatomy* (Ottawa: National Gallery of Canada, 1996), 174.





10B. AESTAS



LOC. AUTUMNUS



10D. HYEMS



11. ANATOMICAL MANIKINS

Germany, France, and Italy, 17th–18th century

Carved ivory, wood, cloth, leather, metal, and glass; 5" to 8" (figures alone), 7 ½" to 10" (including couches)

History of Medicine Collections, Duke University Medical Center Library

Ivory figurines like these were commonly used as instructive tools for doctors to train barber-surgeons and midwives who had little or no access to anatomy theaters where human dissection was performed. They were probably also used by physicians and midwives to give physiological instruction to the lay public, especially in relation to pregnancy, or to explain diagnoses and surgical procedures to patients. Often highly decorative (one is even dressed in a ball gown), these delicate figures were produced by the same craftsmen who carved ivory skeletons or memento mori figures. Like many other small crafted objects produced in family workshops, they are not signed or dated.

Anatomical manikins, like fugitive sheets, were sometimes created as matching pairs with a male and female figure. Many models have articulated arms and a chest plate, which can be removed to reveal organs in the abdominal and thoracic regions. Traces of pigment on the faces of some of the figures shown here and overleaf indicates that they were originally painted. Often the figures (especially the females) have elaborate coiffures and rest on little raised couches of dark wood with delicate linen or lace-trimmed pillows. In all cases, they are depicted in poses resembling sleep rather than death. One model that survives in numerous collections is a pregnant woman, often with a separate fetus attached to the uterus by an umbilical cord made of red thread. Although usually made of ivory, anatomical manikins were also carved from wood or marble, and even cast in bronze. They appear to have still been in use as recently as the end of the eighteenth century, when larger models, cast in colored wax, made them seem imprecise and outdated.







**12. JACQUES-FABIEN GAUTIER D'AGOTY, FRENCH, 1717–1785, AND ARNAULD ÉLOI
GAUTIER D'AGOTY, FRENCH, 1741–c. 1780**

Studies of hands

Colored mezzotint, from *Cours complet d'anatomie* (Nancy: Jean-Baptiste-Hyacinthe Leclerc, 1773), plate 13
26" × 20 1/4"

History of Medicine Collections, Duke University Medical Center Library

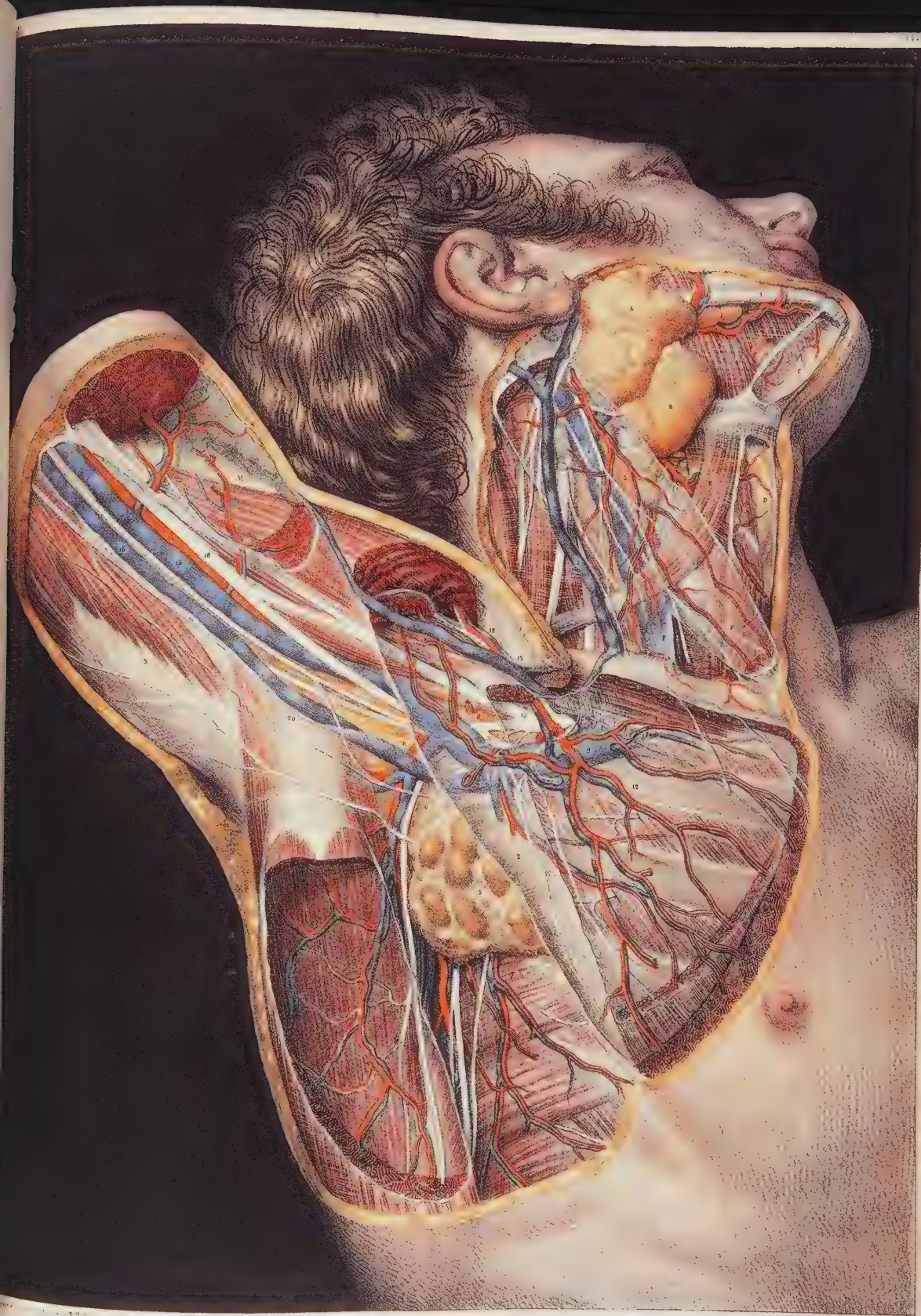
An artist rather than an anatomist or physician, Jacques-Fabien Gautier was born in Marseilles and learned color-printing techniques in the studio of Jacob Christian Le Blon (1667–1741). Drawing on Isaac Newton's theory of the three primary colors of light, Le Blon had formulated a process of color printing using existing mezzotint engraving techniques; he had enjoyed little recognition or success, however. After his teacher's death, Gautier obtained a thirty-year royal *privilege*, or patent, to use his printing technique and improved the process with the addition of a fourth color — black. Continuing Le Blon's goal to publish a completely illustrated anatomical text in color, Gautier began his publication of colored anatomical plates in 1745 with a series of life-sized prints of the muscles. Modeled from cadavers dissected and prepared by Jacques-François-Marie Duverney (d. 1748), a lecturer in anatomy at the Jardin du Roi in Paris¹³ and younger brother of G. J. Duverney (1648–1730), who did all the other artwork for d'Agoty, Gautier's figures heralded a new grace and elegance in anatomical imagery. For the next several decades, Gautier, and later his sons, were the artist-engravers for a celebrated series of medical and botanical illustrations.

Gautier's engravings are all printed with black and three primary colors — red, yellow, and blue. Often employing a vibrant black or deep green as his background color, many of his most dramatic images are life-sized. In 1773, Gautier,

who was now known professionally as "Dagoty" or "d'Agoty" issued an even more successful work on sexual anatomy, *Anatomie des parties de la génération de l'homme et de la femme*. The same year Gautier's second son, Arnauld Éloi Gautier d'Agoty, who was situated in Nancy, published a complete edition of his father's anatomical plates. The edition represented here, *Cours complet d'anatomie* contains fifteen superb plates, the first of which depict male and female nudes. The later prints offer more specialized images of individual body parts, such as this serenely beautiful illustration of the hand. Although not as scientifically accurate as other atlases of the same period, and criticized for their somewhat "muddy" quality, Gautier's prints nevertheless attracted widespread attention and were particularly sought by artists. Many of the more striking plates depict "living" dissected bodies that are often erotically charged or display a lyrical romantic elegance intensified by his use of color.

13. Formally opened in 1640, the Jardin du Roi, also known as the Jardin des Plantes or Jardin Royal des Plantes, became far more than a royal garden of medicinal plants. It gradually developed into a center of scientific study encompassing activity in anatomy, botany, chemistry, and medicine. Lectures held in the auditorium aired views contrary to those espoused by the Paris Faculty of Medicine. It gave dissenting physicians an arena in which to speak and study. In 1793 it was reorganized and was thereafter the Muséum National d'Histoire Naturelle. By 1855 it had ceased to represent the medical sciences.





**13. JEAN-BAPTISTE MARC BOURGERY,
FRENCH, 1797–1849**

The axilla and neck

Hand-colored lithograph by Nicolas-Henri Jacob
(1782–1871), from *Médecine opératoire* (1852), vol. 6
of *Traité complet de l'anatomie de l'homme*, 8 vols. (Paris:
C.-A. Delaunay, 1831–1854), plate 6

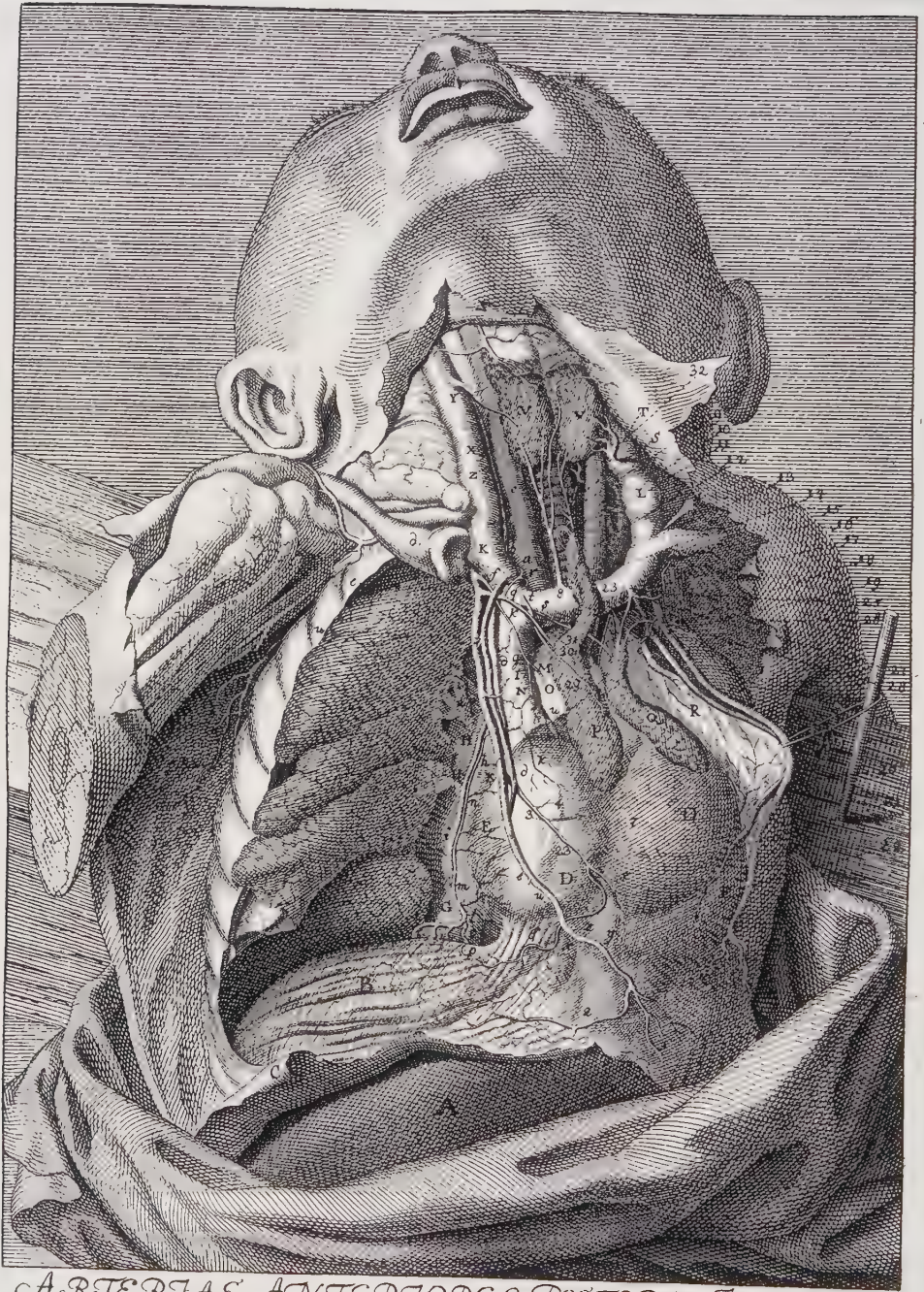
17 $\frac{1}{8}$ " $\times$ 13 $\frac{1}{2}$ "

Coy C. Carpenter Library, Wake Forest University
School of Medicine

Jean-Baptiste Marc Bourgery studied medicine in Paris where he interned with René Théophile Hyacinthe Laennec (1781–1826) and Guillaume Dupuytren (1777–1835) and won several gold medals for excellence from the faculty of medicine. He received his medical degree in 1827 and spent the next decade as a successful health officer in Romilly. Around this time he also decided to produce an atlas of the whole of anatomy, using the newly invented technique of colored lithography. Enlisting the help of the artist Nicolas-Henri Jacob, a pupil of the neoclassical painter Jacques-Louis David (1748–1825), Bourgery produced *Traité complet de l'anatomie de l'homme*, one of the most lavishly illustrated anatomical and surgical treatises ever published. Executed after Jacob's drawings from dissections and anatomical preparations by Claude Bernard (exhibition no. 20) and others, the 726 hand-colored lithographs are unique in their vibrancy and attention to colorful detail.

Bourgery's first volume in the series appeared in 1831, while the text of the eighth and final volume is dated 1854. Encompassing all of human anatomy with separate volumes on embryology

and microscopic anatomy, the series offers an excellent summary of the anatomical knowledge and ideas current in Paris during the middle of the nineteenth century. In the illustration shown, Jacob has used a striking black background to set off the bright colors of the arteries and veins in this lithograph of a dissection of the axilla and neck. Like many other authors of illustrated anatomical texts, Bourgery's illustrations often rely on "living" dissection models, which avoid the unpleasant associations of death that would be found in cadavers. In this case, the idealized male figure, shown in profile, has an abundance of soft, curly hair and warm skin tones. With the layer of skin removed completely (as opposed to being peeled back or left hanging from the torso), the observer is offered an engaging and privileged view of the body.



ARTERIAE ANTERIORES PECTORIS INTERNI.
Kaltenhofer sc. et del. ad Nat. Götting.

**14A-B. ALBRECHT VON HALLER, SWISS,
1708-1777**

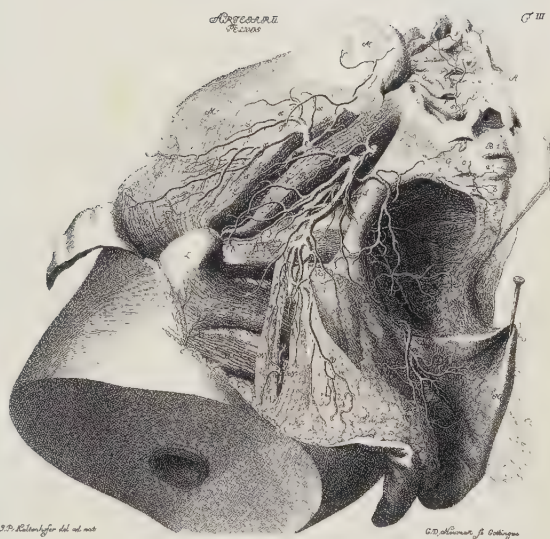
Facing: *Arteriae anteriores pectoris interni* (Anterior arteries of the inner chest)

Right: *Arteriolum pelvis* (Pelvic arteries)

Copperplate engravings by George Daniel Heumann (1691-1759) after drawings by Joel Paul Kaltenhofer (d. 1777), from *Iconum anatomicarum quibus praecipuae partes corporis humani delineatae continentur* (Göttingen: Abram Vandenhoek, 1743-1756), fascicles 3 and 4

17 ⁷/₈" × 11 ¹/₈", 17 ⁷/₈" × 11"

Carl W. Gottschalk Collection, Rare Book Collection,
University of North Carolina at Chapel Hill



Albrecht von Haller was born in Berne, Switzerland, and obtained his medical degree from the prestigious University of Leiden, with a dissertation on the anatomy of the salivary glands, when he was only eighteen years old. Deeply influenced by Herman Boerhaave (1668-1738), he learned anatomy under Bernard Siegfried Albinus (exhibition no. 19). In 1736, he was appointed professor of anatomy, surgery, and medicine at the new University of Göttingen. During the sixteen years he lived in Göttingen, Haller established a library and a botanical and medicinal garden at the university and helped form the Royal Society of Sciences. In 1753, the somewhat irascible professor abruptly resigned his post and returned to Bern with his family for unknown reasons. Haller remained in his native city in a series of minor governmental posts until the end of his life, leaving a voluminous array of writings upon his death in subjects as diverse as economic, philosophical, and medical matters, as well as three novels.

Haller's most innovative medical writings focus predominantly on anatomy and physiology. Wanting these two fields to complement each other, Haller created the concept of a "living anatomical model": he proposed, for example, studying the anatomy of the diaphragm in conjunction with mechanisms of respiration. The two engravings exhibited here are loose

prints from Haller's classic work on gross anatomy, *Icones anatomicae*. Issued from Göttingen, these prints are part of a series of large folios on the arterial system collected as a group and sold separately from the text. Based on Haller's own dissections, J. P. Kaltenhofer's plain, direct images contain no distracting emblematic details. Taking a more straightforward, less romantic approach than other anatomists of the same period, the illustrations in *Icones anatomicae* have a realistic quality drawn directly from the dissecting room. They are for this reason more difficult to view, particularly the illustrations of children. Kaltenhofer's images are more complex and exact than prior attempts at this subject (almost microscopic in their detail), and reveal the finest branches of veins, arteries, and nerves in the context of the actual specimen. Often an outline plate accompanies the illustration and serves to identify the details.

15. GOVERT BIDLOO, DUTCH, 1649–1713

Dissection of the hand

Copperplate engraving by Gérard de Lairese (1640–1711), from *Anatomia humani corporis* (Amsterdam: Sumptibus viduae Joannis à Someren, haeredum Joannis à Dyk, Henrici & viduae Theodori Boom, 1685), plate 70
20 1/2" × 14 3/4"

History of Medicine Collections, Duke University Medical Center Library

A native of Amsterdam, Govert Bidloo studied anatomy under Fredrik Ruysch (1638–1731) and was appointed professor of anatomy at The Hague in 1688 and professor at the University of Leiden in 1694. A favorite of William of Orange (later William III of England) at the court in The Hague, Bidloo also wrote plays and composed a libretto for an opera. Noting that the majority of anatomical atlases available offered little beyond Vesalian identifications of basic structures and made no attempt to correlate the functions of individual organs or systems, Bidloo set out to create his own improved version. He commissioned the renowned artist Gérard de Lairese to produce illustrations from cadavers he had dissected and published the *Anatomia humani corporis* in 1685. Although its text is unremarkable, the book is distinguished by Lairese's superb series of 105 folio copperplate engravings.

