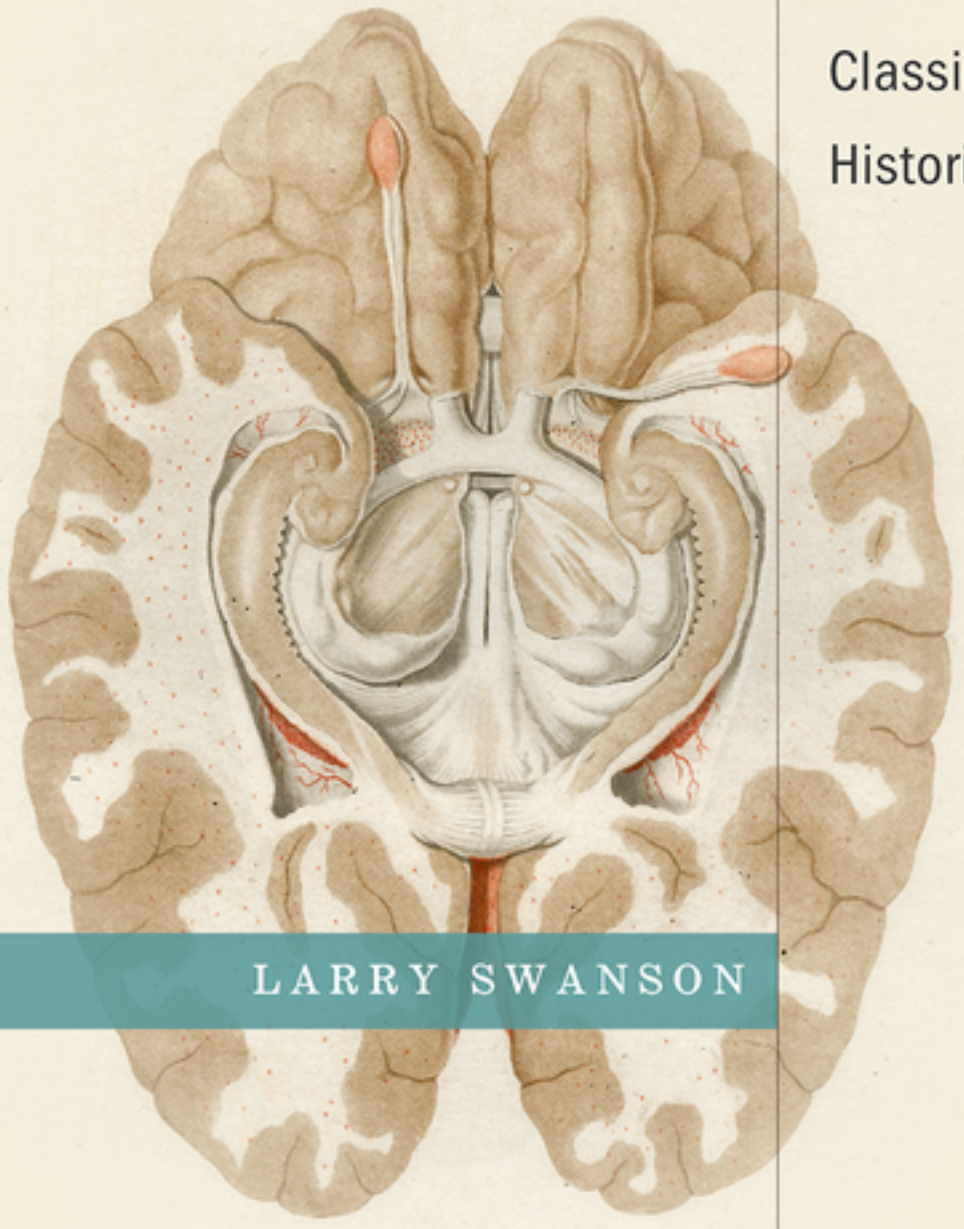
NEUROANATOMICAL TERMINOLOGY

A Lexicon of Classical Origins and Historical Foundations



LARRY SWANSON

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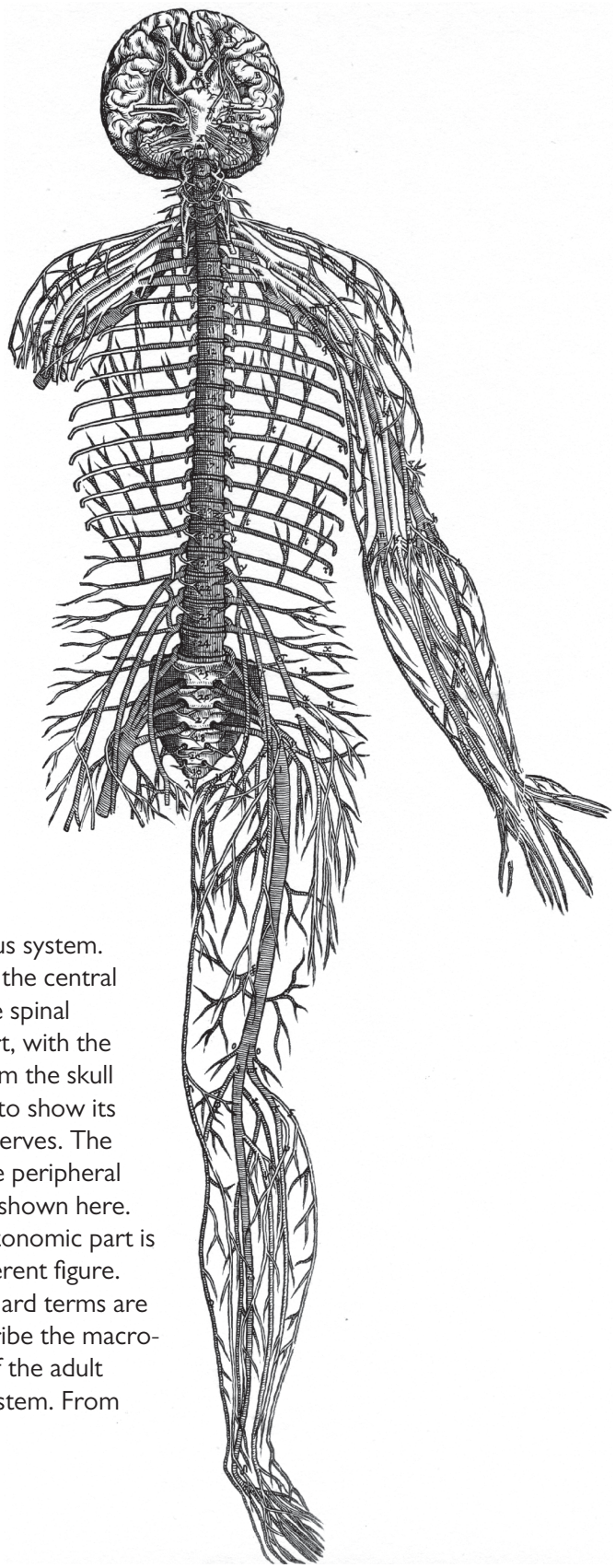

The human nervous system. The spinal cord of the central part remains in the spinal column for support, with the brain removed from the skull and tilted upward to show its base with cranial nerves. The somatic part of the peripheral nervous system is shown here. The visceral or autonomic part is illustrated in a different figure. About 1,300 standard terms are used now to describe the macroscopic structure of the adult human nervous system. From Vesalius (1543a).

Neuroanatomical **Terminology**

A LEXICON OF CLASSICAL ORIGINS AND HISTORICAL FOUNDATIONS

LARRY W. SWANSON, PhD

University Professor and
Appleman Professor of Biological Sciences
University of Southern California
Los Angeles

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Preface

Work on this book coincided with the explosive creation of the Internet and the rather more difficult birth of neuroinformatics toward the end of the 20th century. Without the former it probably could not have been finished in its present form during my lifetime, and without the latter it probably would not have been started at all.

The early stimulus for this research was a 1989 Committee on a National Neural Circuitry Database hosted by the Institute of Medicine (IOM) of the United States National Academies (Pechura & Martin, 1991). It helped pave the way for a decade of substantial National Institutes of Health (NIH) funding of the Human Brain Project (HBP) starting in 1995 (see De Schutter, 2005). During HBP conferences in San Diego, I met regularly and informally with three participants—Douglas Bowden, Steven Koslow, and Arthur Toga—to discuss broad strategies. We eventually agreed that the chaotic state of neuroanatomical nomenclature was perhaps the single greatest impediment to developing useful neuroinformatics tools for all aspects of neuroscience. Bowden went on to implement *NeuroNames* (Bowden & Dubach, 2003), which deals with contemporary sources of terminology, and I decided to take an historical approach, following the development of neuroanatomical terminology from the beginning. This approach was orders of magnitude more difficult than I had expected, and the initial results are presented here and in our broader Foundational Model of Connectivity (Swanson & Bota, 2011; Brown & Swanson, 2013).

Neuroinformatics is based on constructing databases and knowledge management systems for the nervous system (Koslow & Huerta, 1997). To construct tables for databases and to use inference engines in knowledge management systems it is necessary to create internally consistent defined vocabularies along with sets of rules for establishing relationships between concepts and terms. In contrast, neuroanatomy—now sometimes called *structural neuroscience* or *connectomics*—is thousands of years old and its terminology remains frustratingly disorganized, unlike mathematics, physics, and chemistry, where standardized nomenclatures have long been essential for progress.

I was originally drawn into this morass in the 1970s by the tradition of citing historical precedence in my own experimental neuroanatomical research papers on axonal connections between parts of the mammalian brain. It was accepted practice to determine which available terminologies for brain parts fitted the data best, and if none were adequate it was sometimes necessary to define new parts or different borders in relation to the older views (for example, Swanson, 1976). In the *Discussion* section the earlier literature could then be viewed and interpreted in relation to the internally consistent structural nomenclature adopted and defined for the experimental results.

As the body of this work grew and expanded to include the entire central nervous system (for example, Swanson & Hartman, 1975; Swanson & McKellar, 1979), the need for a systematic atlas became apparent, and the first edition of *Brain Maps: Structure of the Rat Brain* (Swanson, 1992, 1993) eventually appeared. This work contained a traditional atlas, with a set of photomicrographs of transverse histological sections through the rat brain accompanied by a set of corresponding interpretative maps (in print and the first atlas in digital format). But perhaps more importantly it contained the first systematic, hierarchically organized Nomenclature Tables of brain parts (gray matter regions and white matter tracts) to appear in modern times, with documentation from the primary literature. This required assessing the rather extensive contemporary literature and choosing an internally consistent parceling and accompanying nomenclature that appeared to be not only best documented in terms of experimental evidence, but also most appropriate in terms of historical precedence. These Nomenclature Tables are now in their third edition (Swanson, 2004).

The experience gained by this systematic exercise was taken to another level by our translation (Swanson & Swanson, 1995) of Santiago Ramón y Cajal's masterpiece, the *Histologie du Système Nerveux de l'Homme et des Vertébrés* (Cajal, 1909–1911). This monumental work of just

over 680,000 words and 1,025 original illustrations not only documented Cajal's own contributions to neuroanatomy—especially in the arenas of neuron types and connections—but also formed a critical review of most contributions to the field in the second half of the 19th century. Thus, it became necessary for us to understand clearly the state of neuroanatomical terminology at the end of the 19th century, which was presented in the translation's *Index*.

The third level of structural neuroscience nomenclature analysis presented here emerged from the needs of a new field—neuroinformatics—mentioned above. We went on to create an online Brain Architecture Knowledge Management System (Google: *BAMS*) that was based initially on our atlas, nomenclature, and experimental circuit data in the rat (Bota et al., 2003). However, the need for a comprehensive neuroanatomical nomenclature for all parts of the nervous system (central and peripheral), and in all animals, remained and led to the formulation of a Foundational Model of Connectivity (Swanson & Bota, 2010) and the work presented here. The ultimate goal is to create a language that can be used to describe clearly, accurately, and unambiguously the wiring or schematic diagram of the nervous system and that can be refined with a set of rules to accommodate new data and conceptual frameworks (see Brown & Swanson, 2013).

A revolution in scholarly research methodology took place literally during the course of this investigation. I began in 1998 the traditional, time-honored way: reading books in a library and taking notes. Shortly thereafter, catalogs of most of the world's most important libraries came online, massive union catalogs like WorldCat and Karlsruher Virtueller Katalog (KVK) were created, and librarians could be contacted easily by email for more detailed information about individual holdings. The vast majority of Western literature from the 15th century on was digitized and made available by keyword searches online, often in text searchable format. And word processing software made note taking, file searching, and text organization much more convenient and efficient than ever before. Today there is no excuse but laziness for not examining the earlier literature on any topic, including the history of neuroscience, which goes back to the Smith Papyrus of about 1700 BC.

Aside from my personal library, the most useful by far has been the Louise M. Darling Biomedical Library at the University of California, Los Angeles, and the exceptionally knowledgeable and helpful staff in the History and Special Collections for the Sciences Division, including especially Katherine Donahue, Russell Johnson, and Teresa Johnson. Marie-Françoise Chesselet, Chair of the Neurobiology Department at UCLA at the time, also made the research go much more smoothly by arranging a Visiting Scholar appointment for me. The second most useful resource was the incomparable collection and staff at the U.S. National Library of Medicine in Bethesda, Maryland. Here I want especially to thank those in the History of Medicine Division who helped the most: Stephen Greenberg, Crystal Smith, Anne Rothfeld, and Karen Pitts. Other valuable resources in California included the Huntington Library and its Dibner Senior Curator Daniel Lewis, the William Andrews Clark Library of UCLA and its then Head Librarian Bruce Whiteman, the Arts Library of UCLA, the Charles E. Young Research Library of UCLA, and the Lane Medical Library of Stanford and its Historical Curator Drew Bourn. In New York City I especially thank Arlene Shaner at the superb New York Academy of Medicine Library, and Stephen Novak and Jennifer McGillan at the Archives and Special Collections of the Augustus C. Long Health Sciences Library of Columbia University. Exceptionally rare material was also examined at the Francis A. Countway Library of Medicine of Harvard University and the Bancroft Library and Marian Koshland Biosciences and Natural Resources Library of the University of California, Berkeley. This research was supported in part by NIH Grant R01NS050792.

Readers will understand that no undertaking like this by one individual in a limited time frame can be regarded as anything but a preliminary guide to the vast, multilingual literature and part of a never ending revision of nomenclature tables.

AUGUST 15, 2013
LOS ANGELES

Quotations

"He who can properly define and divide is to be considered a god."

Plato (quoted in Mackay, 1977, p. 119)

"For in order that nothing I say be misunderstood and that precision and clarity be everywhere present, it is most essential that the meaning of every term be accurately defined."

Galen (*On the Doctrines of Hippocrates and Plato*; De Lacy, 1980, p. 361)

"Truth is the daughter of Time and not of authority."

Leonardo da Vinci (quoted in Garrison, 1929, p. 14)

"I cannot set bounds to my astonishment at my own stupidity and excessive trust in the writings of Galen and other anatomists. I was so besotted by Galen that I had never undertaken to demonstrate a human head without the head of a lamb or ox at my public dissections; I was so keen not to gain the reputation of having been unable to find the plexus [rete mirable (Herophilus, c335–c280 BC)] whose name was familiar to everyone that I imposed upon my audience by demonstrating from a sheep's head something I had never found in a human one."

Andreas Vesalius (1543a; Richardson & Carman translation, 2002, p. xvii)

"I implore his Majesty the Emperor [Charles V] to punish severely, as he deserves, this monster born and reared in his own home, this most pernicious exemplar of ignorance, ingratitude, arrogance, and impiety; and to suppress him completely, lest he poison the rest of Europe with his pestilential breath. With his deadly spume, he has already infected certain Frenchmen, Germans, and Italians, but they, I believe, are ignorant of anatomy and of the other branches of medicine…"

Jacques Dubois (1551; from *A Repudiation of the Calumnies of a Certain Madman [Vesalius] Concerning Hippocratic and Galenic Anatomy by Jacobus Sylvius, the Royal Interpreter of Things Medical at Paris*; see Cushing translation, 1943, p. xxx)

"Among the parts of an animated Body, which are subject to Anatomical disquisition, none is presumed to be easier or better known than the brain; yet in the meantime, there is none less or more imperfectly understood."

Thomas Willis (1664; Pordage translation, 1681, p. 55)

"To examine each part [of the brain] thoroughly requires so much time and such application of mind that it would be necessary to give up all other labors and all other considerations on that particular task."

Nicolaus Steno (1669; see translation, 1965, p. 141)

"When a committee is made up of five or six people, one of them is reading, another is delivering his opinion, two are gossiping together, one is asleep, and one is diverting himself by leafing through one of the Dictionaries on the table."

Antoine Furetière (1688. A member of *l'Académie française*, founded in 1635 to produce a dictionary of the French language; quoted in Hitching, 2005, p. 51)

"Dictionaries are like watches. The worst is better than none, and the best cannot be expected to go quite true."

Samuel Johnson (shortly before his death in 1784, quoted in Hitching, 2005, p. 179)

"We shall provisionally adopt the more rational language which C. Chaussier has substituted for the whimsical and ridiculous names employed by the ancients to denote the different parts of the encephalic organ. But, it must be confessed, that zootomy will never be in possession of a nomenclature completely satisfactory, and susceptible of being generally adopted, until intelligent anatomists employ themselves, as the modern chemists [Antoine Lavoisier in particular] have done, to reform the language of their science; and until, after adopting a method of nomenclature, they shall have given to the different parts names suited not only to the organs of man, but also to the similar or analogous parts in animals, so as to connect by language two branches of natural history, which ought never to be separated."

Jean Burdin (1803 translation, Vol. 1, pp. 156–157)

"Anatomy may be likened to a harvest field. First come the reapers who, entering on untrodden ground, cut down great store of corn from all sides of them. These were the earliest anatomists of modern Europe, such as Vesalius, Fallopius, Malpighi, and Harvey. Then come the gleaners, all gather up ears enough from the bare ridges to make a few loaves of bread. Such were the anatomists of the last century—Winslow, Vicq d'Azyr, Camper, Hunter, and the two Monroes. Last of all come the geese, who still contrive to pick up a few grains scattered here and there among the stubble, and waddle home in the evening, poor things, cackling with joy because of their success. Gentlemen, we are the geese."

John Barclay (1758–1826; from a warning to his students, as quoted in Sinclair and Robb-Smith, 1950, p. 74)

"It is not a little remarkable that what is definitely known regarding the special functions of the nervous system has been ascertained within the last thirty years."

British and Foreign Medical Review (1840, Vol. 9, p. 98)

"The best workman uses the best tools. Terms are the tools of the teacher; and only an inferior hand persists in toiling with a clumsy instrument when a better one lies within his reach. But 'he has been used to the other.' No doubt; and some

extra practice is necessary to acquire the knack of applying the new tool. But in this acquisition a small capital of trouble will have been invested with a sure return of large profits. A single substantive term is a better instrument of thought than a paraphrase. But the substitution of such terms for definitions is still more advantageous when they are susceptible of becoming adjectives by inflection..."

Richard Owen (1866, p. xiii–xiv)

"Faced with an anatomical fact proven beyond doubt, any physiological result that stands in contradiction to it loses all its meaning. . . So, first anatomy and then physiology; but if first physiology, then not without anatomy"

Bernard von Gudden (quoted in Brodmann, 1909; Garey translation, 1994, p. 267)

"'A well-chosen word can save an enormous amount of thought,' because to name is to classify, to establish ideal affiliations—analogous relationships—between little-known phenomena, and to identify the general idea or principle wherein they lie latent, like the tree within its seed."

Santiago Ramón y Cajal (1999, p. 54)

"The terminology of the brain is in great confusion. Most of the more obvious parts were named before their functions were known, and the same part often receiving many different names, and sometimes the same name being applied to very different parts."

C. Judson Herrick (1915, p. 115)

"It is almost unbelievable how many people are unable to copy a name correctly, and once a mistake gets into print or into an official document it is difficult to eradicate."

Henry E. Sigerist (1960, p. 292)

"Regardless of how terms are defined by lexicographers or committees of experts, terms cannot be used outside a theory. That is true even when terms are contingent—'given so-and-so, that is a neuron'—or hedged with observational restrictions—'that is an object at this time and place which has observable properties a, b, . . . n.' The principal reason for the frequent disputes over terminology is not so much about whether a new term muddles Greek with Latin. It is really about whether the term is biased toward their theory rather than ours."

Marcus Jacobson (1993, p. 16)

"Without the belief in some principle of organization of the nervous system there can be no science of the nervous system."

Marcus Jacobson (1993, p. 23)

Chapter 1

Lexicon of Nervous System Parts

Understanding how any system works requires four things: a general understanding of what the system does, a parts list, an account of how each part works, and knowledge of how the parts are interconnected to function as a whole. For the ***nervous system (Monro, 1783)*** in particular, there is a basic understanding of its role as a biological computer in controlling and coordinating both the internal physiological state of the body and behavioral interactions of the body with the external environment. However, a fundamental block to understanding mechanisms underlying this integration is the lack of a comprehensive, systematic, and widely accepted parts list for the ***nervous system (Monro, 1783)***.

A standard parts list is important for at least three main reasons. First, effective scientific communication requires an accurate, clearly defined vocabulary of technical terms. Second, a global parts list allows global analysis at the systems level. What is the internal configuration of each part and how does it work, how are the parts interconnected to function as a whole, and how does activity in one part or node influence activity in other parts or nodes of the network? And third, knowledge management systems that use inference engines with associated databases require unambiguous, systematic defined vocabularies of terms and relationships between terms.

Connectomes are one way to organize information about the wiring diagram of the ***nervous system (Monro, 1783)***. As originally conceived, a connectome is a global table of connections between ***nervous system (Monro, 1783)*** parts—a "from–to" lookup table or matrix (Sporns et al., 2005). Obviously, a comprehensive, internally consistent set of defined terms for parts that are connected is required for such a connectome (Bota et al., 2003; Bota & Swanson, 2010).

Foundational Model of Connectivity

Because the ***nervous system (Monro, 1783)*** is a biological computer, the "wiring" or schematic diagram of its structural connectivity provides one obligatory foundational model for understanding functional localization and mechanisms at all levels of organization from molecules to behavior and cognition. To facilitate accurate and clear scientific communication, global analysis of neural networks, and network modeling in knowledge management systems, a Foundational Model of Connectivity was formulated (Swanson & Bota, 2010). It is a high-level, downwardly extendible conceptual framework that applies to all animals with a ***nervous system (Monro, 1783)***, invertebrates and vertebrates alike, at all levels of analysis or resolution.

Any system or network has nodes and connections between nodes (see next section). This book has two major, interrelated parts: a Lexicon of defined terms and a set of 10 Nomenclature Tables. Fundamentally, they deal with the identity and location of nodes and connections within the ***nervous system (Monro, 1783)*** and are developed within the framework of the Foundational Model of Connectivity.

Location or position within the ***nervous system (Monro, 1783)***, and within the body as a whole, is described for any and all animals with a standard set of terms defined in the Foundational Model of Connectivity (Figure 1). This is a common approach in comparative anatomy, but for historical reasons it has been a major problem in human anatomy, where an idiosyncratic and deeply rooted set of positional terms is commonly used, especially in medical contexts. Nevertheless, the Foundational Model of Connectivity terms for positional information are used here as much as is practical for describing human ***nervous system (Monro, 1783)*** parts in the Lexicon (Figure 2).

Macrolevel, Mesolevel, and Microlevel of Analysis

An important feature of the Foundational Model of Connectivity is the precise definition for the ***nervous system (Monro, 1783)*** of three nested levels of analysis, resolution, granularity, and description (Swanson & Bota, 2010; Brown & Swanson, 2013). This approach (Figure 3) provides a strategy for attacking the well-known complexity of the ***nervous system (Monro, 1783)***, either from the top down (simple to complex) or bottom up (complex to simple).

The macrolevel of ***nervous system (Monro, 1783)*** connectivity is the simplest and lowest resolution. It deals with parceling ***gray matter (Meckel, 1817)*** and ***white matter (Meckel, 1817)*** into distinct ***gray matter regions (Swanson & Bota, 2010)*** and ***white matter tracts (Bell & Bell, 1826)***, respectively. At the macrolevel, ***nervous system (Monro, 1783)*** circuitry is described as ***gray matter region (Swanson & Bota, 2010)*** macronodes with ***white matter tract (Bell & Bell, 1826)*** input and output macroconnections. Before the microscope was used effectively for studying ***nervous system (Monro, 1783)*** connectivity organization in the mid 1830s, and the cell theory was introduced (Schleiden, 1838; Schwann, 1839), macrolevel examination was done with the naked eye, occasionally aided by a hand lens. Since then it has been examined predominantly with histological methods in animals and, more recently, with imaging techniques like MRI in living humans.

The mesolevel of ***nervous system (Monro, 1783)*** connectivity deals with neuron types (Bota & Swanson, 2007).

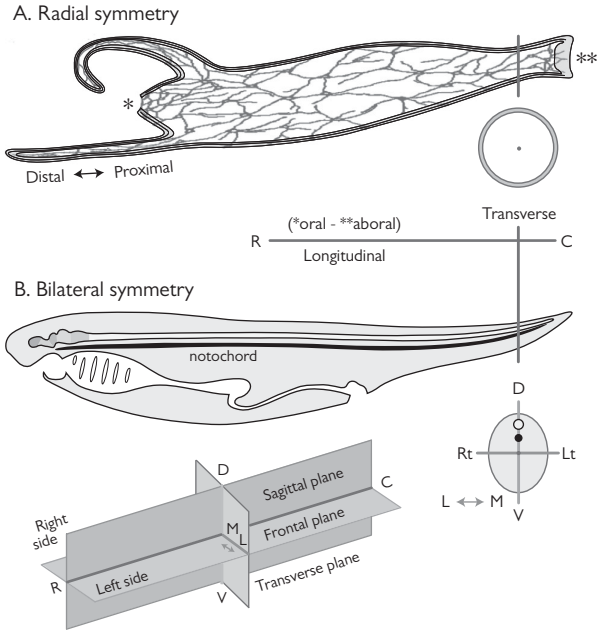

FIGURE 1. Describing position and symmetry in all animals with a ***nervous system (Monro, 1783)***. The basic assumption is that the body of all animals, whether radially or bilaterally symmetrical, has a longitudinal axis and one or two transverse axes, with the former having rostral and caudal ends. (A) Radially symmetrical animals like the hydra illustrated here have a ***nerve net (>1840)*** and two orthogonal axes, longitudinal (rostrocaudal or oral-aboral) and transverse. They also have two orthogonal planes of section, longitudinal or transverse. Relative position along body extensions, in this case tentacles, is indicated (distal or proximal to its attachment to the body). In bilaterally symmetrical animals, proximal and distal are used for extensions like fins, wings, limbs, or noses. (B) Bilaterally symmetrical invertebrates and vertebrates have three cardinal axes and three corresponding planes of section, as well as right and left halves or sides. An idealized chordate body plan is shown here. The ***central nervous system (Carus, 1814)*** lies dorsal to the notochord that in turn lies dorsal to the digestive system. A key principle in comparative schemes for indicating positional information is use of terms referring to the body itself, rather than to relationships of the body to the environment, which can change dramatically depending on behavior. Especially egregious offenders include horizontal (parallel to the horizon), superior (toward the sky, or heavens), and inferior (toward the earth). *Abbreviations*: *C*, caudal; *D*, dorsal; *L*, lateral; *Lt*, left; *M*, medial; *R*, rostral; *Rt*, right; *V*, ventral. *Reproduced with permission from Swanson & Bota (2010).*

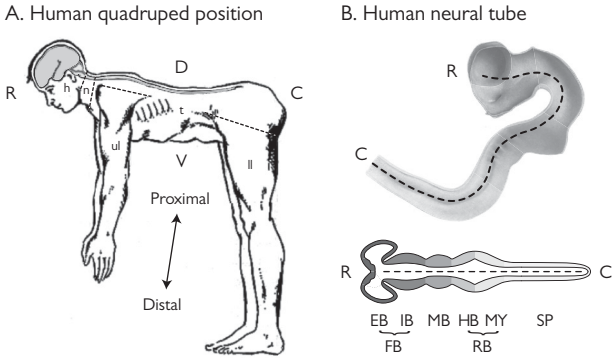

FIGURE 2. Describing position and symmetry in the developing and adult human. This problem is especially difficult because of dramatic changes in the longitudinal axis of the developing embryo, and of the adult body, which is vertical and bipedal with the palms facing forward in the standard human anatomical position. (A) Adult human in the comparative anatomical position where comparison with other bilaterally symmetrical animals (Figure 1B) is easy, and position along extensions like limbs is also easily described (compare with tentacle in Figure 1B). The body's longitudinal axis is indicated with a dashed line and has rostral (*R*) and caudal (*C*) ends. (B) ***Neural tube (Baer, 1837)*** of a one-month human embryo, with the longitudinal axis indicated by a dashed line. The ***endbrain (Kuhlenbeck, 1927)*** (*EB*) is at the rostral end and the ***spinal cord (Galen, c162–c166)*** (SP) is at the caudal end. The top part of the figure shows the right half of the ***neural tube (Baer, 1837)***, and the bottom half is a conceptualized straightened ***neural tube (Baer, 1837)*** in frontal (horizontal) section with topographic divisions listed in Appendix 2. *Other abbreviations*: *D*, dorsal; *FB*, ***forebrain (Goette, 1873)***; *HB*, ***hindbrain (Baer, 1837)***; *IB*, ***interbrain (Baer, 1837)***; *MB*, ***midbrain (Baer, 1837)***; *MY*, ***medulla (Winslow, 1733)*** or ***afterbrain (Baer, 1837)***; *RB*, ***rhombicbrain (His, 1893b)***; *V*, ventral. *Reproduced with permission from Swanson & Bota (2010).*

In essence, each ***gray matter region (Swanson & Bota, 2010)*** is defined by a unique set of neuron types. At the mesolevel, ***nervous system (Monro, 1783)*** connectivity is described as neuron type mesonodes within particular macronodes that have input and output mesoconnections following specific routes though ***white matter tracts (Bell & Bell, 1826)***.

The microlevel of ***nervous system (Monro, 1783)*** connectivity deals with individual neurons of a neuron type. At the microlevel, individual neurons form individual micronodes and the connection pattern of individual neurons at the level of axon branching patterns, and the distribution and size of individual synapses is accounted for.

In general, the macrolevel and mesolevel of ***nervous system (Monro, 1783)*** organization are genetically determined, discounting injury and disease. They are still commonly treated qualitatively, although differences between individuals are often measured. In contrast, the effects of experience—which include factors like learning, pharmacological agents, and stress—are measured at the microlevel. Microlevel features are commonly treated quantitatively and change rather quickly, and often more or less continuously, in the individual.

Goals and Scope of the Book

The general goal of this book was to provide a comprehensive, systematic defined vocabulary for describing the ***nervous system (Monro, 1783)*** in general and the human ***nervous system (Monro, 1783)*** in particular. This was approached by developing two major interrelated features. The first is the Lexicon. It provides for each ***standard term*** in the defined vocabulary a literature citation for the first use of the term; a textual definition including method used to describe the part, age, species, and sex to which

the definition applies; a citation for the discovery of the part; and a list of other terms including alternate spellings, translations, synonyms, and those that partly correspond. The second feature is the comprehensive and systematic set of Nomenclature Tables based on the ***standard terms*** (see Chapter 3 and Appendices).

Based on these goals, an historical approach was taken starting at the beginning of surviving written documentation from the Middle Kingdom of Ancient Egypt about 3,700 years ago. As research on the goals progressed, it became apparent that the scope of the project would have to be limited. By the end of the 18th century the number of terms was clearly increasing exponentially (see Chapter 2 and Figure 6).

The scope of this book was thus limited in three ways. First, it was limited to the macrolevel of description (Figure 3), which is the easiest. Second, a comprehensive defined vocabulary for the ***nervous system (Monro, 1783)***

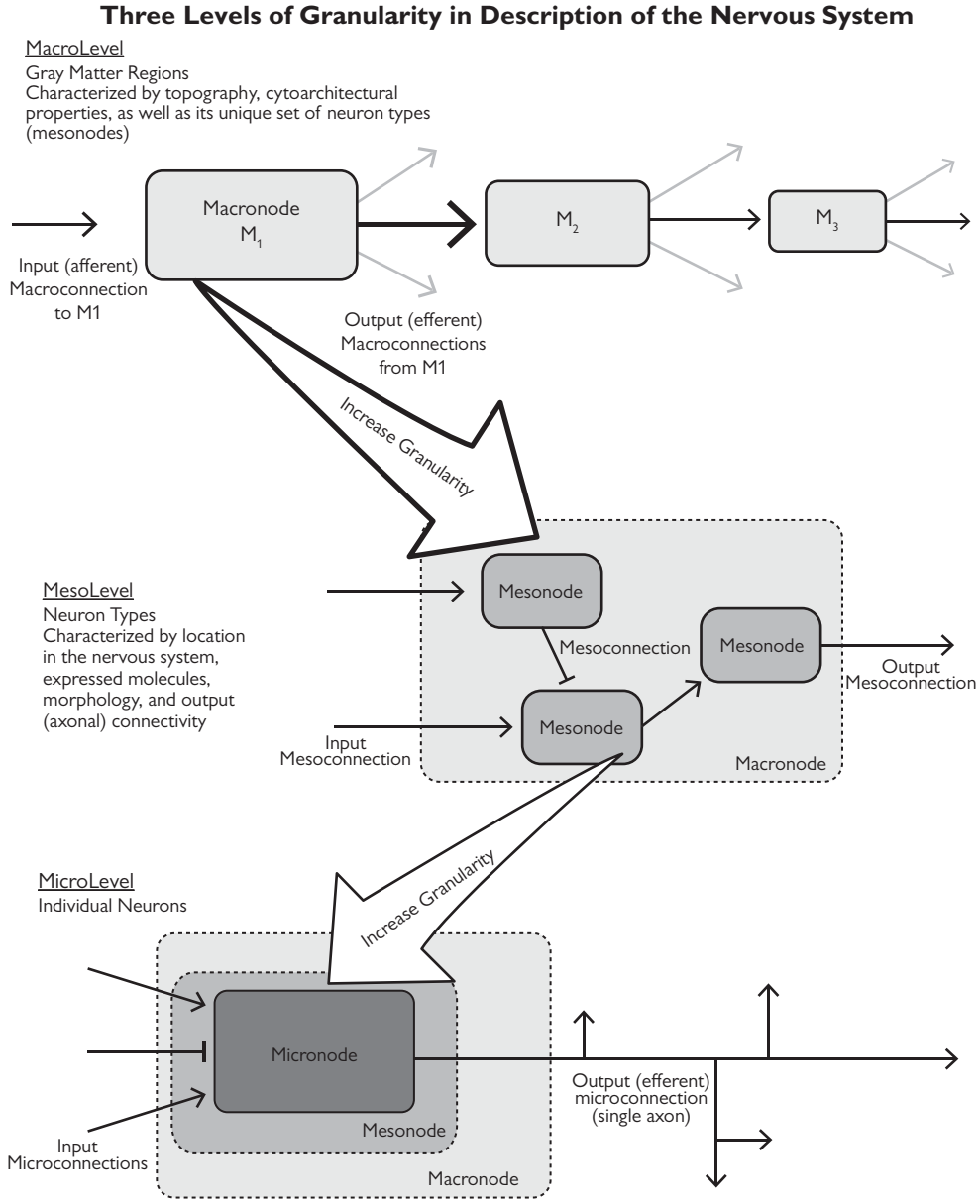

FIGURE 3. Levels of analysis for ***nervous system (Monro, 1783)*** connectivity. Because ***nervous system (Monro, 1783)*** circuitry is so complex, dividing it into three well-defined and nested levels helps clarify analysis strategies and provides a conceptual framework for clearer understanding of organizing principles. The origins of neural connections can be regarded as macronodes or ***gray matter regions (Swanson & Bota, 2010)***, mesonodes or neuron types, and micronodes or individual neurons. Individual ***gray matter regions (Swanson & Bota, 2010)*** are distinguished by a unique set of neuron types, and individual neuron types are distinguished by a unique set of individual neurons. *Reproduced with permission from Brown & Swanson (2013).*

was limited to human, where documented analysis at the macrolevel is by far most complete and where it is particularly relevant now for in vivo MRI imaging. And third, thorough historical documentation was limited to the Classic Era of neuroanatomy, which can be defined as ending with the introduction of the cell theory to biology (Schleiden, 1838; Schwann, 1839) and the rapid rise of histological analysis thereafter. Historical documentation of ***standard terms*** beyond 1840, symbolized as (>1840) when the original source was not established, was strictly limited to the best textbooks and to terms used relatively recently that may be confusing or ambiguous.

Following earlier attempts (Swanson, 1992, 1998, 2004; Swanson & Bota, 2010), the Nomenclature Tables (Appendices) present the higher levels of the hierarchies and are easily extendible in the future to lower levels containing documented finer subdivisions.

Terms and Definitions

The Lexicon is a defined vocabulary of 1,381 ***standard terms*** and 10,928 other, *nonstandard terms*. The use of ***standard terms*** is highly advantageous in a work like this for two reasons. First, the number of complete definitions required is proportional to the number of all terms, whereas without ***standard terms*** the number of complete definitions is proportional to the square of all terms (Dashti et al., 1997). In the former case *nonstandard terms* are defined in relation to ***standard terms*** (for example, synonyms need no definition, only a pointer to the appropriate ***standard term***), whereas in the latter case every term must be defined in relation to every other term. The second reason ***standard terms*** are advantageous is that they are used to construct clearly defined, internally consistent Nomenclature Tables.

A full ***standard term*** entry in the Lexicon has the following components:

Standard term name and citation of first use. Following recent international trends, the preferred language for ***standard terms*** is English (*Terminologia Anatomica*, 1998; Nieuwenhuys et al., 2008), with American English spelling. Anatomical literature has not been published in Latin since the 19th century, and very few experimental neuroscientists today are fluent in, or even acquainted with, Latin. In practice, this makes the use of existing Latin terminology meaningless and the creation of meaningful new terminology based on emerging research quite problematic.

Choosing ***standard terms*** from all those available, or even from new ones created specifically for this purpose, was particularly difficult. However, it is important to recall that human anatomy, including neuroanatomy, has a long and strong tradition—it has been taught continuously in medical schools for 2,500 years, since Classical Greece—and that macrolevel human anatomical terminology has been standardized by a succession of national and international committees since 1895 (see *Terminologia Anatomica*, 1998, pp. 157–162). Three main factors guided the choice of ***standard terms***. First, they followed, as closely as current evidence indicates, the standard nomenclature provided in *Nomina Anatomica* (1983) and *Terminologia Anatomica* (1998). The two sources are rather similar, although the latter includes Latin and English equivalents. They are strongest for ***peripheral nervous system (Meckel, 1817***) anatomy and weakest for ***forebrain (Goette, 1873)*** anatomy. Creating a new rational neuroanatomical nomenclature, like Carl Linnaeus (1758) did for biological taxonomy or Antoine Lavoisier and colleagues (Guyton de Morveau et al., 1787) did for chemistry in the 18th century, is an undertaking for the future.

Second, possible choices were made with the long-term goal of creating a nomenclature common to mammals, with specialized terms for smaller subdivisions applicable to particular species. The choices made here were guided by the Foundational Model of Connectivity (Swanson & Bota, 2010) and the strategy taken in our nomenclature for the adult rodent ***central nervous system (Carus, 1814)*** (Swanson, 2004; Dong & Allen Institute for Brain Science, 2008). As a corollary, it is accepted procedure that when a structure is present in mammals including human, the term applied to the human is applied to the same structure in other forms (see Romer, 1962, p. 13). Other generally accepted procedures include the fact that any nomenclature should be logical, practical, and clear, and that for ***nerves (Herophilus, c335–c280 BC***) in particular, terms should when possible correspond to accompanying bones, arteries, and/or veins, or to corresponding innervated structures like muscles and glands.

And third, the choices were made to construct and complete in a systematic way the 10 Nomenclature Tables presented in Chapter 3 and the Appendices. Since Linnaeus (1758), perhaps the single most important criterion for the acceptance of standard names in plant and animal taxonomy is historical precedence or priority (International Commission on Zoological Nomenclature, 1999, pp. 2, 24): if a species has been described and named adequately, it is not acceptable to use a new name. This principle has not yet been applied to structural neuroscience.

Following the ***standard term*** name is a citation to the first use of this specific term, as far as could be determined. Its format is ***standard term (Author, date)***, or ***standard term (>1840)*** when it was introduced after 1840 and the origin of the term has not been traced yet. The use of a citation is critical because the same term can have different definitions that must be distinguished, as is easy to see in the *List of All Defined Terms*. It is important to note that these citations are not eponyms, the use of which current practice discourages because they are sometimes used without regard to accurate historical precedence.