While most books published at this time were still using subtle modifications of Vesalian motifs, the Bidloo-Lairese collaboration demonstrates profound changes. One of the more problematic aspects of Vesalius's illustrations was the lack of close-up details of individual structures. Employing perspective and posing full figures in

decorative tableaux, Vesalius's illustrators sacrificed opportunities to present human anatomy in greater detail. In contrast, Bidloo's images offer clear views of individual structures that are made all the more striking by Lairese's confident handling of light and shadow, as seen in this illustration of a dissected hand and forearm. Everything extraneous has been removed in favor of the magnification of a single section of the body viewed from the perspective of the dissector. Lairese's use of delicate shading aids comprehension of the detail by rendering the surface of the muscles distinct from that of the cord-like tendons and fleshy fingers. The artist's inclusion of props of the trade — pins and blocks — also impart a greater naturalism lacking in earlier works. Known for his elegant style and delicate details, Lairese even included a realistic fly atop a cadaver in one of the other plates.





A. P. D. R.

Brisson del. absculp.

16. FÉLIX VICQ D'AZYR, FRENCH, 1748–1794

Two views of the human brain

Hand-colored aquatint by Alexandre Briceau and Angélique Briceau, from *Traité d'anatomie et physiologie*

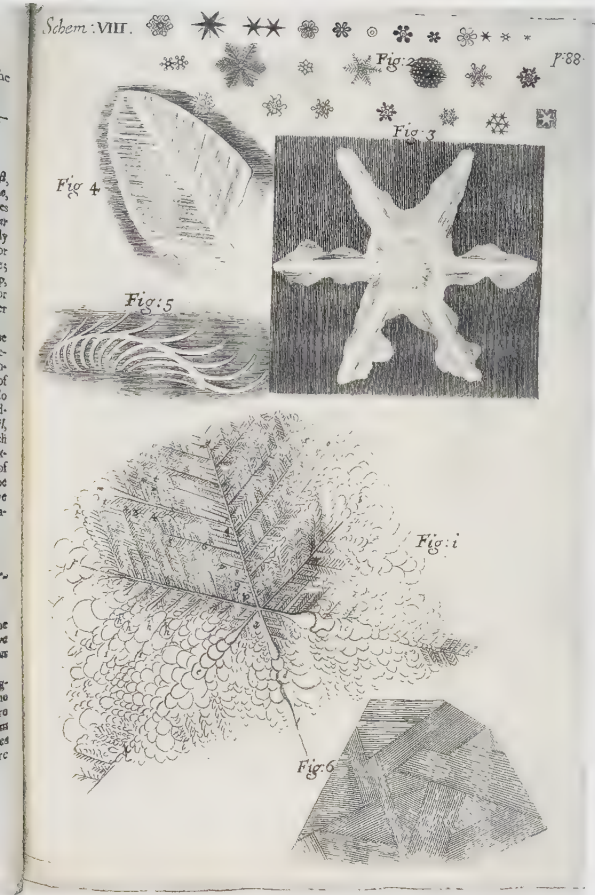
(Paris: François Ambroise Didot l'aîné, 1786), vol. 1, plate 2

19 $\frac{5}{8}$ " $\times$ 13 $\frac{1}{2}$ "

Coy C. Carpenter Library, Wake Forest University School of Medicine

The son of a Normandy doctor, Félix Vicq d'Azyr, received his medical degree from the University of Paris in 1774. From the beginning, he focused his career interests on the study of comparative anatomy, eventually obtaining an appointment at a new veterinary school established at Alfort. Always convinced that veterinary and human medicine could be mutually beneficial, Vicq d'Azyr distinguished himself by containing an epidemic in the Midi region of France with the use of quarantines and sulfur disinfectants. He was also among the first of his French colleagues to compare various organs and functions in a series of laboratory animal studies. In 1778, Vicq d'Azyr became permanent secretary to the Société Royale de Médecine in Paris, where he was instrumental in reforming medical practice and education in France. Vicq d'Azyr's contributions to neuroanatomy are highlighted in his *Traité d'anatomie et physiologie*, which was intended as the first of a multivolume work on anatomical and physiological studies. Adopting a scholarly, quantitative approach, Vicq d'Azyr's

treatise includes observations of brain weights and descriptions of parts of the white matter and the thalamus. However, it was the stunning illustrations by Alexandre Briceau, assisted by Angélique Briceau (later Mme. Allais), that made the author internationally famous. Printed with very pale inks with colored detail added by hand, their illustrations resemble fine, transparent water colors and are generally thought to be the finest and most accurate neuroanatomical illustrations prior to the advent of microscopic staining techniques. Unfortunately, as a result of the outbreak of the French Revolution and d'Azyr's death in 1794, no further volumes in the proposed series were published.



17. ROBERT HOOKE, ENGLISH, 1635–1703

The six-branched figure formed on frozen urine
Copperplate engraving, from *Micrographia, or
Some Physiological Descriptions of Minute Bodies Made by
Magnifying Glasses* (London: James Allestry, 1667),
schema 8, fig. 1

12" x 8 1/8"

History of Medicine Collections, Duke University
Medical Center Library

Invented in Holland between 1590 and 1609, the microscope revolutionized the study of anatomy and physiology; however, it did not become a serious tool for anatomists until the second half of the seventeenth century. Robert Hooke, appointed curator of experiments in 1662 and elected fellow of the Royal Society in London the following year, was one of the first to realize the importance of microscopic anatomy as a medical research tool. Hooke's book, *Micrographia*, first published in 1665 and based on many of the

experiments he demonstrated for the society, was a celebration of "that hidden world" revealed under the lens of the microscope. Sponsored by the society to present and publish his findings on subjects as diverse as insect parts, hair, scales, bark, blue mold, and snowflakes, Hooke brought his microscope to meetings in 1663 and 1664 and invited members to compare his drawings or "schemes" with their true appearance through the microscope. Aware of the power of image in the pursuit of science, Hooke seems almost apologetic for the beauty and wonder found in his studies:

Now because oftentimes much more may be expressed in a small Picture of the thing, than can be done by a Description of the same thing in as many words as will fill a sheet; it will be often necessary to add the Pictures of those Observables that will not otherwise be so fully and sensibly express by Verbal Description: But in the doing of this, as a great Art and Circumspection is to be used in the Delination, so ought there to be very much Judgment and Caution in the use of it. For the Pictures of things which only serve for Ornament or Pleasure, or the Explication of such things as can be better describ'd by words is rather noxious than useful, and serves to divert and disturb the Mind, and sways it with a kind of Partiality or Respect.¹⁴

This illustration of the most mundane of body materials—a few drops of frozen human urine—reveals designs of fantastic beauty and almost perfect organization. Although Hooke's book was regarded by some historical scholars as a thinly disguised offering to the society's sponsor, King James, it did inspire anatomists like Marcello Malpighi (1628–1694) to discover the possibilities inherent in the microscope, thereby facilitating more sophisticated studies of the human body.

14. Robert Hooke, "Of the True Method of Building a Solid Philosophy, or of a Philosophical Algebra," in *Posthumous Works* (London: Smith and Walford, 1705), 64.

18. EARLY DRUM OR COMPOUND MICROSCOPE

England, c. 1850

Brass, with glass lens and mirror; 6 ½" as shown

(height range 6" to 8")

History Collections, Health Sciences Library,

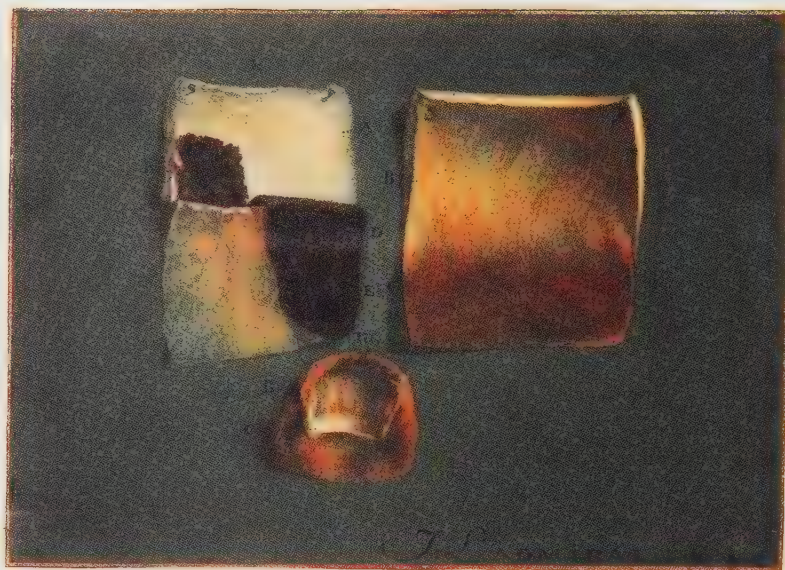
East Carolina University

Small personal microscopes were first introduced into scholarly European circles in the early 1700s. By the last quarter of the century, they were the rage of upper-class salons all over the Continent as every educated gentleman required one for his study or drawing room. A particularly popular model was the miniature cylinder or "drum" microscope derived from Benjamin Martin's pocket reflecting microscope, which was first introduced into England in 1738. The compound microscope consists of three parts: the object glass and eye piece, the stage for holding the object to be viewed, and a mirror or condensing lens below the stage for illuminating the object, which was Martin's innovative feature.¹⁵ Martin's design also incorporated a micrometer in the eyepiece that enabled the user to make valuable measurements. Microscopes were first manufactured from pasteboard, ray skin, wood, and brass; later versions, like this one, were made entirely of brass. Such microscopes were usually sold in a velvet-lined mahogany box accompanied by a variety of accessories, which included different lenses, specimen containers, and suggestions for study or preparation of specimens. Pike's instrument catalogue, published in 1856, advertised microscopes similar to this one at prices ranging from three dollars for a small "ordinary quality" model up to nine dollars for a large deluxe model with multiple accessories.¹⁶

15. Benjamin Pike, *Pike's Illustrated Descriptive Catalogue of Optical, Mathematical and Philosophical Instruments*, 2nd ed. enl., vol. 1 (New York: Published and sold by the author, 1856), 352.

16. *Ibid.*, 353.





**19. BERNARD SIEGFRIED ALBINUS,
GERMAN, 1697–1770**

Prepared skin pigment samples

Colored mezzotint by Joannes Ladmiraal (1698–1773),
from *Dissertatio secunda de sede et caussa coloris Aethiopum et
caeterorum hominum* (Leiden: Theodorum Haak;
Amsterdam: Jacobum Graal & Henricum de Leth,
1737), opposite page [18]

10 5/8" x 8 7/8"

History of Medicine Collections, Duke University
Medical Center Library

Bernard Siegfried Albinus, whose family name Weiss was Latinized in the sixteenth century, became a famous professor of anatomy and surgery at the University of Leiden. He spent a good portion of his life immersed in the problem of creating better and more accurate methods of anatomic illustration, collaborating on different occasions with Jan Wandelaar (1690–1759), a Dutch artist, and Joannes (Jan) Ladmiraal, a French artist and printmaker. Realizing that black-and-white prints, no matter how detailed and exact, could not realistically record the surfaces of objects or their inherent textures, Albinus and Ladmiraal attempted a radical new method that was meant to compete with the naturalistic effects of oil painting “in the colors of life, not painted with a brush, but printed from plates with a wonderful and unheard of ingenuity.”¹⁷ Working from two posthumous drawings of dissections by Amsterdam’s city anatomist,

Fredrik Ruysch (1638–1731), and from others prepared by Albinus, Ladmiraal created six highly realistic anatomical studies, including this one showing samples of skin and the fingernail from an African woman. Almost portrait-like in their attention to detail, Ladmiraal’s studies impart a three-dimensional quality that is enhanced by the vibrant green background. The Latin treatise on the color of human skin (a preoccupation of white Dutch colonial physicians in particular) contains the following explanation of the representations in Albinus’s own words: “These were made, and with no less workmanship, by that same Ladmiraal who made the illustrations of the veins and arteries of the intestines of a man (a work) which I published last year. From a burning and praiseworthy desire to show specimens of his matchless skill, he did not cease to entreat me until he prevailed upon me to give him a chance.”¹⁸

17. Ludwig Choulant, *History and Bibliography of Anatomical Illustration in Its Relation to Anatomic Science and the Graphic Arts*, trans. and ed. Mortimer Frank (Chicago: University of Chicago Press, 1920), 268. Trans. from Bernard Albinus, *Icon durarum matris in concava superficie visae ex capite foetus humani* (Amsterdam: Jacobum Graal & Henricum de Leth; Leiden: Theodorum Haak, 1738), [2].

18. Choulant, *History and Bibliography of Anatomical Illustration*, 268. Trans. from Bernard Albinus, *Dissertatio secunda de sede et caussa coloris Aethiopum et caeterorum hominum* (Leiden: Theodorum Haak; Amsterdam: Jacobum Graal & Henricum de Leth, 1737), [17].

**20. CLAUDE BERNARD, FRENCH,
1813–1878**

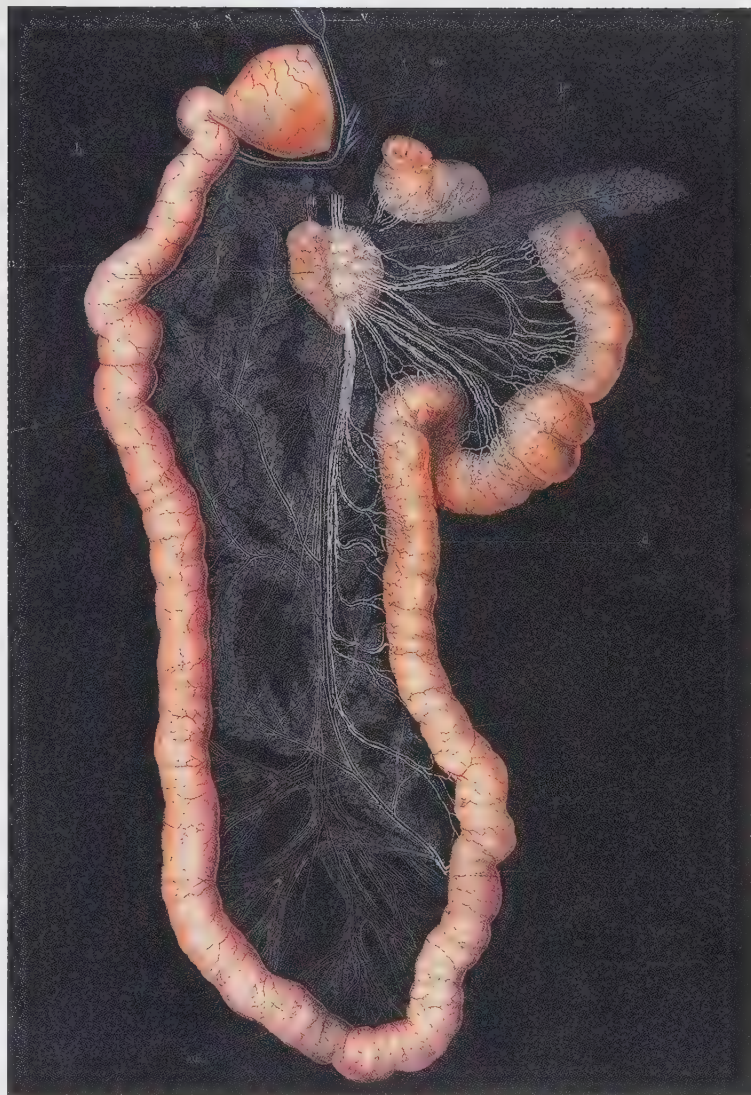
Pancreas

Hand-colored, stipple-engraved aquatint by Borromée after Lackerbauer; from *Mémoire sur le pancréas et sur le rôle du suc pancréatique dans les phénomènes digestifs, particulièrement dans la digestion des matières grasses neutres*, in *Comptes rendus hebdomadaires des séances de l'Académie des Sciences* (Paris: Impr. Impériale, 1856), supplément 1, plate 7–8

11" × 8 3/4"

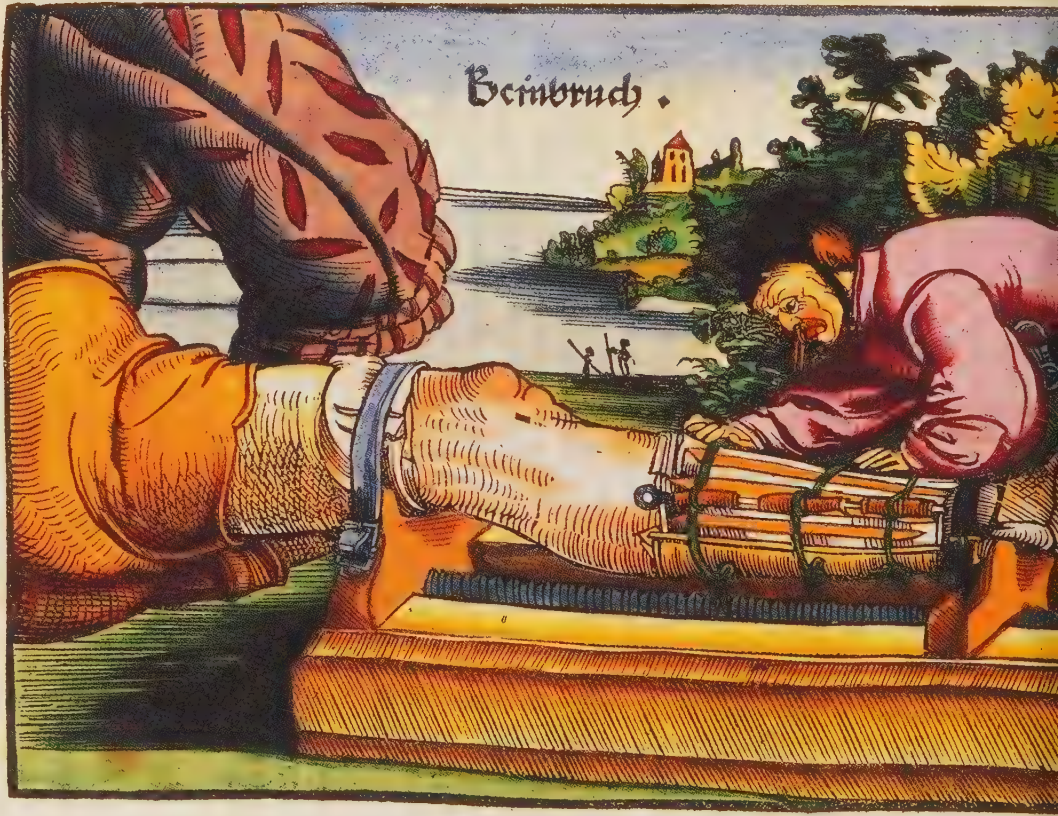
History of Medicine Collections, Duke
University Medical Center Library

Regarded as the most important experimental physiologist of the nineteenth century, Claude Bernard was born in the village of St. Julien to parents who worked in the Beaujolais vineyards. Although his early training was in humanistic rather than scientific disciplines, Bernard became an assistant to an apothecary at the age of nineteen. He spent much of his leisure time writing dramatic plays and comedies. At the age of twenty-one, he went to Paris but was dissuaded from pursuing theatrical writing by the critic Saint-Marc Girardin, who suggested he take up medicine instead. While still a student, Bernard became assistant to the great physiologist François Magendie (1781–1855) at the Collège de France. Eventually working as equal colleagues, the two made a series of brilliant discoveries regarding the physiology of the nervous system, the mechanisms of poisoning, and the physiology of digestion. In 1846, Bernard began a study



of the pancreatic juices and their role in digestion. By observing the digestive process in rabbits and dogs, Bernard showed that pancreatic juices made fats absorbable by breaking them down into fatty acids and glycerine. In 1856, he published his complete results in *Mémoire sur le pancréas*, which accompanied this beautiful hand-colored engraving, praised for its authenticity and clarity.

Inkrument zu den Beinbrüchen.
 Beinbrüchig schäden/als Schlingbrüch/
 Wie diesem Inkrument/ auch sich/
 Richten vnd schneiden lan sein zeit/
 So das Glied in sein gband recht leit.



Beinbruch .

verordnet was/ vnd lege sie auff den
 nach so nam ich die bendel mit dem
 macht sein) vnd knüpffet die vber d
 sie gleich hart stunden/ vnd stieß A
 siat blieb sehn.

Die aber so hure dich /das du d
 sonderlich an den orten des Silgs/d
 mit Popolio /vnden hinein hin vnd
 winne/ so ist es gerecht.

Den Bruch solt du vorm neund
 versach das er nicht rechleg/ oder in
 et her. Aber ich thet kein Bruch an
 lag/ vnd er kein schmerzen her/ den i
 vnd ist darnach dessbass zubinden.

Du solt auch dem Schlingbruch/
 schneiden/das du allen tag zu der A
 beren/das doch der Bruch also gebu
 folgendegut bewerte Pflaster/ die ic
 andern Pflastern/ die ich von viel gu
 erfunden hab.

Ein gut bewert P
 Bruc

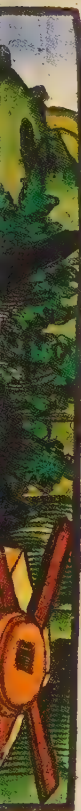
Das gemein Pflaster ist/ das m
 Klein geschnitten sein/ die soll man dar
 becker so der Ofen kält ist worde/ auff
 ward/ vnd darnach stoss sie zu puluer.
 so nem des puluers als viel in ein Psä
 ein wasser vber das puluer/ vnd lass
 es denn auff ein thuch also warm er
 den zu/ als man ein Bruch binden sol
 wir gemeinlich in ein Bruch haben.

Ein ander Pflaster

dienen

Nem Ziegelfein. der da wol geb
 vnd nem denn Bolum armenum/ vnd
 Gerstenmel/ vnd Wälstaub/ vnd A
 einander nuch deinem gefalln/ vnd A

dem pflaster mit Eyerweiss / vnd leg
Ein ander
Dem Regenwurm vnd däre se
einhalb lb, werd / vnd nem acht lot



verordnet

PART 2 *The Surgical Arts*

21. HANS VON GERSDORFF,

GERMAN, C. 1455–1529

Von Abschneidung der Gleider
(On the amputation of limbs)

Hand-colored woodcut by Hans
Wechtlin, from *Feldtbuch der Wundt
Artzney* (Frankfurt am Main:
Hermann Gölfferrich, 1551),
leaf 79 recto

12 $\frac{3}{8}$ " x 7 $\frac{7}{8}$ "

History of Medicine Collections,
Duke University Medical
Center Library

First published in Strassburg
in 1517, the same year that
Martin Luther posted his
Ninety-Five Theses, Gersdorff's
Feldtbuch der Wundt Artzney is the
second-earliest illustrated book
on surgery after Hieronymus
Brunschwig's *Buch der Chirurgia*
(1497). A military surgeon for forty years, Hans
von Gersdorff, nicknamed Schylhans, or
Squinting Hans, took part in many campaigns,
including the battle of Nancy where Charles the
Bold was killed. This widely circulated handbook
on wound surgery was based on his substantial
experience on the battlefield, predominantly
treating patients shot with firearms. The book

Von den Leeshungen.

siedent Wasser/vnd laß sie gar weych werden/vn nem den das
vnd thu diß in ein Aderslein/vnd stoß das zu ein Auf/vnd
denn y. dotieren vnnij. Eyer/vnd stoß sie darunder / vn
ein wenig Nagelamen d auch darunder / vnn thu ein q
Saffran auch darunder/vnd stoß diß alles vnder einander/v
shn das warm darüber/es hilfft. Vnd ob der schmerz so groß
thu j. quint. Opium gepulvert darcin/so legt es schmerzen/ vn
vassigut.

Das Bierdt Capitel / Mit was geschicklichkeit
enklündt Glied soll ab geschnitten werden/nach dem
vnd kein Leeshung helffen/oder sonst nicht
behaltun mag werden.

Frem sonun das Glied muß gesch
werden/vnd kein Leeshung gehelffen mag / ob
da geleicht ist/nicht behalten mag werden/vnd
so solt du den Branten heysen/vor allen ding
Gore ergeben/sichs sind bekennen/vnd des Derr
den betrachten/mis dancsagung/vnd der Chir
des gleich/so gibst im Gott glück zu seiner wickung. Vnd wenn
schneiden wilt/so soltu vor vñ eh allen deine gezeug vnd bereitz
bey einand habē/als Echer/Schermesser/Seg/Blutstellung/
bendel/Binden/Busch/vnd Werk/Eyer/vnd wñ den darzu g
das eins auff das ander folgenach dem schnitz / denn die noer
heysche das. Vnd wenn du ihn schneiden wilt / so heys die ei
Haut hart hinder sich streiffen/vnd bind denn die Haut also n
nem heiland/oder Laß bendel hart/vnd bind denn ein einfach
bendel für den bendel / das es ein Spatium hab zwischen den
bendelen eines Fingers breit blöflichen / das du mit dem Scher
darzwischen magst schneiden / denn dieser schnitz ist gar gewis
gehe gleich ab/vnd machet häßliche strümpff.

Wenn du nun den schnitz also gethan hast / so nem ein Seg
stoß die Rör herab/vnd darnach so thu den Laß bendel wider
vnd heys die einen die Haut vber die Rör/vnd das fleisch z
vnd vornen hart zu halten/vnd solt vor ein binden haben/di
er Finger breit sey/vnd die soll vor genest sein/das sie durch n
so legte sie sich hart an / vnd bind ihm denn den Schendel her
zu dem schnitz / das die fleisch für die Rör gehe / vnd Laß
so gebunden. Vnd darnach so lege ihm die Blutstellung d
vnd du darffst nicht erschrecken des Blutens halb/wenn d
so hältst/als hievor geschrieben seht. Vnd bind ihm denn v
Blutstellung ein gutes dicken Buschen/vnd darnach so nem ein
odder ein Blater/wie du das nennest / die von ein Stier odde
sen/oder von einem Schwein/die da stark sey/vnd schneid den

is divided into four parts: the first section is a
summary of anatomy; the second focuses on
surgery, gunshot wounds, and amputation; and
the third on the treatment of leprosy. The con-
cluding chapter contains a glossary of medicinal
ingredients and medical terms. The *Feldtbuch* was
the first German surgical text to include illustra-
tions of actual surgical procedures, including the

in abschneidung der Glieder. LXXIX

Arm/Bein/abschneiden hat sein Kunst/
 Derreiben den euz in den Brandt/
 Gehört auch nicht ein jeden zu/
 Er schick sich denn / wie ich smethu.



7 fig. oben

first publication date and the early 1600s.

This copy, printed in 1551, is a particularly handsome hand-colored copy. Supposedly, Gersdorff boasted that he had performed amputations on hundreds of patients, the majority of whom had survived. Although he never used anesthesia in any form, Gersdorff did advise patients to go to confession and receive the Holy Sacrament on the day prior to the operation. This illustration, the first woodcut of an amputation, shows Gersdorff's surgical technique, which used tight bands rather than a tourniquet to control hemorrhage as the saw severed the patient's leg. Following the limb's removal, Gersdorff's own styptic recipe, containing lime, vitriol,

alum, aloe, nutgall, and the white hair from a hare's belly mixed with egg whites, was applied to the stump. The final step involved encasing the stump of the amputated limb in a clean bladder from a bull or pig, as is demonstrated by the bearded patient in the background holding his bandaged arm.

first graphic depiction of an amputation. The book's many full-page woodcuts represent an impressive development in early sixteenth-century medical illustration. Extremely vivid and naturalistic, they are distinguished by a quality of realism highly unusual for the period. A popular and accessible work, the *Feldtbuch* appeared in about a dozen editions between its



22. AMPUTATING SAW

Origin unknown, late 16th or 17th century

Bronze and iron with hand-carved wooden handle,
26 1/2" x 7 1/4"

History of Medicine Collections, Duke University
Medical Center Library

Amputation appears to have been practiced from ancient times, as is evident from surviving examples of primitive saws made of flint and bone. In the first century CE, the Roman physician Celsus (25BCE–50CE) described the proper technique for removing a limb:

Therefore, between the sound and the diseased part, the flesh is to be cut through with a scalpel down to the bone, but this must not be done actually over a joint, and it is better that some of the sound part should be cut away than that any of the diseased part should be left behind. When the bone is reached, the sound flesh is drawn back from the bone and undercut from around it, so that in that part also some bone is bared; the bone is then to be cut through with a small saw as near as possible to the sound flesh which still adheres to it; next the face of the bone, which the saw has roughened, is smoothed down, and the skin

drawn over it; this must be sufficiently loosened in an operation of this sort to cover the bone all over as completely as possible.¹⁹

Without knowledge of antiseptics, the risk of infection in wounds or incisions was extremely high, and amputation of gangrenous limbs was a common practice by sixteenth-century surgeons. Most successful surgeons owned their own amputation kit, including a saw, bone knives, and stitching needles. Since recovery was slow, many patients would lodge in a surgeon's house or at a nearby inn so their progress could be closely monitored. This saw's decorative details suggest that it was owned by a wealthy surgeon, who perhaps displayed it in his shop or office. The curved hand grips at the top of the saw were employed by the surgeon and his assistant to steady and balance the large blade during the amputation of limbs. Its size, and weight of three pounds, would preclude it from being used in the field. Portable kits for rural or military field surgeons contained smaller saws.

19. Aulus Cornelius Celsus, *De Medicina*, trans. W. G. Spencer, 3 vols. (London: William Heinemann, 1935–1938), book 7, 33.1–2, p. 471.

23. AMBROISE PARÉ, FRENCH, 1510–1590

Instruments for cosmetic surgery with repair of
a wound of the cheek

Woodcut, from *Dix livres de la chirurgie* (Paris: Jean

Le Royer, 1564), leaf 212 verso and leaf 213 recto
7 1/8" × 4 1/2"

History of Medicine Collections, Duke University
Medical Center Library

Ambroise Paré was born in the small town of Laval, France. He had little formal education and never learned Latin or Greek, the languages necessary to read most medical texts. Paré worked as an apprentice for a barber surgeon and then became a wound dresser at the Hôtel Dieu, the public hospital in Paris. In 1537 he became a royal military surgeon, working in France, Italy, Germany, and England, where he obtained the battlefield experience that makes his writings so vivid. Written in French rather than Latin, Paré's first work was a short treatise on the proper treatment of gunshot wounds, *La Methode de traicter les playes* (1545), in which he advised abandoning the standard use of boiling oil to cauterize wounds in favor of a less painful salve. He arrived at this method of treatment by chance when during battle the supply of oil was depleted and he was forced to use a mixture of egg yolk, oil of roses, and turpentine. The results were far superior to traditional practice, and from this observation he extrapolated the general principle of a gentler wound treatment. A second book on anatomy discussed the care of wounds and fractures of the head. However, *Dix livres de la chirurgie* (Ten Books of Surgery) remains his major work and set a precedent for military medicine. Paré's books, all very rare today, were produced in small, handy editions so that they would easily fit into the field surgeon's rucksack. Paré was the first to practice systematically the use of ligature to control hemorrhage in cases of amputation. He also invented a number of surgical instru-



ments, developed new methods in dentistry, and designed a variety of artificial limbs. Although he was ridiculed by city physicians and the University of Paris faculty for his lack of education and rustic manners, Paré's successes eventually led him to become the royal surgeon to four monarchs in succession beginning with Henry II.

Concerned with the patient's psychological reaction to residual scars or the loss of an eye or limb as well as his or her general health, Paré's book also includes a number of innovative designs and techniques for improving the patient's appearance, including this fine woodcut showing how to treat a "wound of the cheek." Paré suggests the use of a very fine linen bandage and tiny needle to minimize scarring of the delicate skin on the face, a practice still used in the nineteenth century.

Das Fünffte Teil/ von der

Mit solchem ersten Binde sol der Patient morgens und abends / zweine oder drey tage nacheinander verbunden werden / Und so zweine oder drey tage fürüber sein / so bedafft man des ersten Bandes nicht mehr / Sondern sol bis nachfolgende beschribene Wasser haben / und es brauchen / wie folget.

Ein sehr gut Wasser zum weissen Milchstar zu verbinden.

Wels Begetarten kraut vnd wurzel.	} pfund.
Sanckel kraut.	
Senckel kraut.	
Neyen blümlin wasser.	2 quart.

Die Kreute vnd Wurzel hake klein / geus das Wasser darmiter / las zweine tage vnd zwo nacht stehen / Als dem diffusiles in Balneo Mariae. Solches lege mit vierfachen Tüchlin auff die Augen / und auff die Tüchlin ein Glaserspüchlin / wie dir diese nachfolgende Figur eine deutliche / augenscheinliche anzeigung vnd nachrichtung giebet.

Solch

Cur vnd Heilung des weissen Stares.

70



Solch auflegen des Wassers mit den Tüchlin vnd Glaserspüchlin sol alle tage zweymal / auch so der tag langist / drey mal geschehen / bis zum ende der Cur.

M iij

Das

24. GEORG BARTISCH, GERMAN, 1535–1606

Above: Cataract treatment

Facing: Man with eye-glasses

Hand-colored woodcuts by Hans Hewamaul, from

Οφθαλμοδοουλεια: *Das ist Augendienst* (Dresden:

Matthes Stöckel, 1583), leaves 70 recto and 31 recto

12 1/4" x 7 3/4"

History of Medicine Collections, Duke University
Medical Center Library

Although considered the founder of modern ophthalmology, Georg Bartisch received no formal education as a physician. Without the means to attain a degree, he instead served three apprenticeships in surgery and studied with experienced oculists. After practicing as an itinerant surgeon, he eventually settled in Dresden and developed a substantial practice, gaining a reputation for treating the eye and its diseases. He was appointed court oculist to Duke Augustus I, elector of Saxony, in 1588. Published in 1583 at his own expense and dedicated to his patron, the Οφθαλμοδοουλεια: *Das ist Augendienst* (Ophthalmomodouleia: That Is, the Service of the Eyes) is the first modern work on eye surgery and the book that established the term by which this specialty became known. It is also one of the earliest

Das Ander Theil von Mißfarbe des weissen im Auge.

Ellbergelle.	2	} lot.
Galerierte Perlen.	1	
Gampfer.	1	
Allain.	1	
Vorrath.	1	

Die alles klein gepulvert / thue zusammen / genß darauß ein Nüssel weissen Nosen essig / vnd ein Nüssel Bohnen blüß wasser / Nüßes wol / las kalt werden / selges durch / darvon thue alle tage zwey mal in die Augen.

Ein Wasser in die Nasen zu ziehen / vor die mißfarbige Augen.

℞ Einen frischen saßern Granat apffel. Gleich viel.
Grüne Brun kreßte / so schreier der Apffel ist.

Dieß zwey stücke stoß klein in einem Mößel zu einem Nuss / dar nach nim:

Bertram.	2	} lot.
Gampfer.	2	

Dieß beide stücke sollen auch gepulvert sein / vnd drey tage in Essige gedacht / Als dann zu den andern oben zwey stücken gerhan / vnd vnter einander gemischt / vnd in die kleinen Blase disillirt. Von diesem Wasser ziehe man alle tage ein mal in die Nase / es be nimbt sehr die vngestalte farbe von der Coniunctia der Augen.

Ein sehr gut Sälblin vor die mißfarbe vnd vngestalt der Coniunctia vnd des weissen der Augen.

℞ Storck Schmalz.	3 ½	} lot.
Fransen butter.	3 ½	
Eyer öl.	2	
Gampfer öl.	1	

Die temperire zusammen / von diesem Sälblin thue alle abende einer Einien gros in das mangelhafte Auge.

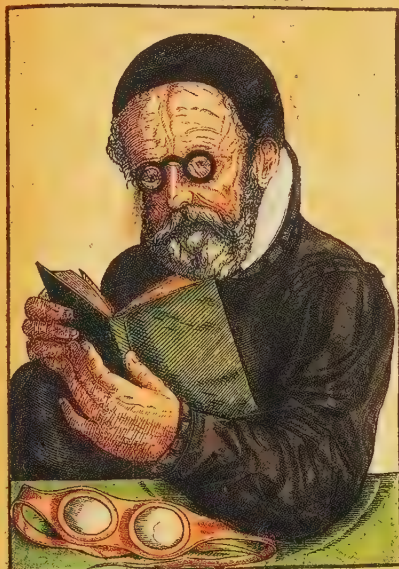
Ende des Andern Theils.

In dem

Das Dritte Teil.

31

In dem Dritten Teil wird ange-
zeigt vnd beschrieben von abnemen / blödigkeit / schwachheit /
dunkel vnd trübheit des Gesichtes / Auch wie man sich vor den Prüllen
vnd Augengüßten bewahren vnd misshalten möge / Item wie man sich von den
Prüllen vnd Augengüßten entwehren vnd absetzen soll.