Standard term definition

All ***standard terms*** have a textual definition describing what they are in relation to other ***standard terms*** in the Lexicon. Other regular features of a definition include the species (for example, human or silkworm) or taxon (for example, vertebrate or mammal), age and sex to which the

standard term applies, and the method used to identify the structure indicated by the term (for example, macroscopic dissection, referred to as macrodissection). These features are important to include because the same term may have different (or the same) meaning in different species, in the embryo and adult, and in males, females, and hermaphrodites (see Bota & Swanson, 2010). Finally, each definition provides a citation to the first delineation of the structure indicated by the ***standard term***.

Some definitions include historical information about identification of the structure indicated by the ***standard term***. This was done when identification was unusually problematic, and is more complete for more important structures.

Alternate spellings

Alternate spellings of particularly important ***standard terms***, like ***brain (Smith Papyrus, c1700 BC)***, are given when of special interest or to clarify ambiguities. Variations between British English and American English spelling, or in hyphenation use, are not systematically given. Many ***standard terms*** can be either singular or plural, though only one is given; for example, ***nerves (Herophilus, c335–c280 BC)***, which is given, can obviously be used as ***nerve (Herophilus, c335–c280 BC)***. Alternate spellings are listed chronologically based on a citation to their first use as far as could be determined.

Translations

Full accounts of translations of standard and other terms into languages other than English are not provided and are relatively easy to access now on the Internet. One exception is the original term for ***standard terms*** when not in English. They are regularly given and are much more frequent in Latin than in German, French, Greek, and Italian. They are listed chronologically based on a citation to their first use as far as could be determined.

Earlier references

Earlier synonyms are terms used for a part before the ***standard term*** was first introduced. In addition, a part might have been delineated before receiving its first name, whether standard or an earlier synonym. Three separately listed possibilities were found, not necessarily in this order: (1) described, not named or illustrated; (2) illustrated, not named or described; and (3) illustrated and described, not named. All four types are defined with respect to ***standard terms*** and/or *nonstandard terms*, and are listed chronologically based on a citation to their first use as far as could be determined.

Later synonyms

They are terms used for a part after the ***standard term*** was introduced. They are listed chronologically based on a citation to their first use as far as could be determined.

Synonyms are the largest category of term in the Lexicon and the easiest to deal with conceptually, once it is admitted that exact synonymy is almost always impossible to determine unless explicitly stated by authors using them. Some authors used synonyms to the point of absurdity. Thomas Willis was one of the greatest abusers in this regard; for example: "The chamfered or streaked bodies, or the tops of the oblong marrow, are two lentiform processes…" uses 4 synonyms (chamfered bodies, streaked bodies, tops of oblong marrow, lentiform processes) in referring to another synonym, the (right and left) *corpus striatum (Willis, 1664)*; see Pordage translation (1681, p. 63). Other authors preferred long descriptive terms to simple terms. For example, compare *mental branch of maxillary branch of inferior maxillary branch of fifth pair of nerves (Bock, 1817)* to the earlier ***mental nerve (Cheselden, 1726)***. And finally, some distinctive parts lend themselves particularly to those inclined to create synonyms. The apparent favorite is ***mammillary body (Ludwig, 1779)***. Its entry in the Lexicon lists 45 earlier synonyms and 14 later synonyms. In contrast, the entry for ***retina (Herophilus, c335–c280 BC)*** lists only one earlier synonym and four later synonyms, the most recent being *coat of eye (Geminus, 1553)*.

Partly corresponds

These terms result from using a comprehensive defined vocabulary and are the hardest to deal with. Simply put, partly corresponding terms are not synonymous with any ***standard term*** in the defined vocabulary. However, in a hierarchically arranged nomenclature like that used here (Chapter 3 and Appendices) all terms related to the ***nervous system (Monro, 1783)*** can be defined with reference to one or more ***standard terms*** because ***nervous system (Monro, 1783)*** is at the top of the hierarchy—it is the universe or domain of discourse.

There are at least three major types of partly corresponding terms that have not been formally separated here. One type of partly corresponding term corresponds to two or more ***standard terms***. Examples include *midbrain (Burdin, 1803)*, which corresponds to ***tectum (Baer, 1837)*** and ***pons (Haller, 1747)*** considered together, and *lentiform nucleus (Burdach, 1822)*, which corresponds to ***globus pallidus (Burdach, 1822)*** and ***putamen (Burdach, 1822)*** considered together. Another type involves only part of one or more ***standard terms***—a part not recognized today and thus now considered a misinterpretation. An example is *cerebral part of oculomotor nerve (Arnold, 1834)*, which corresponds to the proximal segment of the ***oculomotor nerve (Estienne, 1545)*** before piercing the ***dura (Galen, c177)*** to enter the ***cavernous sinus (Winslow, 1733)***. And the third major type of partly corresponding term involves part of a ***standard term*** at the lowest level of the hierarchy that is not yet recognized as a legitimate ***standard term*** in the next lower level of the hierarchy but should or will be added. In summary, partly corresponding terms indicate misinterpretations as well as places where new ***standard terms*** can be added to new, lower levels of the hierarchy.

Methodology

The basic approach was to start at the beginning of recorded literature dealing with the structure of the ***nervous***

system (Monro, 1783), and systematically progress through history. Fortunately, virtually every relevant document through the beginning of the 16th century has been translated into English and is readily available in scholarly editions. For relevant information printed in Europe from the late 15th century to 1840, when the modern, microscopic era of structural neuroscience began, every attempt was made to examine an original copy, although fact checking has become much easier recently with the availability of printed material online. The goal was to provide for this period as complete an inventory as possible, without scholarly bias, of classical neuroanatomical terminology. This goal can, of course, never be achieved completely, as experience has taught for previous dictionaries of all kinds. Instead, methods and protocols were established with results limited by the author's knowledge, patience, and available time. The accuracy of information within the Lexicon was confirmed when possible by internal evidence within particular citations and by frequent reference to earlier work in later publications. For practical reasons, systematic examination was confined to the technical anatomical literature, so terms for ***nervous system (Monro, 1783)*** parts that have been used mostly in works on surgery, pathology, and the like may be missing. In addition, the etymology of terms is not treated systematically and pronunciation concerns are ignored, unlike many dictionaries.

In practice, systematic work on the historical origins of terms proceeded in parallel with construction of the 10 modern Nomenclature Tables presented in the Appendices. The two processes informed each other in a very synergistic way.

Chapter 2

Historical Trends

Localization of function is the single most important general principle emerging from the long history of clinical and scientific work in neuroscience (Sherrington, 1906; Neuburger, 1981; Clarke & Jacyna, 1987; Finger, 1994; Clarke & O'Malley, 1996), and is one reason clear communication about the parts of the ***nervous system (Monro, 1783)*** and their location is so critical. It is far beyond the scope of the present work to explore in detail the historical foundations of the results documented in the Lexicon, but some obvious trends in the Classical Era of neuroanatomy, defined as ending with the introduction of the cell theory at the end of the 1830s, are worth pointing out here.

Pattern of Discovery in the Classical Era

It is most interesting to begin with the discovery of ***nervous system (Monro, 1783)*** parts, whether or not, or what, they were named. For the present day macrolevel account of ***nervous system (Monro, 1783)*** parts in the Lexicon and Appendices, 1,381 ***standard terms*** are used, and of these, 1,162 (84%) corresponding parts were discovered by 1840. Almost all of the remaining 16% of parts with ***standard terms*** discovered since 1840 (>1840) are below the resolution of clear identification with current human in vivo imaging (MRI) methods, so it is clear that virtually everything in the ***nervous system (Monro, 1783)*** that can be identified with current human MRI technology was discovered by 1840.

Discovery in the Classical Era of neuroanatomy was not steady and progressive. Instead, it falls into four distinct periods separated by centuries of stagnation or even regression (Figure 4). Knowledge of the Egyptian Period is based on a single surviving papyrus with the only known original observations about ***nervous system (Monro, 1783)*** structure. The Edwin Smith Surgical Papyrus was written about 3,700 years ago by physicians dealing in living human patients with battle wounds, some so severe that the ***meninges (Smith Papyrus, c1700 BC)***, ***brain (Smith Papyrus, c1700 BC)***, and *cerebral convolutions (Smith Papyrus, c1700 BC)* were exposed to view. These were objective clinical observations accompanied by diagnoses and prognoses.

No new ***nervous system (Monro, 1783)*** structures were recorded over the next 1,200 years until the Greek Period of classical neuroanatomy, which coincided with Classical Greece in the 4th and 5th centuries BC. It was here that scientific observation of animal structure and function began: first with Alcmaeon and Anaxagoras, then with Hippocrates and Aristotle, and finally with Herophilus and Erasistratus, who also dissected human cadavers in Alexandria. Most notably, this group was responsible for clearly distinguishing major features including the ***nerves (Herophilus, c335–280 BC)***, ***retina (Herophilus, c335–c280 BC)***, ***ventricles (Hippocrates)***, *spinal medulla (Hippocrates)*, and ***cerebellum (Aristotle)***.

Following the work of Herophilus and Erasistratus, nothing original was added for over 300 years, until the Roman Period of classical neuroanatomy around the peak of the Roman Empire in the 2nd century. Galen was the towering figure of the period and a very large corpus of his vast writings has survived. He acknowledged a group of influential predecessor anatomists, including especially the respected Marinus of Pergamon, and had no successor. Galen, who was of Greek ethnicity and wrote in Greek, was far and away the greatest neuroanatomist of the Classical Era in terms of originality, breadth, and depth of discoveries. He discovered over two and a half times as many parts now referred to with ***standard terms*** as Andreas Vesalius, the next greatest discoverer (Figure 5).

Almost nothing was discovered in the ***nervous system (Monro, 1783)*** for 1,300 years after Galen's death, with two notable exceptions. First was the revival of Galen's writings, along with the practice of animal dissection, at the oldest western European medical school, in Salerno, during the late 11th to early 12th century. Four short anatomical texts used with the anatomical dissection of pigs have survived from that time (see Corner, 1927). One of them, associated with *Anatomia Magistri Nicolai physici*, first clearly identified the ***olfactory bulb (Weitbrecht, 1751)*** and ***cauda equina (Anatomia Magistri Nicolai, 12th century)***. The second exception occurred during the earliest stirrings of the Renaissance and was associated with the revival of human cadaver dissection, initially for autopsy purposes, at the medical school in Bologna. Mondino dei Luzzi was the author, and his book *Anathomia* (1316) was the first to mention the personal practice of human dissection since the work of Herophilus and Erasistratus 1,600 years earlier. He was the first to identify at least 5 parts of the ***nervous system (Monro, 1783)*** including the ***mammillary body (Ludwig, 1779)***.

The fruits of the Renaissance came surprisingly late to medicine and the life sciences. Almost 400 years passed after Mondino's *Anathomia* before the first few discoveries associated with the Renaissance Period of classical neuroanatomy in the 1490s, and its first great work didn't appear until 1543. That book, of course, was the *Fabrica* of Vesalius, and it stands second only to Galen's writing in terms of

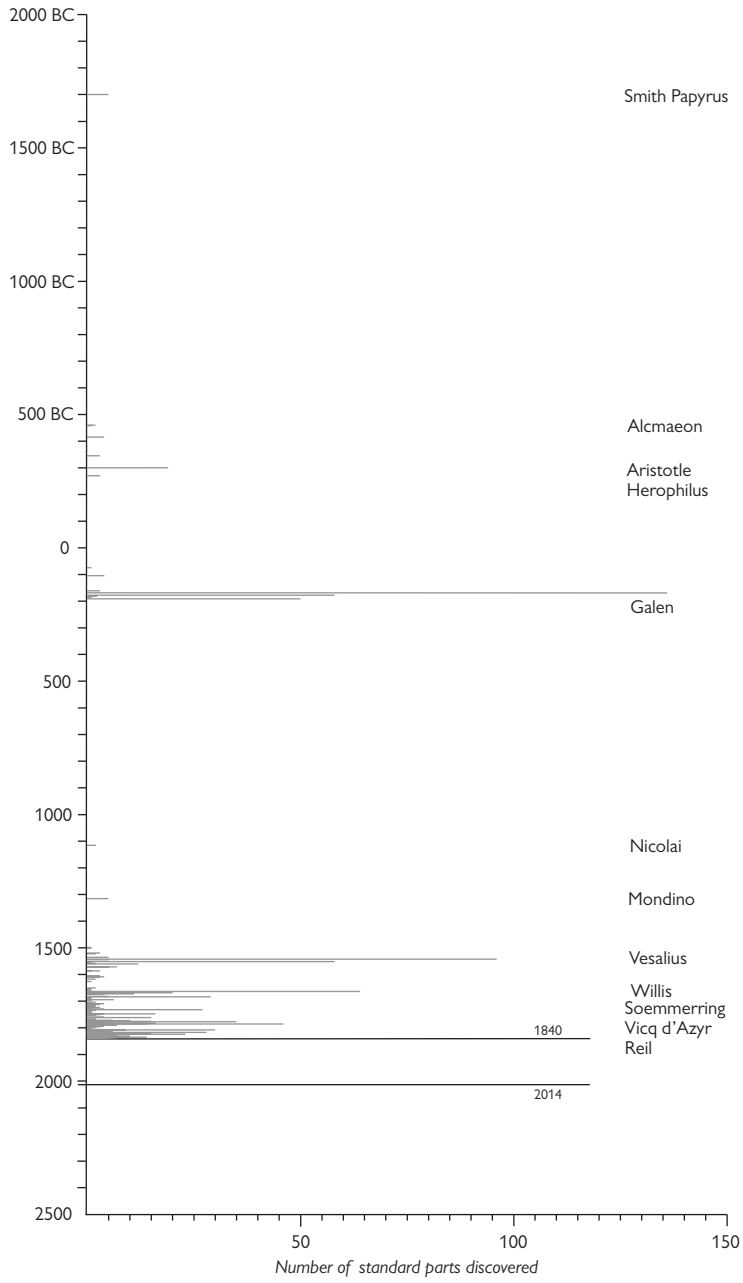

FIGURE 4. Patterns of discovery in the Classical Era. This histogram shows the year-by-year number of basic ***nervous system (Monro, 1783)*** parts discovered and documented in writing or illustration from c1700 BC to 1840. These are the parts given ***standard terms*** in the Lexicon and ten Nomenclature Tables of the Appendices. Authors responsible for significant peaks are listed on the right. The Modern Era of neuroanatomy between 1840 and the present is indicated between two horizontal lines. See text for discussion.

macrolevel ***nervous system (Monro, 1783)*** parts discovered (Figure 5). For our purposes, the Renaissance Period of classical neuroanatomy lasted about 350 years until the Modern Era of neuroanatomy began around 1840. During this period there were a number of great neuroanatomists (Figure 5), and the discovery of ***nervous system (Monro, 1783)*** parts designated with ***standard terms*** basically increased exponentially (Figures 4, 6).

Vesalius inspired a brilliant group of investigators, including most notably Bartolomeo Eustachi (1552), Gabriele Falloppio (1561), Volcher Coiter (1572), and Costanzo Varoli (1573). Then there was something of a lull until the conceptually brilliant work of Willis (1664, 1672), who actually made his most enduring anatomical discoveries in the ***peripheral nervous system (Meckel, 1817)***, which he called the *nervous system (Willis, 1664)*. Willis in turn inspired

Most discoveries in Classical Era

1.	Galen	c164-c192	250
2.	Vesalius	1543, 1555	97
3.	Willis	1664, 1672	67
4.	Vicq d'Azyr	1784, 1786	60
5.	Eustachi	1552	58
6.	Soemmerring	1778, 1791	36
7.	Vieussens	1684	29
8.	Reil	1807-1812	35
9.	Meckel	1817	28
10.	Winslow	1733	27

FIGURE 5 Most prolific discoverers of ***nervous system (Monro, 1783)*** parts in the Classical Era. The ten anatomists responsible for discovering the greatest number of parts before 1840 and the introduction of histological methods. Between c1700 BC and 1840, these ten people were responsible for discovering 59% (687/1,162) of the parts now constituting ***standard terms*** in the Lexicon. For other eminent authors see Figures 4, 6, and 7, and the text.

the work of Nicolas Steno (1669), Marcello Malpighi (1666, 1673), and Raymond Vieussens (1684) before another lull, broken by the superb general work of Jacob Winslow (1733) and Albrecht von Haller (1762) and the more specialized thesis of Samuel Thomas Soemmerring (1778). After the landmark atlas and commentary of Félix Vicq d'Azyr (1786) there was a rather steady increase of discoveries until the end of this period around 1840, most notably by Johann Christian Reil, Johann Friedrich Meckel the Younger, and Karl Friedrich Burdach.

Standard Terms, Synonyms, and Partly Corresponding Terms

The interpretation and definition of terms for parts of the ***nervous system (Monro, 1783)*** are, of course, retrospective—based on current evidence and informed by historical precedent. In general, the introduction of a ***standard term*** lags behind discovery of the corresponding part. For example, whereas Galen discovered at least 250 parts that now have ***standard terms***, only about 13 of the terms he used survive as current ***standard terms***. Similarly, Vesalius discovered almost 100 parts that now have ***standard terms***, and only about 10 of the terms he used survive as ***standard terms***. Unfortunately, there are no set rules for establishing neuroanatomical terms although reasonable best-practice guidelines have emerged over the years and have had some influence (see Chapter 1).

As of 1840, some 1,162 of the currently recognized 1,381 parts now assigned ***standard terms*** had been discovered (see preceding section), but only 386 (33%) of the 1,162 parts recognized in the Lexicon had received their currently assigned ***standard term*** (Figure 6). Burdach (1819, 1822), Meckel (1817), and Friedrich Arnold (1828, 1834, 1838a,b) contributed the most to standard terminology in the Classical Era of neuroanatomy (Figure 7). From Figures 5 and 7 it is clear that Galen (c164–c192), Vesalius (1543a), Winslow (1733), and Meckel (1817) were the greatest contributors during the Classical Era of neuroanatomy with respect to both original discoveries and contributions to standard terminology.

The discovery of structures corresponding to current ***standard terms*** was dealt with in the preceding section. Synonyms for ***standard terms*** constitute the largest category of terms in the Lexicon (Figure 6) and are the easiest to deal with—they correspond as far as can be reasonably determined to the ***standard term***. Synonyms have existed since the beginning, in the Edwin Smith Surgical Papyrus (c1700 BC), and for the ***nervous system (Monro, 1783)*** alone numbered at least 5,712 by 1840 not counting large numbers of alternate spellings and corresponding forms in other languages. This is a ratio of just over 4 (4.1) synonyms coined by 1840 for each ***standard term*** in the Lexicon. Their number obviously rose exponentially during the Renaissance Period of classical neuroanatomy (Figure 6), but the trend since then is impossible to pinpoint accurately because of changing interests, most notably the rise of histological approaches, and because of official nomenclature committees working for standardization since the 1890s (see Chapter 1).

The number of partly corresponding terms (see Chapter 1) also increased exponentially during the Renaissance Period at the end of the Classical Era of neuroanatomy (Figure 6), but not as fast as the number of synonyms. Thus, the ratio of partly corresponding terms in 1840 to current ***standard terms*** in the Lexicon was just under 3:1 (2.8:1; 3,933/1,381).

To summarize the research done here: at the end of the Classical Era of neuroanatomy in 1840, the vast majority of ***nervous system (Monro, 1783)*** parts having ***standard terms*** in the Lexicon had been discovered (1,162 of 1,381), although only 386 (33%) had received their current ***standard term***. In addition, at least 5,712 synonyms (not counting alternate spellings and equivalent forms in other languages) had been coined, and at least 3,922 partly corresponding terms had been delineated. This amounted to just over 10,000 terms for 1,162 ***nervous system (Monro, 1783)*** parts. For the sake of the complete Nomenclature Tables in the Appendices, just over 2,300 terms introduced after 1840 were added to the Lexicon and indicated as (>1840) if the citation to its first use was not determined; see Chapter 3. The number of parts discovered, ***standard terms***, partly corresponding terms, and synonyms all increased exponentially during the Classical Era of neuroanatomy. As pointed out in Chapter 1, by 1840 virtually every ***nervous system (Monro, 1783)*** part with a ***standard term*** that can be unambiguously identified with current human in vivo MRI technology had at least been delineated by 1840.

Methodological Innovations in the Classical Era

Methods used to study and delineate the ***nervous system (Monro, 1783)*** during the Classical Era seem crude

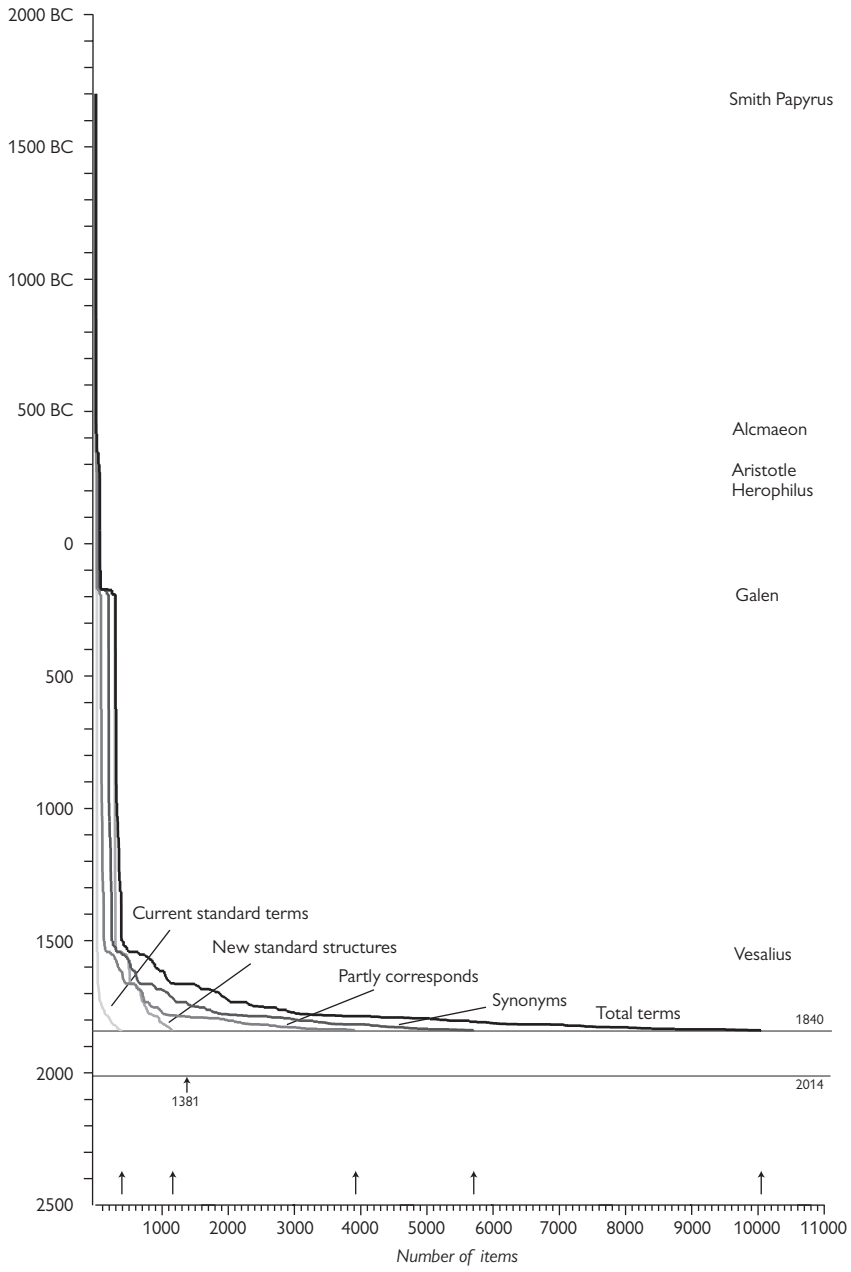

FIGURE 6. Cumulative timecourse for all parts delineated in the Classical Era. The five graphs begin in c1700 BC and end in 1840. They show an exponential rise in the number of new standard structures discovered each year in the ***nervous system (Monro, 1783)***, as well as the number of new ***standard terms*** given to standard structures, new synonyms, and new partly corresponding terms. The number of current ***standard terms*** (1,381) is shown below the horizontal line indicating 2014. The total number of items as of 1840 for each graph is indicated by an upward arrow just above the horizontal axis (Number of items). Some especially important changes along the graphs are associated with particular authors or sources, listed at right. See text for discussion.

today—essentially the gross anatomical dissection of human and other animal brains, viewed with the naked eye and occasionally magnified slightly with a hand lens in the Renaissance Period. As unbelievable as it may seem to modern scientists, the first major innovation since the scientific study of anatomy began in Classical Greece was the introduction of illustration to systematic description in the Renaissance Period. Plato, Aristotle, Galen, and Vesalius's teacher in Paris, Jacques Dubois, generally shunned illustration as too crude and misleading to represent what can actually be seen during dissection, and their predecessors Pythagoras and Socrates even refused to write down their thoughts, considering the written word too crude for conveying them accurately (see Singer & Rabin, 1946;

Singer, 1999). The first surviving records of anatomical research were written by Hippocrates (or his followers) and Aristotle.

While there were examples of crude, stylized drawings of the ***brain (Smith Papyrus, c1700 BC***) in a few manuscripts (Clarke & Dewhurst, 1996), and printing with moveable type was introduced by Johannes Gutenberg in the mid 1450s, the first illustration of the ***brain (Smith Papyrus, c1700 BC***) in a printed book did not appear until 1490, in an edition of Albertus Magnus's *Philosophia Pauperum* (Figure 8). It was a highly stylized, Medieval style drawing to illustrate the Three-cell Doctrine of ***nervous system (Monro, 1783)*** function (see Manzoni, 1998). Remarkably, the first naturalistic drawings of the ***brain (Smith Papyrus, c1700 BC***) were not printed until 1517, and they were small, crude, and unlabeled (Figure 9). Six years later the first great realistic drawings of the ***brain (Smith Papyrus, c1700 BC***) appeared in the second edition of Jacopo Berengario da Carpi's *Isagogae Breves* (1523) and they showed (Figure 10) what was considered its most important part, the ***ventricles (Hippocrates)***—compare with Figure 8, printed 33 years earlier.

Vesalius published a revolutionary series of brilliant drawings to illustrate the dissection of the entire ***nervous system (Monro, 1783)***, including what amounts to a modern atlas of the human ***brain (Smith Papyrus, c1700 BC***); see Frontispiece and Figure 11. The ***brain (Smith Papyrus, c1700 BC***) was revealed in a series of 15 drawings that included a sequence of frontal (horizontal) slices, the selective lifting of certain parts, and the selective removal of others (see Singer, 1952; Richardson & Carman, 2009). The result is a three-dimensional demonstration that would be useful today for autopsy purposes and for showing the

Most standard terms in Classical Era

1.	Burdach	1819, 1822	25
2.	Meckel	1817	20
3.	Arnold	1828, 1834, 1838a,b	20
4.	Winslow	1733	18
5.	Haller	1762	16
6.	Baer	1837	14
7.	Galen	c164-c192	13
8.	Cruveilhier	1836	11
9.	Vesalius	1543a	10
10.	Haase	1781	9
	Walter	1783	9

FIGURE 7. Most influential providers of standard terminology in the Classical Era of neuroanatomy. The anatomists responsible for providing the greatest number of ***standard terms*** in the Lexicon. These eleven people were responsible for providing 43% (165/382) of the ***standard terms*** coined between c1700 BC and 1840.

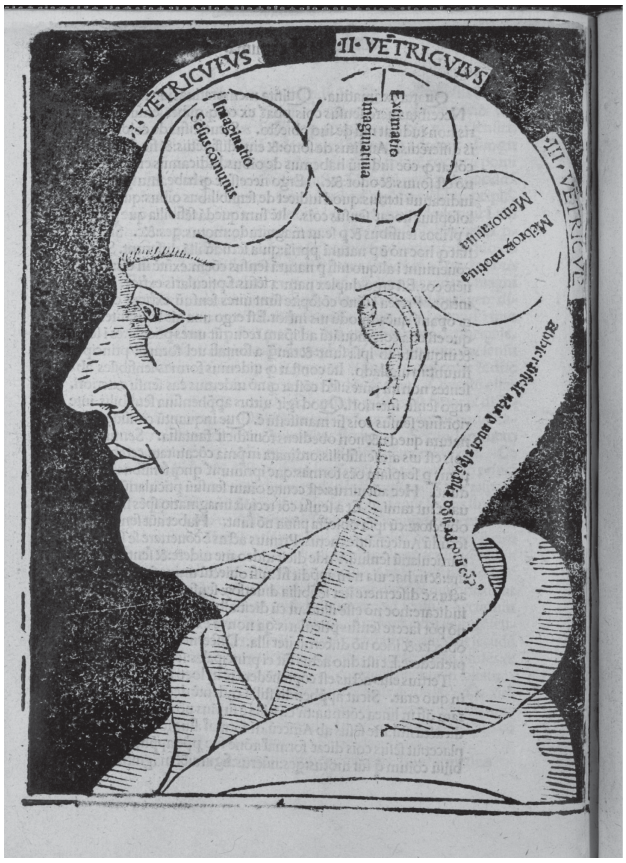

FIGURE 8. First printed illustration of the ***brain (Smith Papyrus, c1700 BC)***. This beautiful Renaissance drawing appeared in an early printed edition of the *Philosophia Pauperum* by Albertus Magnus (c1200–1280). It illustrates in highly schematic Medieval style the Three-cell Doctrine of ***nervous system (Monro, 1783)*** function projected on the side of the head. This theoretical framework attributed cognition to sequential processing of psychic pneuma brought to the ***ventricles (Hippocrates)***—and more specifically, the rostral end (front) of the ***lateral ventricles (Vesalius, 1543a)***—by the sensory ***nerves (Herophilus, c335–c280 BC)*** of the head. As shown, the ***lateral ventricles (Vesalius, 1543a)*** (*I ventriculus*, 1st ventricle or cell) subserve initially the common sense (*Sensus communis*), brought about by mingling of all sensory inputs, and then basic imagination (*Imaginatio*), which flows into the ***third ventricle (Galen, c173)*** (*II ventriculus*, 2nd ventricle or cell) through an unlabeled hole, the ***interventricular foramen (>1840)***, where creative imagination only found in humans (*Imaginativa*) and level of thought shared by all animals (*Ex[s]timatio*) reside. The next stage occurs after passing through another unlabeled hole indicating the ***cerebral aqueduct (>1840)*** and entering the ***fourth ventricle (Galen, c192)*** (*III ventriculus*, 3rd ventricle or cell), where memories (*Memorativa*) are formed and the power moving the limbs (*Membrorum motiva*) resides, before passing downward through the nerves of the neck and all the vertebrae to the whole body (as written on the neck). *Photograph courtesy of the National Library of Medicine.*

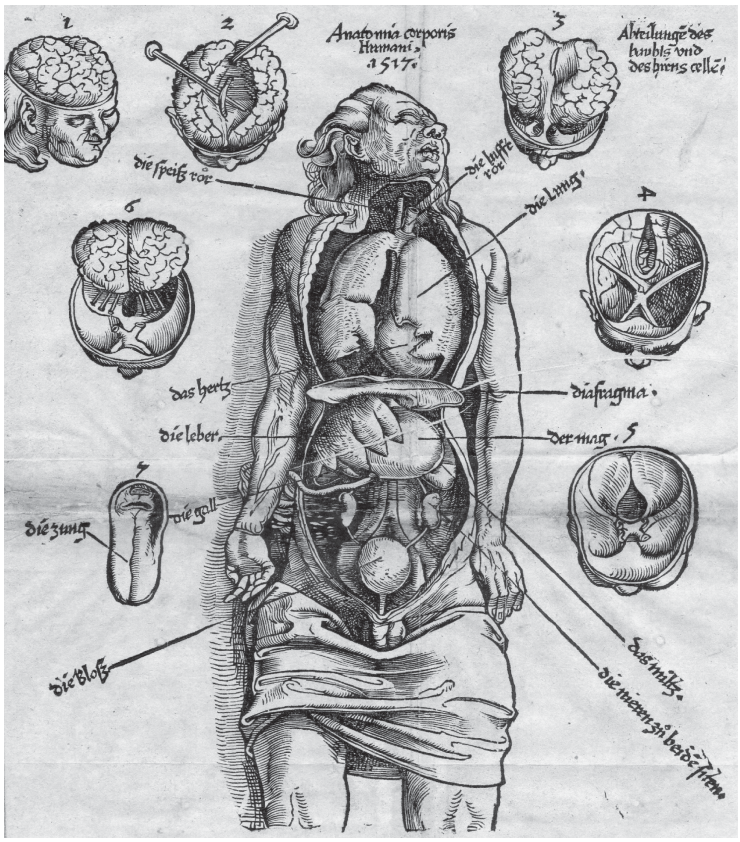

FIGURE 9. First printed naturalistic illustrations of the ***brain (Smith Papyrus, c1700 BC)***. The results of an actual dissection of an adult human cadaver are shown, with the viscera in the middle and a series of drawings around the periphery depicting the basic sequence of dissecting the head and ***brain (Smith Papyrus, c1700 BC)***, described since antiquity by Galen (c177) and Mondino (1316). It was probably drawn by Hans Wechtlin under supervision of the physician/anatomist Wendelin Hock von Brackenau and was first printed in 1517 as an independent fugitive sheet by Johann Schott in Strasbourg, who then included it in a book he published the same year: Hans von Gersdorff's *Feldbuch der Wundtartzney*.

basic structural organization of the human ***brain (Smith Papyrus, c1700 BC***). The drawings themselves were done by Titian's studio and were not surpassed for well over 200 years, until the work of Soemmerring (1778) and Vicq d'Azyr (1786).

There were two other key methodological innovations during the Renaissance Period of classical neuroanatomy: tract tracing and fixation of nervous tissue. Willis (1664) proposed the revolutionary hypothesis that *gray substance (Vesalius, 1543a)* parts generate psychic pneuma ("neural information" in current terminology) whereas *tracts (Willis, 1664)* of *white matter (Vesalius, 1543a)* transmit it to other *gray substance (Vesalius, 1543a)* parts or to muscle. Willis (1664) speculated wildly about the overall organization of *tracts (Willis, 1664)* between various *gray substance (Vesalius, 1543a)* parts and was immediately criticized severely for doing so by Malpighi (1666) and Steno (1669). They both recommended carefully scraping away overlying *gray substance (Vesalius, 1543a)* to reveal more clearly the location and orientation of *tracts (Willis, 1664)*. This was soon done in a limited way by Willis (1672) for the *corpus striatum (Willis, 1664)* (Figure 12), and was illustrated quite remarkably for the ***corticospinal tract (>1840)*** a few years later by Vieussens (1684). The greatest practitioner of this approach in the Classical Era of neuroanatomy was Reil (1807–1812), who had the great advantage of using fixed human ***brain (Smith Papyrus, c1700 BC)*** tissue.

Fixation was a significant advance during the Renaissance Period of classical neuroanatomy because fresh nervous tissue is so soft, thus becoming rather distorted and decomposing quickly after removal from the body. The use of alcohol ("spirits of wine") to harden biological material and prevent putrification was suggested to the Royal Society in the 1660s by William Croone and Robert Boyle, and its use then became rather commonplace among anatomists (see Cole, 1944, pp. 445–448). However, its explicitly documented use in delineating parts of the ***nervous system (Monro, 1783)*** was essentially unknown until the magnificent ***brain (Smith Papyrus, c1700 BC)*** atlas of Vicq d'Azyr was published in 1786. It was an atlas in the broad tradition

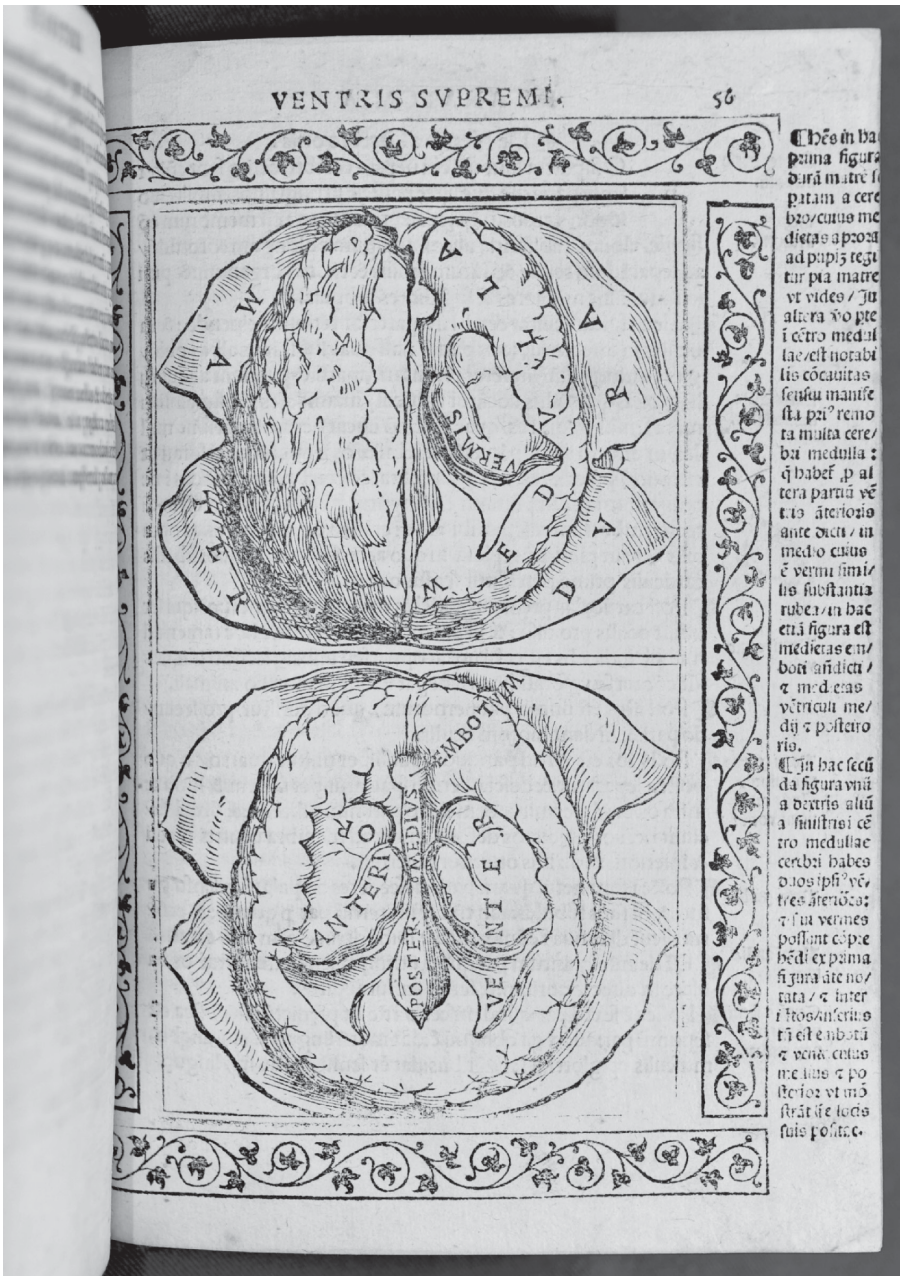

Figure 10. First printed naturalistic drawings of the ***brain (Smith Papyrus, c1700 BC)*** with labeled parts and description. It is from the 1523 book, *Isagogae Brevis* by Jacopo Berengario da Carpi, and shows the actual disposition of the ***ventricles (Hippocrates)*** in contrast to the schematic interpretation shown in Figure 8. The *dura mater (Haly Abbas or Ali ibn' ul-Abbas, d. 994)* of a fresh human cadaver was cut and reflected to show the ***brain (Smith Papyrus, c177 BC)*** from above, with rostral toward the top of each drawing, in four stages of dissection. In the upper left the *pia mater (Haly Abbas or Ali ibn' ul-Abbas, d. 994)* remains intact on the surface of the ***cerebral cortex (>1840)***. In the upper right a frontal (horizontal) slice of ***brain (Smith Papyrus, c177 BC)*** tissue, called *medulla (Berengario da Carpi, 1521)*, was removed to show the *venter anterior (Berengario da Carpi, 1521)* or ***lateral ventricle (Vesalius, 1543a)*** with its *vermis (Avicenna or Ibn Sina, c1030)* or ***choroid plexus of lateral ventricle (Vicq d'Azyr, 1784)***. In the bottom drawing the dorsal part (top) of the ***brain (Smith Papyrus, c1700 BC)*** was removed on both sides, clearly revealing near the median plane the *venter medius (Berengario da Carpi, 1521)* or ***third ventricle (Galen, c173)*** and *venter posterior (Berengario da Carpi, 1521)* or ***fourth ventricle (Galen, c192)***, as well as the *embotum (Berengario da Carpi, 1521)* or *infundibulum (Galen, c173)*. At this time, ***brain (Smith Papyrus, c1700 BC)*** function was commonly thought to reside in the ***ventricles (Hippocrates)***, with the *medulla (Berengario da Carpi, 1521)* playing only a supportive role. The ***posterior horn of lateral ventricle (Haller, 1747)*** is clearly illustrated (at *V* of VENTER in lower right). *Photographed courtesy of the Louise M. Darling Biomedical Library, University of California, Los Angeles.*

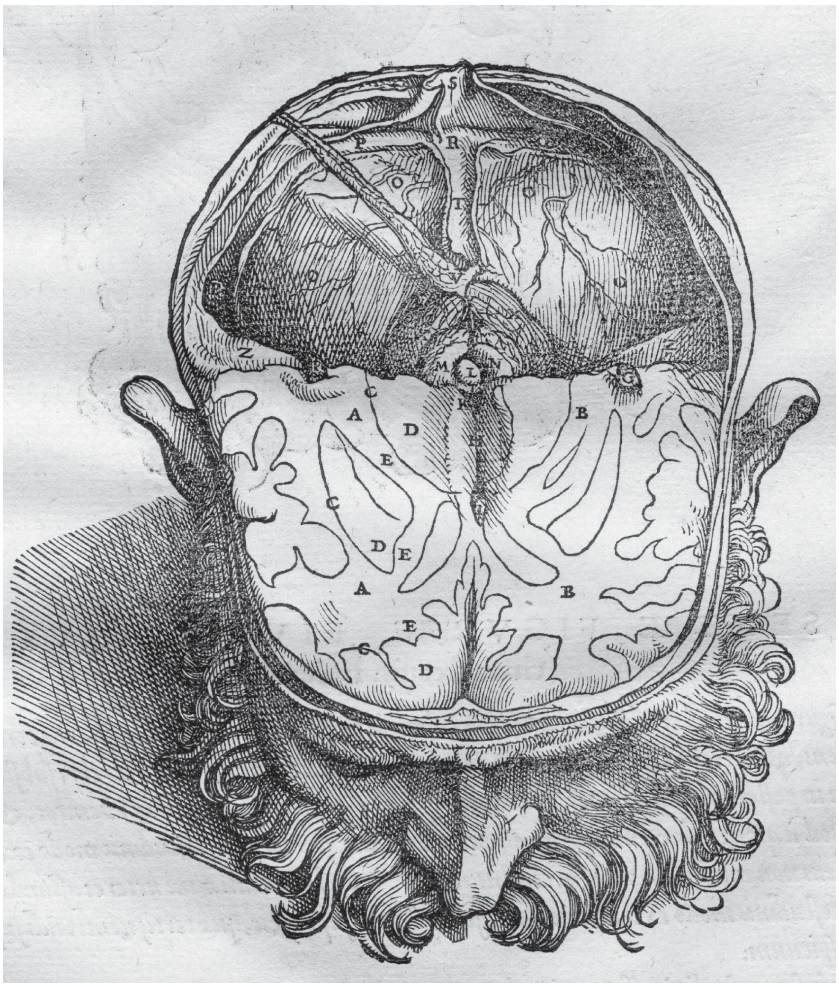

FIGURE 11. Part of adult human ***brain (Smith Papyrus, c1700 BC)*** series of drawings published by Andreas Vesalius (1543a). At this stage of dissection, the dorsal part (top) of the ***forebrain (Goette, 1873)*** was removed by a frontal (horizontal) slice, and the caudal (back) half was also removed to reveal the underlying ***cerebellar tentorium (Winslow, 1733)*** indicated by *O,O,O*. The great cerebral vein (of Galen), indicated by *V*, was moved caudally and laterally from the median plane for clarity (left side of figure). The many remaining features can be identified easily by consulting recent textbooks like Nieuwenhuys et al. (2008); also see Singer (1952, pp. 100–101), Richardson & Carman (2009, pp. 138–140). Vesalius (1543a) ridiculed the Three-cell Doctrine of ***brain (Smith Papyrus, c1700 BC)*** function (Figure 8) but could not suggest an alternative, preferring not to speculate. From Vesalius (1555), where the 1543 woodblocks were also used.

of Vesalius because it relied on slicing to expose various features (Figure 13); but a significant part of its success was due to hardening or fixing the tissue in alcohol, supplemented with hydrochloric acid (Vicq d'Azyr, 1786, Pl. 23 on p. 74; also see Burdach, 1822, p. 243). The other great work near the end of the Classical Era of neuroanatomy that relied to a significant degree on alcohol-fixed ***brain (Smith Papyrus, c1700 BC)*** tissue was that of Reil mentioned above. In fact, to separate ***gray matter (Meckel, 1817)*** and ***white matter (Meckel, 1817)***, he first hardened the tissue in alcohol alone (Reil, 1807–1808a, p. 18), alcohol and potash (Reil, 1809b, p. 139), or oil of turpentine followed by alcohol (Reil, 1812a, p. 96), and followed this treatment with maceration and gentle scraping. The best features of the approaches taken by Vicq d'Azyr and Reil were combined in the wonderful atlas of Arnold (1838b); see Figure 14.

The only other significant technical advance during the Classical Era of neuroanatomy was the occasional placement of ***nervous system (Monro, 1783)*** tissue between two thin sheets of glass for observation. For example, Georg Prochàska (1779) ground parts of ***nerves (Herophilus, c335–c280 BC)*** between glass plates and concluded that their fundamental structure consists of tiny globules (see Garrison & McHenry, 1969), based on artifacts produced by the microscope he used (see next section). In contrast, Jules Baillarger

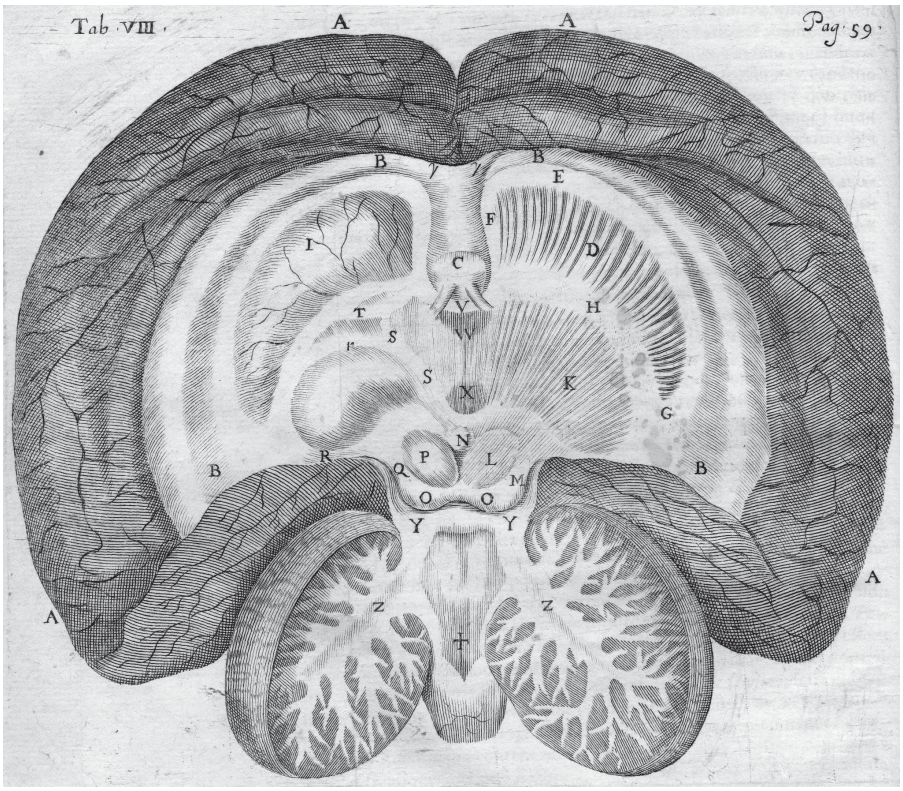

FIGURE 12. First illustration of physical *tract (Willis, 1664)* tracing by the scraping method. By carefully removing the somewhat softer overlying *gray substance (Vesalius, 1543a)*, Thomas Willis (1672) demonstrated the general location and orientation of segments of the adult human ***corticospinal tract (>1840)*** within the *corpus striatum (Willis, 1664)* or ***cerebral nuclei (Swanson, 2000a)*** indicated by *D*, ***interbrain (Baer, 1837)*** indicated by *K*, and ***tectum (Baer, 1837)*** indicated by *L,O*. He mistakenly thought the *tract (Willis, 1664)* did not extend to the ***cerebral cortex (>1840)***. Raymond Vieussens (1684) used the same method to clearly demonstrate continuity throughout the length of the *tract (Willis, 1664)*, from rostrally with the ***cerebral cortex (>1840)*** to caudally with the ***spinal cord (Galen, c162–c166)***. The ***brain (Smith Papyrus, c1700 BC)*** was cut down the median plane from dorsally, and then opened like a book to show the right and left sides with some medial parts of the ***cerebral nuclei (Swanson, 2000a)*** and ***interbrain (Baer, 1837)*** scraped away on the right side. *From Willis's Opera Omnia (1681).*

(1840) did brilliant work on lamination patterns in the ***cerebral cortex (>1840)*** by examining thin slices between glass plates with transmitted light, probably with magnifying glasses (see translation in von Bonin, 1960).

The Modern Era

The Modern Era of neuroanatomy is defined by effective use of the microscope for examining neural tissue and interpretation of the results in light of the cell theory of Matthias Jakob Schleiden (1838) and Theodor Schwann (1839). It is the histological era of structural neuroscience, beginning in the 1830s and defined for practical purposes as 1840. With the notable exception of work by Anton van Leeuwenhoek (1684, 1722) on ***nerves (Herophilus, c335–c280 BC)*** and the ***retina*** (***Herophilus, c335–c280 BC***), essentially everything observed in neural tissue under the microscope before the 1830s was artifactual—the universal fundamental unit seemed to be tiny spherules or globules—because of uncorrected optics (see Polyak, 1941; Clarke & Jacyna, 1987, pp. 58–62). This all changed with the development of achromatic microscope lenses, mainly by Giovanni Battista Amici and Joseph Jackson Lister (see Clarke & Jacyna, 1987, p. 60), and then serial sectioning of frozen ***central nervous system (Carus, 1814)*** tissue, first done brilliantly by hand (Stilling & Wallach, 1842; see Schiller, 1969) and later in the 1870s by microtome, the development of selective staining methods for neurons and neuron connections, and so on (see Clarke & Jacyna, 1987; Shepherd, 1991; Clarke & O'Malley, 1996). These developments stimulated a new vocabulary at the mesolevel and microlevel of analysis, and a shift from heavy emphasis on human anatomy, which is particularly amenable to macrodissection because of the relatively large size, to an emphasis on smaller animal anatomy, which is more practical at the histological level of analysis.

FIGURE 13. The most accurate and beautiful ***brain (Smith Papyrus, c1700 BC)*** atlas from the Classical Era of neuroanatomy. In this Plate, Félix Vicq d'Azyr (1786) showed the adult human ***brain (Smith Papyrus, c1700 BC)***, presumably hardened in alcohol, as viewed from the base (ventrally). Ventral parts of the right and left ***frontal region (Vicq d'Azyr, 1786)*** are seen toward the top of the figure, rostral to the ***optic chiasm (Galen, c173)*** near the median plane. On the left side of the ***brain (Smith Papyrus, c1700 BC)***, the ***olfactory peduncle (Solly, 1836)*** and ***olfactory bulb (Weitbrecht, 1751)*** were moved laterally to expose the ***olfactory sulcus (Quain, 1834)***, and the *insular threshold (Schwalbe, 1881)* is also clearly revealed near the proximal end of the ***olfactory peduncle (Solly, 1836)***. Ventral (basal or bottom) parts of the ***temporal region (>1840)*** and ***occipital region (Vesalius, 1543a)*** were sliced off to reveal the right and left *hippocampus (Aranzi, 1587)*, appearing like two seahorses facing each other from the ***inferior horn of lateral ventricle (Bell, 1802)*** on either side. Blood vessels, including those cut transversely in the ***cerebral cortex white matter (>1840)***, are colored red in the original Plate. Many other features, labeled on a corresponding outline drawing in the atlas, can be identified readily from modern textbooks like Nieuwenhuys et al. (2008).

History of Terminology Analysis

There is no need here to consider in depth such an arcane topic. It is, however, worth commenting on some of the more important contributions beginning, of course, with Aristotle, whose seminal generalization was that definitions should state what a term means, not what it doesn't mean, and should only use terms found elsewhere in the Lexicon (see Hitchings, 2005, p. 88 ff.). Ironically, he was also the first to introduce fundamental and lasting confusion into the neuroanatomical literature by using the same term, encephalon, in two very different ways. One was for the entire ***brain (Smith Papyrus, c1700 BC***) and the other was for the *large brain (Aristotle)*, essentially the ***cerebrum (Obersteiner & Hill, 1900)*** and ***brainstem (Schwalbe, 1881)*** considered together—as opposed to the *small brain (Aristotle)* or its synonyms *parencephalon (Aristotle)* and ***cerebellum (Aristotle)***. Galen was the first to subject this and other ambiguities in neuroanatomical nomenclature to critical analysis (see, for example, Clarke & O'Malley, 1996, p. 630) and this tradition was continued in the 16th century by Berengario da Carpi (1521) and Vesalius (1543a,b),

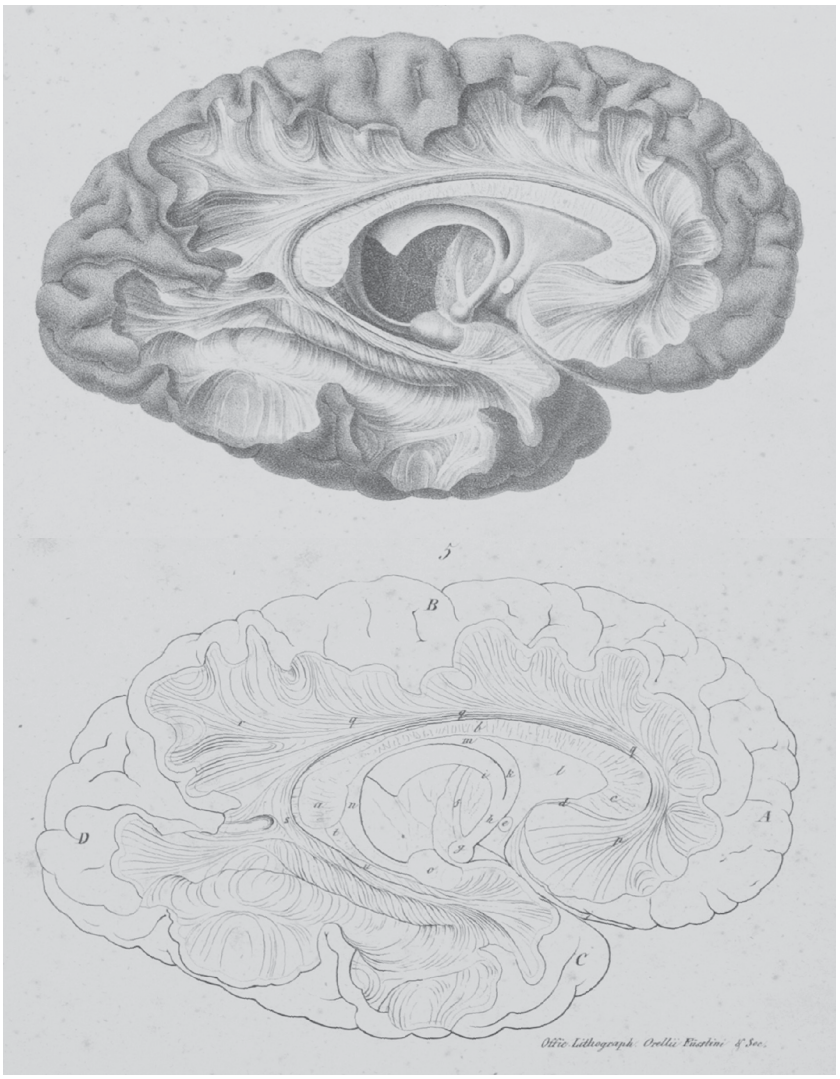

FIGURE 14. State of the art adult human *tract (Willis, 1664)* tracing in the 1830s. Friedrich Arnold (1838b) demonstrated the general location and orientation of ***white matter tracts (Bell & Bell, 1826)*** by selectively removing overlying ***gray matter (Meckel, 1817)*** with a process pioneered by Reil (1807–1812) and involving maceration and gentle scraping of alcohol-fixed tissue. This is Figure 5 of Plate 10, beautifully displaying many features including the ***cingulum (Burdach, 1822)*** (q), ***arcuate fibers (Arnold, 1838b)*** (unlabeled), ***fimbria (Honegger, 1890)*** (n), ***anterior commissure (Lieutaud, 1742)*** (e), ***postcommissural fornix (Loo, 1931)*** (h), ***mammillothalamic tract (Kölliker, 1896)*** (f), and ***zonal layer of thalamus (Burdach, 1822)*** (i). Plate 10 has four additional illustrations showing various stages of the dissection and is printed on two pages, one for drawings of the dissections (for example, Figure 5, top part of this figure) and one with matching outline drawings that are labeled (for example, Figure 5, bottom part of this figure). *Photographs courtesy of the National Library of Medicine.*

as analyzed in great detail by Singer and Rabin (1946) for anatomy in general.

Other authors who paid special attention to the origins and organization of neuroanatomical nomenclature included Caspar Bauhin (1605), Steno (1669), Haller (1762), Soemmerring (1778), Vicq d'Azyr (1786), and by far the most detailed of them all, Burdach (1819–1826). In the Modern Era of neuroanatomy, Jakob Henle (1871) and Wilhelm His (1895) had the most profound influence on macrolevel terminology, whereas the most detailed historical analysis was recently provided by Alfred Meyer (1971), who focused on the ***forebrain (Goette, 1873)***.

Chapter 3

Hierarchical Nomenclature Tables

This book has two interrelated parts, the Lexicon and a set of hierarchical Nomenclature Tables with ***standard terms*** to describe the entire ***nervous system (Monro, 1783)*** in all animals but especially human (Appendices). As discussed in Chapters 1 and 2, the complete historical analysis of terminology was restricted to the Classical Era of neuroanatomy when 1,162 of the 1,381 ***nervous system (Monro, 1783)*** parts with a current ***standard term*** had been discovered, but only 386 had been named with a current ***standard term***. The Lexicon contains just over 10,000 terms culled from the literature to 1840. To create, define, and clarify the systematic Nomenclature Tables in the Appendices, some 2,300 terms coined after 1840 were added to the Lexicon, indicated in the Lexicon by (>1840), when the origin of the term was not traced. It was not practical to trace the origin of most terms appearing after 1840 (see Figure 6).

It is well known that it "is absolutely necessary in scientific systematics to have a system in which different levels of generality or inclusion are recognized" (Simpson, 1961, p. 12), and that the best form of such a system is a hierarchy with a sequence of sets at different levels in which each set except the lowest includes one or more subordinate sets (Simpson, 1961, p. 13). This approach has a long history in human anatomy, and was especially popular in the 16th century, where good examples include Wecker (1562), Coiter (1564, 1566, 1672), and Platter (1583). It was less frequent thereafter, though one superb example is a hierarchical table (Bellingeri, 1818) of the complete branching pattern of the human ***trigeminal nerve (Winslow, 1733)***, the most complex of all the ***nerves (Herophilus, c335–c280)***. In the Modern Era the tables of anatomical parts in the *Basel Nomina Anatomica* (His, 1895) and its successors have been very useful but are not systematically hierarchical. The latest versions, the *Nomina Anatomica* (1983) and *Terminologia Anatomica* (1998), are better for the ***peripheral nervous system (Meckel, 1817)*** than the ***central nervous system (Carus, 1814)***, and are especially confusing for the ***forebrain (Goette, 1873)***.

The strategy of arranging a set of ***standard terms*** in hierarchical Nomenclature Tables allows every *nonstandard term*, now and in the future, to be synonymous or to partly correspond with one particular ***standard term*** at one particular level of the hierarchy. The highest level of the hierarchy is ***nervous system (Monro, 1783)***, which is the universe or domain of discourse for the neuroanatomical nomenclature ontology (Gruber, 1993; Gomez-Perez et al., 2003). These Nomenclature Tables are a modification and expansion of those appearing in the three editions of *Brain Maps* (Swanson, 1992, 1998, 2004). The latter provided complete hierarchical tables for ***gray matter regions (Swanson & Bota, 2010)*** and ***white matter tracts (Bell & Bell, 1826)*** of the adult male rat ***central nervous system (Carus, 1814)***, and incomplete tables for other parts of the ***nervous system (Monro, 1783)***. The arrangements within the hierarchies were different in each edition, based essentially on a combination of topographic and functional considerations. In the third edition (Swanson, 2004), ***gray matter regions (Swanson & Bota, 2010)*** were arranged according to the functional scheme proposed in Swanson (2003).

The goal of the present work is to provide a complete set of hierarchical Nomenclature Tables for the ***nervous system (Monro, 1783)*** as a whole, at the macrolevel of description and based just on structural topographic criteria, which historically are more stable and less theory-based than functional criteria. Research for this book began seriously in 1998 and the initial results were published in an article, *What is the brain?* (Swanson, 2000). Here some of the main lines of controversy in neuroanatomical nomenclature were traced from classical Antiquity, and it was documented that over the course of many centuries, 10 basic parts or topographical regions of the vertebrate ***central nervous system (Monro, 1783)*** have now gained almost universal acceptance based on converging evidence from adult structure (see Nauta & Feirtag, 1986 and Figure 15 lower left side) and development of the ***neural tube (Baer, 1837)*** (Appendix 2).

A global Foundational Model of Connectivity with a defined vocabulary for the ***nervous system (Monro, 1783)*** of all animals was developed several years ago (Swanson & Bota, 2010). It contains a standard set of terms for describing position or location in all animals with a ***nervous system (Monro, 1783)***, and the top levels of a general hierarchy of ***standard terms*** for ***nervous system (Monro, 1783)*** parts at the macrolevel, mesolevel, and microlevel of analysis (Figure 15). The 10 Nomenclature Tables in the Appendices are based on the Foundational Model of Connectivity hierarchy of parts, and provide a set of ***standard terms*** (on the order of 1,300) at or greater than the resolution needed for describing the human ***nervous system (Monro, 1783)*** at the macrolevel observable with MRI imaging.

The Nomenclature Tables in the Appendices are thematically grouped as follows. Appendix 1 is a basic parts list for the adult ***nervous system (Monro, 1783)*** in all animals, invertebrates and vertebrates alike, and is based on the Foundational Model of Connectivity (Figure 15). As such, the remaining 9 Appendices are consonant with it. Appendix 2 is a basic parts list for the early development of the vertebrate ***nervous system (Monro, 1783)***. It is fundamentally important that the basic parts of the vertebrate

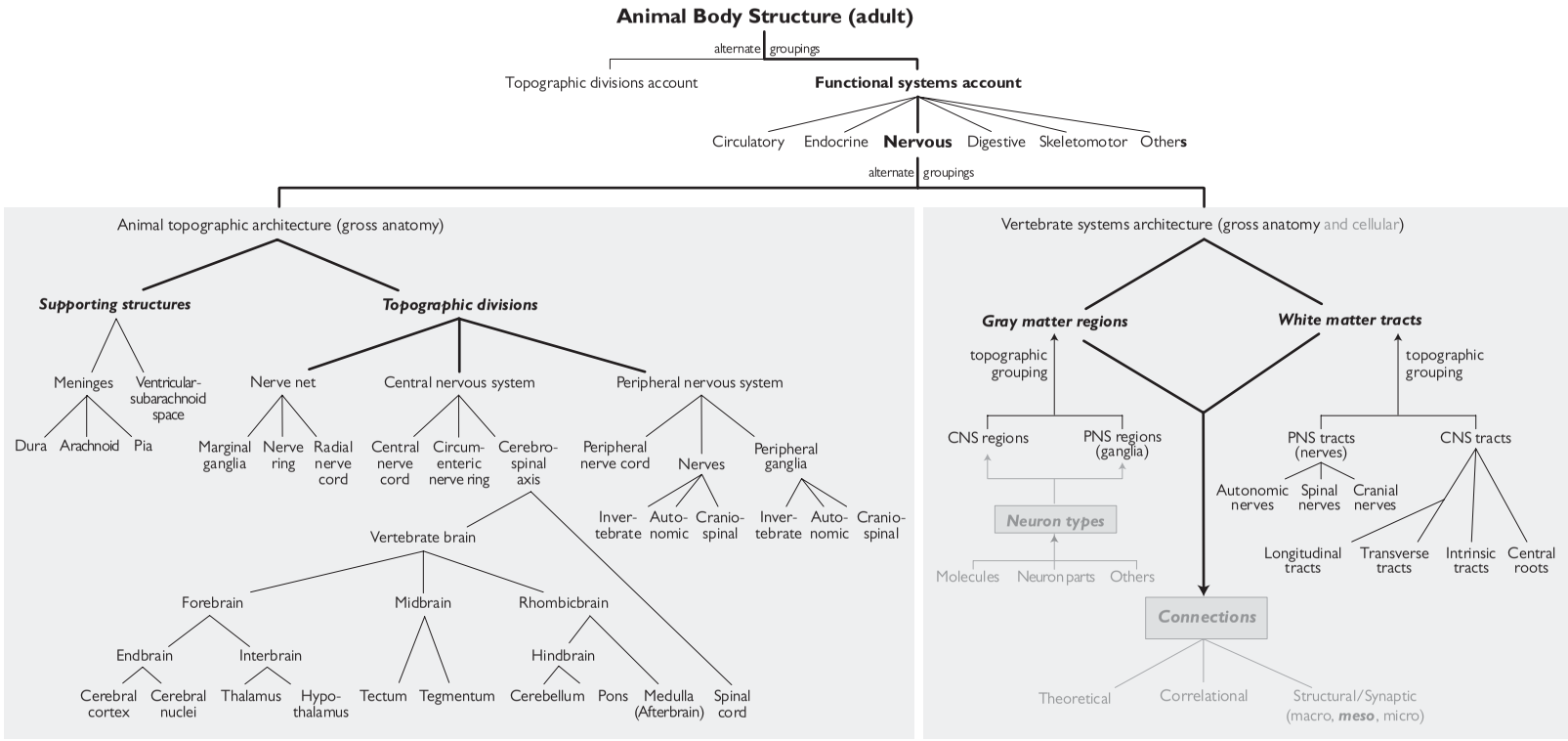

FIGURE 15. Hierarchical nomenclature scheme of the Foundational Model of Connectivity. The ***standard terms*** here apply to all animals with a ***nervous system (Monro, 1783)***. The organization of the ten Appendices is determined by this hierarchy. *Adapted slightly with permission from Swanson & Bota (2010).*

neural tube (Baer, 1837) are the same as the basic parts of the adult vertebrate ***central nervous system (Carus, 1814)*** shown in Figure 15 (lower left side) and Appendices 1 and 3–5.

Appendices 3–10 provide a systematic and complete macrolevel parts list for the adult human ***nervous system (Monro, 1783)***, separated into 8 tables for convenience. ***Gray matter regions (Swanson & Bota, 2010)*** and ***white matter tracts (Bell & Bell, 1826)*** of the ***central nervous system (Monro, 1783)***, followed by external surface features, are dealt with first (Appendices 3–5). This is followed by an account in Appendices 6–9 of the ***peripheral nervous system (Meckel, 1817)*** with its ***peripheral ganglia (>1840), cranial nerves (Soemmerring, 1791), spinal nerves (Camper, 1760–1762)***, and ***autonomic nerves (Langley, 1898)***. Finally, Appendix 10 deals with ***nervous system supporting structures (Swanson & Bota, 2010)*** including the ***ventricular-subarachnoid space (Swanson & Bota, 2010), meninges (Smith Papyrus, c1700 BC)***, and ***choroid plexus (Galen, c177)***.

A comprehensive table of human ***central nervous system white matter tracts (>1840)*** was the most challenging. As discussed in Appendix 4, no satisfactory hierarchical table of these features exists that is systematic and complete. The parceling and nomenclature scheme adopted here is based on two principles: the 10 basic parts or topographical regions of the developing and adult vertebrate ***central nervous system (Monro, 1783)*** mentioned earlier in the chapter (see Figure 2B, Figure 15 lower left), and the fundamental longitudinal-transverse organization of ***central nervous system white matter tracts (>1840)*** discussed in Appendix 4.

Four types of ***central nervous system white matter tracts (>1840)*** were defined for Appendix 4 (Figure 16). (1) Longitudinal tracts extend between rostrocaudally ordered ***central nervous system (Carus, 1814)*** secondary topographic divisions: ***endbrain (Kuhlenbeck, 1927), interbrain (Baer, 1837), midbrain (Baer, 1837), hindbrain (Baer, 1837), medulla (Winslow, 1733)***, and ***spinal cord (Galen, c162–c166)***. They can be unilateral or crossed with a decussation. (2) Transverse tracts are of two kinds. First, they can be a branch of a longitudinal tract to a primary or secondary topographic division. Or, second, they can form a commissure between the right and left sides of a primary or secondary topographic division of the ***central nervous system (Carus, 1814)***. (3) Intrinsic tracts are distinct from longitudinal and transverse tracts because they stay entirely within a primary topographic division: ***forebrain (Goette, 1873), midbrain (Baer, 1837)***, or ***rhombicbrain (His, 1893b)***. (4) Central roots are the ***white matter tracts (Bell & Bell, 1826)*** of the ***central nervous system (Carus, 1814)*** that contribute to ***craniospinal nerves (Herrick, 1915)***. For example, the ***facial nerve central root (>1840)*** becomes the peripheral ***facial nerve root (>1840)*** at the surface of the ***medulla (Winslow, 1733)***.

A second topic with critical implications is related to the central roots just mentioned. It deals conveniently with the naming of vertebrate ***spinal nerve (Camper, 1760–1762)***

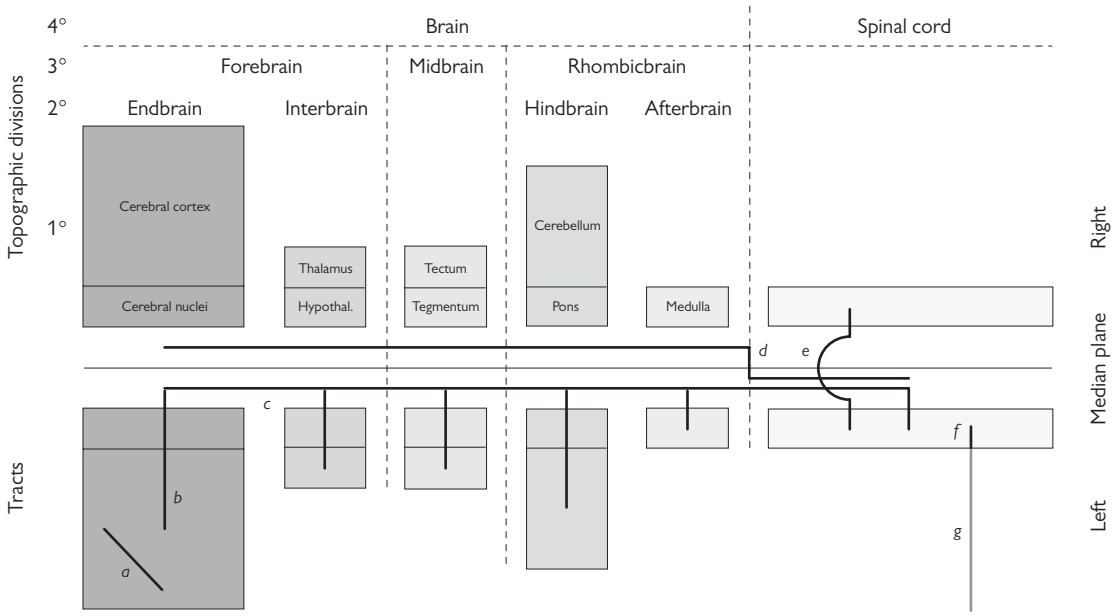

FIGURE 16. Parceling and naming scheme for vertebrate ***central nervous system white matter tracts (>1840)***. The ten primary topographic divisions of the ***central nervous system (Carus, 1814)*** are shown as labeled boxes and their grouping into secondary, tertiary, and quaternary divisions is indicated in the top half of the figure (see Figure 1 lower left and Appendix 1), above the line indicating the median plane. The naming scheme for *tracts (Willis, 1664)* is indicated in the bottom half of the figure and discussed in the text. Overall, there are longitudinal tracts, transverse tracts, intrinsic tracts, and central roots. *Abbreviations*: *a*, intrinsic tract; *b*, transverse tract that is branch of longitudinal tract; *c*, longitudinal tract; *d*, decussation of longitudinal tract; *e*, transverse tract that is a commissure; *f*, central root of a ***nerve (Herophilus, c335–c280 BC)***; *g*, ***nerve (Herophilus, c335–c280 BC)***.

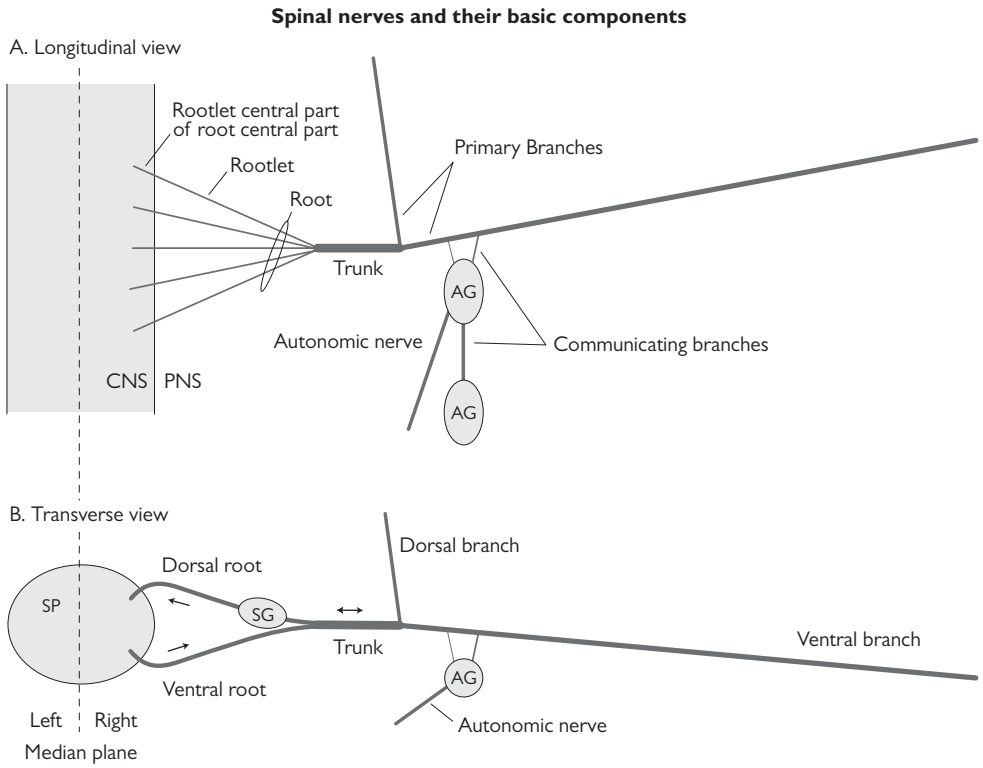

FIGURE 17. Basic parts of ***spinal nerves (Camper, 1760–1762)***. In a hierarchy with topographic grouping (Figure 15, Appendix 1), ***spinal nerves (Camper, 1760–1762***) are part of the ***peripheral nervous system (Meckel, 1817)***. In general, they have a ***ventral root (>1840)*** formed by a set of smaller ***ventral rootlets (>1840)***, and a ***dorsal root (Spurzheim, 1826)*** formed by a set of smaller ***dorsal rootlets (>1840)***. The proximal ends of these roots (and corresponding rootlets) meet the surface of the ***spinal cord (Galen, c162– c166)***, whereas the distal ends join to form a single mixed ***spinal nerve trunk (Frotscher, 1788)*** coursing a short distance before dividing into two ***spinal nerve primary branches (>1840)***: a typically larger ***spinal nerve ventral branch (>1840)***, and a typically smaller ***spinal nerve dorsal branch (Meckel, 1817)***. Each ***dorsal root (Spurzheim, 1840)*** has a ***spinal nerve ganglion (Burdach, 1819)*** associated with it, and each ***spinal nerve ventral branch (>1840)*** typically has one or more ***communicating branches of spinal nerve (Wutzer, 1817)*** with an ***autonomic ganglion (Langley, 1900)***, in particular with a ***sympathetic trunk ganglion (Winslow, 1733)***. In general, ***autonomic nerves (Langley, 1898)*** arise from ***autonomic ganglia (Langley, 1900)***. ***Nerves (Herophilus, c335–c280 BC)*** may branch a number of times, finally ending in terminal branches (not shown). In a hierarchy with topographic grouping (Figure 15, Appendix 1), ***dorsal root central parts (>1840)*** and ***ventral root central parts (>1840)***, with their corresponding ***ventral rootlet central parts (>1840)***, are part of the ***central nervous system (Carus, 1814)***; see text for details. *Abbreviations*: *AG*, ***autonomic ganglion (Langley, 1900)***; *CNS*, ***central nervous system (Carus, 1814)***; *PNS*, ***peripheral nervous system (Meckel, 1817)***; *SG*, ***spinal nerve ganglion (Burdach, 1819)***; *SP*, ***spinal cord (Galen, c162-c166)***.

parts. This might seem like a straightforward realm of neuroanatomical nomenclature but is complicated by two issues, one profound and one relatively trivial. The latter is that every textbook seems to use a slightly different set of terms for them. The ***standard terms*** adopted here are illustrated and explained in Figure 17. The profound issue is the fundamentally different way ***nervous system (Monro, 1783)*** structural organization may be described in different hierarchical arrangements, say structural versus functional.

For example, in a functional hierarchy, a motor component of a ***spinal nerve (Camper, 1760–1762)*** may be described as starting in neurons of the ***ventral horn (>1840)***, with axons passing through the ***ventral root central part (>1840)*** to enter the ***ventral root (>1840)*** peripheral part (illustrated clearly in Figure 5C of Swanson & Bota, 2010). In contrast, when a topographic hierarchy with ***central nervous system (Carus, 1814)*** and ***peripheral nervous system (Meckel, 1817)*** is used (Figures 15, 17; Appendix 1), ***spinal nerves (Camper, 1760-1762)*** are under the ***peripheral nervous system (Meckel, 1817)*** whereas ***ventral root central parts (>1840)*** are under the ***central nervous system (Carus, 1814)***. This example illustrates the critical need to distinguish clearly between topographic and functional descriptions of ***nervous system (Monro, 1783)*** structure, and is shown effectively in Swanson & Bota (2010, their Figure 5A–C).

Chapter 4

Notes on Using the Lexicon

Standard terms (main entries)

Articles in the Lexicon are a defined vocabulary used for the 10 Nomenclature Tables in the Appendices. They are followed by a citation to their first use (Author, date), or if their first use occurred after 1840 and was not determined here, followed by (>1840). The textual definition generally includes method used to identify, age (embryonic, infant, adult, and so on), species, sex (where relevant), and citation to discovery, whether or not the part was named and whether or not the ***standard term*** was used. Here and in general usage ***standard terms*** are bolded and italicized.

Nonstandard terms (subentries)

Following the definition, articles in the Lexicon contain chronological lists of related *nonstandard terms* when they are known. *Nonstandard terms* include alternate spellings of ***standard terms***, forms of ***standard terms*** in languages other than English (translations), synonyms introduced before a ***standard term*** was introduced, synonyms introduced after a ***standard term*** was introduced, and partly corresponding terms. Here and in general usage *nonstandard terms* are italicized. They include a citation to their first use (Author, date), or if their first use occurred after 1840 and was not determined here, followed by (>1840). They are generally defined with reference to a ***standard term*** or another *nonstandard term* like a synonym. Where appropriate, information about method used to identify, age, species, and sex is included.

Partly corresponding terms

Nonstandard terms that are not synonyms. A *partly corresponding term* refers to a zone of a ***reference term*** and thus does not fit exactly anywhere within the Nomenclature Table hierarchies in the Appendices. Above the lowest level of a hierarchy, *partly corresponding terms* are considered misinterpretations by definition. At the lowest level of a hierarchy, partly corresponding terms may be either misinterpretations or unrecognized ***standard terms***.