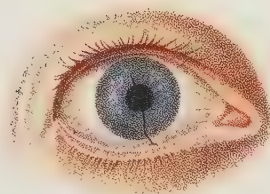
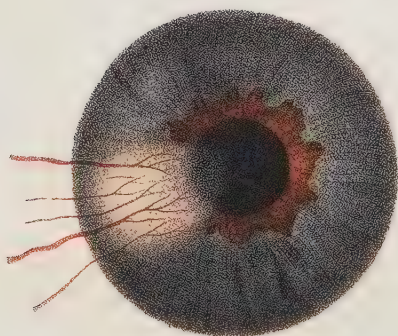
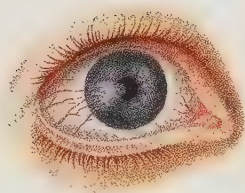


§ Abnemen

medical books to be printed in the German language rather than the traditional Latin or Greek. The author himself appears in the frontispiece, standing under an ornately carved Renaissance-style arch and elegantly clothed in the princely dress of a courtier. This remarkable copy is one of only three or four known contemporary, hand-colored copies of the first edition. Lavishly illustrated, many of the book's ninety-one instructive woodcuts are believed to have been created from drawings by Bartisch himself. Moreover, two images, the anatomy of the head and the eye, have multiple, moveable, hinged overlays.

Drawn from life and rich in detail, many of these vibrant images represent real cases rather than generic patient types. The men, women, and children depicted are all dressed in the latest

Renaissance fashions — with their lace collars, waistcoats, and elaborate jeweled coiffures joyfully recorded. Divided into sixteen sections, the book contains detailed descriptions of various eye diseases and treatments, as well as chapters on such subjects as white and black magic and sorcery. Some of the more evocative illustrations include Bartisch's treatment of different types of cataracts and designs for children's masks for treating crossed eyes. The book concludes with a list of over 600 recipes and instructions for making medicines. The illustration on the facing page depicts a man receiving a herb poultice for the treatment of "white cataracts."



L'aqueur pour et derrier

L'onglon emp

Prud'ben se

**25. ANTOINE PIERRE DEMOURS, FRENCH,
1762–1836**

Blood vessels in the cornea

Colored aquatint by Pierre Paul Prud'hon (1758–1823)
after Cl. Bourguignon Laguiche, from *Traité des
maladies des yeux*, 4 vols. (Paris: Firmin Didot, Chez
L'Auteur et Crochard, 1818), vol. 4, plate 28

10 1/2" x 8 1/4"

History of Medicine Collections, Duke University
Medical Center Library

A prominent surgeon who succeeded his father Pierre as *médecin oculiste du roi*, or royal oculist, Antoine Demours spent years patiently recording observations from his research and practice in preparation for this important treatise on diseases of the eye. The book presents a detailed survey of all known afflictions and offers numerous case histories of eye injuries, as well as the conditions leading to their development. With a description of glaucoma provided by his father, Demours was the first to recognize heightened intraocular pressure as a symptom of the disease. He was also among the first eye surgeons to use belladonna for cataract operations and to open artificial pupils to treat certain types of blindness. Upon its publication, Demours's *Traité des maladies des yeux*, with its splendid illustrations, created a sensation among French physicians. This almost surreal image depicts two stages of pterygium, a condition in which a pattern resembling an "insect wing" appears on the patient's cornea. Partially hereditary, this condition predominantly affects people who spend significant amounts of time outdoors in the sun.



**26. SPECTACLES WITH COLORED
GLASS LENSES**

Paris, Nachet & Fils, 19th century

Brass with hand-blown lenses, 2 1/2" x 5":

lenses, 1 1/2" diameter

Health Sciences Library, University of North Carolina
at Chapel Hill

Although spectacles were invented in Italy in the late fourteenth century, most probably by Salvino degli Armati (d. 1317) of Florence, they did not become generally available until the sixteenth century. With the increase in book production and the rise in literacy, the demand steadily increased. The earliest examples were a single lens in a frame with a handle. Initially frames were made of brass or iron and later of horn, bone, gold, silver, and even leather. The first lenses were only for the far-sighted, but by the sixteenth century concave lenses for the short-sighted had been introduced. Benjamin Franklin (1706–1790), tired of coping with two sets of spectacles, devised the first pair of bifocals in the late 1700s. Tinted lenses appeared in the sixteenth century, but did not become especially fashionable for several more centuries. Spectacles were sold by peddlers or opticians primarily on the basis of the customer's age. Purchasing glasses under the direction of a qualified person rather than selecting by trial and error what seemed to work best did not become the norm until the mid-nineteenth century. The frame and lenses displayed here were part of an optician's diagnostic set used for determining the correct prescriptions for individual patients. They were created by the famous Nachet optics firm, which also made microscopes.



27. CHARLES BELL, SCOTTISH, 1774–1842

Amputation using a screw tourniquet

Etching by Thomas Landseer (1795–1880) after a drawing by Bell, from *Illustrations of the Great Operations of Surgery* (London: Longman, Hurst, Rees, Orme, and Brown, 1821), plate 9

10 1/2" x 15"

History of Medicine Collections, Duke University Medical Center Library

Sir Charles Bell, a well-known Scottish neurologist and surgeon and younger brother of the internationally famous anatomist and surgeon, John Bell (1763–1820), was educated at the University of Edinburgh, but spent the majority of his professional life in London, where he was also known as an anatomist, a teacher, and a writer. Besides such important contributions to medical science as the establishment of the motor and sensory pathways of the spinal nerves, Bell was

an extremely accomplished artist. The author of several important books, Bell also supplied all the drawings for the illustrations as well. Elegant and accurate, Bell's images show his facility for spontaneous life-drawing techniques in minimal, but crucial detail. This plate, one of several in the book illustrating various techniques for amputation of different body parts, offers fully labeled "before" and "after" views of the procedure, along with illustrating the proper use of a screw tourniquet to prevent hemorrhage. An additional thumbnail sketch in the front right of the page offers a third view of the patient's femur or thigh bone. All the plates in the volume were prepared by Thomas Landseer, brother of the popular animal painter Edwin Landseer (1803–1873). Reminiscent of an artist's sketchbook in both style and format, the book's unfinished drawing style and rectangular design were extremely unusual for the time.



28. HORSESHOE TOURNIQUET

Brescia, Figini, late 18th century

Brass and leather, 8" x 7 1/4"

History of Medicine Collections, Duke University

Medical Center Library

The tourniquet was a tremendous advance as a device to arrest hemorrhages from open wounds or during amputations. In the eighteenth century, Jean-Louis Petit (1674–1750) designed an effective tourniquet to control bleeding until the surgeon could tie off, or ligate, all the blood vessels. With bleeding controlled, Paré's ligature technique (exhibition no. 23), which replaced cauterization, then became practical. Petit's screw tourniquet (exhibition no. 27) enabled the application of direct and adjustable pressure to the artery and became the standard means of working in a bloodless field until the early 1900s. While Petit's original tourniquet was made of

wood, the more durable medium of brass with a strong linen strap was soon substituted. In most cases, the pads were covered with soft kid or chamois leather to make them more comfortable. Other compressing tools were devised but were often better suited to control temporary bleeding than for amputations. The particularly elegant example on display is Signoroni's design for a horseshoe tourniquet made by Figini. It is crafted of brass, with an incised design on the two "arms" and has soft leather pads.



29. SURGICAL SET

[New York], G. Tiemann, last half of 19th century
Steel blades with carved ivory handles, 6 $\frac{3}{8}$ " to 6 $\frac{3}{4}$ "
Health Sciences Library, University of North Carolina
at Chapel Hill

Metal scalpels, or small surgical knives, were first used in ancient Greece and Rome for making incisions and a variety of purposes and have changed very little since that time, although new blades and materials have been introduced. Since the 1700s, most surgeons owned pocket surgical kits, because the surgeon often had to travel over long distances to the patient to perform an operation. By the early 1800s, handles were increasingly elaborate and were made from precious materials such as mother-of-pearl or tortoise shell, as well as the more standard models in wood and ivory. This surgeon's kit produced by G. Tiemann & Co. includes a basic scalpel, along with four other knives with pointed and curved blades for various types of incisions.

In 1855 George Christoph Tiemann (1793–1868), who began as a cutler, formed George Tiemann & Co., which became the single largest

surgical instrument producer of its day in America. Tiemann collaborated with leading surgeons who were his customers in the design and fabrication of instruments. Following the Civil War, which was an especially prosperous time for the business, circumstances began to change, with an alteration in both marketing and production. The form of and materials used in the instruments underwent changes in response to asepsis. Organic materials such as wood, leather, and ivory, which could not be effectively sterilized, ceased to be used. A network of retail medical and surgical supply houses that sold instruments purchased from a few large German manufacturers began to displace the traditional small family firms that produced to order for their customers. Unable to respond to these changes, Tiemann & Co. entered a long decline, which ended in the 1930s.

30. NICOLAS ANDRY DE BOISREGARD, FRENCH, 1658–1742

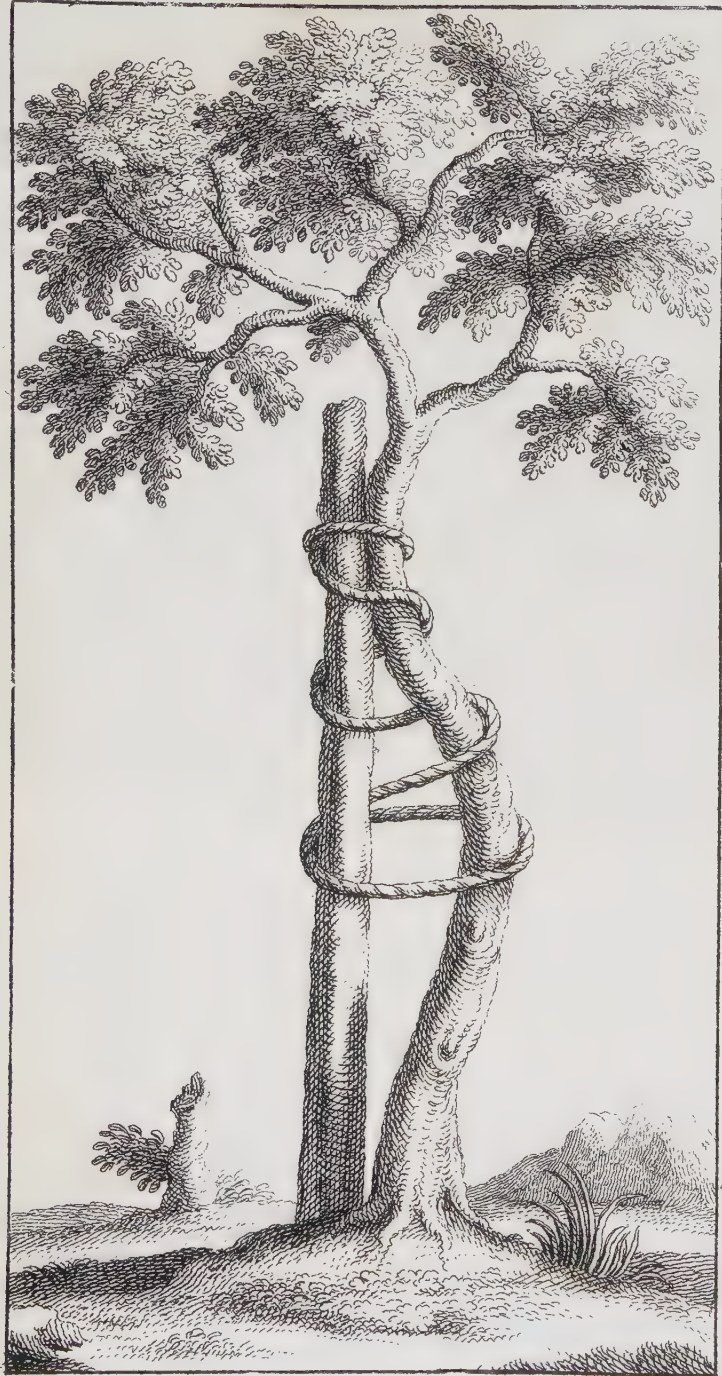
Tree analogy for the treatment of bone deformities
in children

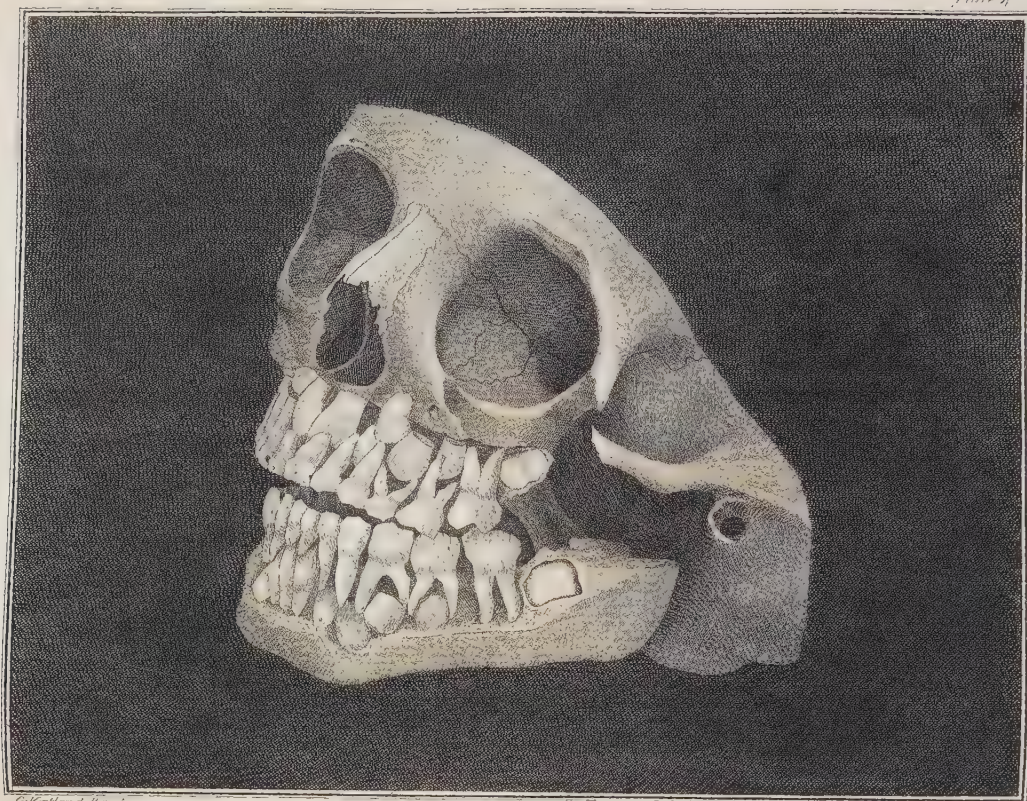
Copperplate engraving by J. B. Guélard after a drawing
by Antoine Humblot, from *L'Orthopédie, ou l'art de
prévenir et de corriger dans les enfans, les difformités du corps*,
2 vols. (Paris: La veuve Alix; Lambert & Durand,
1741), vol. 1, plate opposite page 282

6 $\frac{3}{4}$ " × 4 $\frac{1}{8}$ "

Health Sciences Library, University of North Carolina
at Chapel Hill

A professor of medicine at the University of Paris, Nicolas Andry published at the age of eighty-three his pivotal account on childhood deformities. He introduced the term "l'orthopédie" by combining the Greek *orthos*, meaning straight, and *paidos*, child. Andry stated in the 1743 English translation of his book (vol. 1, p. 1), "Out of these two words I have compounded that of *Orthopaedia* to express in one Term the Design I propose, which is to teach the different Methods of preventing and correcting the Deformities of Children." Born in Lyons, Andry received his medical degree from Rheims in 1697 and four years later was appointed a professor in the College de France. Early in his career, Andry grasped the crucial principles that the muscles are the





G. Kirtland Pinx.

Engraved 12 Jan. 1803 by Joseph Fox

I. Parks sc.

molders of the body in childhood and that weakness in muscles can result in later deformity. Believing that by exercising the affected muscle the deformity could be prevented or cured, Andry devised ingenious balancing exercises and gymnastic games for children. *L'Orthopédie* opens with a general description of the external parts of the body and then focuses on the prevention and correction of deformities in each. Some of Andry's more delightful digressions include a detailed analysis of the problems associated with restrictive play clothes for children and proper posture. Simple, practical, and rich in charming poetic asides, the book remains accessible to a wide audience today. This famous emblematic engraving of a crooked tree tied to a straight post is still used as a symbol of orthopedics. Although Andry's work made a great impact (especially after an English edition appeared in 1743), many of his approaches did not become commonplace until the following century.

31. JOSEPH FOX, ENGLISH, 1776–1816

Two sets of teeth at six years of age

Copperplate engraving by I. Parks after a drawing by G. Kirtland, from *The Natural History of the Human Teeth* (London: Thomas Cox, 1803), plate 4
11" x 8 3/4"

Health Sciences Library, University of North Carolina at Chapel Hill

Prior to the late seventeenth century, most dental operations and procedures were carried out by barber-surgeons, itinerant "tooth-drawers," or blacksmiths; however, in the eighteenth century dental surgery became a legitimate and growing profession. First efforts were made on the European continent to regulate the practice with licensure to eliminate frauds and quacks. In the late 1750s the word "dentist" entered the English language, adapted from the French word "dentiste." One of the more famous early dental specialists in England was Joseph Fox. In his role as

the first lecturer on dentistry at Guy's Hospital in London, Fox had a great impact on early dental practices. His *Natural History of the Human Teeth* was the most complete treatise on dental procedures of that time and was the earliest publication to describe specific operative procedures for the correction of dental abnormalities. The text is concisely written and illustrated with thirteen copperplate engravings, one of which is this elegant print of a six-year-old child's skull highlighted against a dark background. This plate shows in a single view both the temporary (or baby) teeth and the permanent (or adult) teeth.

32. DENTAL SCALER AND TOOTH KEYS

Origin unknown, late 18th century

Metal with ivory handles; scaler, 6 $\frac{3}{4}$ ",

tooth keys, 5 $\frac{3}{4}$ " $\times$ 3 $\frac{1}{2}$ "

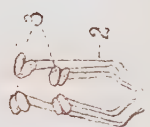
Health Sciences Library, University of North Carolina at Chapel Hill

Dental scalers, used for the scraping of tartar, are documented as early as the eleventh century by Arabian physician Albucasis (d. c. 1013). However, it was Pierre Fauchard's (1678–1761) *Le Chirurgien dentiste, ou traité des dents* (The Surgeon Dentist), published in 1728, that is often credited with making the use of such tools common practice across Europe. Typically manufactured and sold in sets of different sizes with bone, ivory, ebony, or even elaborately carved mother-of-pearl handles, dental scalers were an important innovation for modern dentistry.

Tooth keys are first mentioned in Alexander Monro's *Medical Essays and Observations* (1742) but appear to have been in limited use already in the first quarter of that century. The earliest



examples looked just like an ordinary door key of the period, with a straight shaft and a large ringed handle. Over time, the latter became a transverse handle made of wood or ivory while at the other end was a bolster with an attached hinged claw. The bolster was placed against the tooth's root with the claw placed over the crown. The key was then quickly and forcibly turned (like a key in a lock), which extracted the tooth. One of the tooth keys shown here contains claws of several different sizes to provide a better fit for extractions in different patients.