List of all defined terms

All ***standard terms*** and *nonstandard terms* are given alphabetically in the List of All Defined Terms. The List is used to find a particular *nonstandard term* in a particular ***standard term*** article of the Lexicon.

Spelling

American English is preferred to British English. In old Latin (and to some extent old English), *u* and *v*, as well as *i* and *j*, are typically interchangeable; *u* and *i*, respectively, are used where appropriate for modern spelling. In old German, *s* and *f* are interchanged in a regular way; *s* is used where appropriate for modern spelling.

Singular versus plural

In general, ***standard terms*** and *nonstandard terms* in the Lexicon can be used in either the plural or singular form. For example, ***nerves (Herophilus, c335–c280)***, an article in the Lexicon, can be used as ***standard term*** singular form, ***nerve (Herophilus, c335–c280)***.

Terms not in the Lexicon

There are many reasons a term is not found in the Lexicon. (1) No effort was made to document every minor spelling variation, including the use of hyphenation. (2) English ***standard terms*** are preferred, with original Latin form of ***standard term*** given if used. No effort was made systematically to provide alternate forms of ***standard terms*** and *nonstandard terms* in languages other than English. (3) Except for ***standard terms***, and common current synonyms for them, most terms introduced since 1840 are not included (see Figure 6). (4) Some terms have synonyms resulting from alternate word order; no attempt was made to document every such synonym, although many examples are provided. (5) In general, terms are culled from the anatomical literature, thus excluding specialized terms used in surgery, pathology, and related disciplines. (6) No dictionary or lexicon can be complete or completely accurate.

Defining terms not found in the Lexicon with respect to ***standard terms*** and *nonstandard terms* in the Lexicon, and thus the Nomenclature Tables in the Appendices, is much easier now than ever before. The place to start is with a combination of the best dictionaries and online search engines.

Eponyms

Citations (Author, date) following ***standard terms*** and *nonstandard terms* are not eponyms. Instead they refer to the first usage of the corresponding term as best determined thus far. Eponyms are included in Lexicon articles as *nonstandard terms*, with a citation to their first use.

Methods

During the Classical Era of neuroanatomy (c1700 BC–1840) almost all observations were macroscopic, made with the naked eye or sometimes a simple hand lens using gross dissection, often shortened in the Lexicon to "macro-dissection." During the Modern Era of neuroanatomy (1841–present) methodology obviously became much more complex and continues to evolve rapidly.

Etymology and pronunciation

These aspects of language nomenclature are not covered.

Standard Terms

A

abducens nerve (Heister, 1717)

As described for macrodissected adult human, a ***cranial nerve (Soemmerring, 1791)*** attached to the ***medullopontine sulcus (>1840)***, between the rostral end of the ***pyramid (Willis, 1664)*** and caudal end of the ***pons (Haller, 1747)***, distal to the ***abducens nerve central root (>1840)***. Normally its action is through the lateral rectus extraocular muscle to rotate the eye laterally (abduction), although in nonhuman mammal it also supplies the retractor bulbi muscle; see Williams & Warwick (1980, pp. 1068-1069). Heister used the term for the *sixth pair of nerves arising within skull (Willis, 1664)* in macrodissected adult human; pp. 78, 94. Vicq d'Azyr (1786; Pl. XVII, Fig. I-*51*) reviewed the early history of exactly where it emerges from the surface of the ***brainstem (Schwalbe, 1881)***. Burdach (1822, p. 313) mentioned without citation that Riolan used the term *abducens*, and Schiller (1969, p. 78) wrote that Riolan (1610) used the term *abducens*; however, the source has not yet been traced; it does not appear to be in Riolan (1618). It was first clearly described as the *fourth pair of nerves from brain (Falloppio, 1561)*.

ALTERNATE SPELLINGS:

1. *abducent nerve (Heister, 1752)*
   Alternate spelling of ***abducens nerve (Heister, 1717)***; p. 230. Also see *Terminologia Anatomica* (1998, p. 135).

EARLIER REFERENCES:

Described, not named or illustrated:

1. ***[abducens nerve (Heister, 1717)] (Galen c173)***
   It has been suggested that Galen observed it in macrodissected adult mammal (see May translation, 1968, pp. 442, 444), but this is doubtful; see Duckworth translation (1962, p. 188), May (1968, p. 452), Savage-Smith (1971).

Earlier synonyms:

1. *fourth pair of nerves from brain (Falloppio, 1561)*
   Falloppio is credited with first clear description of ***abducens nerves (Heister, 1717)***, in macrodissected adult human; f. 147. Also see Zinn (1755, p. 200), Haller (1762, p. 222), Hierons & Meyer (1962, p. 289).
2. *seventh pair of nerves from brain (Bartholin, 1641)*
   Synonym for macrodissected adult human ***abducens nerves (Heister, 1717)***; see translation (1662, p. 325).
3. *sixth pair of nerves arising within skull (Willis, 1664)*
   Willis was first to use current number for ***abducens nerves (Heister, 1717)***; see Pordage translation (1681, p. 143) and Burdach (1822, p. 313), although Willis thought it contributes to origin of ***sympathetic trunk (Winslow, 1733)***; see Pordage translation (1681, p. 144).
4. *nervus timidus (Bidloo, 1685)*
   Synonym for macrodissected adult human ***abducens nerve (Heister, 1717)***, according to Burdach (1822, p. 313).

LATER SYNONYMS:

1. *nervi motores externi (Winslow, 1733)*
   Synonym listed for macrodissected adult human ***abducens nerves (Heister, 1717)***; Section VI, p. 59.
2. *nervi oculares externi (Winslow, 1733)*
   Synonym listed for macrodissected adult human ***abducens nerves (Heister, 1717)***; Section VI, p. 59; for singular form, *nervus ocularis externus*, see Burdach (1822, p. 313).
3. *nervi musculares externi (Winslow, 1733)*
   Synonym listed for macrodissected adult human ***abducens nerves (Heister, 1717)***; Section VI, p. 59.
4. *nervi oculo-musculares externi (Winslow, 1733)*
   Synonym listed for macrodissected adult human ***abducens nerves (Heister, 1717)***; Section VI, p. 59; for singular form, *nervus oculo-muscularis externus*, see Burdach (1822, p. 85). Burdin (see translation, 1803, Vol. 1, p. 144) used *exterior oculo-muscular pair of nerves*.
5. *nervi motores oculorum externi (Winslow, 1733)*
   Synonym listed for macrodissected adult human ***abducens nerves (Heister, 1717)***; Section X, p. 48. Alternately,

Andersch (1797) used singular, *nervus motorius externus oculi*; see Burdach (1822, p. 313).
6. *nervi opthalmici externi (Winslow, 1733)*
Synonym listed for macrodissected adult human ***abducens nerves (Heister, 1717)***; Section X, p. 48.
7. *tenth pair of nerves (Malacarne, 1791)*
Synonym for macrodissected adult human ***abducens nerves (Heister, 1717)***; in Latin, *par decimum* (see Burdach, 1822, p. 313).
8. *sixth pair of cranial nerves (Soemmerring, 1791)*
Synonym for macrodissected adult human ***abducens nerves (Heister, 1717)***; see ***cranial nerves (Soemmerring, 1791)***.
9. *sixth pair of cerebral nerves (Soemmerring, 1791)*
Synonym for *sixth pair of cranial nerves (Soemmerring, 1791)*; in the original Latin, *par sextum nervorum cerebri*, p. 125.
10. *par oculos abducens nervorum cerebri (Soemmerring, 1798)*
Synonym for *sixth pair of cerebral nerves (Soemmerring, 1798)*; p. 125.
11. *exterior oculo-muscular pair of nerves (Burdin, 1803)*
Synonym for macrodissected adult human ***abducens nerves (Heister, 1717)***; see translation (1803, Vol. 1, p. 178).
12. *abductor nerve of eye (Gordon, 1815)*
Synonym for macrodissected adult human ***abducens nerve (Heister, 1717)***; Gordon's original mixed Latin and English term (plural) was "*Abductores Oculorum* Nerves" (p. 113). Gall & Spurzheim (1810, p. 74) used the French, *nerf abducteur de l'oeil*, and Spurzheim (1826, p. 231 note *10*) used the abbreviated *abductor nerve*.
13. *nervus oculomuscularis posterior (Meckel, 1817)*
Synonym for macrodissected adult human ***abducens nerve (Heister, 1717)***; p. 705, also see translation (1832, Vol. 3, p. 57).
14. *scornful nerve (Burdach, 1822)*
Synonym listed for macrodissected adult ***abducens nerve (Heister, 1717)***; in the original Latin, *nervus indignatorius*, p. 313. Apparently Casseri and Riolan used the term *indignatorius musculus* for the lateral rectus muscle; see Nysten (1814, p. 646).
15. *abducent oculo-muscular nerve (Swan, 1830)*
Synonym for macrodissected adult human ***abducens nerve (Heister, 1717)***; p. 18.

PARTLY CORRESPONDS:
1. *cerebral part of sixth pair (Arnold, 1834)*
Macrodissected adult human proximal segment of ***abducens nerve (Heister, 1717)*** before entering ***cavernous sinus (Winslow, 1733)***; in the original Latin, *par sextum, pars cerebralis*, p. 11.
2. *cerebral part of abducens nerve (Arnold, 1834)*
Synonym for *cerebral part of sixth pair (Arnold, 1834)*; in the original Latin, *nervus abducens, pars cerebralis*, p. 11.
3. *cerebral part of scornful nerve (Arnold, 1834)*
Synonym for *cerebral part of sixth pair (Arnold, 1834)*; in the original Latin, *nervus indignatorius, pars cerebralis*, p. 11.

abducens nerve central root (>1840)

As described for macrodissected adult human, and mammal generally with histological methods for ***axons (Kölliker, 1896)***, the central root *nerve fibers (Ehrenberg, 1833)* of the ***abducens nucleus (>1840)*** form bundles coursing ventrally to the ventral surface of the ***medulla (Winslow, 1733)*** at its junction with the ***pons (Haller, 1747)***; see Carpenter (1976, p. 349 and Figs. 12.1, 12.6), Nieuwenhuys et al. (2008, Figs. 6.25-*30*, 6.26-*24*). The bundles are ***abducens nerve central rootlets (>1840)*** together forming the ***abducens nerve central root (>1840)*** that on leaving the ***medulla (Winslow, 1733)*** becomes the peripheral ***abducens nerve root (>1840)***. It was discovered by Mayo; see ***[abducens nerve central root (>1840)] (Mayo, 1827)***.

EARLIER REFERENCES:

Illustrated and described, not named:
1. ***[abducens nerve central root (>1840)] (Mayo, 1827)***
Traced from rostral and ventral surface of macrodissected adult human ***medulla (Winslow, 1733)*** to back (dorsal) part of ***gray matter (Meckel, 1817)*** of ***pons (Haller, 1747)*** without, of course, recognizing ***abducens nucleus (>1840)*** in caudal ***tegmentum (Swanson, 2000b)***; Plate VII, Figure 2-*VI*.

Earlier synonyms:
1. *real origin of external ocular motor nerve (Cruveilhier, 1836)*
Synonym for macrodissected adult human ***abducens nerve central root (>1840)***. Cruveilhier noted without providing citations that Gall traced it along border of ***pyramid (Willis, 1664)*** and Herbert Mayo traced it through ***pons (Haller, 1747)*** to region below ***fourth ventricle (Galen, c192)***; in the original French, *origine réelle*, p. 896. Grainger (1837, p. 40) also traced it deep into macrodissected adult human ***pons (Haller, 1747)***.

abducens nerve central rootlets (>1840)

As described in macrodissected adult human, and mammal generally with histological methods for ***axons (Kölliker, 1896)***, the central root *nerve fibers (Ehrenberg, 1833)* of the ***abducens nucleus (>1840)*** form bundles coursing ventrally to the ventral surface of the ***medulla (Winslow, 1733)*** at its junction with the ***pons (Haller, 1747)***; see Carpenter (1976, p. 349 and Figs. 12.1, 12.6), Nieuwenhuys et al. (2008, Figs. 6.25-*30*, 6.26-*24*). The bundles are ***abducens nerve central rootlets (>1840)*** together forming the ***abducens nerve central root (>1840)***. On leaving the ventral surface of the ***medulla (Winslow, 1733)*** the ***abducens nerve central rootlets (>1840)*** become peripheral ***abducens nerve rootlets (>1840)***. They were not known by 1840.

abducens nerve root (>1840)

As described for macrodissected adult human, the ***abducens nerve (Heister, 1717)*** is attached to the side of the ***medulla (Winslow, 1733)*** just caudal to the ***pons (Haller, 1747)***, roughly in line with the ***hypoglossal nerve (Winslow, 1733)***; see Obersteiner & Hill (1900, Fig. 10), Crosby et al. (1962, p. 115). The ***abducens nerve root (>1840)*** consists of a variable number of ***abducens nerve rootlets (>1840)***. Meckel (1817) described the usual

situation as 2 distinct roots, medial and lateral, with the latter about 2 times larger than the former and each made up of smaller filaments [rootlets]; see translation (1832, Vol. 3, p. 57). It was first observed by Du Verney; see ***[abducens nerve root (>1840)] (Du Verney, 1683)***.

EARLIER REFERENCES:

Illustrated, not named or described:

1. ***[abducens nerve root (>1840)] (Du Verney, 1683)***
   Because Du Verney illustrated the ***abducens nerve rootlets (>1840)***, he illustrated the root for macrodissected adult human; Plate 1, Figure 1-*N*.

Earlier synonyms:

1. *external motor nerve roots (Günther, 1786)*
   Synonym for macrodissected adult human ***abducens nerve root (>1840)***. Günther described the usual situation as 2 distinct roots (p. 54), described in more detail by Meckel (1817) as internal [medial] and external [lateral], with the latter about 4 times larger than the former and each made up of smaller filaments [rootlets]. Meckel also described a right–left variation on how the 2 roots merge, which is always seen only on the left; see translation (1832, Vol. 3, p. 57).

abducens nerve rootlets (>1840)

As described for macrodissected adult human, the variable number of small *nerve fiber (Ehrenberg, 1833)* bundles between the surface of the ***medulla (Winslow, 1733)*** and the ***abducens nerve trunk (>1840)***, together constituting the ***abducens nerve root (>1840)***; see Gehuchten (1906, Fig. 5). They were discovered by Du Verney; see ***[abducens nerve rootlets (>1840)] (Du Verney, 1683)***.

EARLIER REFERENCES:

Illustrated, not named or described:

1. ***[abducens nerve rootlets (>1840)] (Du Verney, 1683)***
   Illustrated for macrodissected adult human; Plate 1, Figure 1-*N*. Also see Bell & Bell (1829, p. 505).

Earlier synonyms:

1. *roots of external motor nerve of eyes (Malacarne, 1791)*
   Synonym mentioned in passing for macrodissected adult human ***abducens nerve rootlets (>1840)***; p. 227.
2. *external motor nerve filaments (Meckel, 1817)*
   Synonym for macrodissected adult human ***abducens nerve rootlets (>1840)***; see translation (1832, Vol. 3, p. 57).
3. *apparent origin of external ocular motor nerve (Cruveilhier, 1836)*
   Synonym for macrodissected adult human ***abducens nerve rootlets (>1840)***; in the original French, *origine apparente*, p. 896.

PARTLY CORRESPONDS:

1. *internal root of external ocular motor nerve (Cruveilhier, 1836)*
   Smaller of 2 macrodissected adult human ***abducens nerve rootlets (>1840)*** emerging from ***pons (Haller, 1747)***; in the original French, *racine interne*, p. 896.
2. *external root of external ocular motor nerve (Cruveilhier, 1836)*
   Larger of 2 macrodissected adult human ***abducens nerve rootlets (>1840)*** emerging just dorsal to rostral end of ***pyramid (Willis, 1664)***; in the original French, *racine externe*, p. 896.

abducens nerve trunk (>1840)

As described for macrodissected adult mammal, segment of the ***abducens nerve (Heister, 1717)*** between the ***abducens nerve root (>1840)*** proximally and the distal branching of the ***nerve (Herophilus, c335–c280 BC)*** to the lateral rectus and (when present) retractor bulbi muscles. It was probably first delineated by Willis; see ***[abducens nerve trunk (>1840)] (Willis, 1664)***.

EARLIER REFERENCES:

Illustrated, not named or described:

1. ***[abducens nerve trunk (>1840)] (Willis, 1664)***
   Illustrated for macrodissected adult mammal; see Pordage translation (1681, p. 145, Fig. 2-*C*).

Earlier synonyms:

1. *sixth pair of nerves trunk (Vieussens, 1684)*
   Synonym for macrodissected adult human ***abducens nerve trunk (>1840)***; in the original Latin, *truncus nervi sexti paris*, Table 23-*D*.
2. *external motor nerve trunk (Günther, 1786)*
   Synonym for macrodissected adult human ***abducens nerve trunk (>1840)***; p. 54.

PARTLY CORRESPONDS:

1. *primary branch of sixth pair (Portal, 1803a)*
   Portal claimed it is not uncommon in macrodissected adult human to find such a branch of ***abducens nerve trunk (>1840)*** to ***nerve of pterygoid canal (>1840)***; in the original French, *le rameau primitif*, p. 158.
2. *secondary branch of sixth pair (Portal, 1803a)*
   Portal claimed it is not uncommon in macrodissected adult human to find such a branch of ***abducens nerve trunk (>1840)*** to 1st ***cervical spinal ganglion (>1840)***; in the original French, *le rameau secondaire*, p. 158.
3. *cavernous part of sixth pair (Arnold, 1834)*
   Macrodissected adult human segment of ***abducens nerve trunk (>1840)*** within ***cavernous sinus (Winslow, 1733)***; in the original Latin, *par sextum, pars cavernosa*, p. 11.
4. *cavernous part of abducens nerve (Arnold, 1834)*
   Synonym for *cavernous part of sixth pair (Arnold, 1834)*; in the original Latin, *nervus abducens, pars cavernosa*, p. 11.
5. *cavernous part of scornful nerve (Arnold, 1834)*
   Synonym for *cavernous part of sixth pair (Arnold, 1834)*; in the original Latin, *nervus indignatorius, pars cavernosa*, p. 11.
6. *orbital part of sixth pair (Arnold, 1834)*
   Macrodissected adult human segment of ***abducens nerve trunk (>1840)*** distal to ***cavernous sinus (Winslow, 1733)***, before it branches to enter lateral rectus muscle; in the original Latin, *par sextum, pars orbitalis*, p. 11.
7. *orbital part of abducens nerve (Arnold, 1834)*
   Synonym for *orbital part of sixth pair (Arnold, 1834)*; in the original Latin, *nervus abducens, pars orbitalis*, p. 11.

8. *orbital part of scornful nerve (Arnold, 1834)*
   Synonym for *orbital part of sixth pair (Arnold, 1834)*; in the original Latin, *nervus indignatorius, pars orbitalis*, p. 11.

abducens nucleus (>1840)

As described for mammal with cellular architecture and connections, the small ***gray matter region (Swanson & Bota, 2010)*** lying in the caudal dorsomedial ***pontine reticular nucleus (>1840)***, just ventral to the ventromedial tip of the ***pontine central gray (>1840)***, and generating the ***abducens nerve central root (>1840)*** continuing peripherally as the ***abducens nerve (Heister, 1717)*** to the lateral rectus muscle of the eye; see Nieuwenhuys et al. (2008, p. 203 and Fig. 6.26-*8*). It was first delineated by Desmoulins and Rolando; see ***[abducens nucleus (>1840)] (Desmoulins, 1825)***.

EARLIER REFERENCES:

Illustrated, not named or described:

1. ***[abducens nucleus (>1840)] (Desmoulins, 1825)***
   Clearly indicated in transverse section of macrodissected adult beef; Plate XIII, Figure 12, drawn by Rolando.

accessory cuneate nucleus (>1840)

As described for macrodissected adult human and for adult mammal in general with cellular architecture and connections, the ***gray matter region (Swanson & Bota, 2010)*** of the ***dorsal column nuclei (>1840)*** lying lateral to the rostral end of the ***cuneate nucleus (>1840)*** and receiving a massive input from the ***cuneate fascicle (Müller, 1834)***; histologically it contains larger ***neurons (Waldeyer, 1891)*** than the ***cuneate nucleus (>1840)***; see Williams & Warwick (1980, p. 902), *Terminologia Anatomica* (1998, p. 110), Nieuwenhuys et al. (2008, p. 194 and Figs. 6.22, 6.23, where it is called *lateral cuneate nucleus*). It was first recognized by Burdach; see ***[accessory cuneate nucleus (>1840)] (Burdach, 1822)***.

EARLIER REFERENCES:

Described, not named or illustrated:

1. ***[accessory cuneate nucleus (>1840)] (Burdach, 1822)***
   Described for macrodissected adult human; p. 36, see Dejerine & Dejerine-Klumpke (1901, p. 573).

accessory nerve (Vieussens, 1684)

As described for macrodissected adult human, a ***cranial nerve (Soemmerring, 1791)*** with a ***cranial root of accessory nerve (>1840)*** and a ***spinal root of accessory nerve (>1840)***. The ***cranial root of accessory nerve rootlets (>1840)*** and the ***spinal root of accessory nerve rootlets (>1040)*** caudal to it extend along a continuous longitudinal line on the outer surface of the ***medulla (Winslow, 1733)*** and ***spinal cord (Galen, c162-c166)***, caudal to the ***vagus nerve rootlets (>1840)***. The ***spinal root of accessory nerve rootlets (>1840)*** converge to form the long, rostrally directed (ascending) ***spinal root of accessory nerve trunk (>1840)***, and the ***cranial root of accessory nerve rootlets (>1840)*** converge to form the short ***cranial root of accessory nerve trunks (>1840)***. The ***spinal root of accessory nerve trunk (>1840)*** and ***cranial root of accessory nerve trunks (>1840)*** converge in the region of the jugular foramen to form the single short ***accessory nerve trunk (Wrisberg, 1786)***, in turn splitting to form the ***internal branch of accessory nerve trunk (Meckel, 1817)*** and ***external branch of accessory nerve (Meckel, 1817)***. The ***cranial root of accessory nerve (>1840)*** and ***spinal root of accessory nerve (>1840)*** are now described as essentially distinct parts anatomically as well as functionally; see Durward (1951, Fig. 908), Williams & Warwick (1980, pp. 1081–1083 and Fig. 7.189), *Terminologia Anatomica* (1998, p. 137). For Vieussens's use in macrodissected adult human see p. 179; also see *spinal accessory nerve (Willis, 1664)* and *accessory nerve of Willis (Vieussens, 1684)*. Ridley used the precise term, *accessory nerve*, in English (Fig. VIII-*P*). Meckel (1817; see translation, 1832, Vol. 3, p. 6) noted, without citation, that Portal and others considered the ***accessory nerve (Vieussens, 1684)*** an intermediate class of ***craniospinal nerve (Herrick, 1915)*** because it arises largely from the ***spinal cord (Galen, c162–c166)*** but exits from the cranium. It was known to Herophilus; see ***[accessory nerve (Vieussens, 1684)] (Herophilus, c335–c280 BC)***.

TRANSLATIONS:

1. *nervus accessorius (Vieussens, 1684)*
   Original Latin form of ***accessory nerve (Vieussens, 1684)***; p. 179, where it is plural. Also see Burdach (1822, p. 82) and Lobstein's thesis (1760).

EARLIER REFERENCES:

Described, not named or illustrated:

1. ***[accessory nerve (Vieussens, 1684)] (Herophilus, c335–c280 BC)***
   Herophilus, the founder of human anatomy, is credited with discovering but not naming ***glossopharyngeal nerve (Huber, 1744)***, ***vagus nerve (Galen, c192)***, and ***accessory nerve (Vieussens, 1684)***, which were apparently distinguished but considered together; see Solmsen (1961), von Staden (1969), Longrigg (1993), Clarke & O'Malley (1996, p. 261), *third division of nerve of sixth pair (Galen, c192)*. He dissected adult mammals and human cadavers.

Earlier synonyms:

1. *third division of nerve of sixth pair (Galen, c192)*
   Synonym for ***accessory nerve (Vieussens, 1684)***; see Duckworth translation (1962, p. 248). Galen carefully described this ***nerve (Herophilus, c335–c280 BC)***, which he included in the *sixth pair of nerves from brain (Galen, c192)*; see Duckworth translation (1962, pp. 202, 235), May translation (1968, pp. 696–697) Most if not all of his neuroanatomy was done on macrodissected adult beef, pig, and/or macaque but not human. Vesalius (1543a) mentioned it briefly for macrodissected adult human; see Richardson & Carman translation (2002, p. 195). The first modern, accurate description of the ***accessory nerve (Vieussens, 1684)*** was by Coiter in 1572; see Meyer (1971, p. 12 note 6).

Ridley (1695, p. 151) stated without citation that Guidi (1611) "painted and described" it.

2. *spinal accessory nerve (Willis, 1664)*
   Synonym for ***accessory nerve (Vieussens, 1684)***; see Pordage translation (1681, Tab. IX legend). It was part of the *eighth pair of nerves arising within skull (Willis, 1664)*. Willis identified it consistently "not only in Man and four-footed Beasts, but also in Fowls and Fishes; and in these it seems to be destinated instead of Arms, and for the moving of their wings and fins" (Pordage translation, 1681, p. 173).
3. *accessory nerve of wandring pair (Willis, 1664)*
   Synonym for ***accessory nerve (Vieussens, 1684)*** in macrodissected adult human and other vertebrates; see Pordage translation (1681, pp. 58, 146, 173, Tabs. 5-*N*, 6-*L*).
4. *spinal accessory nerve of wandring pair (Willis, 1664)*
   Synonym for macrodissected adult human and other vertebrate ***accessory nerve (Vieussens, 1684)***, which Willis wrote arises entirely from the ***spinal cord (Galen, c162–c166)***, beginning caudally in human at levels six or seven of ***cervical part of spinal cord (>1840)***; see Pordage translation (1681, pp. 173–174). For Latin form, *nervus spinalis ad par vagum accessorius*, see Haase (1781, p. 114).
5. *accessory nerve of Willis (Vieussens 1684)*
   Eponym for macrodissected adult human *spinal accessory nerve (Willis, 1664)*; in the original Latin (plural), *nervi accessorii Willisii*, p. 179.

LATER SYNONYMS:

1. *spinal nerve (Collins, 1685)*
   Synonym for ***accessory nerve (Vieussens, 1684)***; p. 1052. Also see Vicq d'Azyr (1786, pp. 49, 54).
2. *nervus spinalis (Winslow, 1733)*
   Latin form of *spinal nerve (Collins, 1685)*; Section X, p. 48.
3. *nervus accessorius octavi paris (Winslow, 1733)*
   Synonym for macrodissected adult human ***accessory nerve (Vieussens, 1684)***; Section X, p. 48.
4. *recurrent spinal nerve (Albinus, 1744)*
   Synonym for macrodissected adult human ***accessory nerve (Vieussens, 1684)***; in the original Latin, *nervus spinalis recurrens*; Table 18, Figures 1 & 3-*ζ,η,θ,ι* and Table 19-*f*. Also see Burdach (1822, p. 309).
5. *intermediate nerve (Huber, 1744)*
   Synonym for macrodissected adult human ***accessory nerve (Vieussens, 1684)***; in the original Latin, *nervus intermedius*, p. 10. Also see Schreger (1803, p. 346).
6. *superior recurrent nerve of eighth pair (Neubauer, 1772)*
   Synonym for macrodissected adult human ***accessory nerve (Vieussens, 1684)***; in Latin, *recurrens octavi paris superior*, according to Burdach (1822, p. 309).
7. *accessory nerves to eighth pair of Lobstein (Frotscher, 1788)*
   Eponym for macrodissected adult human ***accessory nerves (Vieussens, 1684)***; in the original Latin, *nervi ad par octavum accessorii Lobsteinii*, p. 101, referring to Lobstein (1760). However, see *nervus accessorius octavi paris (Winslow, 1733)*.
8. *recurrent nerves of Willis (Frotscher, 1788)*
   Eponym for macrodissected adult human ***accessory nerves (Vieussens, 1684)***; in the original Latin, *nervi recurrentes Willisii*, p. 101, without providing citation to Willis.
9. *accessory nerve to vagal pair (Frotscher, 1788)*
   Synonym for macrodissected adult human ***accessory nerve (Vieussens, 1684)***; in the original Latin, *nervo ad par vagum accessorii*, p. 101.
10. *recurrent spinal nerve of Willis (Coopmans, 1789)*
    Eponym for macrodissected adult human ***accessory nerve (Vieussens, 1684)***; in the original Latin, *spinalis recurrens Willisii*, p. 100, without providing citation to Willis.
11. *fifteenth pair (Malacarne, 1791)*
    Synonym for macrodissected adult human right and left ***accessory nerves (Vieussens, 1684)***; see Burdach (1822, p. 309), who gave the Latin, *par decimum quintum*. The 15th of 17 pairs of *cerebral nerves (Malacarne, 1791)*.
12. *par accessorius ad sympathicum medium (Malacarne, 1791)*
    Synonym for macrodissected adult human ***accessory nerves (Vieussens, 1684)***; according to Burdach (1822, p. 309).
13. *par vagum accessorius (Soemmerring, 1791)*
    Synonym for macrodissected adult human ***accessory nerves (Vieussens, 1684)***, listed as 11th of 12 ***cranial nerves (Soemmerring, 1791)***; p. 254. Burdach (1822, p. 309) quoted without citation Soemmerring as using the term, *par undecimum, accessorius ad vocalem, Baynerve.*
14. *eleventh pair of cranial nerves (Soemmerring, 1791)*
    Synonym for macrodissected adult human ***accessory nerves (Vieussens, 1684)***; see ***cranial nerves (Soemmerring, 1791)***.
15. *eleventh pair of cerebral nerves (Soemmerring, 1791)*
    Synonym for *eleventh pair of cranial nerves (Soemmerring, 1791)*; see p. 103 and ***cranial nerves (Soemmerring, 1791)***. For original Latin form, *par undecimum nervorum cerebri*, see Soemmerring (1798, p. 125).
16. *adcessory pair of cerebral nerves (Soemmerring, 1798)*
    Synonym for macrodissected adult human ***accessory nerves (Vieussens, 1684)***; in the original Latin, *par adcessorium nervorum cerebri*, p. 125.
17. *third division of eighth pair of nerves (Bell, 1803b)*
    Synonym for macrodissected adult human ***accessory nerve (Vieussens, 1684)***; p. 159.
18. *nerfs spino-crânio-trapèziens (Portal, 1803b)*
    Synonym for macrodissected adult human ***accessory nerves (Vieussens, 1684)***; Vol. 4, p. 217.
19. *trachelo-dorsal pair of nerves (Burdin, 1803)*
    Synonym for macrodissected adult human ***accessory nerves (Vieussens, 1684)***; see translation (Vol. 1, p. 144).
20. *twelfth pair of encephalic nerves (Burdin, 1803)*
    Synonym for macrodissected adult human ***accessory nerves (Vieussens, 1684)***; see translation (Vol. 1, p. 185).
21. *superior respiratory nerve of trunk (Bell, 1821)*
    Synonym for macrodissected adult mammalian ***accessory nerve (Vieussens, 1684)***; p. 406. "To an anatomist it

is as plainly set forth as if it were written in our mother tongue, this is *the superior respiratory nerve of the trunk*." (Bell, 1822, p. 294; italics his).

22. *superior external respiratory nerve (Bell & Bell, 1826)*
    Synonym for macrodissected adult human ***accessory nerve (Vieussens, 1684)***; Vol. 2, p. 400.
23. *ascending spinal nerve (Swan, 1830)*
    Synonym for macrodissected adult human ***accessory nerve (Vieussens, 1684)***; p. 24.
24. *accessory nerve of Weber (Bischoff, 1832)*
    Eponym for ***accessory nerve (Vieussens, 1684)*** as identified by Weber (1827, pp. 321-323) in macrodissected adult fish; in the original Latin, *nervus accessorius Weberi*, Table VI, Figures 1–3.

PARTLY CORRESPONDS:

1. *roots of accessory nerve of Willis (Malacarne, 1791)*
   Alluded to for macrodissected adult human ***accessory nerve (Vieussens, 1684)*** without distinguishing ***cranial root of accessory nerve rootlets (>1840)*** from ***spinal root of accessory nerve rootlets (>1840)***; p. 227.
2. *anastomosis of third cervical nerve with recurrent nerve of Willis (Peipers, 1793)*
   Macrodissected adult human short and long ***communicating branches (Winslow, 1733)*** between third ***cervical nerve (Galen, c173)*** and ***accessory nerve (Vieussens, 1784)***; in the original Latin, *anastomosis tertii cervicalium cum recurrente Willisii*, p. 33.
3. *spinal and cerebral part of eleventh pair (Arnold, 1834)*
   Essentially synonym for macrodissected adult human **spinal root of accessory nerve (>1840)** and ***cranial root of accessory nerve (>1840)*** considered together; in the original Latin, *par undecimum, pars spinalis et cerebralis*, p. 14.
4. *spinal and cerebral part of accessory nerve of Willis (Arnold, 1834)*
   Synonym for *spinal and cerebral part of eleventh pair (Arnold, 1834)*; in the original Latin, *nervus accessorius Willisii, pars spinalis et cerebralis*, p. 14.
5. *cervical part of eleventh pair (Arnold, 1834)*
   Essentially macrodissected adult human ***accessory nerve trunk (Wrisberg, 1786)*** and its two major branches; in the original Latin, *par undecimum, pars cervicalis*, p. 14.
6. *cervical part of accessory nerve of Willis (Arnold, 1834)*
   Synonym for *cervical part of eleventh pair (Arnold, 1834)*; in the original Latin, *nervus accessorius Willisii, pars cervicalis*, p. 14.

accessory nerve trunk (Wrisberg, 1786)

As described for macrodissected adult human, it lies distal to the site where the ***spinal root of accessory nerve trunk (>1840)*** and ***cranial root of accessory nerve trunks (>1840)*** merge in the region of the jugular foramen, and proximal to the site where it divides into ***internal branch of accessory nerve trunk (Meckel, 1817)*** and ***external branch of accessory nerve trunk (Meckel, 1817)***; see Durward (1951, p. 1043), Williams & Warwick (1980, pp. 10881–1083 and Fig. 7.189). For Wrisberg's use in macrodissected adult human, see Wrisberg reprint (1800, p. 429); in the original Latin, *truncus accessorii*. Bellingeri (1823; Tab. III, Fig. 5-*g*) illustrated it beautifully for macrodissected adult beef. It was perhaps first clearly delineated by Eustachi; see ***[accessory nerve trunk (Wrisberg, 1786)] (Eustachi, 1552)***.

EARLIER REFERENCES:

Illustrated, not named or described:

1. ***[accessory nerve trunk (Wrisberg, 1786)] (Eustachi, 1552)***
   Illustrated for macrodissected adult human; see *trunk of recurrent spinal nerve (Albinus, 1744)*.

Earlier synonyms:

1. *trunk of recurrent spinal nerve (Albinus, 1744)*
   Synonym for macrodissected adult human ***accessory nerve trunk (Wrisberg, 1786)***; in the original Latin, *truncus nervorum spinalium recurrentium*, Table 18, Figure 2-*f*.

PARTLY CORRESPONDS:

1. *anastomotic branch of accessory nerve of Willis with vagus nerve (Günther, 1786)*
   Macrodissected adult human ***communicating branch (Winslow, 1733)*** between ***accessory nerve trunk (Wrisberg, 1786)*** and ***vagus nerve (Galen, c192)***; in the original Latin, *r. anastomaticos cum n. vago*, p. 90.
2. *anastomotic branch of accessory nerve of Willis with glossopharyngeal nerve (Günther, 1786)*
   Macrodissected adult human ***communicating branch (Winslow, 1733)*** between ***accessory nerve trunk (Wrisberg, 1786)*** and ***glossopharyngeal nerve (Huber, 1744)***; in the original Latin, *r. anastomaticos cum n. glossopharyngeo*, p. 90.
3. *anastomotic branch of accessory nerve of Willis with ninth nerve (Günther, 1786)*
   Macrodissected adult human ***communicating branch (Winslow, 1733)*** between ***accessory nerve trunk (Wrisberg, 1786)*** and ***hypoglossal nerve (Winslow, 1733)***; in the original Latin, *r. anastomaticos cum n. nono*, p. 90.

accessory obturator nerve (Schmidt, 1794)

As described for macrodissected adult human, it is observed in only about one in three individuals, arising from the third, or third and fourth ***lumbar nerves (Diemerbroeck, 1672)*** between the roots of the ***obturator nerve (Cheselden, 1726)*** and ***femoral nerve (Haller, 1762)***, and associated with although separable from the ***obturator nerve (Cheselden, 1726)***. It usually ends in three branches; one replaces the branch from the ***femoral nerve (Haller, 1762)*** to the pectineus muscle, a second goes to the hip joint, and a third communicates with the ***obturator nerve (Cheselden, 1726)***; see Durward (1951, p. 1098), *Terminologia Anatomica* (1998, p. 140). For Schmidt's use of this shorthand form of *accessory internal crural nerve (Schmidt, 1794)* see p. 82, where it is clearly described for the first time.

EARLIER REFERENCES:

Earlier synonyms:

1. *accessory internal crural nerve (Schmidt, 1794)*
   Synonym for macrodissected adult human ***accessory obturator nerve (Schmidt, 1794)***; in the original Latin, *accessorius nervi cruralis interioris*, pp. 81–83.
2. *accessory nerve of internal crural nerve (Schmidt, 1794)*
   Synonym for ***accessory obturator nerve (Schmidt, 1794)***; in the original Latin, *nervus accessorius nervi cruralis interioris*, Table II-*76*.

LATER SYNONYMS:

1. *accessory nerve of obturator nerve (Cloquet, 1828)*
   Synonym for macrodissected adult human ***accessory obturator nerve (Schmidt, 1794)***; in the original French, *nerf accessoire au nerf obturateur*, Plate CLXXII, Figure 1-*90*.
2. *nerve of coxofemoral joint (Cruveilhier, 1836)*
   Synonym for macrodissected adult human ***accessory obturator nerve (Schmidt, 1794)***; in the original French, *nerf de l'articulation coxo-fémorale*, p. 840.

accessory olfactory bulb (>1840)

As described for embryonic human primarily with histological methods, a small differentiation of the dorsal ***olfactory bulb (Weitbrecht, 1751)*** receiving the ***vomeronasal nerve (>1840)***. It regresses and is not present in adult human; see Crosby et al. (1962, p. 416). In macrosmatic adult mammal the small ***accessory olfactory bulb (>1840)*** forms a set of stacked layers with the ***vomeronasal nerve layer of accessory olfactory bulb (>1840)*** on the outside and forming the bulk of the ***vomeronasal nerve central root (>1840)***, which extends deeper to end in the glomeruli of the subjacent ***glomerular layer of accessory olfactory bulb (>1840)***; see Shipley et al. (1996), Swanson (2004, Atlas Level 3). The ***main olfactory bulb (>1840)*** and ***accessory olfactory bulb (>1840)*** were not distinguished by 1840.

accessory phrenic nerve (>1840)

As described for macrodissected adult human it not uncommonly arises from the ***subclavian nerve (>1840)***, sometimes with other filaments from the fifth and/or sixth ***cervical nerves (Galen, c173)***, and descends for variable distances before joining the main ***phrenic nerve (Galen, c173)*** in the lower neck or upper thorax; see Durward (1951, pp. 1065–1066, 1070), *Terminologia Anatomica* (1998, p. 137). It was perhaps first mentioned specifically by Meckel; see ***[accessory phrenic nerve (>1840)] (Meckel, 1817)***.

EARLIER REFERENCES:

Described, not named or illustrated:

1. ***[accessory phrenic nerve (>1840)] (Meckel, 1817)***
   Mentioned without naming for macrodissected adult human; see translation (1832, Vol. 3, p. 30).

accumbens nucleus (Ziehen, 1897–1901)

As described for macrodissected adult human, and with cellular architecture and connections for all mammals, a rostroventral differentiation of the ***striatum (Swanson, 2000a)*** between ***caudoputamen (Heimer & Wilson, 1975)*** dorsally and ***olfactory tubercle (Calleja, 1893)*** ventrally; see Nieuwenhuys et al. (2008, p. 436). There are no good histological criteria for determining a precise border between ***accumbens nucleus (Ziehen, 1897–1901)*** and ***caudoputamen (Heimer & Wilson, 1975)***. For Ziehen's use in macrodissection and histology of monotreme and marsupial, see p. 718. Not clearly described by 1840.

TRANSLATIONS:

1. *nucleus accumbens (Ziehen, 1897–1901)*
   Original Latin form of ***accumbens nucleus (Ziehen, 1897–1901)***; p. 718.

adenohypophysis (Rioch et al., 1940)

As described for adult mammal, a component of the ***pituitary gland (>1840)*** developing from Rathke's pouch with an ***anterior lobe of pituitary gland (>1840)*** derived from the rostral wall of the pouch, and an ***intermediate lobe of pituitary gland (>1840)*** derived from the caudal wall; see Simmons et al. (1990). It is thus non-neural tissue, and in English is *glandular pituitary*. By contrast, the other component of the ***pituitary gland (>1840)***, the ***neurohypophysis (Rioch et al., 1940)***, develops as a ventral and median, ventrally directed extension of the ***hypothalamus (Kuhlenbeck, 1927***) and is thus neural tissue. For use by Rioch et al. in mammal see Table 2. It was perhaps first distinguished by Riolan; see ***[adenohypophysis (Rioch et al., 1940)] (Riolan, 1610)***.

EARLIER REFERENCES:

Described, not named or illustrated:

1. ***[adenohypophysis (Rioch et al., 1940)] (Riolan, 1610)***
   First identified vaguely in macrodissected adult human; see ***anterior lobe of pituitary gland (Haller, 1762)***.

Earlier synonyms:

1. *glandular lobe of hypophysis (Tilney, 1936)*
   Synonym for ***adenohypophysis (Rioch et al., 1940)***; p. 425. Tilney divided it into tuberal, infundibular [***intermediate lobe of pituitary gland (>1840)***], and distal parts; p. 425.

adrenal plexus (>1840)

As described for macrodissected adult human, it is formed by branches from the ***celiac ganglion (Walter, 1783)***, ***celiac plexus (Winslow, 1733)***, and ***greater splanchnic nerve (Walter, 1783)*** supplying the adrenal gland. Functionally the branches contain preganglionic sympathetic ***axons (Kölliker, 1896)*** synapsing with the gland's chromaffin cells, homologous to postganglionic ***neurons (Waldeyer, 1891)***; see Mitchell (1953, Fig. 104), Williams & Warwick (1980, p. 1134). It was known to Pietro da Cortona; see ***[adrenal plexus (>1840)] (Pietro da Cortona, c1618)***.

EARLIER REFERENCES:

Illustrated, not named or described:

1. ***[adrenal plexus (>1840)] (Pietro da Cortona, c1618)***
   Clearly illustrated in Table 8-*Z* for macrodissected adult human; see Haller (1762, p. 265-note *g*).

Described, not named or illustrated:

1. ***[adrenal plexus (>1840)] (Winslow, 1733)***
   Mentioned for macrodissected adult human; Section VI, no. 406, p. 98.

Earlier synonyms:

1. *suprarenal plexus (Haase, 1781)*
   Synonym for macrodissected adult human ***adrenal plexus (>1840)***; in the original Latin, *plexum(s) suprarenalis*, p. 125.
2. *capsular plexus (Wrisberg, 1808)*
   Probably synonym for macrodissected adult human ***adrenal plexus (>1840)***, associated with *capsulis atrabilariis*, or *capsulam suprarenalem*; in the original Latin, *plexum capsularem*, p. 17.
3. *plexus of suprarenal capsule (Cruveilhier, 1836)*
   Synonym for macrodissected adult human ***adrenal plexus (>1840)***; in the original French (plural), *plexus des capsules surrénales*, p. 1016.

PARTLY CORRESPONDS:

1. *suprarenal nerves (Cloquet, 1828)*
   For macrodissected adult human, larger components of ***adrenal plexus (>1840)*** as it extends from ***celiac ganglion (Walter, 1783)*** and ***celiac plexus (Winslow, 1733)***; in the original French, *N. surrénaux*, Plate CLXXVI-*109*.

afterbrain (Baer, 1837)

Equally acceptable synonym for macrodissected embryonic and adult vertebrate ***medulla (Winslow, 1733)***; in the original German, *Nachhirn*, p. 107. Just 3 years earlier Bell (1834, p. 477) wrote, "After these dissections, it is impossible for us to consider the medulla oblongata as the mere commencement of the spinal marrow: it has a peculiar structure and distinct functions." Also see ***afterbrain vesicle (Baer, 1837)***.

TRANSLATIONS:

1. *Nachhirn (Baer, 1837)*
   Original German form of ***afterbrain (Baer, 1837)***; p. 107.
2. *metencephalon (Sharpey et al., 1867)*
   Original Latin form of ***afterbrain (Baer, 1837)***; p. 577.

afterbrain vesicle (Baer, 1837)

For macrodissected vertebrate embryos, the caudal division of the ***primary hindbrain vesicle (Baer, 1837)*** developing into the adult ***afterbrain (Baer, 1837)*** or equally acceptable synonym ***medulla (Winslow, 1733)***; the rostral division is the ***hindbrain vesicle (Baer, 1837)***. For Baer's use, see p. 107; it was clearly differentiated early on by Malpighi; see ***[afterbrain vesicle (Baer, 1837)] (Malpighi, 1673)***.

EARLIER REFERENCES:

Illustrated and described, not named:

1. ***[afterbrain vesicle (Baer, 1837)] (Malpighi, 1673)***
   Clearly illustrated for chick embryo on third day of incubation; see Figure XVIII.

Earlier synonyms:

1. *medulla oblongata vesicle (Serres, 1824–1826)*
   Synonym for ***afterbrain vesicle (Baer, 1837)*** in macrodissected chick embryo on third day of incubation; in the original French, *vésicule de la moelle allongée*; Plate I, Figure 3-5. Used later in the book for all vertebrates.

agranular retrosplenial area (>1840)

As described with cellular architecture in adult human, the dorsal, outer part of the ***retrosplenial region (>1840)***; Brodmann called it the *agranular retrolimbic area (Brodmann, 1909)*. It was not identified by 1840.

EARLIER REFERENCES:

Earlier synonyms:

1. *area retrolimbica agranularis (Brodmann, 1909)*
   Original Latin form of *agranular retrolimbic area (Brodmann, 1909)*; p. 149.
2. *agranular retrolimbic area (Brodmann, 1909)*
   Synonym for adult human ***agranular retrosplenial area (>1840)***; see p. 149.
3. *area 30 (Brodmann, 1909)*
   Synonym for *agranular retrolimbic area (Brodmann, 1909)*; in the original German, *Feld 30*, see p. 149, Figure 86.

alar plate (>1840)

As described for developing vertebrate, right or left wall of the ***neural tube (Baer, 1837)*** between the ***roof plate (>1840)*** dorsally and ***limiting sulcus (>1840)*** ventrally; see Alvarez-Bolado & Swanson (1996, p. 13 ff.), Nieuwenhuys et al. (2008, p. 9). It was not clearly described by 1840.

alveus (Burdach, 1822)

As described in macrodissected adult human, and mammal generally with histological methods for ***axons (Kölliker, 1896)***, the components of the ***fimbria (Honegger, 1890)*** in direct contact with, and constituting the ***cerebral cortex white matter (>1840)*** of, ***Ammon's horn (Vicq d'Azyr, 1786)*** and the ***subiculum (>1840)***. It has two limbs, one on either side of the ***fimbria (Honegger, 1890)***, the longer extending toward the ***subiculum (>1840)*** and facing the ***inferior horn of lateral ventricle (Bell, 1802)*** and the shorter extending toward the ***dentate gyrus (>1840)***; see Swanson (2004, Atlas Levels 27–43). It was perhaps first clearly delineated as the *fibrous envelope of cornu ammonis (Meckel, 1817)*.

EARLIER REFERENCES:

Earlier synonyms:

1. *fibrous envelope of cornu ammonis (Meckel, 1817)*
   Synonym for macrodissected adult human ***alveus (Burdach, 1822)***; see translation (1832, Vol. 2, p. 451).
2. *white envelope of pes hippocampi (Meckel, 1817)*
   Synonym for macrodissected adult human ***alveus (Burdach, 1822)***; see translation (1832, Vol. 2, p. 451).
3. *medullary layer of cornu Ammonis (Meckel, 1817)*
   Synonym for macrodissected adult human ***alveus (Burdach, 1822)***; see translation (1832, Vol. 2, p. 465).

PARTLY CORRESPONDS:

1. *external appendix of fimbria (Volkmann, 1831)*
   Part of macrodissected adult mammalian ***alveus (Burdach, 1822)*** extending away from ***fimbria***

(Honegger, 1890) and toward ***subiculum (>1840)***, adjacent to ***inferior horn of lateral ventricle (Bell, 1802)***; in the original Latin, *appendicem fimbriae externum*, pp. 52–53, Table XVIIII, Figure 5-*h**. Dejerine & Dejerine-Klumpke (1901, p. 294) called it "intraventricular alveus", and Cajal (1911) called it "white matter layer on the side adjacent to the ventricle" (Swanson & Swanson translation, 1995, p. 604).

2. *internal appendix of fimbria (Volkmann, 1831)*
   Part of macrodissected adult mammalian ***alveus (Burdach, 1822)*** extending away from ***fimbria (Honegger, 1890***) and toward ***dentate gyrus (>1840)***; in the original Latin, *appendicem fimbriae internum*, pp. 52–53, Table XVIIII, Figure 5-*h***. Dejerine & Dejerine-Klumpke (1901, pp. 294–295) called it "extraventricular alveus", and Blackstad (1956, pp. 420, 440) called it "deep root" of ***alveus (Burdach, 1822)***.

ambient gyrus (>1840)

As described for macrodissected adult human, a topographic subdivision of the ***olfactory region (>1840)*** between ***olfactory peduncle (Solly, 1836)*** rostrally and ***semilunar gyrus (>1840)*** caudally, and corresponding to the *limen insulae (>1840)*. Based on cellular architecture and connections, it basically corresponds to the ***piriform area (Smith, 1919)*** in mammal generally; see Nauta & Haymaker (1969, pp. 150–151, Fig. 4.10-*GA*), Nieuwenhuys et al. (2008, Fig. 5.6-*13*). It was perhaps first clearly distinguished as the *threshold of Sylvian fissure (Reil, 1809b)*.

TRANSLATIONS:

1. *gyrus ambiens (>1840)*
   Latin form of ***ambient gyrus (>1840)***; see Nauta & Haymaker (1969, p. 150).

EARLIER REFERENCES:

Earlier synonyms:

1. *threshold of Sylvian fissure (Reil, 1809b)*
   Synonym for macrodissected adult human *insular threshold (Schwalbe, 1881)*, indicating location of histologically defined ***piriform area (Smith, 1919)***; see Mayo translation (1823, p. 52).
2. *limen fissura Sylvii (Reil, 1809b)*
   Latin form of *threshold of Sylvian fissure (Reil, 1809b)*.

LATER SYNONYMS:

1. *insular threshold (Schwalbe, 1881)*
   Synonym for macrodissected adult human ***ambient gyrus (>1840)***; in the original German, *Inselschwelle*; see Nauta & Haymaker (1969, p. 156, Fig. 4.10), *Nomina Anatomica* (1983, p. A71), *Terminologia Anatomica* (1998, p. 125).
2. *limen insulae (>1840)*
   Current Latin form of *insular threshold (Schwalbe, 1881)*; see *Terminologia Anatomica* (1998, p. 125).
3. *lateral olfactory gyrus (>1840a)*
   According to some authors, synonym for macrodissected adult human ***ambient gyrus (>1840)***; see Nauta & Haymaker (1969, pp. 151, 156), Carpenter (1976, p. 525). For alternate view see *lateral olfactory gyrus (>1840b)*.

PARTLY CORRESPONDS:

1. *pyriform (Collins, 1685)*
   Term for differentiated region of ***endbrain (Kuhlenbeck, 1927)*** out of which extends ***olfactory peduncle (Solly, 1836)*** in skate, a cartilaginous fish: "In a Skate [the smelling nerves] arise out of the Apices of the *Pyriform* [called *pyramidal processes* in the legend to Table 61, Figure 1-*a* and Figure 2-*a*] being the First [rostralmost] Processes, and make their progress obliquely crossways, toward the inward Orbite of the Eyes, and then perforate the Skull, and afterward arrive the Organs of Smelling, and thence creeping all along, make a round ridge [bulb] on the Surfaces of them." (p. 1043). Thus, in very vague way *piriform (Collins, 1685)* may correspond to all or part of histologically defined ***piriform area (Smith, 1919)*** or macrodissected adult human ***ambient gyrus (>1840)***, though it is probably not possible to define correspondence more accurately.
2. *pyramidal process (Collins, 1685)*
   Synonym for *pyriform (Collins, 1685)*; see Table 61, Figure 1-*a* and Figure 2-*a*.
3. *lateral olfactory gyrus (>1840b)*
   According to some authors, corresponds in adult human to parts of ***piriform area (Smith, 1919)*** in direct proximity to ***lateral olfactory tract (>1840)***, with ***ambient gyrus (>1840)*** by this definition constituting rest of ***piriform area (Smith, 1919)*** more laterally; see Williams & Warwick (1980, p. 995). For alternate view see *lateral olfactory gyrus (>1840a)*.

ambiguus nucleus (>1840)

As described for adult mammal based on cellular architecture and connections, a thin longitudinal ***gray matter region (Swanson & Bota, 2010)*** in ventral and caudal parts of the ***medulla (Winslow, 1733)***, lying caudal to the ***facial nucleus (>1840)*** and generating motor components of the ***vagus nerve central roots (>1840)*** and continuing peripherally in the peripheral ***vagus nerve root (>1840)***. It has 2 spatially segregated functional components, one supplying striated muscles of the pharynx and larynx and the other supplying parts of the viscera, especially the heart, via the parasympathetic system; see Cheng & Powley (2000), Nieuwenhuys et al. (2008, pp. 194, 867 and Figs. 6.22–6.24). It was not identified by 1840.

amiculum of olive (>1840)

As described for macrodissected adult human, the dense band of myelinated axons surrounding the ***principal olivary nucleus (>1840)*** of the ***inferior olivary complex (>1840)***, formed at least partly by the caudal end of the ***medullary central tegmental tract (Bechterew, 1889)***; see Carpenter (1976, p. 299), *Terminologia Anatomica* (1998, p. 109), Williams & Warwick (1980, p. 904), Nieuwenhuys et al. (2008, p. 196 and Figs. 6.22-6.24). In English literally, *fleece of olive*. It was perhaps first clearly described as the *central nucleus of olivary eminence (Chaussier, 1807)*.

TRANSLATIONS:

1. *amiculum olivare (>1840)*
   Latin form of ***amiculum of olive (>1840)***; see *Terminologia Anatomica* (1998, p. 109).

EARLIER REFERENCES:

Earlier synonyms:

1. *central nucleus of olivary eminence (Chaussier, 1807)*
   For macrodissected adult human, the interlaced *white substance (Vesalius, 1543a)* surrounding the *dentate body of olivary eminence (Vicq d'Azyr, 1786)*, essentially the ***amiculum of olive (>1840)***; in the original French, *noyau central*, p. 123.
2. *dentate body of olives (Desmoulins, 1825)*
   In macrodissected adult human, the pleated capsule of fibrous matter associated with the ***inferior olivary complex (>1840)***, essentially the ***amiculum of olive (>1840)***; in the original French, *corps dentelé des olives*, Plate XIII, Figure 2-*d* and Figure 9-*d*.
3. *pleated capsule of olivary eminence (Cloquet, 1828)*
   Synonym for macrodissected adult human ***amiculum of olive (>1840)***; in the original French, *capsule plissée de l'éminence olivaire*, Plate CXLV, Figure 7-3.

PARTLY CORRESPONDS:

1. *funiculus siliquae externus (Burdach, 1822)*
   For macrodissected adult human the dorsal part of the ***amiculum of olive (>1840)***; Table III-*g*.
2. *tectum of white substance at anterior end of olivary nucleus (Arnold, 1838b)*
   For macrodissected adult human, the rostral part of the ***amiculum of olive (>1840)***; in the original Latin, *extremitas anterior nucleorum olivarum, substantia alba tecta*, Table II, Figure 10-*d*. See Carpenter (1976, p. 299).

Ammon's horn (Vicq d'Azyr, 1784)

As described for macrodissected adult human, one of two major parts of the ***hippocampal region (Swanson et al., 1987)***, the other being the medially adjacent ***dentate gyrus (>1840)***. As described with cellular architecture and connections in mammal, three longitudinal regions or areas of ***cerebral cortex gray matter (>1840)—field CA3 (Lorente de Nó, 1934)***, ***field CA2 (Lorente de Nó, 1934)***, and ***field CA1 (Lorente de Nó, 1934)—*** arranged topologically and developmentally from medial to lateral. "CA" is abbreviation for *cornu ammonis*, the Latin form of Ammon's horn; see Brodmann (1906, p. 398 and Figs. 127, 128, 137, 156–162, 176–179, 191–194). Amun (Ammon in Greek) was one of the principal gods in Egyptian mythology, and as a symbol of virility was depicted as a ram with its typical curved horns—famously at Karnak, with its avenue of ram-headed sphinxes. Vicq d'Azyr distinguished clearly for the first time between ***dentate gyrus (>1840)*** and ***Ammon's horn (Vicq d'Azyr, 1784)*** in macrodissected adult human; in the original French, *corne d'Ammon*; pp. 518–520; also see Vicq d'Azyr, 1786, Plate XV:*20–23*, and Plate VIII, Figure 1-*25,26*. It is unclear whether he included any of the ***subiculum (>1840)***; compare his 1786 Plate XXVI, Figures 7 and 8 with Duvernoy (1988, Figs. 23, 91A, 92A). In addition, Vicq d'Azyr (1786) sometimes used the term more generally in the sense of *hippocampus (Aranzi, 1587)*, for example, Plate XXVI, Figures 4 and 6; also see *hippocampus proper (Vicq, d'Azyr, 1786)*. Vicq d'Azyr (1784, p. 520) emphasized that it is a special *cerebral convolution (Smith Papyrus, 1700 BC)*. Wenzel & Wenzel (1812, p. 151) also suggested that ***Ammon's horn (Vicq d'Azyr, 1784)*** is an infolding of the ***cerebral cortex (>1840)***, which was confirmed by Tiedemann (1816; see translation, 1826, p. 281). It is synonymous with *hippocampus (Vicq d'Azyr, 1784)* and is distinguished from *hippocampal gyrus (>1840)* or ***parahippocampal gyrus (>1840)***.

LATER SYNONYMS:

1. *hippocampus (Vicq d'Azyr, 1784)*
   Synonym for ***Ammon's horn (Vicq d'Azyr, 1784)***; p. 518.
2. *hippocampus major (Vicq d'Azyr, 1786)*
   Synonym for ***Ammon's horn (Vicq d'Azyr, 1784)***; in the original French, *grand hypocampe*, see Plate XV:*20–23*. In addition, Vicq d'Azyr sometimes used the term more generally in the sense of *hippocampus (Aranzi, 1587)*, for example, Plate XXVI, Figures 4 and 6; also see *hippocampus proper (Vicq, d'Azyr, 1786)*.
3. *hippocampus proper (Vicq d'Azyr, 1786)*
   Synonym for ***Ammon's horn (Vicq d'Azyr, 1784)***; in the original French, *hypocampe proprement dit*, see Plate XV:20–23.
4. *gerollte Wulst (Soemmerring, 1788)*
   German synonym for macrodissected adult human ***Ammon's horn (Vicq d'Azyr, 1784)***; see Burdach (1822, p. 372), Meyer (1971, p. 123). In English it refers to a rolled-in convolution.
5. *Kolben (Reil, 1809b)*
   Reil's term in German for macrodissected adult human ***Ammon's horn (Vicq d'Azyr, 1784)***, which he distinguished from ***dentate gyrus (>1840)***; see Mayo translation (1823, Pl. XIII-*G,H*), Meyer (1971, p. 127). In English, it refers to a club-shaped structure or bulb; a German synonym is *Wulst*.
6. *processus cerebri lateralis (Wenzel & Wenzel, 1812)*
   Apparently synonym for macrodissected adult human ***Ammon's horn (Vicq d'Azyr, 1784)***; pp. 134, 203.
7. *cylindrical protuberance (Cruveilhier, 1836)*
   Synonym listed for macrodissected adult human ***Ammon's horn (Vicq d'Azyr, 1784)***; in the original French, *protubérance cylindrïode*, p. 694.

PARTLY CORRESPONDS:

1. *lamina conjunctiva (Burdach, 1822)*
   Appears to indicate combined *stratum lacunosum-moleculare* and *stratum radiatum* of macrodissected adult human ***Ammon's horn (Vicq d'Azyr, 1784)***; p. 157. It is continuous with ***lamina medullaris (Burdach, 1822)***.

angular gyrus (>1840)

As described for macrodissected adult human, the caudal (posterior) topographic subdivision of the ***inferior parietal lobule (>1840)*** surrounding the caudal and dorsal end of the ***superior temporal sulcus (>1840)***;

see Williams & Warwick (1980, p. 986, Fig. 7.111A). It was clearly delineated by Rolando; see ***[angular gyrus (>1840)] (Rolando, 1831)***.

EARLIER REFERENCES:

Illustrated, not named or described:

1. ***[angular gyrus (>1840)] (Rolando, 1831)***
   Very clearly illustrated for macrodissected adult human; Figure 1-*29* indicates rostral limb of ***angular gyrus (>1840)***.

Earlier synonyms:

1. *area angularis (Brodmann, 1909)*
   Original Latin form of *angular area (Brodmann, 1909)*; p. 140.
2. *angular area (Brodmann, 1909)*
   Based on cellular architecture in adult human, corresponds roughly to ***angular gyrus (>1840)***; see Garey translation (1994, p. 119 and Fig. 85).
3. *area 39 (Brodmann, 1909)*
   Synonym for adult human *angular area (Brodmann, 1909)*; in the original German, *Feld 39*, p. 140.

anococcygeal nerves (>1840)

As described for macrodissected adult human, they arise from the ***coccygeal plexus (>1840)*** and distribute to the coccygeus and adjacent parts of the levator ani muscles and to the skin and fascia near the coccyx and dorsal to (behind) the anus, medial to branches of the ***perforating cutaneous nerve (>1840)***; see Durward (1951, p. 1112 and Fig. 945), Williams & Warwick (1980, p. 1116 and Fig. 7.213), *Terminologia Anatomica* (1998, p. 140). They were known to Vieussens; see ***[anococcygeal nerves (>1840)] (Vieussens, 1684)***.

EARLIER REFERENCES:

Illustrated and described, not named:

1. ***[anococcygeal nerves (>1840)] (Vieussens, 1684)***
   Vieussens provided a rudimentary description and illustration for macrodissected adult human; see Table 29-*18*. Fisher (1791, p. 23) described and illustrated them fairly accurately for macrodissected adult human.

Earlier synonyms:

1. *last branch of intercostal nerve (Günther, 1786)*
   Synonym for macrodissected adult human ***anococcygeal nerves (>1840)***; in the original Latin, *r. ultimi intercostalis*, p. 96.

ansa cervicalis (>1840)

As described for macrodissected adult human, a complex part of the ***cervical plexus (Molinetti, 1675)*** with a ***superior root of ansa cervicalis (>1840)*** and ***inferior root of ansa cervicalis (>1840)*** joining to form a distal loop, the ansa cervicalis proper, with branches to the sternohyoid, sternothyroid, and omohyoid muscles; see Durward (1951, Figs. 909, 919), Hamilton (1976, Fig. 816), Williams & Warwick (1980, Figs. 7.193, 197), *Nomina Anatomica* (1983, p. A76 note *157*), *Terminologia Anatomica* (1998, p. 137). It was known at least partly to Galen; see ***[ansa cervicalis (>1840)] (Galen, c173)***.

EARLIER REFERENCES:

Described, not named or illustrated:

1. ***[ansa cervicalis (>1840)] (Galen, c173)***
   Galen identified at least part of this loop in describing innervation of sternohyoid muscle from macrodissected adult beef, pig, and/or macaque but not human; see May translation (1968, p. 690) and Duckworth translation (1962, p. 204). Vesalius (1543a) described branches of *sixth pair of cerebral nerves (Vesalius, 1543a)* to sternohyoid and sternothyroid muscles in macrodissected adult human; see Richardson & Carman translation (2002, p. 195). Winslow (1733, Sect. VI, p. 75) clearly described the entire loop for macrodissected adult human. Asch (1750, see Figs. 4, 5) described and illustrated its major features in macrodissected adult human.

Earlier synonyms:

1. *ansam communicationis nervorum cervicalium cum nono pari cerebri nervorum (Neubauer, 1772)*
   Macrodissected adult human ***ansa cervicalis (>1840)*** very clearly illustrated and described; Table 1-*156,245*.
2. *long arch of neck (Andersch & Soemmerring, 1792)*
   Synonym for macrodissected adult human ***ansa cervicalis (>1840)***; in the original Latin, *arcus longus colli*, p. 161.
3. *arch of hyoidiam nerves (Burdin, 1803)*
   Roughly synonymous with macrodissected adult human ***ansa cervicalis (>1840)***; see translation (1803, Vol. 1, p. 184).
4. *ansa formed by descending branch of hypoglossal nerve and third cervical nerve (Langenbeck, 1826–1830)*
   Synonym for macrodissected adult human ***ansa cervicalis (>1840)***; in the original Latin, *ansa, quam formant ramus descendens nervi hypoglossi et nervus cervicalis tertius*, Fascicle III, Table XVII-*12*.

PARTLY CORRESPONDS:

1. *crooked nerve (Willis, 1664)*
   Probably refers to at least part of macrodissected adult human ***ansa cervicalis (>1840)***; in the original Latin, *nervo incurvato;* see Pordage translation (1681, Tab. IX-*T*).
2. *ansa carotidi communi (Neubauer, 1772)*
   Apparently segment of macrodissected adult human ***ansa cervicalis (>1840)*** adjacent to common carotid artery; Table 2-*156*.
3. *nerve to coracohyoid muscle (Andersch & Soemmerring, 1792)*
   Branch of macrodissected adult human ***ansa cervicalis (>1840)*** to sternohyoid muscle; in the original Latin, *nervus musculi coracohyoidei*, p. 159.
4. *nerve to sternothyroid muscle (Andersch & Soemmerring, 1792)*
   Branch of macrodissected adult human ***ansa cervicalis (>1840)*** to sternohyoid muscle; in the original Latin, *nervus musculi sternothyreoidei*, p. 159.
5. *middle plexus of neck (Andersch & Soemmerring, 1792)*
   Relatively simple network of macrodissected adult human ***communicating branches (Winslow, 1733)*** at end of ***ansa***

cervicalis (>1840) generating ***nerves (Herophilus, c335–c280 BC)*** to sternohyoid and sternothyroid muscles; in the original Latin, *medius plexus colli*, p. 161.

6. *costohyoid nerve (Scarpa, 1794)*
   Branch of macrodissected adult human ***ansa cervicalis (>1840)*** to omohyoid muscle; in the original Latin, *nervus costo-hyoideus*, Table I-*28,29*.
7. *superficial cervical plexus (Bell & Bell, 1826)*
   Probably synonym for *middle plexus of neck (Andersch & Soemmerring, 1792)*; Vol. 2, pp. 587–588.
8. *branch of hypoglossal nerve descending branch to sternohyoid muscle (Arnold, 1834)*
   In macrodissected adult human, branch of ***ansa cervicalis (>1840)*** to sternohyoid muscle; in the original Latin, *nervus hypoglossus, ramus descendens, ramus musculi sternohyoidei*, p. 15.
9. *branch of hypoglossal nerve descending branch to omohyoid muscle (Arnold, 1834)*
   In macrodissected adult human, branch of ***ansa cervicalis (>1840)*** to superior belly of omohyoid muscle; in the original Latin, *nervus hypoglossus, ramus descendens, ramus musculi omohyoidei*, p. 15.
10. *branch of hypoglossal nerve descending branch to sternothyroid muscle (Arnold, 1834)*
    Synonym for macrodissected adult human *nerve to sternothyroid muscle (Andersch & Soemmerring, 1792)*; in the original Latin, *nervus hypoglossus, ramus descendens, ramus musculi sternothyroidei*, p. 15.
11. *cardiac branch of hypoglossal nerve descending branch (Arnold, 1834)*
    In macrodissected adult human, branch of ***ansa cervicalis (>1840)***, presumably to ***cardiac plexus (Keill, 1698)***; in the original Latin, *nervus hypoglossus, ramus descendens, ramus cardiacus*, p. 15.

ansa subclavia (Neubauer, 1772)

As defined for macrodissected adult human, two or more ***communicating branches of sympathetic trunk (>1840)*** between ***middle cervical ganglion (Haller, 1762)*** and ***inferior cervical ganglion (Vieussens, 1684)***, forming a loop around the subclavian artery; see Mitchell (1953, p. 223 and Fig. 104) and Williams & Warwick (1980, p. 1128). Neubauer should probably be given credit for naming it, "*ansa* circa arteriam *subclaviam*…" (his italics, p. 138), and distinguishing superficial and deep branches (Tab. 3, Fig. 3-*13,14*), in macrodissected adult human. It was clearly noted more than a century earlier by Willis; see ***[ansa subclavia (Neubauer, 1772)] (Willis, 1664)***.

TRANSLATIONS:

1. *subclavian ansa (>1840)*
   English form of ***ansa subclavia (Neubauer, 1772)***; see Mitchell (1953, p. 225). Another form is subclavian loop; see *Dorland's* (2004, p. 1067).

EARLIER REFERENCES:

Illustrated and described, not named:

1. ***[ansa subclavia (Neubauer, 1772)] (Willis, 1664)***
   Clearly illustrated and described for macrodissected adult human; see Pordage translation (1681, p. 158 and Tab. 9-Ξ), Mitchell (1953, p. 3).

Earlier synonyms:

1. *ansa of intercostal nerve (Krüger, 1758)*
   Synonym for macrodissected adult human ***ansa subclavia (Neubauer, 1772)***; in the original Latin, *nervi intercostalis ansa*, Table 2-*42*.

LATER SYNONYMS:

1. *ansularam subclavias (Camper, 1760–1762)*
   In a sentence describing macrodissected adult human, Camper wrote, "De ansularum usu nihil, ne conjecturâ quidem, detegere possumus, id constanter videmus, non modo corca subclavias…" (p. 10), clearly referring to ***ansa subclavia (Neubauer, 1772)***.
2. *ansa Vieussenii (Camper, 1760–1762)*
   Eponym for macrodissected adult human ***ansa subclavia (Neubauer, 1772)***, although Willis illustrated it clearly before Vieussens; Table 1, Figure 1-*5,7,10,9*. See ***[ansa subclavia (Neubauer, 1772)] (Willis, 1664)***.
3. *ansa magna circa subclaviam arteriam (Haller, 1772)*
   Synonym for macrodissected adult human ***ansa subclavia (Neubauer, 1772)***; p. 9-*94*.
4. *laquei subclavici (Andersch & Soemmerring, 1792)*
   Apparently synonym for macrodissected adult human right and left ***ansa subclavia (Neubauer, 1772)***; p. 175.
5. *laqueus ordinarius arteriae subclaviae (Andersch & Soemmerring, 1792)*
   Synonym for *laquei subclavici (Andersch & Soemmerring, 1792)*; pp. 189, 190.
6. *laqueus subclavicus (Andersch, 1797)*
   Singular form of *laquei subclavici (Andersch & Soemmerring, 1792)*; Vol. 2, p. 165.

ansiform lobule (Bolk, 1906)

As described for macrodissected adult human, the part of the ***cerebellar hemisphere (Willis, 1664)*** between ***simple lobule (Jansen & Brodal, 1954)*** and ***gracile lobule (>1840)***, lateral to the ***folium vermis (1840)*** of the ***cerebellar vermis (Meckel, 1817)***. It is subdivided into ***ansiform lobule crus 1 (Bock, 1906)***, adjacent to the ***simple lobule (Jansen & Brodal, 1954)***, and ***ansiform lobule 2 (Bock, 1906)***, adjacent to the ***gracile lobule (>1840)***; see Angevine et al. (1961, Fig. 24), Larsell & Jansen (1972, Fig. 118), Carpenter (1976, Fig. 14.1). It was not recognized as such by 1840.

EARLIER REFERENCES:

Earlier synonyms:

1. *semilunar lobules (>1840)*
   Synonym for macrodissected adult human ***ansiform lobule (Bolk, 1906)***; see His (1895, p. 83), *Terminologia Anatomica* (1998, p. 119).

ansiform lobule crus 1 (Bolk, 1906)

As described for macrodissected adult human, the part of the ***ansiform lobule (Bolk, 1906)*** of the ***cerebellar hemisphere (Willis, 1664)*** between ***simple lobule (Jansen & Brodal, 1954)*** and ***ansiform lobule crus 2***

(Bolk, 1906); see Angevine et al. (1961, Fig. 24), Larsell & Jansen (1972, Fig. 118), Carpenter (1976, Fig. 14.1). It was perhaps first clearly delineated as the *superior posterior lobe (Malacarne, 1776)*.

EARLIER REFERENCES:

Earlier synonyms:

1. *superior posterior lobe (Malacarne, 1776)*
   Synonym for macrodissected adult human ***ansiform lobule crus 1 (Bolk, 1906)***, p. 31; see Larsell (1967, p. 43). A Latin form is *lobus superior posterior*; see Burdach (1822, p. 294).
2. *posterior lobule of cerebellum (Chaussier, 1807)*
   According to Burdach (1822, p. 294), synonym for macrodissected adult human *superior posterior lobe (Malacarne, 1776)*; in the original French, *lobules postérieurs*, p. 91. Burdach gave the Latin form, *lobulus posterior*. Also see *superior lobule of cerebellum (Chaussier, 1807)*.
3. *superior semilunar lobe (Meckel, 1817)*
   Synonym for macrodissected adult human *superior posterior lobe (Malacarne, 1776)*, p. 465; also see translation (1832, Vol. 2, p. 428). For Latin form, *lobus superior semilunaris;* see Burdach (1822, p. 294).

PARTLY CORRESPONDS:

1. *superior external lobule (Vicq d'Azyr, 1784)*
   Apparently roughly corresponds to *superior posterior lobe (Malacarne, 1776)*, but without *deep lobule of superior fissure of Vicq d'Azyr (Dejerine & Dejerine-Klumpke, 1901)*; in the original French, *lobule supérieur et externe*, pp. 569, 571. Also see Vicq d'Azyr (1784, p. 89, Fig. 1). For Latin form, *lobulus cerebelli superior externus*, see Burdach (1822, p. 294).
2. *deep lobule of superior fissure of Vicq d'Azyr (Dejerine & Dejerine-Klumpke, 1901)*
   According to Dejerine & Dejerine-Klumpke (Fig. 339, *lobule profunde du sillon supérieur*), in current terms a region corresponding in macrodissected adult human to anterior sublobule of ***ansiform lobule crus I (Bolk, 1906)***, adjacent to ***posterior superior fissure (>1840)***; see Larsell & Jansen (1972, p. 51). It is probably referred to, though not with this exact name, in Vicq d'Azyr (1784, p. 569).

ansiform lobule crus 2 (Bolk, 1906)

As described for macrodissected adult human, the part of the ***ansiform lobule (Bolk, 1906)*** of the ***cerebellar hemisphere (Willis, 1664)*** between ***ansiform lobule crus 1 (Bolk, 1906)*** and ***gracile lobule (>1840)***; see Angevine et al. (1961, Fig. 24), Larsell & Jansen (1972, Fig. 118), Carpenter (1976, Fig. 14.1). It was perhaps first clearly delineated as the *inferior posterior lobe (Malacarne, 1776)*.

EARLIER REFERENCES:

Earlier synonyms:

1. *inferior posterior lobe (Malacarne, 1776)*
   Synonym for macrodissected adult human ***ansiform lobule crus 2 (Bolk, 1906).*** p. 42. Clarke & O'Malley (1996, p. 645) translated it *posteroinferior lobe*, whereas Larsell (1967, p. 4) translated it *superior inferior lobule*.

ansoparamedian fissure (>1840)

As described for macrodissected adult human, the groove between ***ansiform lobule crus 2 (Bolk, 1906)*** and ***gracile lobule (>1840)*** of the ***cerebellar hemisphere (Willis, 1664)***; see Angevine et al. (1961, p. 16 and Fig. 24), *Terminologia Anatomica* (1998, p. 119). It was perhaps first clearly identified by Malacarne; see ***[ansoparamedian fissure (>1840)] (Malacarne, 1776)***.

EARLIER REFERENCES:

Described, not named or illustrated:

1. ***[ansoparamedian fissure (>1840)] (Malacarne, 1776)***
   Malacarne first distinguished clearly macrodissected adult human ***ansiform lobule crus 2 (Bolk, 1906)*** and ***gracile lobule (>1840)***. Thus he first identified, without naming, ***ansoparamedian fissure (>1840)***.

Earlier synonyms:

1. *semilunar fissure (Dejerine & Dejerine-Klumpke, 1901)*
   Synonym for macrodissected adult human ***ansoparamedian fissure (>1840)***; p. 465, Figure 344. Also see Angevine et al. (1961, p. 16) and *inferior cerebellar fissure (Vic d'Azyr, 1784)*.

anterior ampullary nerve (>1840)

As described for macrodissected adult human, commonly a terminal branch of the ***rostral part of vestibular nerve (>1840)*** to the ampulla of the anterior (superior) semicircular canal; see Durward (1951, Fig. 904), *Terminologia Anatomica* (1998, p. 136). It was probably first accurately described as the *branch of major anterior vestibular nerve to ampulla of anterior semicircular canal (Langenbeck, 1826–1830)*.

EARLIER REFERENCES:

Earlier synonyms:

1. *branch of major anterior vestibular nerve to ampulla of anterior semicircular canal (Langenbeck, 1826–1830)*
   Synonym for macrodissected adult human ***anterior ampullary nerve (>1840)***; in the original Latin, *ramus nervi vestibuli anterior—major—ad ampullam canalis semicircularis anterior*, Fascicle III, Table XXIX-*7*.
2. *branch of anterior vestibular nerve to ampulla of anterior membranous semicircular canal (Langenbeck, 1826–1830)*
   Synonym for macrodissected adult human ***anterior ampullary nerve (>1840)***; in the original Latin, *ramus nervi vestibuli anterior ad ampullam canalis semicircularis membranacei anterioris*; Fascicle III, Table XXIX, Figure IX-*6*.

anterior auricular nerves (>1840)

As described for macrodissected adult human, they are usually two branches of the ***auriculotemporal nerve (Haller, 1762)*** supplying skin of the tragus and sometimes a small part of the adjacent helix; see Williams & Warwick (1980, p. 1066), *Terminologia Anatomica* (1998, p. 134). They were known to Falloppio; see ***[anterior auricular nerves (>1840)] (Falloppio, 1561)***.

EARLIER REFERENCES:

Described, not named or illustrated:

1. ***[anterior auricular nerves (>1840)] (Falloppio, 1561)***
   According to Haller (1762, p. 220 note *o*), Falloppio alluded to them for macrodissected adult human on p. 145.

Illustrated and described, not named:

1. ***[anterior auricular nerves (>1840)] (Du Verney, 1683)***
   Mentioned and partly illustrated for macrodissected adult human; Plate 13-*I*.