9 8 10

Benjamin Smith Barton.

A N

A C C O U N T

O F T H E

F O X G L O V E,

A N D

Some of its Medical Uses :

W I T H

PRACTICAL REMARKS ON DROPSY,
AND OTHER DISEASES.

B Y

WILLIAM WITHERING, M. D.

Physician to the General Hospital at Birmingham.

— *nonumque prematur in annum.*

HORACE.

BIRMINGHAM: PRINTED BY M. SWINNEY;

F O R

G. G. J. AND J. ROBINSON, PATERNOSTER-ROW, LONDON.

M,DCC,LXXXV.



**33. PORTRAIT OF WILLIAM HARVEY, ENGLISH,
1578–1657**

England, attributed to Sir Peter Lely's (1618–1680)
workshop, c. 1650

Oil on canvas, 28 $\frac{3}{4}$ " $\times$ 24"

From the collection of Verne L. Roberts, Ph.D.

William Harvey remains one of the outstanding figures in the history of medicine. Harvey's small book, *Exercitatio anatomica de motu cordis et sanguinis in animalibus* (An Anatomical Exercise on the Motion of the Heart and Blood in Animals), was published in Frankfurt in 1628 and marked the beginning of experimental science. Demonstrating by clear and repeatable experimental method that the blood circulated through the body and that its movement was caused by the pumping action of the heart, Harvey's revolutionary theory sent shock waves throughout university medical schools across Europe. As a leading physician and scholar at the royal court in London, Sir William Harvey apparently sat for his portrait on numerous occasions, from which a number of copies were produced. This portrait closely resembles one given to the Royal Society in 1683 or 1684 by John Mapletoft, MD (1631–1721), which was later copied for several

different patrons. On the authority of the Keeper of the Queen's Pictures, the portrait is thought to be a copy painted during the 1650s in Peter Lely's studio and later acquired by the Henage Finch family into which Harvey's niece had married. It is known that this particular portrait was sent to auction at Christie's by the Fitzwilliam Trust on 11 July 1986 and from there acquired through the intermediary of several antiquarian booksellers by Verne L. Roberts for his collection.²⁰

In this portrait, a sober, serious Harvey is portrayed in bust length form as an elderly man wearing somber robes and black skull cap. As in many of the later portraits, he appears wan and thin, perhaps the result of the illnesses (including gout) which he suffered late in life. The collection and display of a series of similar bust-length portraits of studious academics has had a long tradition in northern European universities and learned societies and may still be seen in some academic halls today.²¹ This painting may well have been originally intended as part of such a portrait series.

20. G. S. T. Cavanagh, "William Harvey," *North Carolina Medical Journal*, 50, no. 2 (1989): 78.

21. Series of academic portraits may still be viewed at a number of universities in the Netherlands and Britain, including the Oude academische zaal van de Rijksuniversiteit, Leiden, where oral Ph.D. defenses are still conducted.

**34. PORTRAIT OF VALENTINE MOTT,
AMERICAN, 1785–1865**

United States, by James Henry Shegogue (1806–1872),
before 1850

Oil on canvas, 27 1/4" × 19 1/4"

History of Medicine Collections, Duke University
Medical Center Library

Valentine Mott, one of the most famous surgeons in New York during the early nineteenth century, received his training by apprenticing with local doctors. In addition, he later traveled to London where he studied with Astley Paston Cooper (see exhibition no. 51). In 1809, Mott returned to the United States where he held appointments at Columbia College, Rutgers Medical College, and the newly established College of Physicians and Surgeons of New York. A highly skilled and ambidextrous surgeon, Mott was famous primarily for his investigations and achievements in vessel ligation. Believing that a surgeon's duty was "to operate in every case which allows of a rational hope of success, either of improving the patient's condition, or of preserving his life,"²² Mott's swiftness and skill were highly valued since the majority of his operations were performed prior to the invention of anesthesia. Mott also had a large collection of specimens in his home, many collected from patients in his own practice.²³ This elegant portrait, modeled after the kind of paintings Mott would have seen of upper-class patrons in London, depicts the dashing young doctor as a gentleman in the guise of the Lord of the Manor. Dressed in informal clothes (he could have just returned from a ride in the countryside seen through the window at the far left), Mott's face is highlighted by the vi-



brant, crimson curtain behind him. His hand casually resting on a table, he acknowledges the viewer with a confident gaze. The absence of any motifs of his trade (often included in more traditional portraits of American physicians) suggests that Mott preferred to be viewed as a landed aristocrat rather than as a physician or surgeon.

22. Valentine Mott, "An Account of a Case of Osteo-Sarcoma of the Left Clavicle in which Exsection of that Bone Was Successfully Performed," *American Journal of the Medical Sciences*, 3 (1828): 100.

23. The eighteenth- and nineteenth-century anatomical collection was a descendant of the sixteenth-century princely cabinet of rarities or *Kunstammer*, which displayed anatomy specimens and natural history artifacts juxtaposed with painting, sculptures, coins, and other works of art.



35. HOME MEDICINE CHEST

England, c. 1830

Walnut wood with ivory knobs and brass drawer pull;

13 1/2" x 11 1/4" x 7"; open, 13 1/2" x 23" x 7"

History of Medicine Collections, Duke University
Medical Center Library

From the beginning of the eighteenth century, domestic medicine chests were made for private households in Britain; however, it was not until the beginning of the next century that these portable dispensaries began to proliferate. A number of reasons contributed to their popularity: the appearance of medical treatises written for the lay public, the growth of a middle class which could afford to buy them, and not the least, the convenience of having a stock of ready-made medicines close at hand. Fitted with a number of compartments and drawers, chests in a variety of styles were sold with custom-made

bottles, glass measuring cups, scales, a mortar and pestle, and funnel. A typical chest of the period was made of mahogany, rosewood, or walnut and contained an assortment of powders, tonics, and salves, along with a copy of a home medical manual. An ivory crochet hook, found in the drawer of this chest, when inserted in a small hole in the upper right corner, served to hang scales for weighing out the proper medicinal ingredients. Larger chests, including this one in the double-fronted cupboard style, had additional bottles in a back compartment concealed by a sliding panel. Incorrectly thought by many to house poisons, these compartments contained substances like epsom salts or tartaric acid.



36. DECORATIVE PILL CASES

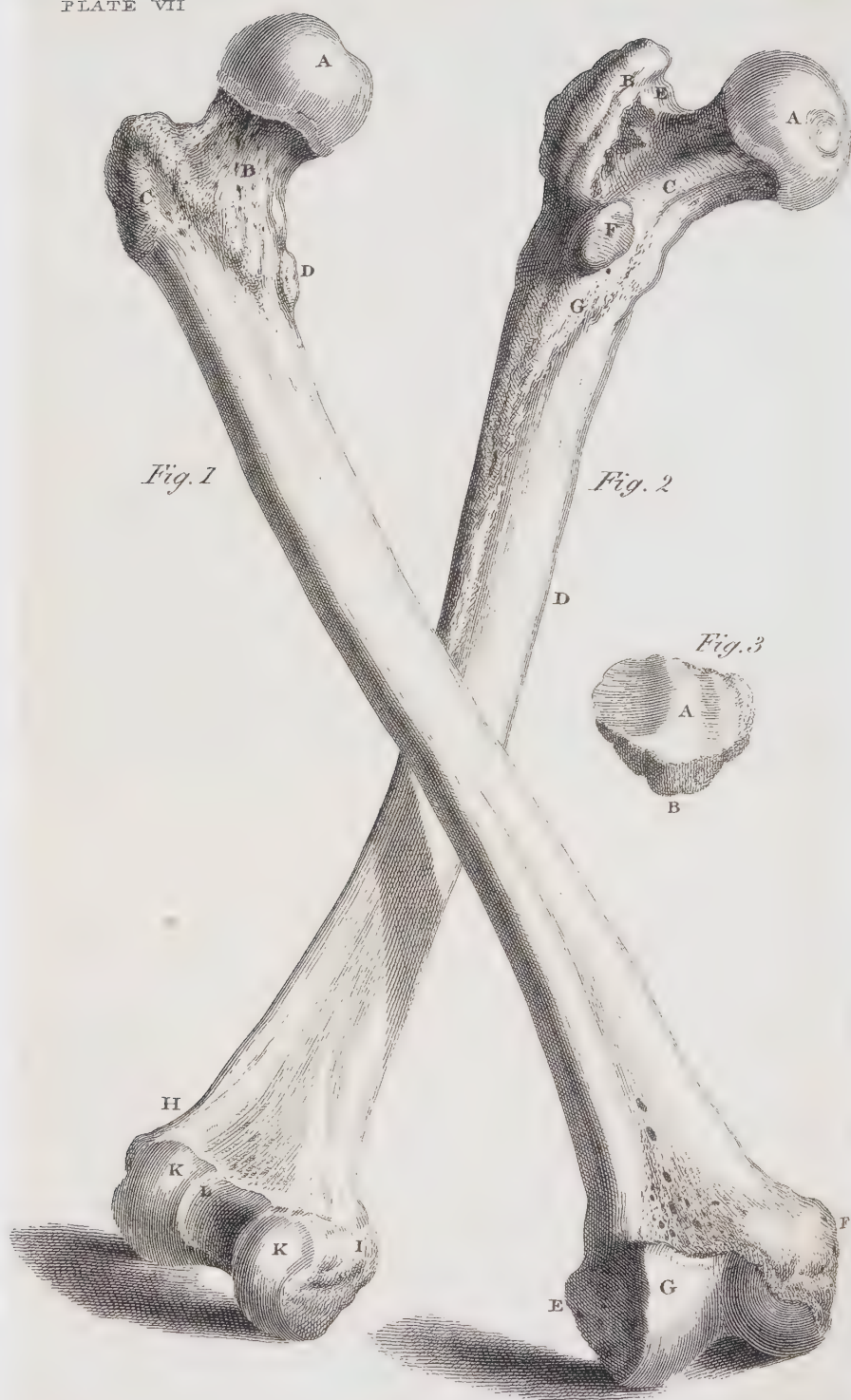
Origin unknown, 19th century

Carved ivory with incised and painted details;

1¼"–2 ⅝" high, 1 ½"–3 ½" wide

Health Sciences Library, University of North Carolina
at Chapel Hill

Decorative pill cases made from stone, silver, ivory, wood, or enamel were particularly popular from the seventeenth century onward. Physicians often kept the more precious ones in their offices for dispensing directly to patients. For the most part, pills were large and globular in shape, covered with gelatin, varnish, or fine talc for a pearl-like coating. For especially important (and wealthy) patients, they could be silvered or gilt. For the purpose of coating the pills, apothecaries used spherical boxes on a circular foot in which the pills were rolled until coated. By the end of the eighteenth century, pharmacists began to produce their own special boxes, either in pottery with their name transferred on the lid or in the form of circular wooden "chip" boxes with a close fitting lid.



Published as the Act Directs. Jan^r 1st 1811. by E. COX, St. Thomas's Street, Borough London.

**37. WILLIAM CHESelden, ENGLISH,
1688–1752**

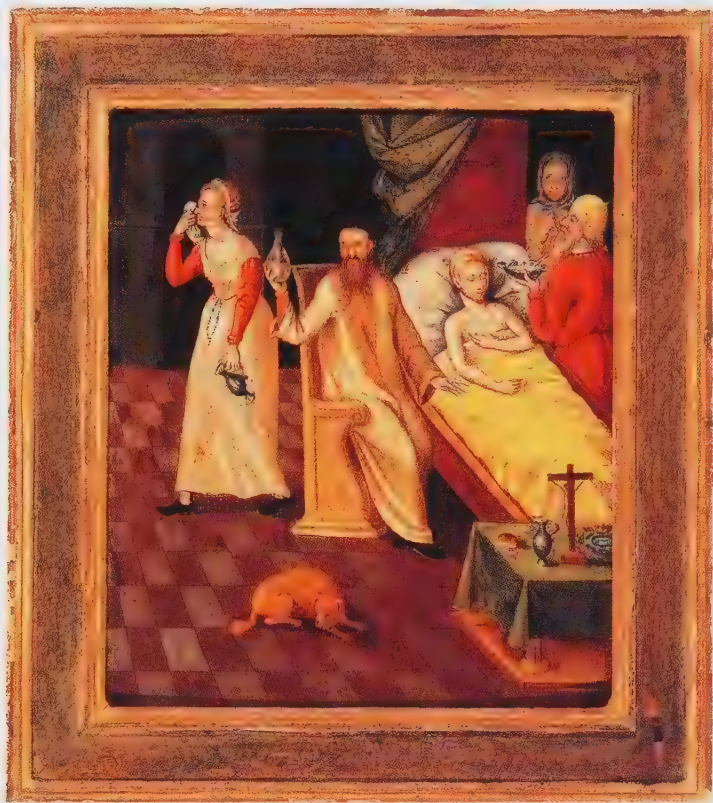
Front and back sides of the *os femoris* (femur bone)
Engraving by Gerard van der Gucht (1696–1776),
from *Plates of the Human Bones, Correctly Reduced from
the Original Copy* (London: E. Cox, 1811), plate 7
7 1/8" × 4 1/4"

Coy C. Carpenter Library, Wake Forest University
School of Medicine

William Cheselden, a successful London surgeon, was born to a farming family in Leicester. At age fifteen, he was apprenticed to James Ferne, a surgeon at St. Thomas's Hospital. In 1711, after passing his examinations for the Barber-Surgeon's Company, Cheselden advertised in his syllabus the following course of instruction in anatomy: "First, We teach the Osteology; after that the Enterology in Brutes, then in Humane Bodies together with the Muscles as they arise in Dissection and in both the Comparative and Humane Anatomy, we give an account of the Use of the Parts."²⁴ The author of a number of important anatomy books, Cheselden published his first text at the age of twenty-five. Appearing in 1713, *The Anatomy of the Humane Body* was expressly designed for Cheselden's own classes and contained a course syllabus as well as twenty-three splendid plates engraved by Gerard van der Gucht. Sold for five to fifteen shillings, his *Anatomy* was one of the earliest texts published in both large and pocket-size editions. It was aimed predominantly at the medical student market. By 1749, when Cheselden sold the copy-right to two London bookseller-publishers, thousands of copies had already been sold.

Cheselden's third book, *The Osteographia, or The Anatomy of the Human Bones*, published in 1733, was a continuation and enlargement of his previous text. It contained two sets of fifty-six large plates of the human skeleton (one lettered for explanations and the other unlettered) with all the bones reproduced "in their natural size" along with forty-four additional illustrations (mostly of animal skeletons). The accuracy of the plates was due in part to van der Gucht's use of a camera obscura for these later illustrations. This widely used artistic technique helped correct for some of the distortions of perspective and proportion when the images were reduced, as in the small pocket-size edition exhibited here. Surprisingly precise, van der Gucht's anatomical figures, often placed in lively compositional poses, are interesting images in their own right.

24. William Cheselden, *Syllabus, sive index humani corporis partium anatomicus* . . . , 2nd ed. (London: Printed for N. Cliff and D. Jackson, 1713), in *The Anatomy of the Humane Body*, facsimile ed. (Birmingham, Ala.: Privately printed for the members of The Classics of Surgery Library, 1985), 1 unnumbered leaf at end.



38. THE PHYSICIAN'S VISIT TO THE SICK MAN

Flanders, 16th century

Oil on wood panel, 12 ½" x 10 ½"

Anonymous loan

Many paintings of sick rooms show a physician holding a small urine flask to the light, observing it with serious concentration. This is a demonstration of uroscopy or, the diagnosis of illness accomplished by the examination of urine for peculiarities of color, smell, texture, and taste. Lacking the chemical tests used today, doctors since antiquity relied on their senses to discern such important signs as the presence of blood, sugar, or acid in urine. The physician, wearing the hat and ermine-trimmed robe of a university-educated doctor, is seated next to the bed, while his apprentice holds a bowl containing medicine. The painting has been cut down from its original size and may have been part of a larger panel in a hospital chapel, as the presence of Christian im-

agery suggests. At the foot of the patient's bed stands

a wooden crucifix, a wine ewer, and a piece of bread. These symbolic objects, as well as the inclusion of the two weeping women may indicate that the subject of the painting is a death scene. The receding tiled floor (indicating some knowledge of perspective) and the sleeping dog curled up next to his master's bed are both common artistic motifs of sixteenth-century Flemish painting.

39. THE SICK LADY WITH HER PHYSICIAN

Netherlands, 17th century

Oil on copper plate, copy after Caspar Netscher

(1635–1684), 9 ¾" x 8 ¼"

Anonymous loan

The subject of the physician's visit to the dropsical or lovesick young lady was a common genre in seventeenth-century Dutch painting.



While some painters like Jan Steen (1626–1679) emphasized comedic or satirical aspects by depicting lascivious quacks misdiagnosing pregnant but unmarried women, other artists like Gabriel Metsu (1629–1667) and Caspar Netscher treated the subject with more seriousness. Wearing the robes and hat of a degreed physician, the handsome young doctor searches the flask while simultaneously taking the young woman's pulse.²⁵ Seated next to a writing desk and wearing the satin skirt and the sumptuous velvet and fur bed jacket of an upper-class lady, the woman watches his face intently as she holds her right hand over her heart. This is most likely a reference to the “pulse of love,” a common topic in seventeenth-century Dutch medical treatises, such as Johann van Beverwijck's best-selling handbook, *Schat der ongesontheijt* (Treasure of Unhealthiness), published in 1641. The theory derived from Galen (c. 130–200CE) supposed that a young woman's pulse rate would suddenly increase the moment her lover

entered the room or if his name was spoken. Often ambiguous in tone, especially in the works of Vermeer (1632–1675), Dutch genre scenes are frequently difficult to read. In this painting, however, the woman's lover may be none other than the young doctor attending her.

25. In the seventeenth century, it was believed that the urine of pregnant women developed a pearly film if left standing over a few days. We now know that bacterial growth stimulated by the hormones of pregnancy can cause a film to develop over a urine specimen. See Laurinda S. Dixon, *Perilous Chastity: Women and Illness in Pre-Enlightenment Art and Medicine* (Ithaca: Cornell University Press, 1995), 75–84.



40A-F. APOTHECARY JARS

Italy, late 15th century to mid-16th century
Tin-glazed earthenware, polychromed under a clear lead glaze; 6" to 13 7/8"
Duke-Semans Fine Arts Foundation

Cylindrical pharmacy jars were produced in potteries in Italy as early as the fourteenth century and were often manufactured in sets for public and private dispensaries. In general, their intended contents determined their size and shape. Taller jars, for instance, usually held powders or confections, while shorter ones contained unguents. Others had smaller necks for shaking or spouts for pouring liquid or syrupy solutions. Most pharmacy jars were tin-glazed, which made the pottery stronger and less porous than regular glazing techniques. Although some jars had ceramic or cork stoppers, most were sealed with parchment or cloth tied with string. Glazed inscriptions on the jars identified the contents and in some cases also carried the dispenser's initials or shop name. One type of ceramic frequently used for apothecary jars in Italy was *Majolica alla porcellana* with its distinctive cobalt blue and floral

decoration. A specialty of craftsmen in the Castel Durante area of Urbino and in Naples, the style, also known as *faenza* or *faience* in other locations, was a highly successful adaptation of traditional Chinese porcelain designs.