Earlier synonyms:

1. *posterior branch of superficial temporal branch of third branch of fifth pair (Meckel, 1748)*
   Synonym for macrodissected adult human ***anterior auricular nerves (>1840)***; in the original Latin, *ramus temporalis superficialis tertii rami Quinti paris ramus auricularis*, pp. 102–103.
2. *auricular branch of superficial temporal branch of third branch of fifth pair (Meckel, 1748)*
   Synonym for macrodissected adult human ***anterior auricular nerves (>1840)***; in the original Latin, *ramus temporalis superficialis tertii rami Quinti paris ramus posterior*, pp. 102–103.
3. *auricular nerves (Haase, 1781)*
   Synonym for macrodissected adult human ***anterior auricular nerves (>1840)***; in the original Latin, *nervi auriculares*, see Index sections 144–146. Haase described anterior and posterior terminal branches; p. 76.
4. *minor posterior branches of auricular nerve (Soemmerring, 1791)*
   Synonym for macrodissected adult human ***anterior auricular nerves (>1840)***; p. 216. For original Latin form, *ramum posteriorem minorem*, see Soemmerring (1798, p. 237).
5. *first auricular branch of superficial temporal nerve (Bock, 1817)*
   Apparently synonym for macrodissected adult human ***anterior auricular nerves (>1840)***; in the original Latin, *ramus auricularis primus*, p. 50.
6. *superior auricular fascicle of cutaneous temporal surculus of inferior maxillary branch (Bellingeri, 1818)*
   Synonym for macrodissected adult human ***anterior auricular nerves (>1840)***; in the original Latin, *fasciculus auricularis superior*, see Table I.
7. *anterior auricular branches of superficial temporal nerve (Arnold, 1834)*
   Synonym for macrodissected adult human ***anterior auricular nerves (>1840)***; in the original Latin, *nervus temporalis superficialis, rami auriculares anteriores*, p. 11.
8. *anterior auricular branches of anterior auricular nerve (Arnold, 1834)*
   Synonym for macrodissected adult human ***anterior auricular nerves (>1840)***; in the original Latin, *nervus auricularis anterior, rami auriculares anteriores*, p. 11.
9. *external auricular branches of superficial temporal nerve (Todd, 1836–1839)*
   Synonym for macrodissected adult human ***anterior auricular nerves (>1840)***; p. 294.
10. *inferior branch of auriculotemporal nerve (Cruveilhier, 1836)*
    Synonym for macrodissected adult human ***anterior auricular nerves (>1840)***; in the original French, *branche inférieure*, p. 933.
11. *descending branch of auriculotemporal nerve (Cruveilhier, 1836)*
    Synonym for macrodissected adult human ***anterior auricular nerves (>1840)***; in the original French, *branche descendante*, p. 933.
12. *auricular branch of auriculotemporal nerve (Cruveilhier, 1836)*
    Synonym for macrodissected adult human ***anterior auricular nerves (>1840)***; in the original French, *branche auriculaire*, p. 933.

anterior branch of great auricular nerve (Bock, 1827)

As described for macrodissected adult human, it innervates skin of the face over the parotid gland and communicates in the substance of the gland with the ***cervical branch of facial nerve (>1840)***; see Williams & Warwick (1980, p. 1092) and Schwalbe (1881, Fig. 468-*6,7*). For Bock's use in macrodissected adult human see Table III-*4*. It was known to Galen; see ***[anterior branch of great auricular nerve (Bock, 1827)] (Galen, c192)***.

TRANSLATIONS:

1. *ramus anterior nervi auricularis magni (Bock, 1827)*
   Original Latin form of ***anterior branch of great auricular nerve (Bock, 1827)***; Table III-*4*.

EARLIER REFERENCES:

Described, not named or illustrated:

1. ***[anterior branch of great auricular nerve (Bock, 1827)] (Galen, c192)***
   Mentioned for macrodissected adult beef, pig, and/or macaque but not human; see Duckworth translation (1962, p. 225).

Illustrated, not named or described:

1. ***[anterior branch of great auricular nerve (Bock, 1827)] (Eustachi, 1552)***
   Clearly illustrated for macrodissected adult human; see Albinus edition (1761, Tab. 21/2-*h*). Du Verney probably illustrated its origin for macrodissected adult human (1683, Pl. 14-*4,7*).

Earlier synonyms:

1. *anterior branch of auricular nerve of third pair of cervical nerves (Meckel, 1753)*
   Synonym for macrodissected adult human ***anterior branch of great auricular nerve (Bock, 1827)***; p. 99.
2. *anterior branch of principal auricular nerve (Bang, 1770)*
   Synonym for macrodissected adult human ***anterior branch of great auricular nerve (Bock, 1827)***; in the

original Latin, *anterior ramus nervus auricularis principalis*, Figure I-*30,31*.

3. *anterior branch of greater posterior auricular nerve (Bang, 1770)*
   Synonym for macrodissected adult human ***anterior branch of great auricular nerve (Bock, 1827)***; in the original Latin, *anterior ramus nervus auricularis magnus posterior*, Figure I-*30,31*.
4. *lesser posterior auricular nerve (Neubauer, 1772)*
   Small component of macrodissected adult human *posterior auricular nerve (Neubauer, 1772)*, presumably ***anterior branch of great auricular nerve (Bock, 1827)***; in the original Latin, *parvum nervum auricularem posteriorem*, Table 1-*182*; also see Schwalbe (1881, Fig. 468-*6,7*).
5. *anterior twig of great cervical auricular nerve (Soemmerring, 1791)*
   Synonym for macrodissected adult human ***anterior branch of great auricular nerve (Bock, 1827)***; p. 269.
6. *anterior branches of auricular branch of cervical plexus (Cloquet, 1816)*
   Synonym for macrodissected adult human ***anterior branch of great auricular nerve (Bock, 1827)***; p. 640.

LATER SYNONYMS:

1. *facial branch of great auricular nerve (Arnold, 1834)*
   Synonym for macrodissected adult human ***anterior branch of great auricular nerve (Bock, 1827)***; in the original Latin, *nervus auricularis magnus ramus facialis*, Table IX-*43,44*.
2. *facial branchlets of auricular nerve (Cruveilhier, 1836)*
   Synonym for macrodissected adult human ***anterior branch of great auricular nerve (Bock, 1827)***; in the original French, *filets faciaux*, p. 783.
3. *parotid branchlets of auricular nerve (Cruveilhier, 1836)*
   Synonym for *facial branchlets of auricular nerve (Cruveilhier, 1836)*; in the original French, *filets parotidiens*, p. 783.

PARTLY CORRESPONDS:

1. *lateral cutaneous nerve of face of anterior branch of great auricular nerve (Meckel, 1753)*
   Dorsal (posterior) branch of macrodissected adult human ***anterior branch of great auricular nerve (Bock, 1827)***; in the original French, *le nerf cutané lateral du visage*, Table 1-*264* (also see p. 99).

anterior branch of lateral cerebral sulcus (>1840)

As described for macrodissected adult human, the rostral extension of the ***lateral cerebral sulcus (>1840)*** lying between ***straight gyrus (Valentin, 1841)*** ventrally and ***triangular part of inferior frontal gyrus (>1840)*** dorsally; see Williams & Warwick (1980, p. 984, Fig. 7.111A), *Terminologia Anatomica* (1998, p. 125). It was probably first alluded to accurately as the *anterior fissure (Burdach, 1822)*.

EARLIER REFERENCES:

Earlier synonyms:

1. *anterior fissure (Burdach, 1822)*
   May correspond to macrodissected adult human ***anterior branch of lateral cerebral sulcus (>1840)***. According to Foster (1892, p. 1597), it is a vaguely indicated adult human cerebral fissure corresponding to *presylvian fissure of Wilder*, which was then defined as *anterior limb* of ***lateral cerebral fissure (>1840)***, forming frontal boundary of *operculum (Burdach, 1822)*; see Foster, (1892, p. 1601). Meckel (1817) may have mentioned it earlier; see translation (1832, Vol. 2, p. 442). If it corresponds to ***anterior branch of lateral cerebral sulcus (>1840)***, it probably corresponds to rostrally directed part of *cruciform sulcus (Rolando, 1831)*, Figure 1-*8*. However, *anterior fissure (Burdach, 1822)* may correspond instead to ***ascending branch lateral cerebral sulcus (>1840)***; see Nieuwenhuys et al. (2008, Fig. 3.2-*27*). Meyer (1971, p. 130) suggested that *anterior fissure (Burdach, 1822)* may instead correspond to ***precentral sulcus (>1840)***, but this seems doubtful. Vicq d'Azyr (1784, pp. 505–506, and accompanying plate) may have alluded to *anterior fissure (Burdach, 1822)*. Burdach gave the German form, *Vorderspalte*; p. 166 and Table V-*9*.

anterior branch of lateral cutaneous branch of intercostal nerves (>1840)

As described for macrodissected adult human, the ventrally (anteriorly) directed branch of the ***lateral cutaneous branch of intercostal nerves (>1840)***; see Durward (1951, Fig. 935), Williams & Warwick (1980, p. 1103). It was probably first clearly described as *anterior branch of lateral cutaneous nerve of intercostal nerve (Bock, 1827)*.

EARLIER REFERENCES:

Earlier synonyms:

1. *anterior branch of lateral cutaneous nerve of intercostal nerve (Bock, 1827)*
   Synonym for ***anterior branch of lateral cutaneous branch of intercostal nerves (>1840)***; in the original Latin, *ram. anterior nervi cutanei lateralis intercostalis*, Table III-*27*.
2. *anterior filament of perforating branch of intercostal branches of dorsal nerves (Cruveilhier, 1836)*
   Synonym for macrodissected adult human ***anterior branch of lateral cutaneous branch of intercostal nerves (>1840)***; in the original French, *filet antérieur*, p. 825.

PARTLY CORRESPONDS:

1. *cutaneous branches of lateral pectoral nerve (Bock, 1827)*
   Apparently ***anterior branch of lateral cutaneous branch of intercostal nerve (>1840)*** of 2nd ***lateral cutaneous branch of intercostal nerve (>1840)***; in the original Latin, *rami cutanei nervi lateralis pectoris*, Table II-*80*.
2. *anterior branch of lateral pectoral nerve (Bock, 1827)*
   Synonym for macrodissected adult human ***anterior branch of lateral cutaneous branch of intercostal nerve (>1840)*** of 3rd–7th ***lateral cutaneous branches of intercostal nerves (>1840)***; in the original Latin, *ram. anterior nervi [cutanei] lateralis pectoris cutanei*, see Table II:*81–89*.
3. *anterior branch of lateral abdominal cutaneous nerve (Bock, 1827)*

Synonym for macrodissected adult human ***anterior branch of lateral cutaneous branch of intercostal nerve (>1840)*** of 8th–11th ***lateral cutaneous branches of intercostal nerves (>1840)***; in the original Latin, *ram. anterior nervi cutanei abdominis lateralis*, see Table II-92.

4. *anterior branch of lateral pectoral cutaneous nerve of intercostal nerve (Bock, 1827)*
   Synonym for macrodissected adult human ***anterior branch of lateral cutaneous branch of intercostal nerve (>1840)*** of 3rd–7th ***lateral cutaneous branch of intercostal nerves (>1840)***; in the original Latin, *ram. anterior nervi cutanei lateralis pectoris intercostalis*, see Table III-29.
5. *cutaneous nerves of intercostal nerve (Bock, 1827)*
   Synonym for macrodissected adult human ***anterior branch of lateral cutaneous branch of intercostal nerve (>1840)***, here for 11th ***lateral cutaneous branch of intercostal nerve (>1840)***; in the original Latin, *nervi cutanei intercostalis undecimi*, Table IV-56.
6. *inferior intercosto-humeral nerve (Knox, 1832)*
   In macrodissected adult human, apparently ***anterior branch of lateral cutaneous branch of intercostal nerve (>1840)*** of 4th ***lateral cutaneous branch of intercostal nerve (>1840)***, to skin overlying serratus anterior muscle; Plate XIX-27.

anterior branch of mandibular nerve (>1840)

As described for macrodissected adult human, the smaller of the two major divisions of the ***mandibular nerve (>1840)*** giving off one sensory ***nerve (Herophilus, c335–c280 BC)***, the ***buccal nerve (Meckel, 1748)***, and three substantial motor ***nerves (Herophilus, c335–c280 BC)***: the ***masseteric nerve (Meckel, 1748)***, ***deep temporal nerves (Haase, 1781)***, and ***lateral pterygoid nerve (>1840)***; see Durward (1951, pp. 1026–1029, Fig. 899) and Williams & Warwick (1980, p. 1066), who called it a trunk instead of branch—Hamilton called it a division (1976, p. 624). It was known to Vesalius; see *tendril-like offshoot of thicker root of third pair (Vesalius, 1543a)*.

EARLIER REFERENCES:

Earlier synonyms:

1. *tendril-like offshoot of thicker root of third pair (Vesalius, 1543a)*
   Roughly synonymous with macrodissected adult human ***anterior branch of mandibular nerve (>1840)***; see Richardson & Carman translation (2002, p. 189).
2. *first branch of fourth conjugation of nerves of brain (Crooke, 1615)*
   Roughly synonymous with macrodissected adult human ***anterior branch of mandibular nerve (>1840)***; p. 486. Crooke's description is a translation of Bauhin (1605).
3. *anterior branch of third branch of fifth cerebral pair (Albinus, 1744)*
   Synonym for macrodissected adult human ***anterior branch of mandibular nerve (>1840)***; in the original Latin, *ramus anterior tertii rami nervi quinti paris cerebri*, Table 18, Figures 1,3,4,5-K.
4. *superior branch of inferior maxillary nerve (Schaarschmidt, 1750)*
   Synonym for macrodissected adult human ***anterior branch of mandibular nerve (>1840)***; pp. 26–27.
5. *anterior branch of trunk of maxillary nerve (Le Cat, 1768)*
   Synonym for macrodissected adult human ***anterior branch of mandibular nerve (>1840)***; Plate VII, Figure 1-5.
6. *minor branches of inferior maxillary nerve (Loder, 1778)*
   Synonym for macrodissected adult human ***anterior branch of mandibular nerve (>1840)***; in the original Latin, *ramos minores*, p. 17.
7. *superior fascicle of inferior maxillary nerve (Günther, 1786)*
   Synonym for macrodissected adult human ***anterior branch of mandibular nerve (>1840)***; in the original Latin, *fasciculum superiorem*, p. 49.
8. *minor fascicle of inferior maxillary nerve (Günther, 1786)*
   Synonym for macrodissected adult human ***anterior branch of mandibular nerve (>1840)***; in the original Latin, *fasciculum minorem*, p. 49.
9. *upper anterior branch of inferior maxillary nerve (Meckel, 1817)*
   Synonym for macrodissected adult human ***anterior branch of mandibular nerve (>1840)***; see translation (1832, Vol. 3, p. 71).
10. *muscular branch of inferior maxillary nerve (Jacobson, 1818)*
    Essentially synonym for macrodissected adult mammalian ***anterior branch of mandibular nerve (>1840)***; in the original Latin, *nervus maxillaris inferior ramus muscularis*, p. 18.
11. *superior primary branch of inferior maxillary nerve (Quain, 1832)*
    Synonym for macrodissected adult human ***anterior branch of mandibular nerve (>1840)***; p. 675.
12. *muscular division of inferior maxillary nerve (Quain & Wilson, 1839)*
    Synonym for macrodissected adult human ***anterior branch of mandibular nerve (>1840)***; Plate XIII, Figure 2-x.

PARTLY CORRESPONDS:

1. *external branches of inferior maxillary nerve (Cruveilhier, 1836)*
   Macrodissected adult human ***deep temporal nerves (Haase, 1781)***, ***masseteric nerve (Meckel, 1748)***, and ***buccal nerve (Meckel, 1748)*** considered together; in the original French, *branches externes*, p. 930.

anterior branch of medial cutaneous nerve of forearm (>1840)

As described for macrodissected adult human, it is larger than the ***posterior branch of medial cutaneous nerve of forearm (>1840)*** and descends on the front of the medial side of the forearm, supplying skin as far as the wrist and

communicating with the ***palmar branch of ulnar nerve (Soemmerring, 1791)***; see Williams & Warwick (1980, p. 1097 and Fig. 7.201, branch to the left), *Terminologia Anatomica* (1998, p. 138). It was first distinguished clearly by Eustachi; see ***[anterior branch of medial cutaneous nerve of forearm (>1840)] (Eustachi, 1552)***.

EARLIER REFERENCES:

Illustrated, not named or described:

1. ***[anterior branch of medial cutaneous nerve of forearm (>1840)] (Eustachi, 1552)***
   Illustrated for macrodissected adult human; see Albinus edition (1761, Tab. 21/2-*16* upper branch).

Described, not named or illustrated:

1. ***[anterior branch of medial cutaneous nerve of forearm (>1840)] (Winslow, 1733)***
   Described for macrodissected adult human; Section VI, no. 240, p. 83.

Earlier synonyms:

1. *palmar cutaneous nerve (Klint, 1784)*
   Synonym for macrodissected adult human ***anterior branch of medial cutaneous nerve of forearm (>1840)***; in the original Latin, *nervus cutaneus palmaris*, p. 65. Klint ascribed the term to Wrisberg without citation, presumably from his lectures.
2. *palmar cutaneous nerve of Wrisberg (Frotscher, 1788)*
   Eponym for macrodissected adult human *palmar cutaneous nerve (Klint, 1784)*; in the original Latin, *nervum cutaneum palmarem Wrisbergii*, p. 92, where Frotscher referred to Klint (1784, § XXIX), [p. 65].
3. *external branch of cutaneous nerve (Fyfe, 1800)*
   Synonym for macrodissected adult human ***anterior branch of medial cutaneous nerve of forearm (>1840)***; Vol. 2, p. 308.
4. *ramus magis palmaris nervi (Loder, 1803)*
   Synonym for macrodissected adult human ***anterior branch of medial cutaneous nerve of forearm (>1840)***; Table CLXXVIII-*144*.
5. *anterior branch of internal cutaneous nerve (Loder, 1803)*
   Synonym for macrodissected adult human ***anterior branch of medial cutaneous nerve of forearm (>1840)***; in the original Latin, *nervi cutanei interni ramus anterior*, Table CLXXVIII, Figure 2-*13*.
6. *middle cutaneous branch of internal cutaneous nerve (Caldani, 1813, 1814)*
   Synonym for macrodissected adult human ***anterior branch of medial cutaneous nerve of forearm (>1840)***; in the original Latin, *ramus medius cutaneus a nervo cutaneo interno*, Table CCLVIII, Figure 1-*29*.
7. *middle cutaneous nerve (Caldani, 1813, 1814)*
   Synonym for *middle cutaneous branch of internal cutaneous nerve (Caldani, 1813, 1814)*; in the original Latin, *nervus cutaneum medium*, Table CCLVIII, Figure 1-*30*.
8. *palmar branch of medial cutaneous nerve (Bock, 1827)*
   Synonym for macrodissected adult human ***anterior branch of medial cutaneous nerve of forearm (>1840)***; in the original Latin, *nervus cutaneus medius ramus palmaris*, Table II-*29,33*.
9. *palmar branch of major internal cutaneous nerve (Bock, 1827)*
   Synonym for macrodissected adult human ***anterior branch of medial cutaneous nerve of forearm (>1840)***; in the original Latin, *nervus cutaneus internus major ramus palmaris*, Table II-*29,33*.

PARTLY CORRESPONDS:

1. *branches of middle cutaneous nerve joining volar cutaneous branch of median nerve (Caldani, 1813, 1814)*
   For macrodissected adult human, two branches of ***anterior branch of medial cutaneous nerve of forearm (>1840)*** joining ***palmar branch of median nerve (Bock, 1827)***; in the original Latin, *rami nervi cutanei medii conjuncti cum ramus cutaneus volaris nervi mediani*, Table CCLVIII, Figure 1-*35*.
2. *palmar cutaneous branch of middle cutaneous branch of internal cutaneous nerve (Caldani, 1813, 1814)*
   For macrodissected adult human, extension of ***anterior branch of medial cutaneous nerve of forearm (>1840)*** to proximal part of palm; in the original Latin, *ramus cutaneus palmaris a ramo medio cutaneo derivatus*, Table CCLVIII, Figure 1-*39*.
3. *cutaneous palmar branch of middle cutaneous branch from internal cutaneous nerve (Knox, 1832)*
   Synonym for macrodissected adult human *palmar cutaneous branch of middle cutaneous branch of internal cutaneous nerve (Caldani, 1813, 1814)*; Table XX-*14*.

anterior branch of obturator nerve (Haase, 1781; Martin, 1781)

As described for macrodissected adult human, it has a ***cutaneous branch of obturator nerve (>1840)*** contributing to the ***subsartorial plexus (>1840)*** and ***muscular branches of anterior branch of obturator nerve (>1840)*** supplying the adductor longus, gracilis, usually the adductor brevis, and often the pectineus muscles; see Durward (1951, pp. 1092–1094), Williams & Warwick (1998, p. 1108). For Haase's use in macrodissected adult human, see p. 106; for Martin's, see p. 231. It was probably first identified as the *higher part of third deep nerve of thigh (Galen, c177)*.

TRANSLATIONS:

1. *nervus obturatorius ramus anterior (Haase, 1781)*
   Original Latin form of ***anterior branch of obturator nerve (Haase, 1781; Martin, 1781)***; p. 106.

EARLIER REFERENCES:

Earlier synonyms:

1. *higher part of third deep nerve of thigh (Galen, c177)*
   Probably corresponds to ***anterior branch of obturator nerve (Haase, 1781; Martin, 1781)***, with branch to gracilis muscle that Galen described for macrodissected adult beef, pig, and/or macaque but not human; see Singer translation (1999, p. 85). Eustachi (1552; see Albinus edition, 1761, Tab. 19/2-2) and Vieussens (1684, Tab. 28-*73,74*) probably illustrated part of it for macrodissected adult human.

LATER SYNONYMS:

1. *superior branch of obturator nerve (Günther, 1786)*
   Synonym for macrodissected adult human ***anterior branch of obturator nerve (Haase, 1781; Martin, 1781)***; in the original Latin, *r. superiorem*, p. 82.
2. *superficial branch of obturator nerve (Meckel, 1817)*
   Synonym for macrodissected adult human ***anterior branch of obturator nerve (Haase, 1781; Martin, 1781)***; see translation (1832, Vol. 3, p. 16).

anterior cerebellar notch (Chaussier, 1807)

As described for macrodissected adult human, the wide and shallow depression on the surface of the ***cerebellum (Aristotle)*** in the median plane. It is formed near the ***central lobule (Burdach, 1822)*** and is occupied by the ***inferior colliculi (Haller, 1762)*** and ***superior cerebellar peduncles (Procháska, 1800)***; see Carpenter (1976, Fig. 2.23, labeled *anterior incisure*), *Dorland's* (2003, pp. 920, 1280). For Chaussier's use in macrodissected adult human see pp. 78–79. It was first delineated as the *cliff (Malacarne, 1776)*.

TRANSLATIONS:

1. *échancrure antérieure (du cervelet) (Chaussier, 1807)*
   Original French form of ***anterior cerebellar notch (Chaussier, 1807)***; pp. 78–79.
2. *incisura anterior cerebelli (Burdach, 1822)*
   Latin form of macrodissected adult human ***anterior cerebellar notch (Chaussier, 1807)***; p. 49.
3. *incisura cerebelli anterior (Burdach, 1822)*
   Current Latin form of *incisura anterior cerebelli (Burdach, 1822)*; see *Dorland's* (2003, p. 920).

EARLIER REFERENCES:

Earlier synonyms:

1. *cliff (Malacarne, 1776)*
   Synonym for macrodissected adult human ***anterior cerebellar notch (Chaussier, 1807)***; see Clarke & O'Malley translation (1996, p. 643).
2. *anterior cerebellar fissure (Reil, 1807–1808a)*
   Synonym for macrodissected adult human ***anterior cerebellar notch (Chaussier, 1807)***; see Mayo translation (1823, Tab. I, Fig. I-*e,h*).
3. *semilunar cerebellar fissure (Reil, 1807–1808a)*
   Synonym for macrodissected adult human ***anterior cerebellar notch (Chaussier, 1807)***; see Mayo translation (1823, Tab. I, Fig. I-*e,h*).

LATER SYNONYMS:

1. *anterior semilunar notch (Tiedemann, 1816)*
   Synonym for macrodissected fetal human *semilunar cerebellar fissure (Reil, 1807–1808a)*; see translation (1826, p. 63).
2. *semilunar notch (Ranson, 1920)*
   Synonym for macrodissected adult human *anterior semilunar notch (Tiedemann, 1816)*; p. 197.

anterior cerebral artery plexus (Chaussier, 1789)

As described for macrodissected adult human, an extension of the ***internal carotid plexus (>1840)*** along the anterior cerebral artery and its branches; see Mitchell (1953, pp. 219–220). For Chaussier's observations and use of name in macrodissected human, see *Table synoptic du nerf tri-splanchnique*.

anterior cingulate region (>1840)

As described with cellular architecture for adult human, a subdivision of the ***cingulate region (>1840)*** between ***infralimbic area (Rose & Woolsey, 1948)*** rostrally and ***posterior cingulate region (>1840)*** caudally, and further divided into ***dorsal anterior cingulate area (Brodmann, 1909)***, or *area 32 (Brodmann, 1909)* and ***ventral anterior cingulate area (Brodmann, 1909)***, or *area 24 (Brodmann, 1909)*. See Nieuwenhuys et al. (2008, Fig. 12.13). It was not described by 1840.

anterior commissure (Lieutaud, 1742)

As described in macrodissected adult human and mammal generally with histological methods for ***axons (Kölliker, 1896)***, a part of the ***cerebral cortex white matter (>1840)*** crossing the median plane in the ***terminal lamina (Burdach, 1822)*** associated with the rostral and dorsal end of the ***hypothalamus (Kuhlenbeck, 1927)*** and having two major components, ***olfactory limb of anterior commissure (>1840)*** and ***temporal limb of anterior commissure (>1840)***; see Williams & Warwick (1980, p. 997), Nieuwenhuys et al. (2008, p. 596). For Lieutaud's use in macrodissected adult human, see p. 392. It was known to Eustachi; see ***[anterior commissure (Lieutaud, 1742)] (Eustachi, 1552)***.

EARLIER REFERENCES:

Illustrated, not named or described:

1. ***[anterior commissure (Lieutaud, 1742)] (Eustachi, 1552)***
   Illustrated crossing just rostral to macrodissected adult human ***postcommissural fornix (Loo, 1931)*** in plates not published until 1714, and without text. In his edition of the plates, Albinus (1744, p. 97) called ***anterior commissure (Lieutaud, 1742)*** the *portio transversa* of what corresponds to ***postcommissural fornix (Loo, 1931)***. Also see *transverse medullary process (Willis, 1664)*.
2. ***[anterior commissure (Lieutaud, 1742)] (Steno, 1669)***
   First accurate published illustration, shown crossing median plane in first published midsagittal view of ***brain (Smith Papyrus, c1700 BC)***, for macrodissected adult human; Plates I, II. Also see *transverse medullary process (Willis, 1664)*.

Earlier synonyms:

1. *transverse cord (Riolan, 1649)*
   First mention in writing of ***anterior commissure (Lieutaud, 1742)*** for macrodissected adult human; see Burdach (1822, p. 361), Bell (1802, p. 43), Meyer (1971, p. 14). Riolan wrote, "being spread out like a beam it [*septum lucidum (Galen, c177)*] bears up the Vaulted Arch of the Ventricles [***fornix (Vesalius, 1543a)***], the fore most [rostral] bifurcation cleaves

unto a little transverse cord, which resembles the Optick Nerve in thickness and in Color." (see translation, 1657, pp. 126–127). In the original Latin, *funiculus transversus*.

2. *processus transversus corpora striata conjugens (Bartholin, 1686)*
   Synonym for macrodissected adult human ***anterior commissure (Lieutaud, 1742)***; p. 479, see Haller (1762, p. 56), Bartholin (1673, p. 479).

LATER SYNONYMS:

1. *portio transversa, qua radices fornicis conjunctae sunt (Albinus, 1744)*
   Synonym for macrodissected adult human ***anterior commissure (Lieutaud, 1742)***; Table 17, Figure 6-*I*. Also see Burdach (1822, p. 361).
2. *anterior cerebral commissure (Tarin, 1753)*
   Synonym for macrodissected adult human ***anterior commissure (Lieutaud, 1742)***; in the original Latin, *commissura anterior cerebri*, p. 24. Gordon (1815, p. 100) used English form, *anterior commissure of brain*, for macrodissected adult human.
3. *chorda Willisii (Santorini, 1775)*
   Eponym for macrodissected adult human ***anterior commissure (Lieutaud, 1742)***; p. 39, see Burdach (1822, p. 361).
4. *junction of anterior convolutions of middle lobe (Gall & Spurzheim, 1810)*
   Synonym for macrodissected adult human ***anterior commissure (Lieutaud, 1742)***; in the original French, *réunion des circonvolutions antérieures du lobe moyen*, Table VI-*61*. Burdach (1822, p. 361) gave the Latin, *reunio gyrorum anteriorum lobi medii.*
5. *commissure of hemispheres (Carus, 1814)*
   Synonym for macrodissected adult human ***anterior commissure (Lieutaud, 1742)***; in the original German, *Commissur der Hemisphären*, p. 199.
6. *commissure of olfactory nerve ganglia (Carus, 1814)*
   Synonym for macrodissected adult fish ***anterior commissure (Lieutaud, 1742)***; in the original German, *Commissur der Riechnervenganglien*, Table 2-*v*.
7. *commissure of olfactory ganglion (Schönlein, 1816)*
   According to Burdach (1822, p. 361), synonym for macrodissected adult human ***anterior commissure (Lieutaud, 1742)***; in the original German, *Commissur der Riechganglien*.
8. *great commissure (Meckel, 1817)*
   According to Burdach (1822, p. 361), synonym for macrodissected adult human ***anterior commissure (Lieutaud, 1742)***; in the original German, *grosse Commissur*; in Latin, *commissura magna*; Vol. 3, p. 519; also see translation (1832, Vol. 2, p. 457). Meckel pointed out that in adult human it is slightly thicker than the ***optic nerve (Vicq d'Azyr, 1786)***; also see *transverse cord (Riolan, 1649)*.
9. *commissura magna (Meckel, 1817)*
   Latin form of *great commissure (Meckel, 1817)*.
10. *anterior junction of middle lobe (Knox, 1832)*
    Synonym for macrodissected adult human ***anterior commissure (Lieutaud, 1742)***; Supplemental Plate IV-*29*.
11. *anterior commissure of middle lobe (Knox, 1832)*
    Synonym for macrodissected adult human ***anterior commissure (Lieutaud, 1742)***; Supplemental Plate V-*9.a*.
12. *commissure of anterior cerebral ganglia (Combe et al., 1838)*
    Synonym for macrodissected adult human ***anterior commissure (Lieutaud, 1742)***; p. xxix.
13. *commissure of corpus striatum (Combe et al., 1838)*
    Synonym for macrodissected adult human ***anterior commissure (Lieutaud, 1742)***; p. xxix.
14. *cord (Gerdy, 1838)*
    Synonym for macrodissected adult human ***anterior commissure (Lieutaud, 1742)***; in the original French, *le cordon*, p. 260.
15. *rostral commissure (>1840)*
    Synonym for macrodissected adult human ***anterior commissure (Lieutaud, 1742)***; see *Nomina Anatomica* (1983, p. A72); in the original Latin, *commissura rostralis*.

PARTLY CORRESPONDS:

1. *commissura (Willis, 1664)*
   Willis used Latin term *commissura* (p. 159) for "joining together" (Pordage translation, 1681, p. 103) across median plane of *transverse medullary process (Willis, 1664, p. 61)* or ***terminal stria (Wenzel & Wenzel, 1812)***, although what he actually described as *commissura* was almost certainly segment of ***anterior commissure (Lieutaud, 1742)*** in median plane.
2. *commissura crassioris nervi aemula (Vieussens, 1684)*
   Corresponds to segment of macrodissected adult human ***anterior commissure (Lieutaud, 1742)*** near median plane; Table VIII-*b*. Also see Bell (1802, p. 24), Meyer (1971, p. 20).
3. *corpus medullare crassiorem nervum referens (Vieussens, 1684)*
   Synonym for *commissura crassioris nervi aemula (Vieussens, 1684)*; see Meyer (1971, p. 16).
4. *tractus medullaris transversus et nonnihil obliquus (Vieussens, 1684)*
   Corresponds to lateral regions of macrodissected adult human ***anterior commissure (Lieutaud, 1742)***; see Meyer (1971, p. 16).
5. *anterior commissure central part (Reil, 1809c)*
   Corresponds to segment of macrodissected adult human ***anterior commissure (Lieutaud, 1742)*** near median plane, defined by interval between right and left ***post-commissural fornix (Loo, 1931)***; see Mayo translation (1823, Tab. XI-*o*, p. 108).

anterior cutaneous branch of iliohypogastric nerve (>1840)

As described for macrodissected adult human, it supplies small branches to the internal oblique and transversus muscles and then innervates abdominal skin above (rostral to) the pubis; see Williams & Warwick (1980, p. 1106 and Fig. 7.206), *Terminologia Anatomica* (1998, p. 139). It is sometimes considered a ***lumbar plexus ventral division (Paterson, 1887)***; see Durward (1951, Fig. 937),

Carpenter (1976, p. 181 and Fig. 7.19). It was first clearly delineated by Eustachi; see ***[anterior cutaneous branch of iliohypogastric nerve (>1840)] (Eustachi, 1552)***.

EARLIER REFERENCES:

Illustrated, not named or described:

1. ***[anterior cutaneous branch of iliohypogastric nerve (>1840)] (Eustachi, 1552)***
   Clearly illustrated for macrodissected adult human; see Albinus edition (1761, Tab. 21/2-*x,y,ζ*).

Described, not named or illustrated:

1. ***[anterior cutaneous branch of iliohypogastric nerve (>1840)] (Meckel, 1817)***
   Vaguely described without naming for macrodissected adult human; see translation (1832, Vol. 3, p. 14).

Earlier synonyms:

1. *internal branch of iliohypogastric nerve (Bock, 1827)*
   Synonym for macrodissected adult human ***anterior cutaneous branch of iliohypogastric nerve (>1840)***; in the original Latin, *Ram. internus nervi ileo-hypogastrici*, Table I, Figure 2-*58,59*.
2. *anterior branch of external cutaneous branch of lumbar plexus (Quain, 1828)*
   Synonym for macrodissected adult human ***anterior cutaneous branch of iliohypogastric nerve (>1840)***; p. 285.
3. *abdominal branch proper of greater abdominal branch of lumbar plexus (Cruveilhier, 1836)*
   Synonym for macrodissected adult human ***anterior cutaneous branch of iliohypogastric nerve (>1840)***; in the original French, *rameau abdominal proprement dit*, p. 834.

anterior cutaneous branch of intercostal nerves (>1840)

As described for macrodissected adult human, the terminal branches of the ***intercostal nerves (Vesalius, 1543a)*** that may be divided into thoracic and abdominal endings arising from the rostral (upper) and caudal (lower) ***intercostal nerves (Vesalius, 1543a)*** respectively; see Williams & Warwick (1980, pp. 1103–1105), *Nomina Anatomica* (1983, p. A77), *Terminologia Anatomica* (1998, p. 139). The feature was known to Galen; see ***[anterior cutaneous branch of intercostal nerves (>1840)] (Galen, c192)***.

EARLIER REFERENCES:

Described, not named or illustrated:

1. ***[anterior cutaneous branch of intercostal nerves (>1840)] (Galen, c192)***
   Described for macrodissected adult beef, pig, and/or macaque but not human; see Duckworth translation (1962, p. 259).

Illustrated and described, not named:

1. ***[anterior cutaneous branch of intercostal nerves (>1840)] (Vesalius, 1543a)***
   Described for macrodissected adult human without naming them as such; see Richardson & Carman translation (2002, p. 206). They were beautifully illustrated for macrodissected adult human by Eustachi (1552); see Albinus edition (1761, Tab. 21).

Earlier synonyms:

1. *cutaneous nerve of anterior thoracic nerves (Günther, 1786)*
   Synonym for macrodissected adult human ***anterior cutaneous branch of intercostal nerves (>1840)***; p. 72.
2. *anterior subcutaneous branch of intercostal branch of thoracic nerve (Bock, 1827)*
   Synonym for macrodissected adult human ***anterior cutaneous branch of intercostal nerve (>1840)***; in the original Latin, *ram. subcutaneus anterior*, Table I, Figure 2-*52*.
3. *internal branch of dorsal nerve (Swan, 1830)*
   Synonym for macrodissected adult human ***anterior cutaneous branch of intercostal nerve (>1840)***; Plate XVII.
4. *anterior perforating filaments of intercostal branch of intercostal branches of dorsal nerves (Cruveilhier, 1836)*
   Synonym for macrodissected adult human ***anterior cutaneous branch of intercostal nerves (>1840)***; in the original French, *filets perforans antérieurs*, p. 824.
5. *anterior perforating branches of dorsal nerves (Cruveilhier, 1836)*
   Synonym for macrodissected adult human ***anterior cutaneous branch of intercostal nerves (>1840)***; in the original French, *rameaux perforans antérieurs*, p. 830.
6. *anterior cutaneous branches of dorsal nerves (Cruveilhier, 1836)*
   Synonym for *anterior perforating branches of dorsal nerves (Cruveilhier, 1836)*; in the original French, *rameaux cutanés antérieurs*, p. 830.

PARTLY CORRESPONDS:

1. *pectoral anterior subcutaneous branch of intercostal branch of thoracic nerve (Bock, 1827)*
   As described for macrodissected adult human, ***anterior cutaneous branch of intercostal nerve (>1840)*** of 2nd ***intercostal nerve (Vesalius, 1543a)***; in the original Latin, *ram. subcutaneus anterior pectoris*, Table I, Figure 2-*48*.
2. *pectoral anterior cutaneous branch of intercostal nerves (Bock, 1827)*
   Synonym for *pectoral anterior subcutaneous branch of intercostal branch of thoracic nerve (Bock, 1827)*; in the original Latin, *nerv. cutaneus anterior pectoris*; Table II-*90*.
3. *internal subcutaneous branch of third subcostal nerve (Bock, 1827)*
   As illustrated for macrodissected adult human, lateral branch of ***anterior cutaneous branch of intercostal nerve (>1840)*** of 3rd ***intercostal nerve (Vesalius, 1543a)***; in the original Latin, *ram. subcutaneus internus nervi subcostalis tertii*; Table V, Figure 1-*50*.

anterior cutaneous branches of femoral nerve (Quain & Wilson, 1839)

As described for macrodissected adult human, they innervate skin on the dorsal side (front) of the thigh as

far distally as the knee, where they end in the ***patellar plexus (>1840)***; see Williams & Warwick (1980, p. 1109, called *intermediate cutaneous nerve of thigh*). For Quain & Wilson's use in macrodissected adult human see Plate XXIII-*B,a*. They were first described as the *second cutaneous nerve at beginning of thigh (Galen, c177)*.

EARLIER REFERENCES:

Earlier synonyms:

1. *second cutaneous nerve at beginning of thigh (Galen, c177)*
   Synonym for ***anterior cutaneous branches of femoral nerve (Quain & Wilson, 1839)*** in macrodissected adult beef, pig, and/or macaque but not human; see Singer translation (1999, p. 83). They were clearly illustrated for macrodissected adult human by Eustachi (1552); see Albinus edition (1761, Tab. 21-*P*).
2. *most anterior branch of crural nerve forming cutaneous nerves (Winslow, 1733)*
   Synonym for macrodissected adult human ***anterior cutaneous branches of femoral nerve (Quain & Wilson, 1839)***; Section VI, p. 91.
3. *minor superior cutaneous branch of anterior femoral nerve (Soemmerring, 1798)*
   Synonym for macrodissected adult human ***anterior cutaneous branches of femoral nerve (Quain & Wilson, 1839)***; p. 318, also see Soemmerring (1791, p. 300).
4. *middle anterior femoral cutaneous nerve (Bock, 1827)*
   Synonym for macrodissected adult human ***anterior cutaneous branches of femoral nerve (Quain & Wilson, 1839)***; in the original Latin, *Nerv. cutaneus femoris anterior medius*, Table I, Figure 2-*79*. Bock also described external and internal branches of it, and used the Latin form, *nerv. cutaneus anterior medius femoris*, Table II-*111*.
5. *anterior cutaneous nerve (Cloquet, 1828)*
   Probably synonym for macrodissected adult human ***anterior cutaneous branches of femoral nerve (Quain & Wilson, 1839)***; in the original French, *nerf cutané antérieur*, Plate CLXXI, Figure 1-*44*.
6. *superior cutaneous perforant branch of crural musculocutaneous nerve (Cruveilhier, 1836)*
   Probably synonym for macrodissected adult human ***anterior cutaneous branches of femoral nerve (Quain & Wilson, 1839)***; in the original French, *perforante cutanée supérieure*, p. 842.
7. *anterior cutaneous branches of crural nerve (Quain & Wilson, 1839)*
   Synonym for macrodissected adult human ***anterior cutaneous branches of femoral nerve (Quain & Wilson, 1839)***; Plate XXIII-*B,a*.

PARTLY CORRESPONDS:

1. *middle cutaneous nerve of crural nerve (Styx, 1782)*
   Main macrodissected adult human ***anterior cutaneous branch of femoral nerve (Quain & Wilson, 1839)***; in the original Latin, *nervus cutaneus medius*, p. 8.
2. *anterior cutaneous nerve of crural nerve (Styx, 1782)*
   Minor macrodissected adult human ***anterior cutaneous branch of femoral nerve (Quain & Wilson, 1839)***; in the original Latin, *nervus cutaneus anterior*, p. 8.
3. *anterior cutaneous nerve (Styx, 1782)*
   Synonym for *anterior cutaneous nerve of crural nerve (Styx, 1782)*; in the original Latin, *nervus cutaneus anterior*, p. 8. Also see Schmidt (1794, p. 60).
4. *middle cutaneous nerve (Fyfe, 1800)*
   Synonym for macrodissected adult human *middle cutaneous nerve of crural nerve (Styx, 1782)*; Vol. 2, p. 327.
5. *anterior cutaneous branch of crural nerve (Fyfe, 1800)*
   Synonym for macrodissected adult human *anterior cutaneous nerve of crural nerve (Styx, 1782)*; Vol. 2, p. 328.
6. *middle cutaneous nerve of thigh (Bell, 1803a)*
   Lateral branch of macrodissected adult human ***anterior cutaneous branches of femoral nerve (Quain & Wilson, 1839);*** Plate VII-*2*.
7. *anterior cutaneous nerve of thigh (Bell, 1803a)*
   Medial branch of macrodissected adult human ***anterior cutaneous branches of femoral nerve (Quain & Wilson, 1839)***; Plate VII-*3*.
8. *anterior cutaneous nerve (Bell, 1803b)*
   Synonym for *anterior cutaneous nerve of thigh (Bell, 1803a)*; p. 197.
9. *short saphenous nerve (Quain & Wilson, 1839)*
   As illustrated for macrodissected adult human, ***anterior cutaneous branch of femoral nerve (Quain & Wilson, 1839)*** coursing just lateral to ***saphenous nerve (Haase, 1781)*** and ending proximal to knee; Plate XXIII-*e*. In some cadavers it might correspond to *lesser saphenous nerve (Fisher, 1791)*.
10. *middle cutaneous nerves of anterior crural nerve (Quain & Wilson, 1839)*
    Anterior cutaneous branches of femoral nerve (Quain & Wilson, 1839) on ventral (anterior) part of thigh; Plate XXIV-*a*; also see Plate XXIII-*B,a*.

anterior deep temporal nerve (Arnold, 1834)

As described for adult human, it is usually a component of the ***deep temporal nerves (Haase, 1781)*** although it is not uncommonly given off from the ***buccal nerve (Meckel, 1748)***. It courses rostrally (ascends) over the upper head of the lateral pterygoid muscle and supplies rostral (anterior) regions of the temporalis muscle; see Williams & Warwick (1980, p. 1066), Kwak et al. (2003, p. 394), and Henle's (1871, Fig. 243-*tpr*^{2}) beautiful illustration. For Arnold's use in macrodissected adult human, see p. 10. It was perhaps first clearly delineated as the *internal deep temporal branch of third branch of fifth pair (Meckel, 1748)*.

TRANSLATIONS:

1. *nervus temporalis profundus anterior (Arnold, 1834)*
   Original Latin form of ***anterior deep temporal nerve (Arnold, 1834)***; p. 10.

EARLIER REFERENCES:

Earlier synonyms:

1. *internal deep temporal branch of third branch of fifth pair (Meckel, 1748)*

Synonym for macrodissected adult human ***anterior deep temporal nerve (Arnold, 1834)***; in the original Latin, *ramus temporalis profundus interior tertii rami quinti paris*, p. 82. Haase described anterior and posterior branches in macrodissected adult human (1781, p. 70).

2. *internal deep temporal nerve (Mayer, 1794)*
   Synonym for macrodissected adult human ***anterior deep temporal nerve (Arnold, 1834)***; in the original Latin, *nervus profundus temporalis internus*; Part 5, Table VIII-*65* (p. 60).
3. *anterior deep temporal branch of inferior maxillary nerve (Todd, 1836–1839)*
   Synonym for macrodissected adult human ***anterior deep temporal nerve (>1840)***; p. 291. Also see Quain (1837, p. 764).
4. *internal deep temporal branch of inferior maxillary nerve (Todd, 1836–1839)*
   Synonym for macrodissected adult human ***anterior deep temporal nerve (>1840)***; p. 291.

anterior esophageal plexus (Haller, 1762)

As described for macrodissected adult human, a caudal (descending) extension of the ***esophageal plexus (Haller, 1762)*** derived predominantly, though by no means exclusively, from the left ***vagus nerve trunk (Wrisberg, 1786; Günther, 1786)***. It is concentrated around caudal (lower) thoracic parts of the ventral (anterior) esophagus; it receives sympathetic ***axons (Kölliker, 1896);*** and some parts of it condense into the ***anterior vagal trunk (Wrisberg, 1780)*** extending caudally (descending) into the abdomen, whereas other parts penetrate directly into the esophageal part of the ***enteric plexuses (Hill, 1927)***; see Mitchell (1953, pp. 184–185), Williams & Warwick (1980, p. 1079). For Haller's use in macrodissected adult human, see p. 235. It was known to Galen; see ***[anterior esophageal plexus (Haller, 1762)] (Galen, c173)***.

TRANSLATIONS:

1. *plexus oesophageus anterior (Haller, 1762)*
   Original Latin form of ***anterior esophageal plexus (Haller, 1762)***; p. 235.
2. *plexum gulae priorem (Soemmerring, 1798)*
   Latin form of *plexus oesophageus anterior (Haller, 1762)*; p. 269.
3. *plexus nervorum gulae prior (Soemmerring, 1798)*
   Latin form of *plexus oesophageus anterior (Haller, 1762)*; p. 269.
4. *anterior plexus gulae (Bell, 1803b)*
   Mixed English-Latin form of *plexus gulae priorem (Soemmerring, 1798)*; p. 158.

EARLIER REFERENCES:

Described, not named or illustrated:

1. ***[anterior esophageal plexus (Haller, 1762)] (Galen, c173)***
   Described briefly as part of entwined ***vagus nerves (Galen, c192)*** around distal (lower) part of esophagus in macrodissected adult beef, pig, and/or macaque but not human; see May translation (1968, pp. 290, 449), Duckworth translation (1962, p. 220). Winslow (1733, Sect. VI, p. 73) described it rather clearly for macrodissected adult human.

Illustrated, not named or described:

1. ***[anterior esophageal plexus (Haller, 1762)] (Pietro da Cortona, c1618)***
   Illustrated rather nicely for macrodissected adult human; see 1741 edition, Table 5, Figure 1. Also see Haller (1762, p. 235 note *r*).

anterior ethmoidal nerve (>1840)

As described for macrodissected adult human, the continuation of the ***nasociliary nerve (Meckel, 1817; Wutzer, 1817)*** distal to the origin of the ***infratrochlear nerve (Schaarschmidt, 1750)***. It supplies the ***nasal branches of anterior ethmoidal nerve (>1840)***; see Williams & Warwick (1980, p. 1061 and Figs. 7.171, 174), *Nomina Anatomica* (1983, p. A74), *Terminologia Anatomica* (1998, p. 134). It was first delineated as the *third offshoot of thinner root of third pair (Vesalius, 1543a)*.

EARLIER REFERENCES:

Earlier synonyms:

1. *third offshoot of thinner root of third pair (Vesalius, 1543a)*
   Synonym for ***anterior ethmoidal nerve (>1840)*** partly described and illustrated for macrodissected adult human; see Richardson & Carman translation (2002, p. 188).
2. *third branch of third conjugation of nerves of brain (Crooke, 1615)*
   Synonym for macrodissected adult human ***anterior ethmoidal nerve (>1840)***; p. 486. Crooke's description is a translation of Bauhin (1605).
3. *internal nasal nerve (Willis, 1664)*
   Synonym for mammalian ***anterior ethmoidal nerve (>1840)***; in the original Latin, *nervus nasalis internus;* see Meckel (1832, Vol. 3, p. 63).
4. *surculus secundus crassioris ac interioris propaginis K (Vieussens, 1684)*
   Roughly synonymous with macrodissected adult human ***anterior ethmoidal nerve (>1840)***; p. 171, Table 22-*m*.
5. *ethmoidal nerve (Günther, 1786)*
   Synonym for macrodissected adult human ***anterior ethmoidal nerve (>1840)***; in the original Latin, *nervis ethmoidalis*, p. 44.
6. *anterior trunk of ethmoidal nerve (Meckel, 1817)*
   Synonym for macrodissected adult human ***anterior ethmoidal nerve (>1840)***; see translation (1832, Vol. 3, p. 64).
7. *inferior nerve (Jacobson, 1818)*
   Synonym for macrodissected adult mammalian ***anterior ethmoidal nerve (>1840)***; in the original Latin, *nervus inferior*, p. 16.
8. *ethmoidal fascicle of nasal surculus (Bellingeri, 1818)*
   Synonym for macrodissected adult mammalian ***anterior ethmoidal nerve (>1840)***; in the original Latin, *fasciculus et[h]moidalis*, see Table I.

9. *ethmoidal branch of nasociliary nerve (Arnold, 1834)*
   Synonym for macrodissected adult human ***anterior ethmoidal nerve (>1840)***; in the original Latin, *nervus nasociliaris, ramus ethmoidalis*, p. 8.
10. *ethmoidal branch of nasal nerve (Arnold, 1834)*
    Synonym for macrodissected adult human ***anterior ethmoidal nerve (>1840)***; in the original Latin, *nervus nasalis, ramus ethmoidalis*, p. 8.
11. *internal nasal branch of nasal nerve (Cruveilhier, 1836)*
    Synonym for macrodissected adult human ***anterior ethmoidal nerve (>1840)***; in the original French, *rameau nasal interne*, p. 915.
12. *internal nasal branch of nasal branch of ophthalmic nerve (Quain, 1837)*
    Synonym for macrodissected adult human ***anterior ethmoidal nerve (>1840)***; pp. 761–762.
13. *internal nasal branch of nasociliary nerve (>1840)*
    Synonym for macrodissected adult ***anterior ethmoidal nerve (>1840)***; see Durward (1951, p. 1019 and Fig. 893). Also see *internal nasal nerve (Willis, 1664)*.

anterior horn of lateral ventricle (Bell, 1803b)

As described for macrodissected adult human, the part of the ***lateral ventricle (Vesalius, 1543a)*** rostral to the transverse level of the ***interventricular foramen (>1840)***; see Millen & Woollam (1962, pp. 33–44, Figs. 13, 16) and Carpenter & Sutin (1983, pp. 41–45, Fig. 2.20). For Bell's use in macrodissected adult human, see p. 81; it was first referred to as the *front cavities (Galen, c177)*.

EARLIER REFERENCES:

Earlier synonyms:

1. *front cavities (Galen, c177)*
   In *On Anatomical Procedures*, Galen referred to *septum (Galen, c177)* separating *front cavities (Galen, c177)*—clear allusion to right and left ***anterior horn of lateral ventricle (Bell, 1803b)***; see Singer translation (1999, pp. 227, 231). Galen referred to them variously as *front cavities (Galen, c177)* or *foremost ventricles (Galen, c177)* and recognized that they generate ***[olfactory ventricles (>1840)] (Galen, c173)*** in adult ox; see May translation (1968, p. 401 note 44). Later he wrote, "Betake yourself to the part where each of the two ventricles, stretching towards the front, is narrowed." (Duckworth translation, 1962, pp. 4, 186). And again, in *On Anatomical Procedures* he referred to rostral end of *foremost ventricle (Galen, c177)* as resembling a hollow horn; see Duckworth translation (1962, p. 3).
2. *foremost ventricles (Galen, c177)*
   Alternate translation of *front cavities (Galen, c177)*; see Wiberg (1914, p. 19). Geminus (1553, f. BII) provided the singular in English, *formoste ventricle*.
3. *first ventricle (Geminus, 1553)*
   Synonym for macrodissected adult human *foremost ventricle (Galen, c177)*; originally spelled *fyrst ventricle*, f. BII.
4. *foremost figure of brain (Geminus, 1553)*
   Synonym for macrodissected adult human *foremost ventricle (Galen, c177)*; originally spelled *formost figure of brayne*, f. BII.

LATER SYNONYMS:

1. *anterior sinus of lateral ventricle (Bell, 1803b)*
   Synonym for macrodissected adult human ***anterior horn of lateral ventricle (Bell, 1803b)***; p. 81.

anterior hypothalamic nucleus (>1840)

Based primarily on cellular architecture and connections in mammal, the component of the ***medial hypothalamic zone (Nauta & Haymaker, 1969)*** between ***medial preoptic nucleus (>1840)*** rostrally and ***ventromedial hypothalamic nucleus (>1840)*** caudally; see Swanson (1998, Table B, p. 206). It was not described by 1840.

anterior intercavernous sinus (>1840)

As described for macrodissected adult human, a component of the ***circulatory system***; the rostral transverse segment of the ***circular sinus (Ridley, 1695)***, rostral to the ***infundibulum (Rioch et al., 1940)*** and continuous with the rostral end of the right and left ***cavernous sinus (Winslow, 1733)***; see Williams & Warwick (1980, p. 748 and Figs. 6.126, 127B), *Terminologia Anatomica* (1998, p. 94). It was perhaps first clearly delineated as the *anterior clinoid sinus (Vicq d'Azyr, 1786)*.

EARLIER REFERENCES:

Earlier synonyms:

1. *sinus clinoïdeus anterior (Vicq d'Azyr, 1786)*
   Synonym for macrodissected adult human ***anterior intercavernous sinus (>1840)***; p. 72; see Burdach (1822, p. 400).
2. *anterior clinoid sinus (Vicq d'Azyr, 1786)*
   English form of *sinus clinoïdeus anterior (Vicq d'Azyr, 1786)*.

anterior interosseous nerve (Quain, 1832)

As described for macrodissected adult human, a branch of the ***median nerve (Du Verney, 1697)*** supplying the flexor pollicis longus, flexor digitorum profundus, and pronator quadratus muscles before ending in the distal radio-ulnar, radio-carpal, and carpal joints; see Williams & Warwick (1980, p. 1098), *Terminologia Anatomica* (1998, p. 138). For Quain's use in macrodissected adult human, see p. 688. It was known to Galen; see ***[anterior interosseous nerve (Quain, 1832)] (Galen, c177)***.

TRANSLATIONS:

1. *nervus inter-osseus anticus (Quain, 1832)*
   Original Latin form of ***anterior interosseous nerve (Quain, 1832)***; p. 688.
2. *nervus interosseus antebrachii anterior (>1840)*
   Current Latin form of ***anterior interosseous nerve (Quain, 1832)*** [of forearm]; see *Terminologia Anatomica* (1998, p. 138).

EARLIER REFERENCES:

Described, not named or illustrated:

1. ***[anterior interosseous nerve (Quain, 1832)] (Galen, c177)***

Alluded to in macrodissected adult beef, pig, and/or macaque but not human; see Singer translation (1999, p. 71). Vesalius (1543a) alluded to it as ***nerve (Herophilus, c335–c280 BC)*** branches to flexor digitorum profundus and pronator quadratus muscles in macrodissected adult human; see Richardson & Carman translation (2002, pp. 243–244).

Earlier synonyms:

1. *deep median nerve (Günther, 1786)*
   Synonym for macrodissected adult human ***anterior interosseous nerve (Quain, 1832)***; in the original Latin, *nervus medianum profundum*, p. 74.
2. *internal interosseous nerve (Günther, 1786)*
   Synonym for macrodissected adult human ***anterior interosseous nerve (Quain, 1832)***; in the original Latin, *nervus interosseum internum*, p. 74.
3. *anterior interosseous deep nerve (Mayer, 1794)*
   Synonym for macrodissected adult human ***anterior interosseous nerve (Quain, 1832)***; in the original Latin, *nervus profundus interosseus anterior*; Part 5, Table 5, Figure 1-*14* (p. 22).
4. *interosseal branch of median nerve (Cloquet, 1816)*
   Synonym for macrodissected adult human ***anterior interosseous nerve (Quain, 1832)***; in the original French, *rameau inter-osseux*, p. 648.
5. *deep branch of median nerve (Bock, 1827)*
   Synonym for macrodissected adult human ***anterior interosseous nerve (Quain, 1832)***; in the original Latin, *ram. profundus*, Table I, Figure 2-*26*. Langenbeck (1826–1830, Fasc. III, Tab. XIV-*5*) also used this term for macrodissected adult human, but Fascicle III was published in 1830.
6. *interosseous nerve (Quain, 1828)*
   Synonym for macrodissected adult human ***anterior interosseous nerve (Quain, 1832)***; p. 423.

PARTLY CORRESPONDS:

1. *long cutaneous branch of internal interosseous nerve (Caldani, 1813, 1814)*
   In macrodissected adult human, branch of ***anterior interosseous nerve (Quain, 1832)*** extending distally toward medial edge of wrist; in the original Latin, *ramus cutaneus longus*, Table CCLIX, Figure 2-*8*.

anterior labial nerves (>1840)

As described for macrodissected adult human female, branches of the ***ilio-inguinal nerve (>1840)*** to skin of the ventral (anterior) labial region of the labia majora and adjacent part of the thigh; see Durward (1951, p. 1092 and Fig. 918), *Terminologia Anatomica* (1998, p. 139). They were known to Winslow; see ***[anterior labial nerves (>1840)] (Winslow, 1733)***.

EARLIER REFERENCES:

Described, not named or illustrated:

1. ***[anterior labial nerves (>1840)] (Winslow, 1733)***
   Mentioned for macrodissected adult human female; Section VI, no. 274, p. 86. Also see Quain (1828, p. 284).

anterior limb of internal capsule (>1840)

As described for macrodissected adult human, typically in frontal (horizontal) section, the rostral ***internal capsule (Burdach, 1822)*** segment lying between ***caudate nucleus (Arnold, 1838b)*** rostromedially and *lentiform nucleus (Burdach, 1822)* caudolaterally; see Crosby et al. (1962, p. 394, Fig. 272). It was first delineated by Vesalius; see ***[anterior limb of internal capsule (>1840)] (Vesalius, 1543a)***.

EARLIER REFERENCES:

Illustrated, not named or described:

1. ***[anterior limb of internal capsule (>1840)] (Vesalius, 1543a)***
   Clearly illustrated in frontal (horizontal) section of macrodissected adult human; see Singer translation (1952, Fig. 7).

Earlier synonyms:

1. *bundle of striated bodies (Spurzheim, 1826)*
   Roughly synonymous with macrodissected adult human ***anterior limb of internal capsule (>1840)***; p. 230 note *P*.
2. *meditulli albi pars anterior (Arnold, 1838b)*
   Roughly synonymous with macrodissected adult human ***anterior limb of internal capsule (>1840)***; Table IV, Figure 4-*β*.

anterior lobe of pituitary gland (Haller, 1762)

As described for adult mammal, the part of the ***adenohypophysis (Rioch et al., 1940)*** derived developmentally from the rostral wall of Rathke's pouch and having up to 5 classical endocrine cell types, corticotropes, thyrotropes, gonadotropes, somatotropes, and lactotropes. It is typically divided somewhat arbitrarily into a ***distal part of anterior lobe (>1840)*** and ***tuberal part of anterior lobe (>1840)***; see Daniel & Pritchard (1975). For Haller's use in macrodissected adult human, see p. 59; in the original Latin, *lobus anterior*. It was perhaps first distinguished by Riolan; see ***[anterior lobe of pituitary gland (Haller, 1762)] (Riolan, 1610)***.

EARLIER REFERENCES:

Described, not named or illustrated:

1. ***[anterior lobe of pituitary gland (Haller, 1762)] (Riolan, 1610)***
   Burdach (1822, p. 330) credited Riolan (p. 160) with distinguishing two parts of macrodissected adult human *pituitary gland (Galen, c192)*. Willis (1664) also described two distinct lobes of macrodissected adult human *pituitary gland (Galen, c192)*, one of which [***anterior lobe of pituitary gland (Haller, 1762)***] is reddish, located on either side, and interwoven with blood vessels; see Pordage translation (1681, p. 104), Willis (1672, Tab. VI-*F*). None of these workers could have distinguished the regressed ***intermediate lobe of pituitary gland (>1840)*** in macrodissected adult human; they observed the ***adenohypophysis (Rioch et al., 1940)*** as a whole and generally.

Earlier synonyms:

1. *glandula pituitaria potior (Santorini, 1724)*
   Synonym for macrodissected adult human ***[anterior lobe of pituitary gland (Haller, 1762)] (Riolan, 1610)***; p. 70.

LATER SYNONYMS:

1. *anterior lobule of pituitary gland (Arnold, 1834)*
   Synonym for macrodissected adult human ***anterior lobe of pituitary gland (Haller, 1762)***; English form of the original Latin, *glandula pituitaria lobulus anterior*, Table III:*A-mm*.
2. *hypophysis cerebri lobulus anterior (Arnold, 1834)*
   Synonym for macrodissected adult human ***anterior lobe of pituitary gland (Haller, 1762)***; Table III:*A-mm*.

anterior nerve of lesser curvature (>1840)

As described for macrodissected adult human, it frequently presents as the largest of the ***gastric branches of anterior vagal trunk (>1840)***, coursing along the ventral (anterior) surface of the lesser curvature of the stomach between the layers of the lesser omentum; see Mitchell (1953, p. 185), *Terminologia Anatomica* (1998, p. 136). It was clearly illustrated by Eustachi; see ***[anterior nerve of lesser curvature (>1840)] (Eustachi, 1552)***.

EARLIER REFERENCES:

Illustrated, not named or described:

1. ***[anterior nerve of lesser curvature (>1840)] (Eustachi, 1552)***
   Clearly illustrated for macrodissected adult human; see Albinus edition (1744, Tab. 18, Fig. 2-Ψ).

Earlier synonyms:

1. *left gastro-epiploic nerve (Albinus, 1744)*
   Synonym for macrodissected adult human ***anterior nerve of lesser curvature (>1840)***; in the original Latin, *nervus gastro-epiploïcus sinister*; Table 18, Figure 2-Ψ.
2. *greater anterior gastric nerve (>1840)*
   Synonym for macrodissected adult human ***anterior nerve of lesser curvature (>1840)***; see Mitchell (1953, p. 185).
3. *principal anterior nerve of lesser curve (>1840)*
   Synonym for macrodissected adult human ***anterior nerve of lesser curvature (>1840)***; see Mitchell (1953, p. 185).

anterior olfactory nucleus (Herrick, 1910)

As described with cellular architecture and connections in mammal, a component of the ***olfactory region (>1840)*** between ***olfactory bulb (Weitbrecht, 1751)*** rostrally and ***piriform area (>1840)*** caudally. For topographic macroarchitecture it is the ***cerebral cortex gray matter (>1840)*** region of the ***olfactory peduncle (Solly, 1836)***. The term is a misnomer because it is an area of the ***cerebral cortex gray matter (>1840)***; see Haberly & Price (1978). For Herrick's use based on histology in amphibia and reptile, see p. 497. It was first glimpsed by Rolfinck; see ***[anterior olfactory nucleus (Herrick, 1910)] (Rolfinck, 1656)***, although the ***olfactory peduncle (Solly, 1836)*** had been separately identified at least since *olfactory nerve (Bartholin, 1611)*.

EARLIER REFERENCES:

Described, not named or illustrated:

1. ***[anterior olfactory nucleus (Herrick, 1910)] (Rolfinck, 1656)***
   In describing macrodissected adult human ***olfactory peduncle (Solly, 1836)***, Rolfinck identified gray and white stripes (Meyer 1971, p. 76), the ***anterior olfactory nucleus (Herrick, 1910)*** and accompanying segment of ***lateral olfactory tract (>1840)*** respectively; see *nervos odoratorios (Rolfinck, 1656)*.

Earlier synonyms:

1. *olfactory peduncle (Brodmann, 1909)*
   Synonym for mammalian ***anterior olfactory nucleus (Herrick, 1910)***; see Table 7 on p. 247.

anterior orbital gyrus (>1840)

As described for macrodissected adult human, the rostral topographic subdivision of the ***orbital gyri (>1940)***, separated from the others by the ***orbital sulci (>1840)***; see Williams & Warwick (1980, Fig. 7.116). It was first clearly delineated by Soemmerring; see ***[anterior orbital gyrus (>1840)] (Soemmerring, 1778)***.

EARLIER REFERENCES:

Illustrated, not named or described:

1. ***[anterior orbital gyrus (>1840)] (Soemmerring, 1778)***
   Illustrated for macrodissected adult human; Table II.

anterior paracentral gyrus (>1840)

As described for macrodissected adult human, a caudal topographic subdivision of the ***frontal region (Vicq d'Azyr, 1786)*** on the medial surface of the *cerebral hemisphere (Tiedemann, 1816)*, medial to the ***precentral gyrus (>1840)***, rostral to the ***central sulcus (Huschke, 1854)*** and caudal to the ***paracentral sulcus (>1840)***. It forms the rostral half of the *paracentral lobule (>1840)*; see Williams & Warwick (1980, Fig. 7.114A), *Terminologia Anatomica* (1998, p. 126), *Dorland's* (2003, p. 806). It was first clearly delineated by Soemmerring; see ***[anterior paracentral gyrus (>1840)] (Soemmerring, 1778)***.

EARLIER REFERENCES:

Illustrated, not named or described:

1. ***[anterior paracentral gyrus (>1840)] (Soemmerring, 1778)***
   Clearly illustrated for macrodissected adult human; Table III.

anterior parolfactory sulcus (>1840)

As described for macrodissected adult human, a dorsoventral (vertical) groove between the ventral end of the ***medial frontal gyrus (>1840)*** rostrally and the ***parolfactory gyrus (>1840)*** of the ***cingulate region (Brodmann, 1909)*** caudally; see Nauta & Haymaker (1969, Fig. 4.11), *Terminologia Anatomica* (1998, p. 126). It was first clearly distinguished by Soemmerring; see ***[anterior parolfactory sulcus (>1840)] (Soemmerring, 1778)***.

EARLIER REFERENCES:

Illustrated, not named or described:

1. ***[anterior parolfactory sulcus (>1840)] (Soemmerring, 1778)***
   Clearly illustrated for macrodissected adult human; Table III.

anterior pulmonary plexus (Haller, 1762)

As described for macrodissected adult human, a region of the ***pulmonary plexus (Winslow, 1733)*** arising from branches of the ***superior cervical cardiac branches of vagus nerve (>1840)*** and cervical levels of the ***sympathetic trunk (Winslow, 1733)***, as well as direct branches from both sources. It lies on the ventral (anterior) aspect of bronchial and vascular structures in the hila of the lungs and is much smaller than the ***posterior pulmonary plexus (Haller, 1672)***; see Mitchell (1953, Fig. 105), Williams & Warwick (1980, p. 1133). For Haller's use in macrodissected adult human, see p. 235; he was probably the first to distinguish it clearly.

ALTERNATE SPELLINGS:

1. *anterior pulmonic plexus (Bell & Bell, 1816)*
   Alternate spelling of macrodissected adult human ***anterior pulmonary plexus (Haller, 1762)***; p. 507.

TRANSLATIONS:

1. *anterioris plexus pulmonis (Haller, 1762)*
   Original Latin form of ***anterior pulmonary plexus (Haller, 1762)***; p. 235.
2. *plexum pulmonalem anteriorem (Haase, 1781)*
   Early Latin form of ***anterior pulmonary plexus (Haller, 1762)***; p. 87.

LATER SYNONYMS:

1. *anterior pulmonary plexus of eighth nerve (Scarpa, 1794)*
   Synonym for macrodissected adult human ***anterior pulmonary plexus (Haller, 1762)***; in the original Latin, *plexu pulmonali anteriore octavi nervi*, Table III-*51*.
2. *priori plexui nervorum pulmonum (Soemmerring, 1798)*
   Alternate form of macrodissected adult human *plexum pulmonalem anteriorem (Haase, 1781)*; p. 268.
3. *smaller anterior pulmonary plexus of pneumogastric (Knox, 1832)*
   Synonym for macrodissected adult human ***anterior pulmonary plexus (Haller, 1762)***; Plate III-*106*, in Knox's translation of Scarpa (1794).

PARTLY CORRESPONDS:

1. *plexum pulmonalem anteriorem minorem octavi (Scarpa, 1794)*
   Small component of macrodissected adult human ***anterior pulmonary plexus (Haller, 1762)*** associated particularly with ***vagus nerve (Galen, c192)***; Table III: *31–33*.

anterior renal ganglion (Tiedemann, 1822)

As described for macrodissected adult human, usually the second largest, but quite inconsistent, of the ***renal ganglia (Walther, 1735)***; see Mitchell (1953, p. 289). For Tiedemann's discovery and use in macrodissected adult human female see Table I-2.

TRANSLATIONS:

1. *ganglion renale anterius (Tiedemann, 1822)*
   Original Latin form of ***anterior renal ganglion (Tiedemann, 1822)***; Table I-*2,44*.

anterior scrotal nerves (>1840)

As described for macrodissected adult human male, branches of the ***ilio-inguinal nerve (>1840)*** to skin of the ventral (anterior) scrotal region; see Durward (1951, p. 1092 and Fig. 918), *Terminologia Anatomica* (1998, p. 139). They were known to Winslow; see ***[anterior scrotal nerves (>1840)] (Winslow, 1733)***.

EARLIER REFERENCES:

Described, not named or illustrated:

1. ***[anterior scrotal nerves (>1840)] (Winslow, 1733)***
   Mentioned for macrodissected adult human male; Section VI, no. 274, p. 86. Also see Quain (1828, p. 284).

anterior superior dental nerve (Haller, 1762)

As described for macrodissected adult human, a branch of the ***infraorbital nerve (Schaarschmidt, 1750)*** to the upper incisor and canine teeth, participating in the ***superior dental plexus (>1840)*** and giving off the ***nasal branch of anterior superior dental nerve (>1840)***; see Durward (1951, p. 1025) and Williams & Warwick (1980, p. 1064), both using the term. For Haller's use in macrodissected adult human, see p. 215. It was apparently discovered by Falloppio; see ***[anterior superior dental nerve (Haller, 1762)] (Falloppio, 1561)***.

TRANSLATIONS:

1. *nervus dentalis anterior superior (Haller, 1762)*
   Original Latin form of ***anterior superior dental nerve (Haller, 1762)***; p. 215.

EARLIER REFERENCES:

Described, not named or illustrated:

1. ***[anterior superior dental nerve (Haller, 1762)] (Falloppio, 1561)***
   According to Haller (1762, p. 215 note *f*), Falloppio mentioned it for macrodissected adult human (1561, pp. 143–144). Winslow clearly mentioned it for macrodissected adult human (1733, Sect. VI, p. 65).

Earlier synonyms:

1. *anterior dental branch of infraorbital nerve (Meckel, 1748)*
   Synonym for macrodissected adult human ***anterior superior dental nerve (Haller, 1762)***; in the original Latin, *nervus infraorbitalis. . . ramus dentalis anterior*, Figure 1-*61,b*.
2. *anterior dental branch of superior maxillary branch (Meckel, 1748)*
   Synonym for *anterior dental branch of infraorbital nerve (Meckel, 1748)*; p. 68.
3. *anterior dental nerve (Meckel, 1748)*
   Synonym for *anterior dental branch of infraorbital nerve (Meckel, 1748)*; in the original Latin, *nervi dentalis anterioris (maxillae superioris)* or *dentalis nervus anterior*, p. 114.

4. *anterior alveolar nerves of superior maxillary nerve (Schaarschmidt, 1750)*
   Synonym for macrodissected adult human ***anterior superior dental nerve (Haller, 1762)***; in the original Latin, *nervi alveolares anteriores maxillae superioris*, p. 24.

LATER SYNONYMS:

1. *anterior alveolar nerves (Soemmerring, 1798)*
   Synonym for macrodissected adult human ***anterior superior dental nerve (Haller, 1762)***; in the original Latin, *nervi alveolares priores*, p. 228.
2. *anterior dentar nerves (Meckel, 1817)*
   Synonym for macrodissected adult human ***anterior superior dental nerve (Haller, 1762)***; in the original Latin, *nervi dentales anteriores*, see translation (1832, Vol. 3, p. 69).
3. *third dental nerve of second trunk of fifth nerve (Swan, 1830)*
   Synonym for macrodissected adult human ***anterior superior dental nerve (Haller, 1762)***; Plate XII, Figure 5-*4*.
4. *anterior dental branch of superior maxillary nerve (Quain, 1832)*
   Synonym for macrodissected adult human ***anterior superior dental nerve (Haller, 1762)***; p. 675.
5. *greater anterior alveolar nerve (Arnold, 1834)*
   Synonym for macrodissected adult human ***anterior superior dental nerve (Haller, 1762)***; in the original Latin, *nervus alveolaris anterior major*, p. 9.
6. *greater anterior dental nerve (Arnold, 1834)*
   Synonym for macrodissected adult human ***anterior superior dental nerve (Haller, 1762)***; in the original Latin, *nervus dentalis anterior major*, p. 9.
7. *anterior alveolo-dental nerve (Cruveilhier, 1836)*
   Synonym for macrodissected adult human ***anterior superior dental nerve (Haller, 1762)***; in the original French, *nerf alvéolo-dentaire antérieur*, p. 927.
8. *anterior superior alveolar nerve (Henle, 1871)*
   Synonym for macrodissected adult human ***anterior superior dental nerve (Haller, 1762)***; in the original Latin, *nervus alveolaris superior anterio*r, p. 370.

PARTLY CORRESPONDS:

1. *maxillary fasciculi of infraorbital surculus (Bellingeri, 1818)*
   Two branches of macrodissected adult human ***anterior superior dental nerve (Haller, 1762)*** to maxillary sinus and anterior teeth; in the original Latin, *fasciculi maxillares (duo)*, see Table I.
2. *dental branches of greater anterior alveolar nerve (Arnold, 1834)*
   Branches of macrodissected adult human ***anterior superior dental nerve (Haller, 1762)*** to teeth; in the original Latin, *nervus alveolaris anterior major, rami dentales*, p. 9.
3. *dental branches of greater anterior dental nerve (Arnold, 1834)*
   Branches of macrodissected adult human ***anterior superior dental nerve (Haller, 1762)*** to teeth; in the original Latin, *nervus dentalis anterior major, rami dentales*, p. 9.
4. *descending filaments of anterior alveolo-dental nerve (Cruveilhier, 1836)*
   Branches of macrodissected adult human ***anterior superior dental nerve (Haller, 1762)*** to teeth; in the original French, *filets descendans*, p. 928.

anterior thalamic nuclei (>1840)

As described for macrodissected adult human, and based on cellular architecture and connections in mammal, a rostromedial and dorsal component of the ***dorsal part of thalamus (Herrick, 1910)***. Its major ***gray matter regions (Swanson & Bota, 2010)*** include ***anteromedial thalamic nucleus (>1840)***, ***anterodorsal thalamic nucleus (>1840)***, ***anteroventral thalamic nucleus (>1840)***, and ***lateral dorsal thalamic nucleus (>1840)***; see Swanson (2004, Table B, p. 171), Nieuwenhuys et al. (2008, pp. 263–264). Their main projections to the ***cerebral cortex (>1840)*** involve the caudal half of the ***cingulate region (>1840)*** and the ***hippocampal formation (>1840)***. Some authors include the ***lateral dorsal thalamic nucleus (>1840)*** in the ***lateral thalamic nuclei (>1840)*** instead. They were first clearly identified as *subrotunda corpora alba (Vieussens, 1684)*.

EARLIER REFERENCES:

Earlier synonyms:

1. *subrotunda corpora alba (Vieussens, 1684)*
   Clearly illustrated ***anterior thalamic nuclei (>1840)*** for macrodissected adult human; Tables VII-*c*, VIII. See Meyer (1971, p. 14).
2. *small eminence at superior and anterior part of optic thalamus (Pourfour du Petit, 1710)*
   Synonym for macrodissected adult human ***anterior thalamic nuclei (>1840)***; in the original French, *la petite éminence que est à la partie superieure, & anterieure des Couches optiques*, p. 13. Used in first description of ***mammillothalamic tract (>1840)***.
3. *eminentiae thalamorum subrotundae (Tarin, 1750)*
   Synonym for macrodissected adult human ***anterior thalamic nuclei (>1840)***; Table I, Figure 2-*V*.
4. *round tubercles of optic thalamus (Tarin, 1750)*
   Synonym for macrodissected adult human *subrotunda corpora alba (Vieussens, 1684)*; in the original French, *tubercules arrondis de couches des nerfs optiques*, p. 25.
5. *tubercula subrotunda Vieussenii (Tarin, 1750)*
   Eponym for macrodissected adult human *subrotunda corpora alba (Vieussens, 1684)*; p. 25.
6. *corpus eminens oblongum album (Santorini, 1775)*
   Synonym for macrodissected adult human *subrotunda corpora alba (Vieussens, 1684)*; p. 39.
7. *anterior tubercle of optic thalamus (Vicq d'Azyr, 1786)*
   Synonym for macrodissected adult human ***anterior thalamic nuclei (>1840)***; Plate VIII, Figure II-*18*; Plate IX-*21*.
8. *anterior internal tubercle of optic thalamus (Vicq d'Azyr, 1786)*
   Synonym for *anterior tubercle of optic thalamus (Vicq d'Azyr, 1786)*; Plate XXV, Figure II-*c*.

9. *corpus geniculatum externum (Ramsay, 1813)*
   Mistakenly applied to macrodissected adult human *anterior tubercle of optic thalamus (Vicq d'Azyr, 1786)*; p. 45.
10. *anterior thalamic tubercle (Gordon, 1815)*
    Synonym for macrodissected adult human *anterior tubercle of optic thalamus (Vicq d'Azyr, 1786)*; in the original Latin, *tuberculum thalami anticum*, p. 100. See Burdach (1822, pp. 117, 341), who gave Latin form, *tuberculum thalami anterius*.
11. *superior gray nucleus (Burdach, 1822)*
    Synonym for ***anterior thalamic nuclei (>1840)*** observed with hand lens in alcohol-hardened slabs of macrodissected adult human material; in the original Latin, *nucleus cinereus superior*, p.122. See Jones (1985, p. 11), also see Meyer (1971, p. 31).
12. *anterior geniculate tubercle (Rolando, 1831)*
    Synonym for macrodissected adult human ***anterior thalamic nuclei (>1840)***; in the original Latin, *tuberculum geniculatum anterius*, Figure 10-*24*.
13. *anterior superior nucleus of thalamus of optic nerve (Arnold, 1838b)*
    Synonym for macrodissected adult human *superior gray nucleus (Burdach, 1822)*; in the original Latin, *nucleus anterior superior thalami nervi optici*, Table IV, Figure 5-*m*.
14. *superior nucleus of colliculus of optic nerve (Arnold, 1838b)*
    Synonym for macrodissected adult human *superior gray nucleus (Burdach, 1822)*; in the original Latin, *nucleus superior colliculi nervi optici*, Table VIII, Figure 2-*k*.

anterior vagal trunk (Wrisberg, 1780)

As described for macrodissected adult human, it has contributions from the right and left ***vagus nerve trunk (Wrisberg, 1786; Günther, 1876)***, though predominantly from the left, and extends caudally from the distal part of the ***anterior esophageal plexus (Haller, 1762)***; see Williams & Warwick (1980, p. 1079). For Wrisberg's formulation of the term in macrodissected adult human, see reprint in Wrisberg (1800, pp. 257, 259). It was perhaps first known as the *left stomach nerve (Crooke, 1615)*, from Crooke's rough translation of Bauhin (1605).

EARLIER REFERENCES:

Earlier synonyms:

1. *left stomach nerve (Crooke, 1615)*
   Roughly synonymous with macrodissected adult human ***anterior vagal trunk (Wrisberg, 1780)***; originally spelled *left stomacke (or stomack) nerve*, and in Latin *nervus stomachichus sinistrum*, p. 365. Crooke's text here was basically a translation of Bauhin (1605).
2. *superior stomachical branch of wandring pair (Willis, 1664)*
   Probably corresponds to macrodissected adult human and other common large mammal, ***anterior vagal trunk (Wrisberg, 1780)***; see Pordage translation (1681, p. 156 and Fig. 11-*C*).
3. *upper stomachical branch of wandring pair (Willis, 1664)*
   Synonymous with *superior stomachical branch of wandring pair (Willis, 1664)*; see Pordage translation (1681, p. 156 and Fig. 11-*C*).
4. *external trunk of vagus nerve (Drake, 1707)*
   Probably corresponds to *superior stomachical branch of wandring pair (Willis, 1664)* or, alternately, *inferior stomachical branch of wandring pair (Willis, 1664)*; p. 517.
5. *anterior rope of eighth pair (Winslow, 1733)*
   Synonym for macrodissected adult human ***anterior vagal trunk (Wrisberg, 1780)***; Section VI, p. 73.
6. *anterior stomachic nerve (Winslow, 1733)*
   Synonym for macrodissected adult human ***anterior vagal trunk (Wrisberg, 1780)***; Section VI, p. 73.