Exhibition no. 40a is an *albarello* in dark blue and ochre on a white ground with the inscription *farina de luu* (lupulus) on a scroll. This probably refers to a type of food made from *humulus lupulus* or hops. In addition to preserving beer, hops were believed to relieve stomach problems and were often prescribed as a sedative drink to cure headaches.

Exhibition no. 40b is a Castel Durante *fiasca da farmacia* inscribed in blue gothic calligraphy with the drug name *Aq^a de fenochie* on a scroll label against a white ground. Fennel water was a cordial used for many ills. Since ancient times, this aromatic herb was used by doctors in a variety of forms: for snakebite, it was applied as a poultice; for obesity, the seeds were prescribed to increase energy and give a feeling of fullness; for blindness, nausea, and flatulence, it was prescribed in liquid form.



Exhibition no. 40c is a Castel Durante *albarello* with *Zuc^o Violat* (zucchero violato) inscribed in blue, elaborately foliated gothic calligraphy on a scroll against a white ground: A type of candied confection for sore throats was made from the flowers of the sweet violet. The blooms were mixed with syrup and then dried. By the sixteenth century, it was eaten as a candy cough drop and expectorant. An ancient herb dating back to Greek medicine, the violet was also used as a calming agent for nervousness and anxiety. The letters "F" and "G," which appear in the pharmacy mark above the label, as well as a coat of arms bearing a lion below, probably refer to the pharmacy that sold this product.

Exhibition no. 40d is a Venetian wet jar or *brocca* painted in the delicate blue over pale blue ground characteristic of the region. Equipped with a handle and a spout for easy pouring, the jar has a glazed scroll label that reads *SY^o ROS SOL* (syrop rosa solis), which probably refers to a syrup made from roses and then set in the sun for a specific number of days.

Exhibition no. 40e is a *faenza* ovoid jar painted in yellow with green and several different shades

of blue: The inscription, *Aq^a de indivia*, or endive water, indicates the jar held a liquid solution of the distilled plant used for gout, digestive problems, and constipation.

Exhibition no. 40f is a small *albarello* painted dark blue, ochre, yellow, and green, inscribed *Pill de reubar* (reubarbaro). Rhubarb originated from northwest China and Tibet. In the root form it has an especially strong purgative effect and was historically used to treat liver and stomach disorders. Fresh roots were placed on boils and pustules as the plant's natural astringent quality soothes skin ailments. The medallion above the inscription has a portrait of a helmeted warrior in profile with the letters *VALEB* which can be translated as Vale b[ene], "Be well," or Valeb[o], "I will be well."



Digitalis purpurea

AN
ACCOUNT

OF THE

FOXGLOVE,

AND

Some of its Medical Uses :

PRACTICAL REMARKS ON DROPSY,
AND OTHER DISEASES.

WILLIAM WITHERING, M.D.
Physician to the General Hospital at Birmingham.

HOBBES.

BIRMINGHAM: PRINTED BY M. SWINNEY,
C. & J. ROBINSON, STATIONERS, &c.,
WILKINS.

**41. WILLIAM WITHERING, ENGLISH,
1741–1799**

The foxglove plant

Hand-colored copperplate engraving after a drawing
by William Curtis (1746–1799), from *An Account of the
Foxglove and Some of its Medical Uses* (Birmingham,
England: M. Swinney, 1785), folded frontispiece
17 ½" × 11 ½"

Health Sciences Library, University of North Carolina
at Chapel Hill

William Withering's *An Account of the Foxglove*, which appeared in 1785, was the first English publication describing the importance of the drug digitalis for therapeutic application and one of the earliest examples of clinical research. An Edinburgh-trained practitioner in Birmingham as well as an ardent medical botanist and follower of Linnaeus (1707–1778), Withering had heard of a folk remedy useful in treating dropsy (edema). After analyzing the remedy, he recognized that the effective ingredient was the common foxglove plant, *Digitalis purpurea* (also known as dead man's bells, bloody finger, or fairy glove), which grows wild in Great Britain and whose leaves and seeds yield a chemical substance now known as digitalis. Of the 156 patients Withering treated with foxglove over a period of ten years, the 101 who suffered from congestive heart failure experienced relief. Since a very small change in dose could mean the difference between a satisfactory therapeutic response and toxicity, the administration of the dose and the observation of the effects on the patient were of the utmost importance. Withering, unaware of the true action of digitalis, mistakenly attributed the favorable effects solely to its diuretic action rather than its cardiotonic one, which increases the strength of the heartbeat while decreasing its rate, thereby allowing the heart to pump more effectively.

Withering's treatise was available in two different editions: one with a plain engraving of the foxglove plant for four shillings; the second, with this splendid hand-colored plate, for five shillings. This illustration from the colored

edition was copied by permission from an original drawing by William Curtis (botanist to the Society of Apothecaries and a fellow of the Linnean Society), which he had created for his own work, *Flora Londinensis*. The numbers on the figure refer to different parts of the plant — stem, leaves, flowers, seeds — most of which may be used to treat patients depending on the season of the year.

Overleaf

**42A–B. ELIZABETH BLACKWELL, SCOTTISH,
c. 1700–1758**

Tamarindus (Tamarind tree)

Caryophyllus ruber (Carnation)

Hand-colored engravings by Nicolaus Friedrich

Eisenberger after earlier illustrations by Blackwell,
from *Blackwellisches Kräuter-Buch, das ist . . . Sammlung des
Gewächse: Herbarium Blackwellianum emendatum et auctum,
id est . . . collectio stirpium*, 6 vols. (Nuremberg:

Christian de Launoy, the heirs of C. de Launoy and
Johann Joseph Fleischmann, [1747]–1773), vol. 3,
plate 201, and vol. 1, plate 85

14 ½" × 9 ¾"

Health Sciences Library, University of North Carolina
at Chapel Hill

Elizabeth Blackwell's *Herbarium Blackwellianum*, originally published in several volumes as *A Curious Herbal* in London from 1737 to 1739, is remarkable for many reasons, chiefly because the author executed the majority of the illustrations herself. One of the most comprehensive works on pharmaceutical plants, the lavish six-volume set contains 615 hand-colored plates. A romantic narrative surrounds the origin of the book, which was supposedly conceived by Blackwell in order to gain her husband Alexander's release from debtor's prison. Cognizant of the fact that illustrated herbals were marketable at this time and encouraged by various members of the Society of Apothecaries, Blackwell rented a house opposite the Chelsea Physic Garden. There she had the opportunity to render carefully drawn and highly detailed sketches from fresh, live specimens. All



Tamarindus

1. Blüthe
2. Frucht
3. Kern

Tamarinden-Baum.



Caryophyllus ruber { 1-8 Blume.
 9-10 Frucht.
 und Saame. } Garten Pögelein.
Dianthus caryophyllus L.

of the plants illustrated in Blackwell's *Herbarium* are actual specimens used in pharmacy at that time, with the exception of a few poisonous and ornamental plants included for exotic or decorative appeal.

Highly successful, Blackwell's botanical book was expanded and reissued from 1750 to 1755 by the German physician Christoph Jacob Trew (1695–1769). Published under the new title, *Herbarium Blackwellianum*, the splendid and rare volumes with parallel text in Latin and German exhibited here are of Trew's edition. Employing Nicolaus Friedrich Eisenberger, a noted artist and engraver, Trew added over a hundred new plates to Blackwell's original book and reworked her previous illustrations. The result was one of the most important illustrated botanical titles issued in Germany at that time.

Exhibition no. 42a illustrates the tamarind tree with its characteristic golden yellow pod and short, narrow leaves. Related to the evergreen and native to tropical Africa, the tamarind bears fruit with soft pulp and flat seeds that were used in health beverages and medicine, particularly in Asia. Tamarind has been found to soothe sore throats, improve digestion, relieve gas, and serve as a mild laxative. It is still prescribed in parts of India and China for treating colds, summer heat exposure, and morning sickness in pregnancy. Exhibition no. 42b illustrates the *Caryophyllus ruber*, or carnation, also known as the "gilly-flower," a plant that was cultivated throughout Europe. The petals were made into sweet cordials for treating heart disease, high fevers, and nervous disorders. In Asia, the flowers, stems, and leaves were used primarily to treat the painful conditions of kidney stones and urinary tract infections.

**43. EDWARD HAMILTON, ENGLISH,
1824–1899**

Sarsaparilla (*Smilax Medica*)

Colored lithograph by Charlotte C. Sowerby (fl. 1850),
from *The Flora Homeopathica*, 2 vols. (London:

H. Bailliere, 1852–1853), plate 55

9 3/4" × 6 1/4"

History of Medicine Collections, Duke University
Medical Center Library

Edward Hamilton, a physician at the London Homeopathic Hospital, published his *Flora Homeopathica* to prove to his critics that homeopathic medicines were similar to those prescribed by allopathic or traditional physicians. The book was also a rich source of information for other homeopathic doctors and helped to spread and legitimize the practice in rural areas throughout Britain. The sixty-six brilliantly colored lithographs in the two-volume *Flora* were produced by Henry Sowerby (1825–1891) and his sister, Charlotte, from the celebrated family of natural history illustrators. In the text, Hamilton records each plant's various names, and then describes the general and specific characteristics of each as well as the proper preparation, use, and effects.

The illustration shown is of the Sarsaparilla plant, or *Smilax medica*, introduced into Europe from Central America by way of Jamaica in the mid-sixteenth century. The term "sarsaparilla" derives from Spanish meaning a "bramble vine." The roots have been used historically for treating rheumatism, gout, syphilis, chronic skin diseases, and paralysis of the hands and feet. When used in excess, sarsaparilla causes nausea and vomiting. Cultivated in the United States, it was highly popular for use in soda beverages and candy in the nineteenth century, having a sweet, tangy flavor similar to today's root beer.



C. C. Sowerby lith.

Sarsaparilla.
(*Smilax Medica.*)

F. Reeve, imp.



Left to right — Row 1: (16) eczema, (13) dermatitis, (122) urticaria, (126) variola, (48) lupus erythematosus
 Row 2: (78) scabies, (130) xanthoma, (19) eczema, (41) impetigo, (91) syphilis secundaria
 Row 3: (37) furunculus, (17) eczema, (128) verruca, (76) sarcoma, (7) chloasma
 Row 4: (123) varicella (chicken pox), (21) eczema, (63) pellagra, (30) erysipelas, (43) keratosis
 Row 5: (58) naevus vascularis, (34) erythema nodosum, (40) ichthyosis, (98) syphilis, (49) lupus

45. JEAN CRUVEILHIER, FRENCH, 1791–1874

Maladies du poumon (Lung diseases)

Hand-colored lithograph by Antoine Chazal (1793–1854), from *Anatomie pathologique du corps humain*,

2 vols. (Paris and London: J.-B. Bailliere, 1829–1842), section 36, plate 2

18 1/2" x 12 1/2"

History of Medicine Collections, Duke University Medical Center Library

By the early 1800s, the outbreak of frequent epidemics of lung disease (particularly tuberculosis) across Europe resulted in more research on respiration and the study of lung disorders. Consequently, investigations in pathological anatomy and chemical theory became especially important in the diagnosis and treatment of lung afflictions. Some of the best early French illustrations of lung disease are found in Jean Cruveilhier's *Anatomie pathologique du corps humain*, published between 1829 and 1842.

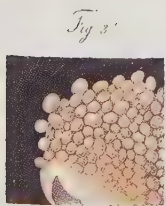
Born in Limoges, Cruveilhier was the son of an army surgeon. As a youth he was drawn to enter the priesthood, but at his father's insistence he went instead to Paris in 1810 to study medicine. He was horrified by the first autopsies he attended but was mentored by a friend of his father's, the renowned surgeon Guillaume Dupuytren (1777–1835), and received his medical degree in 1816. Cruveilhier eventually became the first professor of pathological anatomy in Paris, a chair created by a legacy from his mentor.

Cruveilhier's text, called the greatest pathological atlas ever published, was issued in individual sections over a period of thirteen years. Each of the 233 plates (the majority of which are hand-colored) illustrates specific pathologies and is accompanied by a text description. With the exception of the first ten black-and-white images, all of Cruveilhier's plates are the work of the

celebrated botanist and artist, Antoine Chazal, who was also professor of iconography at the Jardin des Plantes.

The three figures shown on this page illustrate various lung disorders found in autopsied patients: Figure 1 represents the abnormal lung of a woman who died in 1831 with puerperal fever. The term *oedeme noir*, "black edema," is used to describe this unusual finding; figure 2 shows a cancerous lung covered with superficial lesions, which, the author says, "look like drops of wax that were allowed to fall onto the tissue"; figure 3 represents a magnified view of a lung disfigured with acephalocysts. Chazal's precise detail and accuracy, as well as the naturalistic coloring (even to the point of representing the discoloring of diseased tissue when exposed to air), give these plates their high degree of realism.

MALADIES DU POUMON
Mélânose — Plaques cécées — Kyste alvéolaire



ALTÉRATIONS DU PIGMENT.

Pl. III



46. PIERRE FRANÇOIS OLIVE RAYER, FRENCH, 1793–1867

Alterations du pigment (Changes in skin color)

Colored lithograph by Ambroise Tardieu (1788–1841), from *A Theoretical and Practical Treatise on Diseases of the Skin*, 3 vols. and atlas (London: J. B. Ballière, 1835), atlas plate 22

14 $\frac{3}{4}$ " $\times$ 11"

Coy C. Carpenter Library, Wake Forest University School of Medicine

Pierre François Olive Rayer studied medicine in Paris, where he received his medical degree in 1818. Working as a physician at the St. Antoine and the Charité hospitals for a number of years, he also served as personal physician to King Louis Philippe and Napoleon III. In 1862, as a result of his political ties, Rayer became dean of the Paris Medical School by imperial edict; however, his appointment was highly resented by students and faculty alike and he was forced to resign two years later. The author of a number of respected treatises, Rayer made significant contributions in the field of comparative medicine as well as in the understanding and treatment of kidney disease. He was also one of the leading dermatologists of his time in France, and his *Traité théorique et pratique des maladies de la peau* (*A Theoretical and Practical Treatise on Diseases of the Skin*) was immensely popular when published in two volumes (plus an atlas) in Paris between 1826 and 1827. Subsequent editions published in Paris, London, and Philadelphia consisted of three volumes along with the beautifully illustrated atlas shown here.

This plate, depicting a variety of afflictions seen in patients at the public hospitals of Paris, reflected the contemporary preoccupation among Western doctors with determining the exact causes for different skin color.²⁶ A number of dermatologic conditions are illustrated, such

as albinism (the absence of pigment), leucopathia (depigmented white patches), chloasma (brownish or yellowish pigment), and melasma (a black tint to the skin). Number 14 shows a young man in profile with dark slate-colored skin, who was poisoned by frequent ingestion of silver nitrate. Other, more graphic illustrations in the book offer a thorough chronicle of the signs of syphilis, which was then epidemic in Paris.

26. Two of the images are copied from oil paintings found in city collections at this time. Paintings depicting exotic or deformed individuals had been collected in Europe since the Renaissance, particularly in royal courts, where they were displayed with other rarities.



Drawn from Nature by W. Gibson.

Engraved by C. Tiebout.

47. WILLIAM GIBSON, AMERICAN, 1788–1868

A patient with a tumor of the upper arm

Colored aquatint, drawn from nature by Gibson and engraved by C. Tiebout, from *Institutes and Practice of Surgery: Being Outlines of a Course of Lectures*, 6th ed. enl., 2 vols. (Philadelphia: James Kay, 1841), vol. 1, plate 7
9 1/2" x 6 1/2"

History Collections, Health Sciences Library,
East Carolina University

William Gibson, a native of Baltimore, received his medical training at the University of Pennsylvania, but graduated in 1809 with a medical degree from the University of Edinburgh. After studying with Charles Bell (exhibition no. 27) and Astley Paston Cooper (exhibition no. 51) in London, Gibson returned to Baltimore and

entered practice. In 1812, he established his surgical reputation by successfully ligating the iliac artery to stop a hemorrhage in a patient who had suffered a gunshot wound. In 1819, he accepted the chair of surgery at the University of Pennsylvania, which had been vacated by the unwilling transfer of the incumbent and founder, Dr. Philip Syng Physick (1768–1837), to the chair of anatomy. Gibson was the author of many books and papers, and his book *Institutes and Practice of Surgery* records a number of observations and case studies from his surgical practice.

This illustration from a drawing by Gibson himself shows one of his female patients with a growth which he identifies as *fungus haematodes* and carefully distinguishes from a cancer; however, we now know that it was a highly vascular soft malignant growth. The tumor first appeared when the woman was only sixteen years old and gradually increased over the next four years from the size of a large marble to the size shown in the illustration, leaving a large ulcerated cavity. The horrific condition of the woman starkly contrasts with the delicate shading and pale color of the image and represents a new interest in chronicling the physical appearance of medical patients in portraits (see exhibition no. 48). Many such specimens were kept and prepared by Gibson, who also had a large collection of models, casts, pictures, bones, and instruments, with which he enlivened his medical lectures.



**48. JEAN ÉTIENNE DOMINIQUE ESQUIROL,
FRENCH, 1772–1840**

Aliéné en démence (Dementia)

Steel engraving by Ambroise Tardieu (1788–1841), from
Des maladies mentales . . ., 2 vols. and atlas (Paris: J.-B.
Baillière, 1838), atlas plate 13

8 1/2" x 6 3/8"

History of Medicine Collections, Duke University
Medical Center Library

Jean Étienne Esquirol was born in Toulouse and studied with Philippe Pinel (1745–1826), an early advocate of humane treatment for the insane. Although lacking in formal knowledge of pathology and psychology, Esquirol perceived the limitations of a rigid Linnean classification scheme for characterizing illness. Unlike many of his

peers, Esquirol sought to observe and describe rather than classify the various manifestations of insanity encountered in his practice. His famous treatise on insanity, *Des maladies mentales*, was based on forty years of study and his experience at La Salpêtrière and La Maison Royale des Aliénés de Charenton, hospitals for the insane. Subsequently translated into English, German, and Italian, the book contains chapters on hallucinations, epilepsy, demonomania, suicide, dementia, and idiocy, among others, and served as a basic text for psychiatry for over fifty years. He was a brilliant teacher, and many of his students went on to establish important medical reforms in asylums throughout France. He was credited with inventing the term "monomania," a concept close to the modern view

of schizophrenia. Esquirol describes dementia, so effectively portrayed by Ambroise Tardieu in the accompanying print: "Almost all who have fallen into a state of dementia, have *some sort of ridiculous habit or passion*. Some are constantly walking about, as if seeking something that they do not find. The gait of others is slow, and they walk with difficulty. Others still, pass days, months and years, seated in the same place, drawn up in bed, or extended upon the ground. . . . Many clothe themselves in a ridiculous manner, and take possession of whatever they meet with."²⁷

27. J. E. D. Esquirol, *Mental Maladies: A Treatise on Insanity*, ed. Raymond de Saussure, trans. E. K. Hunt (1845; facsimile edition, New York: Hafner Publishing Company, 1965), 418–419.

PART 4 *Obstetrics and Gynecology*



ANGÉLIQUE MARGUERITE DUCOUDRAY.

*Pensionnée et envoyée par le Roy, pour
enseigner à pratiquer l'art des Accouche-
ments dans tout le Royaume.*



V. Weynandscilg delin.

TAB. XII. ab eadem, quâ præcedens, muliere, exhibet apertum planè a parte postica uterum cum vagina, quo situs Fœtus, parsque inferior Placentæ sub Fœtus capite indicarentur. Placenta scilicet orificio uteri interno accreuerat, eoque sub finem graviditatis dilatato, fœtali inde divisione separata est.

J. Alstedt sculp.

49. WILLIAM HUNTER, SCOTTISH, 1718–1783

Fetus in utero

Copperplate engraving by J. Mitchel after a drawing by Jan van Rymsdyk (fl. 1750–1784), from *Anatomia uteri humani gravidi* . . . (The Anatomy of the Human Gravid Uterus) (Birmingham: John Baskerville, 1774), plate 12

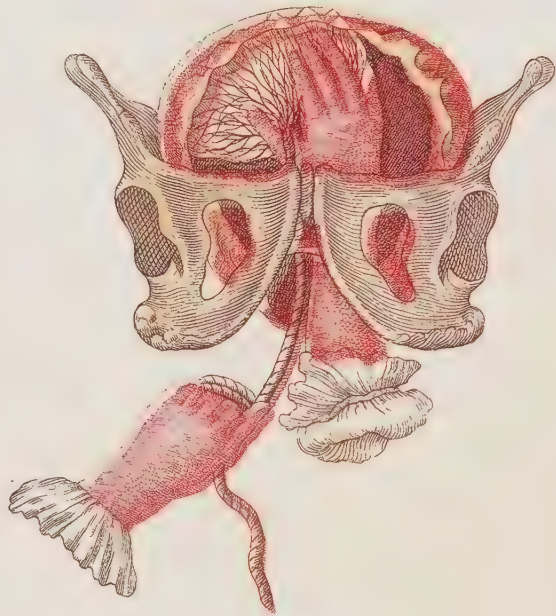
25 1/2" × 18 1/2"

History of Medicine Collections, Duke University
Medical Center Library

William Hunter was born near East Kilbride, Scotland, the seventh child of a small landowner. He entered Glasgow College at the age of thirteen and pursued theological study there for five years. By the end of that period he was convinced he did not wish to enter the church and sought to study medicine instead under a local surgeon, William Cullen (1710–1790). Upon his move to London in 1740, he studied with William Smellie (1697–1763), James Douglas (1645–1742), and Frank Nicholls (1699–1778). Possessed of a natural flair for the theatrics of anatomy, Hunter was giving anatomical lectures as early as 1746. After briefly returning to Glasgow to receive his medical degree, Hunter discontinued his practice as a surgeon, attending only medical and obstetrical cases. By 1767, he had established consulting rooms and a school of anatomy in his own home. The house was also the site of his museum and library, holding his ever growing collection of books, manuscripts, paintings, coins, medals, and anatomical and pathological specimens. Hunter was an inspired teacher and the school was highly successful. As London's foremost obstetrician, Hunter attended Queen Charlotte at the birth of each of her sixteen children.

Hunter spent close to twenty-five years preparing his major work, *Anatomia uteri humani gravidi*, the most extraordinary obstetrical atlas ever published. The enormous folio contained thirty-four superb and anatomically exact copperplate engravings by some of the best artists and engravers in London. The book was written in Latin and English in parallel columns and printed and published in 1774 by John Baskerville (1706–1775), the famous typographer. The expensive volume sold for six guineas.

As the physician for many wealthy clients, Hunter had developed an educated eye for current art styles and supervised every aspect of production of his illustrations: from the copper used for the plates to the ink and paper used for the print. Visually striking, the plates achieve startling effects of light and depth without the loss of contrast and detail, qualities rarely found in engravings so large. The model for the illustrations was a woman who died suddenly near the end of her pregnancy. Hunter dissected her body and injected the blood vessels of the placenta with colored wax in order to preserve them. The Dutch artist Jan van Rymsdyk (I. V. Rymsdyke), who was also working with Charles Nicolas Jenty and Smellie on their obstetric anatomy books during this period, completed ten life-sized drawings in red chalk of the woman's preserved uterus. Over the next few months, the drawings were used in Hunter's public lectures and from these, the finished sketches and then the final engravings were completed. All the original drawings may still be viewed in the Hunterian Collection at Glasgow University.



Cette Planche représente une Matrice ouverte pour laisser voir l'arrière faîte collé à son fond, avec une main droite qui l'ayant reconnu a déjà commencé à passer son petit doigt sous les membranes pour y faire successivement passer tous les autres afin de le rouler et l'extraire tout entier, pendant cette manœuvre le cordon est tenu par la main gauche ayant deux tours passés autour du doigt indice et du milieu de cette même main.

Peint par P. Chapparre.

Gravé en Couleurs par J. Robert.

**50. ANGÉLIQUE MARGUERITE LE BOURSIER
DU COUDRAY (FRENCH, c. 1714–1794)**

Manual extraction of the placenta

Colored copperplate engraving by Jean Robert after
a drawing by P. Chapparre, from *Abrégé de l'art des
accouchemens*, 6th ed. (Paris: Théophile Barrois, 1785),
plate 25

8" x 5 1/4"

History Collections, Health Sciences Library,
East Carolina University

Angélique du Coudray was an extraordinary woman of the Enlightenment who had a tremendous influence on eighteenth-century midwifery in France. A well-known practitioner in Paris with an excellent professional reputation, du Coudray also became something of a local celebrity following her invention of a life-sized obstetrical mannequin for teaching ("her machine"), made of wicker, fabric, leather, stuffing, and sponges. In 1759, she was commissioned by King Louis xv to travel throughout France teaching childbirth techniques to illiterate peasant women in an effort to lower the nation's rural infant mortality rate. For the next thirty years, Madame du Coudray taught in nearly forty cities and was said to have lectured to some ten thousand students. The same year she left Paris on her mission, her lessons were collected into a textbook entitled *Abrégé de l'art des accouchemens* (Summary of the Art of Delivery), which was published by the official printer of the Royal Academy of Surgery.

A practical how-to manual, du Coudray's was the first of many short, clearly accessible childbirth texts published in France through the end of the century. Employing vernacular (rather

than Latin) terminology, the highly popular book was issued in five new editions during the next twenty-six years. A small volume, with twenty-six charming colored engravings, which du Coudray commissioned herself, it not only educated its intended readers — women who were mostly denied access to male-dominated education and dissection classes — but also established du Coudray's legitimacy as a respected author. The illustrations were executed by Jean Robert using a new four-color printing process invented by Jacques Christian Le Blon (1667–1741). Approximating the look of a watercolor, four successive copper plates were inked in red, yellow, blue, and black and printed in superposition. Du Coudray explains her reasoning behind the costly engravings:

Commissioned by the King, and overwhelmed by his goodness, to instruct, with the aid of the machine I thought up, women and girls who mean to follow this profession, especially in the countryside, I add to my second edition plates that can remind my students of my own demonstrations; and to render [the students] still more aware, I made [the pictures] in color, so that the different shades give greater clarity to the objects. I am determined to show the impossibility of bad maneuvers performed by people who dabble in the practice of delivery without knowledge of anatomy.²⁸

28. Nina Rattner Gelbart, *The King's Midwife: A History and Mystery of Madame du Coudray* (Berkeley: University of California Press, 1998), 131.

**51. ASTLEY PASTON COOPER, ENGLISH,
1768–1841**

Milk ducts in the breast

Hand-colored lithograph, from *On the Anatomy of the Breast*, 2 vols. (London: Longman, Orme, Green, Brown & Longmans, 1840), vol. 2, plate 6

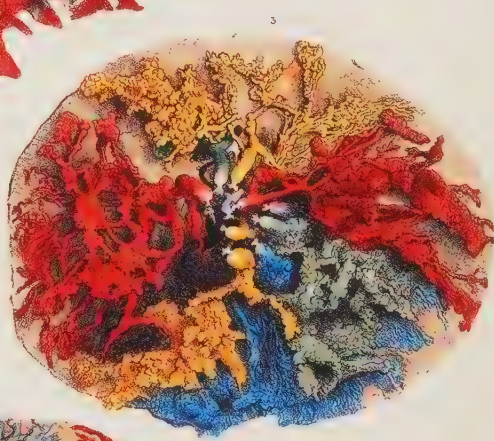
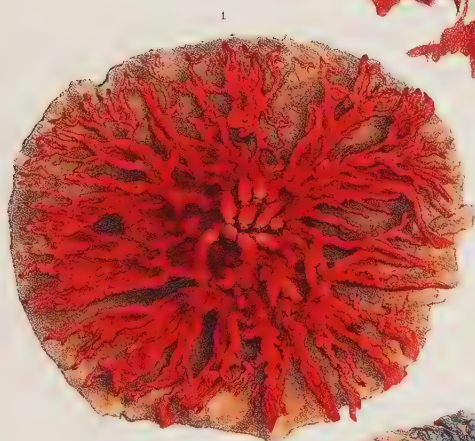
14 $\frac{7}{8}$ " $\times$ 10 $\frac{3}{4}$ "

History of Medicine Collections, Duke University
Medical Center Library

Astley Cooper, one of John Hunter's (1728–1793) pupils, worked as an anatomist and practicing surgeon making important contributions to surgical technique as well as to the reform of the medical curriculum in Britain. Distinguished in his profession, Cooper served both as Hunterian Professor of Comparative Anatomy and later twice as president of the Royal College of Surgeons. He counted King George IV among his patients. Cooper was the author of a number of well-regarded texts, and his writings reflect the countless hours he spent in the dissecting room observing and experimenting. Calling himself "a disciple of nature," Cooper was very aware of the important interrelationship between faithfulness in art and clarity in medical illustration. He was probably best known for his anatomical museum located in the upper rooms of his home on Broad Street in London which contained hundreds of human and animal specimens, most of which he had dissected and preserved himself. Cooper used the collection for teaching and research. Nevertheless, he was aware of the advantages of representing anatomy by precise colored drawings rather than preparations, which never retained their original color. For this purpose, Cooper hired artists to live with him at his resi-

dence to be available at any time to draw his fresh dissections and preparations. Cooper also hired sculptors who provided him with wax and plaster casts of his specimens; he had a collection of tumors that was preserved in this way.

Cooper had intended to follow his *Illustrations of the Diseases of the Breast* (1829) with another volume on malignant diseases. In order to accomplish that, he decided an account of the normal anatomy of the breast was needed first. Published the year before his death, *On the Anatomy of the Breast*, is arranged in three sections: the female breast, the male breast, and comparative anatomy. The four brilliantly colored illustrations from the separate volume of plates shown here represent various views of the dissected female breast. Drawn from Cooper's own anatomical preparations, which were injected with colored wax and preserved in alcohol, these fantastical lithographs clearly show the mammary glands and lactiferous ducts as sectioned through the nipple.



52. WILLIAM FETHERSTON HAUGH

MONTGOMERY, IRISH, 1797–1859

Changes in the ovaries during pregnancy

Hand-colored lithograph by J. Neele after drawings

by Robert Carswell (1793–1857), from *An Exposition of the Signs and Symptoms of Pregnancy* (London: Sherwood, Gilbert & Piper, 1837), plate 11

8 ½" × 5 ⅝"

History of Medicine Collections, Duke University
Medical Center Library

William F. Montgomery was professor of midwifery in the King and Queen's College of Physicians in Ireland. *An Exposition of the Signs and Symptoms of Pregnancy*, his only major publication, was considerably enlarged and expanded from his earlier article, "Signs of Pregnancy and Delivery" (1833), written for the *Cyclopedia of Practical Medicine*. The book was intended as a comprehensive treatise on the signs and symptoms of pregnancy and contained twelve splendid lithographic plates, "faithfully represented" from specimens in Montgomery's museum, which were praised by critics for their quality and exactness of coloring. Originally drawn by the celebrated artist-anatomist Robert Carswell, the plate illustrates the "effects produced in the ovaries by impregnation, especially as to the formation, structure, and successive changes observable in the corpus luteum in all the different stages of its existence . . . the first series of the kind made available for reference" (p. vii). Reflecting a new trend toward obtaining precise scientific data to use as reference tools, Montgomery's accompanying text includes full descriptions of each of the seventeen figures in the plate, along with accurate measurements of the corpus luteum at different times from conception through birth.



Early Second Stage of Labor

53. CHARLOTTE SINCLAIR HOLT, AMERICAN, 1914–1990

Ampullary Ectopic Pregnancy and *Uterine and Tubal Twin*, two models on physiology of pregnancy

Classical Section: Extraction and Early Second Stage of Labor (pictured), two models on physiology of labor

Colored plaster wall sculptures from the exhibition *Visualization of Basic Principles of Human Reproduction*,

Illinois State Department of Public Health, Springfield, Illinois, 1961; from 9 $\frac{7}{8}$ " $\times$ 6 $\frac{7}{8}$ " $\times$ 1 $\frac{1}{4}$ "

to 18 $\frac{1}{4}$ " $\times$ 14" $\times$ 5"

Charlotte Holt Collection, Dorothy Carpenter Medical Archives, Wake Forest University School of Medicine

Charlotte Sinclair Holt, award-winning medical illustrator and sculptor, was born in Springfield, Massachusetts. She studied painting with Malvina Hoffman (1887–1966) in New York, and plaster casting and carving with John Pletinkx and Joseph Krstolich at The Field Museum in Chicago. As an instructor at the University of Illinois College of Medicine, Holt was instrumental in establishing a visual education program for medical students and physicians. Her plaster carvings, sculptures, and drawings were exhibited nationally and internationally throughout the 1950s and 60s, earning her numerous medals and awards. She was employed as a free-lance artist by private physicians, pharmaceutical companies, and numerous professional journals and coauthored and illustrated several medical and nursing texts. In 1962, she was given a distinguished service award from the American College of Obstetrics and Gynecology in Washington, D.C., and from 1970 to 1971, she served as president of the Association of Medical Illustrators, of which she was a charter member.

The sculptures displayed in this exhibit were part of an exhibition Holt created with professor of obstetrics and gynecology Frederick H. Falls, MD (1885–1974), for the Illinois State Department of Public Health. Holt's evocative plaster sculptures for the portrayal of embryology and childbirth clearly illustrate specific medical intervention techniques in an insightful and accessible manner. While most medical illustrators from this period relied on two-dimensional drawings to convey information, Holt's life-like three-dimensional plaques provided a sense of living weight and complexity lacking in contemporary drawings. In several life-size models, she incorporated the actual instruments for birth in an effort to communicate with the viewer in a clear and precise manner.

茶鑑

夫痛有真偽

陽旭

殷

陽關

五會

少商

中

照所

德原

億

周崇

太冊

齒
股

冬令

陽

依

企

人血

周榮

太府

多士

我中

御膳

樽

腹良

嬰家

伏魔

追市

信

醫

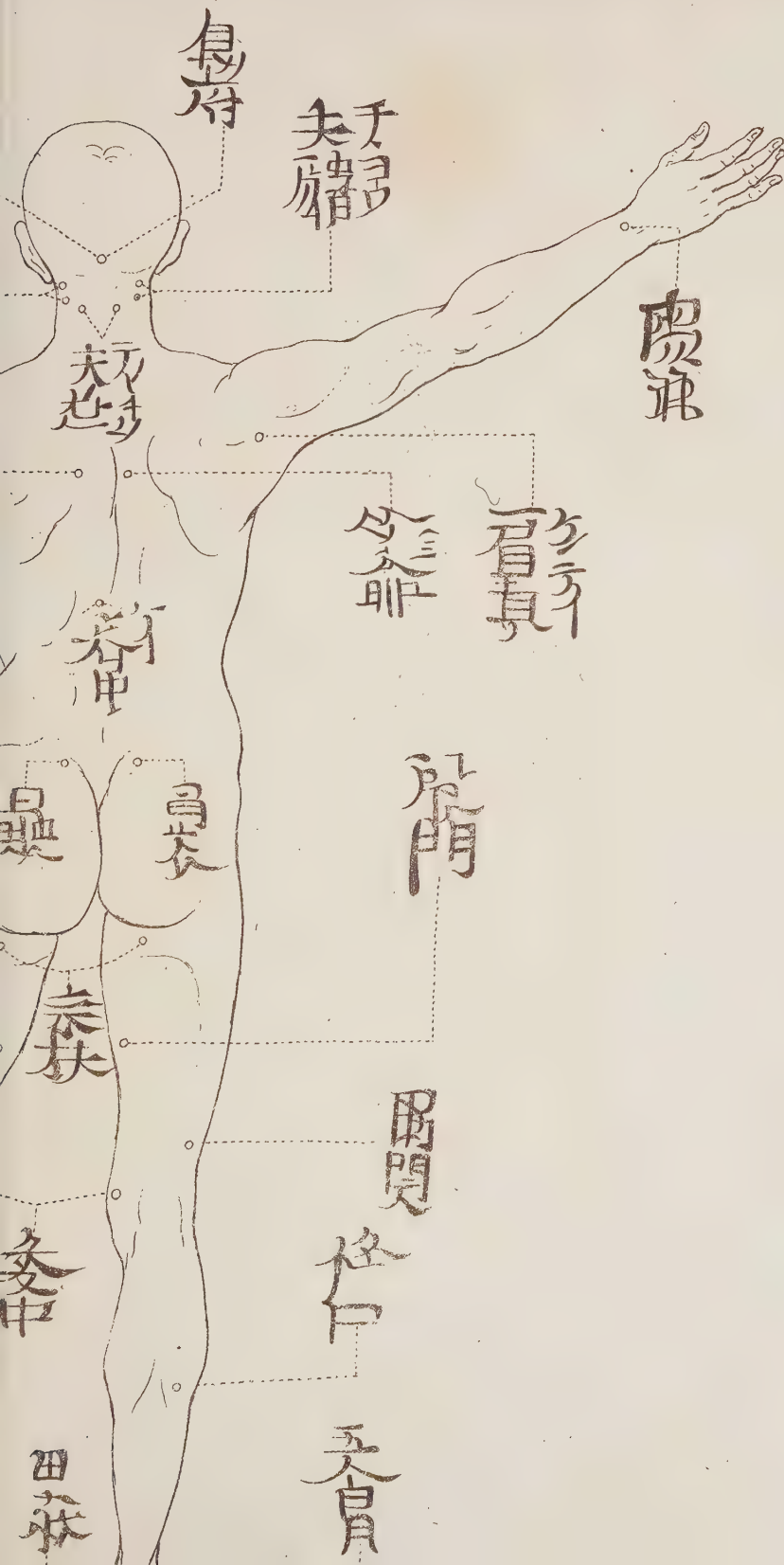
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PART 5 *Non-Western Medicine*

Tab. XLIV.



54. NKISI NKONDI

BaKongo, Congo, between 1880 and 1910

Wood, pigment, metal, and glass; 8 3/4" x 3 1/2"

History of Medicine Collections, Duke University
Medical Center Library

Minkisi (singular *nkisi*) are ritual objects used by the BaKongo (people of the Congo) for oath taking and healing. They are complex objects that derive their power from the dead, and to them, paradoxically, have been attributed the abilities both to afflict and to heal, to visit good as well as evil on a person. Most of the examples that survive today have been altered or damaged in the process of collection and storage. Never intended as art, *minkisi* were meant to create a visual effect and serve as a material expression in the context of ritual use, which included words, songs, drumming, dances, gestures, and costumes, most of which are no longer accessible. The owner and operator of a particular *nkisi* was the *nganga*, or traditional healer, who had been through a process of initiation. Often this initiation was in response to an illness which was considered a spiritual summons to become the *nganga* of the *nkisi* that controlled that particular disease and could cure it.

Minkisi and the disease and other problems with which they dealt were classified roughly into two classes: those "of the above," associated with the sky and especially rain and thunderstorms, and those "of the below," associated with the earth and its terrestrial waters. The diseases that the former could inflict were those of the upper part of the body while the *minkisi* of the below were concerned with women's reproductive functions and diseases of the lower

part of the body. This wooden sculpture is an *nkisi* of the *nkondi* type. An aggressive pose was usually necessary, expressed here by bared teeth, a jutting jaw, and staring or "naked eyes." The nails, blades, and bits of iron driven into the figure by the client each represent an appeal to the forces contained in and controlled by the figure with the intent of arousing it to action. Once the contract was considered fulfilled, the practice varied from region to region whether the metal was removed or left imbedded in the surface.

All *minkisi* were containers for "medicines," which were principally minerals from the graves, gullies, streambeds, and other places regarded as the land of the dead; items selected because their names suggested in a kind of pun the attributes and functions of the *nkisi* and *nganga*; and metaphorical materials such as the head of a poisonous snake, teeth of a dog, and claws of a bird of prey. Often these, reduced to fragments of scrapings and ashes, were placed by the *nganga* in cavities in the belly or added as protuberances on top of the head, on the back, or between the legs. This example, deprived of medicines and other accoutrements, has become ineffectual as a healing object and consequently today exists merely as an image.





Sarab. Rome del.

W. Battersby sculp.

55. JOHN COAKLEY LETTSOM, ENGLISH, 1744–1815

Head ornament with *grigris* attached

Engraving by William Battersby after a drawing by Sarah Stone, from *History of the Origin of Medicine:*

An Oration Delivered at the Anniversary Meeting of the Medical Society of London, January 19, 1778 (London: J. Phillips for E. and C. Dilly, 1778), folded frontispiece

10³/₄" × 9¹/₈"

History of Medicine Collections, Duke University Medical Center Library

John Coakley Lettsom, a British Quaker and philanthropist, was born in the Virgin Islands. After receiving his education and medical training in England, Lettsom graduated with a degree in medicine from Leiden University in Holland with a dissertation on the therapeutic effects of tea. He opened his practice in London in 1770 and married a woman of considerable wealth that same year. For the rest of his life, he spent much of his time and money on the creation of a magnificent museum, library, and botanical garden at his home, Grove Hill. The majority of his collections eventually were bequeathed to the Medical Society of London.

Lettsom's short history of medicine contains sections on surgery, midwifery, anatomy, botany, chemistry, and "mystical medicine." Of more than passing interest are his descriptions of magical medicine practiced by the native peoples of Africa, Mexico, the East and West Indies, and North America. The book's remarkable frontispiece depicts a crown or chaplet from a

friend's collection that originally "belonged to a king of Brak near Senegal, who was killed in battle with this charm upon his head" (p. 148). A variety of protective *grigris*, consisting of small pieces of paper with hand-written passages from the Koran, are enclosed in tiny pouches covered with hairy skin, scarlet cloth, checked linen, or purple-colored leather, which have been attached to the crown.²⁹ Antelope horns are also incorporated in this particular example. Collecting exotic artifacts was considered fashionable in London during this period, and many wealthy doctors sought out those pertaining to mystical medicine.

29. Lettsom made note that the *grigris* were probably made in imitation of phylacteries (small leather cubes containing parchment on which sentences of scripture had been written) worn by observant Jewish men during weekday morning prayers (p. 149).



56. DOCTOR'S LADY

China, late 19th century

Ivory figure with black lacquer on a carved

wooden base, $4\frac{3}{4}'' \times 3\frac{1}{4}'' \times 1\frac{1}{4}''$

History of Medicine Collections, Duke University

Medical Center Library

In traditional Chinese society, particularly among the upper classes, the separation of the sexes was strictly enforced—even for medical doctors visiting patients. Although a physician might be permitted to enter a woman's quarters, he did not see the ailing woman. A woman could not expose any part of her body below her collar or above her wrists or ankles. At most, the doctor would be allowed to take the modest woman's pulse as she remained discretely obscured behind a bed curtain. During the Ming Dynasty (1368–1644), “the doctor's lady” was created to assist in diagnosis. Typically made of ivory, jade, rosewood, bone, or amber, these tiny figures (usually from two to five inches in length) portray a nude Chinese woman lying on her side or back with one hand supporting her head and the other

draped across her breasts. Many recline on elaborately carved mahogany chaises and hold tiny painted fans. The value of such sculpted ivories was enhanced by the belief that ivory combated poisons and reduced swelling of tissues. Taking the figure along on his visits, the physician would pass the doll to the patient behind the bed curtain, who would then mark the specific place “where it hurt” with charcoal or ink, and pass it back to the doctor. However, an extremely wealthy woman could avoid the visit altogether by sending her own marked figurine to the physician's office. Some ivory ladies also functioned as snuff bottles and had removable top-knots of black lacquered hair or feet which served as stoppers. Hidden compartments in other figures contain tiny carved spoons, probably for administering medicine. As befitting a woman of high rank, this figure's feet are bound and she has thick bracelets on both wrists. Figures produced after 1910 no longer had bound or deformed feet since the practice was abolished by the Chinese government.

57. INRŌ MEDICINE BOXES

Japan, late 19th to early 20th century

Inrō, painted and carved lacquer, *ojime*, bone;

3" × 1 3/4" × 3/4", 3 3/4" × 2 1/4" × 7/8"

History of Medicine Collections, Duke University

Medical Center Library

Inrō, first made around 1600 in the form they are known today, are small, highly decorated, multicompartmented boxes or cases that mainly carried medicines, tobacco, cosmetics, or perfumes. The *inrō* was suspended from a gentleman's or woman's sash or obi on a silken cord that ran under the sash and attached by an ornamental ivory or sculpted wood button called a *netsuke*. The *netsuke* rested on the obi, suspending the *inrō* and preventing it from falling. Most pieces also included an *ojime*, which is a small bead through which a braided cord was threaded and which kept the *inrō* cases closed. When they were used for medicine, an airtight fit was important. In many instances, the *inrō* and the *netsuke* were made to match in theme or color. Beads of sea coral were most often used for the *ojime*, which according to an old superstition was supposed to split into pieces in the presence of poison, thereby warning that the medicines in the cases were unsafe.

Although most *inrō* were usually made of many coats of lacquer over a wooden or leather core, some were created from ivory, wood, crystal, tortoise shell, or precious metals. True Japanese lacquer, which is the sap of a tree, has many layers (often up to thirty or more), each of which can be manipulated before being left to harden. *Inrō* artists sometimes added gold dust, ivory, mother of pearl, and numerous metals and stones to these layers; another technique involved the carving of these various layers to different depths, revealing a myriad of colors beneath. Decorative subjects could be historical or mythological, although many *inrō* and *netsuke* contain representations of the natural world—plants, animals, and insects. One of the boxes exhibited here is painted in red and gold on a black lacquer ground



and depicts a pastoral scene with a bamboo fence and screen. The other box shown has the common motif of a scholar sitting in a pavilion and has been carved in many layers of brown lacquer, resembling wood. Both can be described as "five-case *inrō*." Originally designed for utilitarian purposes, *inrō* have become highly prized works of art avidly sought by collectors.

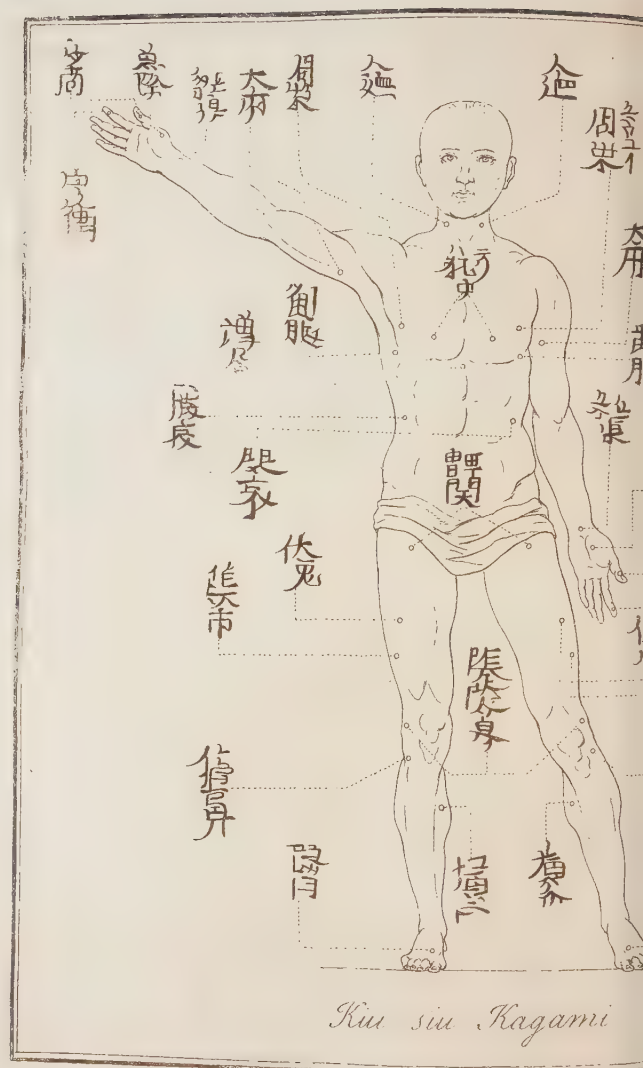
**58. ENGELBERT KAEMPFER,
GERMAN, 1651–1716**

Kiu siu Kagami Uvendorum locorum
Speculum (diagram of Japanese moxa
points)

Copperplate engraving after Kaempfer's
own drawings, from *Histoire naturelle,
civile, et ecclesiastique de l'empire du Japon*,
2 vols., traduite en François sur la
version Angloise de Jean-Gaspar
Scheuchzer (The Hague: P. Gosse &
J. Neaulme, 1729), vol. 1, plate 44

14 1/2" x 9 5/8"

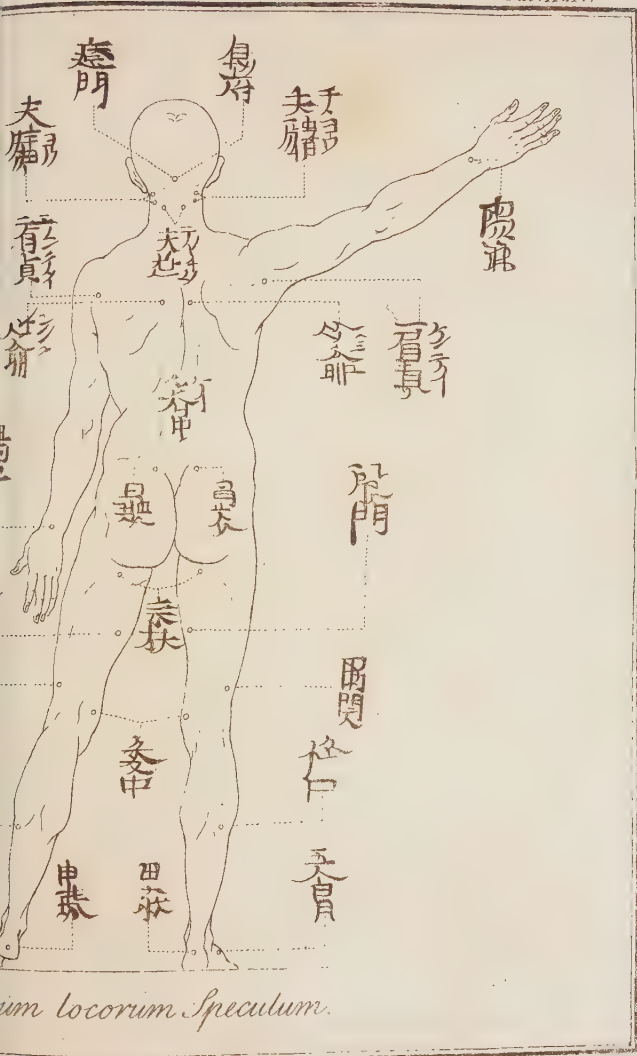
History of Medicine Collections, Duke
University Medical Center Library



The first edition of this book detailing Engelbert Kaempfer's travels to Japan was the first and principal source of Western knowledge of this culture. With the exception of his doctoral thesis, the *Amoenitatum Exoticarum* was the only one of his works published during his lifetime. The French edition shown here contains forty-five engraved illustrations, and offers insightful observations on topics as diverse as acupuncture, parasitic diseases, the Japanese tea ceremony, tobacco, opium, and many exotic medicinal plants.

Born in Lemgo, Germany, Kaempfer studied medicine in Uppsala and Stockholm. He was appointed the physician and secretary to the first

Swedish embassy to Persia and in 1684 arrived in Isfahan, Persia's capital. After completing his assignment, he decided to join the Dutch East India Company and in 1690 was appointed chief physician to the Dutch embassy in Japan, at that time closed to all outsiders except the Dutch, who had established a trading port at Nagasaki. Kaempfer was thus afforded a rare opportunity to study the local culture. While most Japanese were forbidden to converse with foreigners, Kaempfer's medical skills enabled him to

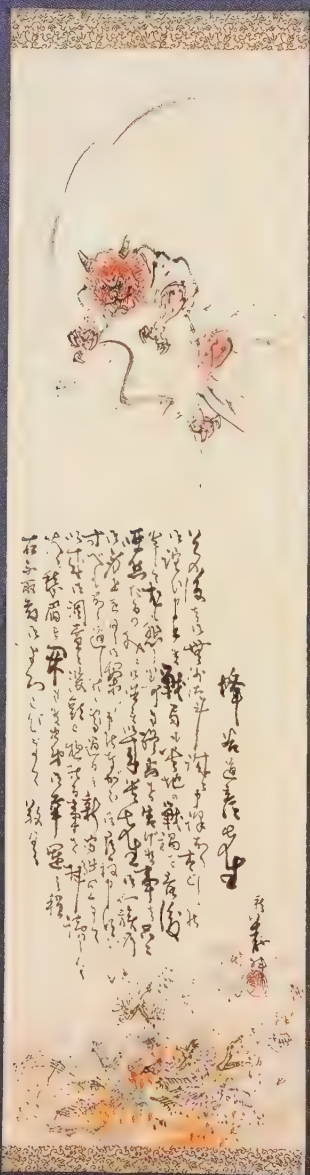


the British Museum, who ordered them translated from the German into English and published in 1727 as *The History of Japan*. The French and Dutch translations are based on the English one; the original German text was first printed only fifty years later. Kaempfer's text, among the best of the seventeenth century, also includes a highly detailed account of the ancient Chinese medical practices of acupuncture and moxibustion. The aim of these treatments was to drain off excess yin or yang and thus establish a proper balance, but external energy could also be introduced into the body. In acupuncture, fine gold and silver needles were inserted into any

exchange scientific information with a number of his Japanese colleagues. In particular, he was fascinated by Asian medical techniques. Returning to Europe in 1693, he received his medical degree at Leiden and planned to compile his notes about his discoveries; however, economic circumstances forced him to set aside his plans for his book and secure an appointment as physician to Count Friedrich Adolph of Lippe in Germany.

Following his death, Kaempfer's manuscripts were acquired by Sir Hans Sloane, the founder of

of 365 points (each point was related to a different organ) along the twelve meridians that traverse the body. A similar but more varied treatment was moxibustion, the application of small burning cones of dried herbs to precise points on the body, which was considered useful as a regular regimen for disease prevention. This diagram demonstrates the proper sites for different forms of *moxa* application.



59. HIROSHIMA SCROLL

Japan, by Shuka Takahashi, 1945

Ink and wash on paper scroll, 69" × 16 1/8"

History of Medicine Collections, Duke University
Medical Center Library

Dr. Michihiko Hachiya (1903–1980) was director of the Hiroshima Communications Hospital on 6 August, 1945, the date of the atomic bombing by United States military forces. Although himself seriously wounded, he continued to work in the damaged hospital treating the wounded and those suffering from radiation sickness. This painted scroll in the form of an illustrated letter was sent to Dr. Hachiya by his friend, the well-known artist Shuka Takahashi, five weeks after the bombing of Hiroshima. Marked on *gasenshi*, a special Chinese drawing paper that has the elongated form of a *kakemono* scroll, Takahashi's image, executed with great skill and imagination, is a metaphorical representation of the moment of the bomb blast. At the top of the composition, a colossal, angry god of wind is releasing air from a huge sack. At the bottom of the scroll, the city of Hiroshima burns amidst a haze of smoke and fire. Takahashi's picture is made even more poignant by the inclusion of tiny, chilling details—fallen telephone poles, ruined houses, and little running figures—all of which are dwarfed by the devastation of the great *pikadon* or flash-boom. In the text which appears in the center of the composition, Takahashi expresses his sadness at the state of the city and his relief that his friend is alive.

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The Physician's Art

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On the cover: Ivory anatomical manikin on a wooden couch, Western Europe, 17th–18th century
Photograph by Bill Bamberger
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“Like a work of art, a medical image or a piece of medical paraphernalia has a period style. This is not simply a surface gloss, a decorative mode that stands in a superficial relationship to the true function of the item. Function and the ‘look’ of something are not separate, since any action is hedged around by attitudes, hostile and approbatory, and our instinctive visual reaction to any item in a field as highly charged as medicine will be an integral part of the social field within which participants function.”

From the foreword by Martin Kemp