LATER SYNONYMS:

1. *anterior trunk of eighth pair of nerves (Wrisberg, 1780)*
   Synonym for ***anterior vagal trunk (Wrisberg, 1780)***; see Wrisberg reprint (1800, p. 257).
2. *lateral left vagus nerve (Haase, 1781)*
   Synonym for macrodissected adult human ***anterior vagal trunk (Wrisberg, 1780)***; in the original Latin, *nervus vagus sinistri lateris*, p. 88.
3. *anterior trunk of gastric and hepatic nerve (Walter, 1783)*
   Synonym for macrodissected adult human ***anterior vagal trunk (Wrisberg, 1780)***; in the original Latin, *truncus anterior nervorum ventriculi et hepatis*, Table III-*456*.
4. *anterior trunk of gastric and hepatic plexus (Walter, 1783)*
   Synonym for macrodissected adult human ***anterior vagal trunk (Wrisberg, 1780)***; in the original Latin, *truncus anterior plexus ventriculi et hepatis*, Table III-*456*.
5. *esophageal cord of left side (Cloquet, 1816)*
   Synonym for macrodissected adult human ***anterior vagal trunk (Wrisberg, 1780)***; in the original French, *cordon oesophagien du côté gauche*, p. 625.
6. *left cord of pneumogastric nerve (Meckel, 1817)*
   Synonym for macrodissected adult human ***anterior vagal trunk (Wrisberg, 1780)***; see translation (1832, Vol. 3, p. 49).

aorticorenal ganglion (>1840)

As described for macrodissected adult human, a small ***prevertebral ganglion (Quain, 1832)*** just caudal and lateral to the ***celiac ganglion (Walter, 1783)***; see Mitchell (1953, p. 273 and Fig. 104), *Terminologia Anatomica* (1998, p.143). It was probably first identified as the *renal infolding (Willis, 1664)*.

EARLIER REFERENCES:

Earlier synonyms:

1. *renal infolding (Willis, 1664)*
   Probably corresponds to ***aorticorenal ganglion (>1840)*** in macrodissected adult human and quadruped; in the original Latin, *plexum renalem*, Table IX-*I*; see Pordage translation (1681) for English form.
2. *renal mesenteric infolding (Willis, 1664)*
   Synonym for *renal infolding (Willis, 1664)*; in the original Latin, *plexum mesentericus renalem*, Table XI; see Pordage translation (1681) for English form.

arachnoid (Blasius, 1666)

Middle layer of the ***meninges (Smith Papyrus, c1700 BC)***, and outer layer of the ***pia-arachnoid (>1840)***, adjacent to the outermost ***dura (Galen, c177)***, separated in adults only by the potential *subdural space*. The ***arachnoid (Blasius, 1666)*** is divided into a thick outer ***arachnoid membrane (Meckel, 1817)*** adjacent to the ***dura (Galen, c177)*** and delicate intermediate ***arachnoid trabeculae (>1840)*** extending through the ***subarachnoid space (Magendie, 1827)*** to the thin vascular inner ***epipial layer (Key & Retzius, 1875)*** of the ***arachnoid (Blasius, 1666)***, lying on the outer surface of the ***pia (Galen, c192)***; see Millen & Woollam (1962). Blasius is usually credited with discovering and naming the macrodissected adult human **arachnoid (Blasius, 1666)**, presenting the vague appearance of a complex spider web; see Millen & Woollam (1962, p. 22). Also see Ridley (1695, p. 16) and Burdach (1822, pp. 24, 274), who used the full Latin term, *meninx arachnoidea*. However, it is impossible to know exactly which components Blasius actually observed, other than the ***arachnoid membrane (Meckel, 1817)***. Galen may have alluded to it much earlier, see ***[arachnoid (Blasius, 1666)] (Galen, c173)***, and Casseri clearly illustrated it; see ***[arachnoid (Blasius, 1666)] (Casseri, 1627)***.

EARLIER REFERENCES:

Described, not named or illustrated:

1. ***[arachnoid (Blasius, 1666)] (Galen, c173)***
   In *On the Usefulness of the Parts*, Galen may allude to it in region of ***pineal gland (Galen, c192)***; see May translation (1968, p. 421). In *On Anatomical Procedures*, he alluded to "empty space" between ***dura (Galen, c177)*** and ***pia (Galen, c192)***, and described how to manipulate its volume experimentally; see Singer translation (1999, p. 230). He macrodissected adult beef, pig, and/or macaque, not humans explicitly. Bell (1803b, p. 21) credited without citation Varoli for clearly describing it around the ***medulla (Winslow, 1733)***.

Illustrated, not named or described:

1. ***[arachnoid (Blasius, 1666)] (Casseri, 1627)***
   Illustrated well for macrodissected adult human, in plates published posthumously; see Mettler (1947, p. 66).

LATER SYNONYMS:

1. *tunica telae arachnoidis similiis (Molinetti, 1669)*
   Synonym for macrodissected adult human ***arachnoid (Blasius, 1666)***, p. 201, according to Haller (1762, p. 84) and Schreger (1803, p. 315).
2. *tertium involucrum (Vieussens, 1684)*
   Synonym for macrodissected adult human ***arachnoid (Blasius, 1666)***; p. 143, see Haller (1762, p. 84).
3. *meninx media (Bidloo, 1685)*
   Synonym for macrodissected adult human ***arachnoid (Blasius, 1666)***, according to Burdach (1822, p. 274).
4. *arachnoid membrane (Günther, 1786)*
   Synonym for macrodissected adult human ***arachnoid (Blasius, 1666)***; in the original Latin, *arachnoidea membrana*, p. 7.
5. *tunica arachnoidea (Bell, 1803b)*
   Synonym for macrodissected adult human ***arachnoid (Blasius, 1666)***; p. 21.
6. *membrana media cerebri (Wenzel & Wenzel, 1812)*
   Synonym for macrodissected adult human ***arachnoid (Blasius, 1666)***; p. 6, see Burdach (1822, p. 274).
7. *membrana mucosa (Meckel, 1817)*
   Synonym for macrodissected adult human ***arachnoid (Blasius, 1666)***; Vol. 3, p. 551. See Burdach (1822, p. 274) and Meckel translation (1832, Vol. 2, p. 475).

arachnoid granulations (>1840)

As described for macrodissected adult human, extensions of the ***arachnoid (Blasius, 1666)*** through the dural wall of venous sinuses (especially the superior sagittal sinus) by way of which ***cerebrospinal fluid (Magendie, 1827)*** from the ***subarachnoid space (Magendie, 1827)*** is reabsorbed into the venous blood; typically, the smaller *arachnoid villi* are included in this definition; see Millen & Woollam (1962, pp. 116–122). They were first mentioned clearly by Vesalius; see ***[arachnoid granulations (>1840)] (Vesalius, 1543a)***.

EARLIER REFERENCES:

Described, not named or illustrated:

1. ***[arachnoid granulations (>1840)] (Vesalius, 1543a)***
   Described briefly for macrodissected adult human; see Singer translation (1952, p. 11, Fig. 1-*K*).

Earlier synonyms:

1. *glandulis conglobatis durae meningis (Pacchioni, 1705)*
   Original description of macrodissected adult human ***arachnoid granulations (>1840)***; see title-page; also see Millen & Woollam (1962, p. 24).
2. *glands of Pacchioni (Fantoni, 1738)*
   Eponym for macrodissected adult human ***arachnoid granulations (>1840)***; in the original Latin, *Pacchioni glandulae*, p. 31. For English form see Meckel (1832, Vol. 2, p. 471).
3. *glandulae durae matris (Mayer, 1794)*
   Synonym for macrodissected adult human ***arachnoid granulations (>1840)***, illustrating both external and internal varieties; Part V, Table I, Figure 2-*C,a*.
4. *cerebral granulations (Bichat et al., 1801-1803)*
   Synonym for macrodissected adult human ***arachnoid granulations (>1840)***; in the original French, *granulationes cerebrales*; Vol. III, p. 59; see Meckel (1832, Vol. 2, p. 471) and Burdach (1822, p. 277).

arachnoid membrane (Meckel, 1817)

As described for macrodissected adult human, the major, condensed layer of ***arachnoid (Blasius, 1666)*** lying just subjacent to ***dura (Galen, c192)*** and generating delicate inwardly projecting ***arachnoid trabeculae (>1840)*** ending in the ***epipial layer (>1840)*** of ***arachnoid (Blasius, 1666)***; see Millen & Woollam (1962, p. 103 ff.). For Meckel's description in macrodissected adult human, see translation (1832, pp. 475–478). It was illustrated as early as ***[arachnoid membrane (Meckel, 1817)] (Casseri, 1627)***.

EARLIER REFERENCES:

Illustrated, not named or described:

1. ***[arachnoid membrane (Meckel, 1817)] (Casseri, 1627)*** Well illustrated for macrodissected adult human, in plates published posthumously; see Mettler (1947, p. 66).

Described, not named or illustrated:

1. ***[arachnoid membrane (Meckel, 1817)] (Blasius, 1666)*** It was undoubtedly the major, if not only, component of the ***arachnoid (Blasius, 1666)*** described.

arachnoid trabeculae (>1840)

Delicate fibrous threads passing through the ***subarachnoid space (Magendie, 1827)*** and connecting the inner surface of the ***arachnoid membrane (Meckel, 1817)*** with the ***epipial layer (>1840)*** of the ***arachnoid (Blasius, 1666)*** and immediately underlying ***pia (Galen, c192)***; see Millen & Woollam (1962, p. 103 ff.).

EARLIER REFERENCES:

Described, not named or illustrated:

1. ***[arachnoid trabeculae (>1840)] (Meckel, 1817)*** Clearly described for macrodissected adult human; see translation (1832, pp. 475–478).

arbor vitae (Winslow, 1733)

As described for macrodissected adult mammal, the deep ***central nervous system white matter tract (>1840)*** of the ***cerebellar cortex (Willis, 1664)*** distal to the three ***cerebellar peduncles (Ridley, 1695)*** and lateral to the ***cerebellar commissure (>1840)***; see Crosby et al. (1962, Fig. 153), *Dorland's* (2003, p. 122), Nieuwenhuys et al. (2008, p. 200). For Winslow's use in macrodissected adult human, see Section X, p. 40. It was first outlined by Dryander; see ***[arbor vitae (Winslow, 1733)] (Dryander, 1536)***.

EARLIER REFERENCES:

Illustrated, not named or described:

1. ***[arbor vitae (Winslow, 1733)] (Dryander, 1536)*** In *The Anatomy of the Human Head*, Dryander clearly if crudely illustrated in Figure 8 deep *white substance (Vesalius, 1543a)* of macrodissected adult human ***cerebellum (Aristotle)***, along with deep *white substance (Vesalius, 1543a)* of ***cerebral cortex (>1840)*** in Figure 6; see Lind translation (1975, pp. 301–302).

Described, not named or illustrated:

1. ***[arbor vitae (Winslow, 1733)] (Cortesi, 1625)*** According to Malpighi (1666), Cortesi described *white substance (Vesalius, 1543a)* of macrodissected adult human ***cerebellum (Aristotle)*** as resembling a branchy tree; see Meyer (1967, p. 189).

Earlier synonyms:

1. *middle marrow of cerebellum (Willis, 1664)* Synonym for macrodissected adult human ***arbor vitae (Winslow, 1733)***; see Pordage translation (1681, p. 124, Fig. VIII-*T*).
2. *meditullium (Willis, 1664)* Latin synonym for *middle marrow of cerebellum (Willis, 1664)*; Chapter 3, see Burdach (1822, p. 44). In general, *meditullium* refers to middle of anything; see Foster (1892, p. 2260). Collins (1685, pp. 1029, 1031) used the term specifically for ***arbor vitae (Winslow, 1733)***.
3. *ramificatio cerebelli ad forman arboris (Willis, 1664)* Synonym for *middle marrow of cerebellum (Willis, 1664)*; Chapter 3, see Burdach (1822, p. 291).
4. *tractus medullares cerebelli (Vieussens, 1684)* Synonym for macrodissected adult human ***arbor vitae (Winslow, 1733)***; Table XIII-*O*,*P*.
5. *central marrow of cerebellar hemisphere (Vieussens, 1684)* Synonym for macrodissected adult human ***arbor vitae (Winslow, 1733)***; in the original Latin, *centrum medullare hemisphaeriorum cerebelli*, p. 78, see (Burdach 1822, p. 289). Vicq d'Azyr (1784, p. 576) referred to it in French as *centre médullaire du Cervelet*.
6. *corpus callosum of cerebellum (Ridley, 1695)* Synonym for macrodissected adult human ***arbor vitae (Winslow, 1733)***; p. 136.
7. *root of peduncle (Pourfour du Petit, 1710)* Synonym for macrodissected adult human ***arbor vitae (Winslow, 1733)***; in the original French, *la racine du Peduncle*, p. 13. Pourfour de Petit referred to *white substance (Vesalius, 1543a)* emerging from *folia (Malacarne, 1776)* to join *root of peduncle (Pourfour du Petit, 1710)* as *branches of peduncular root*; in the original French, *les branches de la racine du Peduncle*, p. 13.
8. *arbusculis medullaribus (Heister, 1717)* Synonym for macrodissected adult human ***arbor vitae (Winslow, 1733)***; p. 211.

LATER SYNONYMS:

1. *cerebellar nucleus (Malacarne, 1776)* Synonym for macrodissected adult human ***arbor vitae (Winslow, 1733)***; p. 65, see Larsell (1967, p. 4).
2. *crus cerebelli (Monro, 1783)* Synonym for macrodissected adult human ***arbor vitae (Winslow, 1733)***; Table VII-*I*.
3. *central nucleus of peduncles (Chaussier, 1807)* Synonym for macrodissected adult human ***arbor vitae (Winslow, 1733)***; p. 98.
4. *central medullary nucleus (Reil, 1807–1808a)* Synonym for macrodissected adult human ***arbor vitae (Winslow, 1733)***, describing how *medullary stems* emerge from it and branch into lobes, lobules, and laminae or *folia (Malacarne, 1776)*; see Mayo translation (1822, p. 19).
5. *medullary nucleus (Reil, 1807–1808b)* Shortened form of *central medullary nucleus (Reil, 1807– 1808a)*; see Mayo translation (1822, p. 56).
6. *medullary nucleus of hemisphere (Reil, 1807–1808a)* Corresponds to *medullary nucleus (Reil, 1807–1808b)*; see Mayo translation (1823, p. 24).
7. *nucleus of cerebellum (Reil, 1809b)* Variation on *central medullary nucleus (Reil, 1807–1808a)*; see Mayo translation (1823, pp. 48, 53).
8. *nucleus of hemisphere (Reil, 1812c)* Variation on *central medullary nucleus (Reil, 1807–1808a)*.
9. *central mass of cerebellum (Gordon, 1815)*

Synonym for macrodissected adult human ***arbor vitae (Winslow, 1733)***; p. 143. Burdach (1822, p. 289) gave the Latin, *massa centralis cerebelli.*

10. *foliatus arbori (Tiedemann, 1821)*
Synonym for macrodissected adult monkey ***arbor vitae (Winslow, 1733)***; Table I, Figure 7-*l*.
11. *frondosae arbori (Tiedemann, 1821)*
Synonym for macrodissected adult monkey ***arbor vitae (Winslow, 1733)***; Table I, Figure 7-*l*.
12. *central white nucleus of cerebellum (Cruveilhier, 1836)*
Basically synonym for macrodissected adult human ***arbor vitae (Winslow, 1733)***; in the original French, *noyau blanc central*, p. 631.

PARTLY CORRESPONDS:

1. *trunk of arbor vitae (Langenbeck, 1826–1830)*
Central condensed part of macrodissected adult human ***arbor vitae (Winslow, 1733)***; in the original Latin, *truncus arbor vitae*, Fascicle I, Table XV-*s*.
2. *nucleus of cerebellum (Arnold, 1838a)*
Synonym for macrodissected adult human *trunk of arbor vitae (Langenbeck, 1826–1830)*; p. 35.
3. *trunk of cerebellum (Arnold, 1838a)*
Synonym for *nucleus of cerebellum (Arnold, 1838a)*; in the original Latin, *truncus*, p. 35.
4. *meditullium of cerebellar hemisphere (Arnold, 1838a)*
Synonym for *nucleus of cerebellum (Arnold, 1838a)*; p. 35. Also see Arnold (1838b, Tab. IV, Fig. 4-*s*), in Latin, *meditullium cerebelli haemisphaerii*.
5. *arbor medullaris (Arnold, 1838a)*
Part of macrodissected adult human ***arbor vitae (Winslow, 1733)*** extending into ***cerebellar cortex (Willis, 1664)*** from *trunk of cerebellum (Arnold, 1838a)*; p. 35.
6. *medullary body of cerebellar hemisphere (Arnold, 1838b)*
Synonym for *nucleus of cerebellum (Arnold, 1838a)*; in the original Latin, *corpus medullare hemisphaerii cerebelli*, Table IV, Figure 4-*p*.
7. *medullary body of cerebellum (Arnold, 1838b)*
Synonym for *nucleus of cerebellum (Arnold, 1838a)*; in the original Latin, *corpus medullare cerebelli*, Table VI, Figure 3-*n*.

arcuate fibers (Arnold, 1838b)

As described for macrodissected adult human, roughly ***U***-shaped bundles of short ***association fibers of cerebral cortex (>1840)*** between nearby *cerebral gyri (Vesalius, 1543a)*; see Williams & Warwick (1980, pp. 1029–1030), where they are referred to as *short arcuate fibers* and *short association fibers*. Also see *Nomina Anatomica* (1983, p. A72), *Terminologia Anatomica* (1998, p. 131). For Arnold's use in macrodissected adult human, see Table X, Figures 1-*z*, 2-*t*.

TRANSLATIONS:

1. *fibrae arcuatae (Arnold, 1838b)*
Original Latin form of ***arcuate fibers (Arnold, 1838b)***; Table X, Figure 1-*z*.
2. *fibrae arcuatae cerebri (>1840)*
Currently accepted Latin form of ***arcuate fibers (Arnold, 1838b)***; see *Terminologia Anatomica* (1998, p. 131).

arcuate nucleus of medulla (>1840)

As described for macrodissected adult human, and based on cellular architecture and connections as well, narrow bands of ***gray matter (Meckel, 1817)*** on superficial parts of the ***pyramid (Willis, 1664)*** often regarded as caudally displaced extensions of the ***pontine nuclei (Jacobsohn, 1909)***, although their ***axons (Kölliker, 1896)***, unlike those from the ***pontine nuclei (Jacobsohn, 1909)***, contribute to the ***ventral external arcuate fibers (>1840)*** and enter the ***inferior cerebellar peduncle (Günther, 1786)***; see Williams & Warwick (1980, pp. 904–905), Nieuwenhuys et al. (2008, Figs. 6.22-*16*, 6.24-*14*). It was perhaps first clearly delineated by Gordon; see ***[arcuate nucleus of medulla (>1840)] (Gordon, 1815)***.

EARLIER REFERENCES:

Described, not named or illustrated:

1. ***[arcuate nucleus of medulla (>1840)] (Gordon, 1815)***
Clearly described for macrodissected adult human; p. 184.

area postrema (>1840)

As described for mammal, a tiny unpaired ***central nervous system gray matter region (>1840)*** lying dorsally in the median plane of the ***medulla (Winslow, 1733)***, just at the level of the ***obex (Burdach, 1822)***. As described for macrodissected adult human, it lies just medial to the ***funiculus separans (>1840)*** with its dorsal surface visible at the caudal tip of the ***floor of fourth ventricle (Reil, 1807–1808a)***. It is a circumventricular organ lacking a blood-brain barrier; see Williams & Warwick (1980, pp. 934–935). It was not described clearly by 1840.

articular branch of deep fibular nerve (>1840)

As described for macrodissected adult human, a thin branch of the ***deep fibular nerve (Fyfe, 1800)*** to the ankle joint; see Williams & Warwick (1980, p. 1115). It was perhaps first clearly identified as *branches of anterior tibial nerve to joints of foot (Quain & Wilson, 1839)*.

EARLIER REFERENCES:

Earlier synonyms:

1. *branches of anterior tibial nerve to joints of foot (Quain & Wilson, 1839)*
Synonym for macrodissected adult human ***articular branch of deep fibular nerve (>1840)***; Plate XXIV, Figure 2-*C,c*.
2. *branches of interosseous nerve to joints of foot (Quain & Wilson, 1839)*
Synonym for macrodissected adult human ***articular branch of deep fibular nerve (>1840)***; Plate XXIV, Figure 2-*C,c*.

articular branch of nerve to popliteus (>1840)

As described for macrodissected adult human, a branch of the ***nerve to popliteus (>1840)*** to the superior tibio-fibular joint; see Durward (1951, pp. 1109–1110), Williams & Warwick (1980, p. 1113). It was probably first

pointed out by Jördens; see ***[articular branch of nerve to popliteus (>1840)] (Jördens, 1788)***.

EARLIER REFERENCES:

Described, not named or illustrated:

1. ***[articular branch of nerve to popliteus (>1840)] (Jördens, 1788)***
   Mentioned for macrodissected adult human as arising from *first nerve to popliteus from tibial nerve trunk (Jördens, 1788)*; p. 9, § XIX.

articular branch of nerve to quadratus femoris (>1840)

As described for macrodissected adult human, a branch of the ***nerve to quadratus femoris (>1840)*** to the hip joint; see Durward (1951, p. 1100), Williams & Warwick (1980, p. 1111). It was perhaps first clearly delineated by Swan; see ***[articular branch of nerve to quadratus femoris (>1840)] (Swan, 1830)***.

EARLIER REFERENCES:

Described, not named or illustrated:

1. ***[articular branch of nerve to quadratus femoris (>1840)] (Swan, 1830)***
   Clearly described for macrodissected adult human; p. 36.

Earlier synonyms:

1. *internal branches of nerve of quadratus femoris and gemellus inferior (Cruveilhier, 1836)*
   Synonym for macrodissected adult human ***articular branch of nerve to quadratus femoris (>1840)***; in the original French, *rameaux internes*, p. 859.
2. *articular branches of nerve of quadratus femoris and gemellus inferior (Cruveilhier, 1836)*
   Synonym for *internal branches of nerve of quadratus femoris and gemellus inferior (Cruveilhier, 1836)*; in the original French, *rameaux articulaires*, p. 859.

articular branch of posterior branch of obturator nerve (>1840)

As described for macrodissected adult human, a branch of the ***posterior branch of obturator nerve (Haase, 1781; Martin, 1781)*** to the dorsal (posterior) part of the knee joint; see Durward (1951, p. 1094), *Terminologia Anatomica* (1998, p. 140). It was first clearly described as the *articular nerve of knee (Cruveilhier, 1836, p. 840)*.

EARLIER REFERENCES:

Earlier synonyms:

1. *articular nerve of knee (Cruveilhier, 1836, p. 840)*
   Synonym for macrodissected adult human ***articular branch of posterior branch of obturator nerve (>1840)***; in the original French, *nerf articulaire du genou*, p. 840.

articular branch of tibial nerve to ankle joint (>1840)

As described for macrodissected adult human, a branch of the ***tibial nerve (Haas, 1781)*** trunk to the ankle joint; see Williams & Warwick (1980, p. 1112). It was perhaps first clearly delineated by Swan; see ***[articular branch of tibial nerve to ankle joint (>1840)] (Swan, 1830)***.

EARLIER REFERENCES:

Described, not named or illustrated:

1. ***[articular branch of tibial nerve to ankle joint (>1840)] (Swan, 1830)***
   Described for macrodissected adult human as branches from *posterior tibial nerve (Haller, 1762)* to deeper parts of ankle joint; p. 36.

articular branches of auriculotemporal nerve (>1840)

As described for macrodissected adult human, one or two small branches of the ***auriculotemporal nerve (Haller, 1762)*** to caudal (posterior) parts of the temporomandibular joint; see Williams & Warwick (1980, p. 1067). They were known to Galen; see ***[articular branches of auriculotemporal nerve (1840)] (Galen, c192)***.

EARLIER REFERENCES:

Described, not named or illustrated:

1. ***[articular branches of auriculotemporal nerve (1840)] (Galen, c192)***
   Mentioned for macrodissected adult beef, pig, and/or macaque but not human; see Duckworth translation (1962, p. 193). They were described for macrodissected adult human by Swan (1830, Pl. XIV, Fig. 2-6) and Cruveilhier (1836, p. 933).

Earlier synonyms:

1. *articular fascicles of cutaneous temporal surculus of inferior maxillary branch (Bellingeri, 1818)*
   Synonym for two macrodissected adult human ***articular branches of auriculotemporal nerve (>1840)***; in the original Latin, *(duo) fasciculi articulares*, see Table I.

articular branches of common fibular nerve (>1840)

As described for macrodissected adult human, 1–3 commonly arise from the ***sciatic nerve (Keill, 1698)*** segment of the ***common fibular nerve (>1840)*** and supply the knee joint; see Durward (1951, p. 1106), Williams & Warwick (1980, p. 1115). They were perhaps first clearly described as the *superior popliteal nerve (Günther, 1786)*.

EARLIER REFERENCES:

Earlier synonyms:

1. *superior popliteal nerve (Günther, 1786)*
   May correspond to macrodissected adult human ***articular branches of common fibular nerve (>1840)***; in the original Latin, *nervus popliteus superior*, p. 87. Also see ***articular branch of tibial nerve to knee joint (>1840)***. Burdin (1803; see translation, 1803, Vol. 1, p. 205) specifically mentioned such a branch for macrodissected adult human.
2. *inferior posterior cutaneous nerve (Meckel, 1817)*
   May correspond to macrodissected adult human ***articular branches of common fibular nerve (>1840)***; see translation (1832, Vol. 3, pp. 17–18).
3. *articular branch of external popliteal nerve (Bock, 1827)*
   Synonym for macrodissected adult human ***articular branches of common fibular nerve (>1840)***; in the

original Latin, *ram. articularis nerv. poplitaeus externus*, Table IV-*88*.

4. *articular branches of sciatic nerve (Cruveilhier, 1836)*
   For macrodissected adult human probably ***articular branches of common fibular nerve (>1840)***; Cruveilhier mentioned three such branches (p. 860) but then only described one (p. 861) from *sciatic nerve trunk (Günther, 1786)*, the *articular nerve of knee (Cruveilhier, 1836)*; in the original French, *rameaux articulaires du nerf sciatique*.
5. *articular nerve of knee (Cruveilhier, 1836, p. 861)*
   For macrodissected adult human, an *articular branch of sciatic nerve (Cruveilhier, 1836)*; in the original French, *nerf articulaire du genou*, p. 861.

articular branches of radial nerve (>1840)

As described for macrodissected adult human, branches from the trunk of the ***radial nerve (Du Verney, 1697)*** distributing to the elbow joint; see Williams & Warwick (1980, p. 1101). They were perhaps first clearly described as a *branch of musculo-spiral nerve distributed to joint (Quain & Wilson, 1839)*.

EARLIER REFERENCES:

Earlier synonyms:

1. *branch of musculo-spiral nerve distributed to joint (Quain & Wilson, 1839)*
   Synonym for macrodissected adult human ***articular branches of radial nerve (>1840)***; Plate XIX, Figure 2-*a*.

articular branches of tibial nerve (>1840)

As described for macrodissected adult human, there are commonly 2–3 branches to the knee joint and one to the ankle joint from the trunk of the ***tibial nerve (Haas, 1781)***; see Durward (1951, p. 1109), Williams & Warwick (1980, p. 1112). At least some were first clearly delineated by Winslow; see ***[articular branches of tibial nerve (>1840)] (Winslow, 1733)***.

EARLIER REFERENCES:

Described, not named or illustrated:

1. ***[articular branches of tibial nerve (>1840)] (Winslow, 1733)***
   Winslow mentioned branches to knee joint in macrodissected adult human; Section VI, no. 328, p. 91.

Earlier synonyms:

1. *internal articular branch of internal popliteal nerve (Bock, 1827)*
   Synonym for macrodissected adult human ***articular branches of tibial nerve (>1840)***; in the original Latin, *ram. articularis internus nerv. poplitaeus internus*, Table IV-*93,94*.

articular branches of tibial nerve to knee joint (>1840)

As described for macrodissected adult human there are commonly 2–3 branches; see Durward (1951, p. 1109), Williams & Warwick (1980, p. 1112). They were perhaps first delineated by Winslow; see ***[articular branches of tibial nerve to knee joint (>1840)] (Winslow, 1733)***.

EARLIER REFERENCES:

Described, not named or illustrated:

1. ***[articular branches of tibial nerve to knee joint (>1840)] (Winslow, 1733)***
   Mentioned for macrodissected adult human; Section VI, no. 328, p. 91.

Earlier synonyms:

1. *posterior articular nerve of knee (Cruveilhier, 1836)*
   Synonym for macrodissected adult human ***articular branch of tibial nerve to knee joint (>1840)***; in the original French, *nerf articulaire postérieur du genou*, p. 870.

ascending branch of lateral cerebral sulcus (>1840)

As described for macrodissected adult human, the rostral and dorsal branch of the ***lateral cerebral sulcus (>1840)*** between ***triangular part of inferior frontal gyrus (>1840)*** rostrally and ***opercular part of inferior frontal gyrus (>1840)*** caudally; see Williams & Warwick (1980, p. 984, Fig. 7.111A), *Terminologia Anatomica* (1998, p. 124). It was first delineated as the *anterior vertical branch of Sylvian fissure (Vicq d'Azyr, 1784)*.

EARLIER REFERENCES:

Earlier synonyms:

1. *anterior vertical branch of Sylvian fissure (Vicq d'Azyr, 1784)*
   Synonym for macrodissected adult human ***ascending branch of lateral cerebral sulcus (>1840)***; p. 506. It probably corresponds to dorsally directed part of ***crusiform sulcus (Rolando, 1831)***; Figure 1-*8*.

ascending superficial branches of cervical plexus (Quain, 1828)

As described for macrodissected adult human, branches of the second and third cervical ***spinal nerve ventral branches (>1840)*** generating the ***lesser occipital nerve (Andersch & Soemmerring, 1791)***, ***great auricular nerve (Haase, 1781)***, and ***transverse nerve of neck (>1840)***; see Durward (1951, p. 1061 and Fig. 919), Williams & Warwick (1980, p. 1092). For Quain's use in macrodissected adult human, see p. 489. They were known to Galen; see ***[ascending superficial branches of cervical plexus (Quain, 1828)] (Galen, c173)***.

EARLIER REFERENCES:

Described, not named or illustrated:

1. ***[ascending superficial branches of cervical plexus (Quain, 1828)] (Galen, c173)***
   Galen described all three major branches in adult large mammals (beef, pig, and/or macaque) but not human; see May translation (1968, pp. 597–598, 698) and Duckworth translation (1962, pp. 225–226, 234–235, 238).

Earlier synonyms:

1. *cephalic part of trachelo-cutanean plexus (Burdin, 1803)*
   Synonym for macrodissected adult human *cephalic part of tracheosubcutaneous nerves (Chaussier, 1809)*; see translation (1803, Vol. 1, p. 188).

2. *cephalic part of tracheosubcutaneous nerves (Chaussier, 1809)*
   Synonym for macrodissected adult human ***ascending superficial branches of cervical plexus (Quain, 1828)***.

PARTLY CORRESPONDS:

1. *lateral cutaneous nerve of face of first pair of cervical nerves (Meckel, 1753)*
   An inconsistent ***ascending superficial branch of cervical plexus (Quain, 1828)*** in macrodissected adult human ending near parotid gland and nearby parts of masseter muscle; Table 1-Φ (also see p. 101).

association fibers of cerebral cortex (>1840)

As described for macrodissected adult human, and mammal generally with histological methods, ***axons (Kölliker, 1896)*** connecting different areas of the ***cerebral cortex gray matter (>1840)*** on the same side (right or left) and generally taking a route through the underlying ***cerebral cortex white matter (>1840)***. For topographic description they are divided into short ***association fibers of cerebral cortex (>1840)***, or ***arcuate fibers (Arnold, 1838b)***, and long ***association fibers of cerebral cortex (>1840)*** including the ***uncinate fascicle (Reil, 1809b)***, ***inferior longitudinal fascicle (Burdach, 1822)***, ***external capsule (Burdach, 1822)***, ***superior longitudinal fascicle (>1840)***, and ***cingulum (Burdach, 1822)***; see Crosby et al. (1962, pp. 402–409 and Fig. 284), Williams & Warwick (1980, pp. 1029–1030, Fig. 7.148). They were perhaps first clearly distinguished by Reil; see ***[association fibers of cerebral cortex (>1840)] (Reil, 1809b)***.

EARLIER REFERENCES:

Illustrated and described, not named:

1. ***[association fibers of cerebral cortex (>1840)] (Reil, 1809b)***
   As described for macrodissected adult human, "it consists but of fasciculi which pass from the centre of any convolution to others more remote." (Mayo translation, 1823, p. 71). And "this structure is probably general, and is probably intended…for the common purpose of associating together in action the convolutions of the great divisions of either hemisphere" (Mayo translation, 1823, p. 81).

atrial plexuses (>1840)

As described for macrodissected adult human, derivatives of the right and left continuations of the ***cardiac plexus (Keill, 1698)*** extending along the pulmonary arteries to the right and left atria of the heart and overlapping with nerve fibers of the ***coronary plexuses (Meckel, 1817)***; see Williams & Warwick (1980, p. 1132). They were perhaps first clearly identified by Willis; see ***[atrial plexuses (>1840)] (Willis, 1664)***.

EARLIER REFERENCES:

Described, not named or illustrated:

1. ***[atrial plexuses (>1840)] (Willis, 1664)***
   Willis described for macrodissected adult human many "nerve fibers" going to "the Vessels hanging to the Heart, and to its little Ears [atria] and Pericardium" (Pordage translation, 1681, p. 147).

Earlier synonyms:

1. *auricular plexus (Swan, 1830)*
   Essentially synonym for macrodissected adult human ***atrial plexuses (>1840)***; pp. 6–7.

PARTLY CORRESPONDS:

1. *nerve to right auricle of heart (Andersch & Soemmerring, 1792)*
   In macrodissected adult human, associated with *anterior branch of right trunk of nerve of right pulmonary branches (Andersch & Soemmerring, 1792)* and contributes to right ***atrial plexus (>1840)***; in the original Latin, *nervus dextrae auriculae cordis, nervum auriculae dextrae cordis*, pp. 196–197.
2. *nerve to left auricle of heart (Andersch, 1797)*
   In macrodissected adult human, extends from *nerve layers of septum of heart (Andersch, 1797)* and contributes to left ***atrial plexus (>1840)***; in the original Latin, *nervus auriculae sinistrae cordis*, Vol. 2, pp. 78, 102.
3. *deep auricular branch of nerve to left auricle (Andersch, 1797)*
   Terminal branch of *nerve to left auricle of heart (Andersch, 1797)*; in the original Latin, *ramo auriculari profundo*, Vol. 2, p. 103.
4. *superficial auricular branches of nerve to left auricle (Andersch, 1797)*
   Terminal branches of *nerve to left auricle of heart (Andersch, 1797)*; in the original Latin, *ramos auricularos superficialos*, Vol. 2, p. 103.

atrium of lateral ventricle (>1840)

The part of the macrodissected adult human ***lateral ventricle (Vesalius, 1543a)*** between the ***body of lateral ventricle (Bell, 1803b)***, ***posterior horn of lateral ventricle (Haller, 1747)***, and ***inferior horn of lateral ventricle (Bell, 1802)***; see Williams & Warwick (1980, p. 1029), *Dorland's* (2003, p. 1949). If no ***posterior horn of lateral ventricle (Haller, 1747)*** is present, the ***body of lateral ventricle (Bell, 1803b)*** borders the ***inferior horn of lateral ventricle (Bell, 1802)*** at the level of the ***splenium of corpus callosum (Burdach, 1822)***; see Millen & Woollam (1962, pp. 33–44, Figs. 13, 16), *Terminologia Anatomica* (1998, p. 127). It was illustrated by Berengario da Carpi; see ***[atrium of lateral ventricle (>1840)] (Berengario da Carpi, 1523)***.

EARLIER REFERENCES:

Illustrated, not named or described:

1. ***[atrium of lateral ventricle (>1840)] (Berengario da Carpi, 1523)***
   First indicated and illustrated in macrodissected adult human; f. 56, top.

Described, not named or illustrated:

1. ***[atrium of lateral ventricle (>1840)] (Gordon, 1815)***
   Clearly described for macrodissected adult human; p. 107.

auditory radiation (>1840)

As described for macrodissected adult human, a topographic division of the ***cerebral cortex white matter (>1840)*** between ***sublentiform part of internal capsule (>1840)***, specifically its ***posterior thalamic radiation (>1840)*** component, and ***cerebral cortex gray matter (>1840)***. A major component is the projection from ***medial geniculate complex (>1840)*** to auditory areas centered in the ***transverse temporal gyri (Heschl, 1878)*** and adjacent parts of the ***superior temporal gyrus (>1840)***; see Mettler (1948, p. 409 and Figs. 96, 97), Crosby et al. (1962, pp. 275, 467 and Fig. 272), Carpenter (1976, Fig. 15.18), Nieuwenhuys et al. (1962, pp. 737, 742–744 and Fig. 18.1A-3). It was not clearly delineated by 1840.

auditory tubercle (>1840)

As described for macrodissected adult human, an eminence on the ***floor of fourth ventricle (Reil, 1807a–1808)***, associated with the ***lateral recess of fourth ventricle (>1840)*** and indicating the surface of the ***cochlear nuclei (>1840)***; see Williams & Warwick (1980, p. 934). It was distinguished by Procháska; see ***[auditory tubercle (>1840)] (Procháska, 1779)***.

EARLIER REFERENCES:

Described, not named or illustrated:

1. ***[auditory tubercle (>1840)] (Procháska, 1779)***
   Undoubtedly corresponds to surface of macrodissected adult human *gray band (Procháska, 1779)*; pp. 389–391.

Earlier synonyms:

1. *eminentias transversales ventriculi quarti (Procháska, 1800)*
   Synonym for at least part of macrodissected adult human right and left ***auditory tubercle (>1840)***; Vol. 1, p. 387 ff. See Burdach (1822, p. 311).

PARTLY CORRESPONDS:

1. *gray colliculus (Wenzel & Wenzel, 1812)*
   Apparently part of macrodissected adult human ***auditory tubercle (>1840)***; in the original Latin, *colliculus cinereus*, Table XI, Figure 4-*c*.

auricular branch of posterior auricular nerve (Arnold, 1834)

As described for macrodissected adult human, a secondary branch of the ***facial nerve trunk (>1840)*** supplying the posterior auricular muscle and intrinsic muscles on the cranial surface of the auricle and lying rostral (anterior) to the ***occipital branch of posterior auricular nerve (Arnold, 1834)***; see Hamilton (1976, Fig. 798), Williams & Warwick (1980, p. 1072). For Arnold's use in macrodissected adult human, see p. 12. It was known to Galen; see ***[auricular branch of posterior auricular nerve (Arnold, 1834)] (Galen, c173)***.

TRANSLATIONS:

1. *nervus auricularis posterior ramus auricularis (Arnold, 1834)*
   Original Latin form of ***auricular branch of posterior auricular nerve (Arnold, 1834)***; p. 12.

EARLIER REFERENCES:

Described, not named or illustrated:

1. ***[auricular branch of posterior auricular nerve (Arnold, 1834)] (Galen, c173)***
   Mentioned for macrodissected adult beef, pig, and/or macaque but not human; see May translation (1968, p. 686).

Illustrated, not named or described:

1. ***[auricular branch of posterior auricular nerve (Arnold, 1834)] (Du Verney, 1683)***
   Clearly illustrated for macrodissected adult human; Plate 12, Figure 3-*D*.

Earlier synonyms:

1. *auricular branch of external deep branch of hard nerve (Meckel, 1753)*
   Synonym for macrodissected adult human ***auricular branch of posterior auricular nerve (Arnold, 1834)***; in the original French, *le rameau postérieur profond auriculaire*, p. 75. Also see *occipital branch of external deep branch of hard nerve (Meckel, 1753)*.
2. *anterior auricular branch of hard nerve (Bang, 1770)*
   Synonym for macrodissected adult human ***auricular branch of posterior auricular nerve (Arnold, 1834)***; in the original Latin, *auriculari nervi duri anteriori*, Figure I-*34*.
3. *anterior branch of external deep branch of hard nerve (Haase, 1781)*
   Synonym for macrodissected adult human ***auricular branch of posterior auricular nerve (Arnold, 1834)***; p. 81.
4. *auricular branch proper of external deep branch of hard nerve (Günther, 1786)*
   Synonym for macrodissected adult human ***auricular branch of posterior auricular nerve (Arnold, 1834)***; in the original Latin, *auricularem proprium*, p. 57.
5. *anterior branch of auricular portion of hard part of acoustic nerve (Frotscher, 1788)*
   Synonym for macrodissected adult human ***auricular branch of posterior auricular nerve (Arnold, 1834)***; in the original Latin, *auriculari portionis durae nervi acustici anteriori*, see p. 87 of 1795 reprint.
6. *anterior branch of posterior auricular nerve (Meckel, 1817)*
   Synonym for macrodissected adult human ***auricular branch of posterior auricular nerve (Arnold, 1834)***; see translation (1832, Vol. 3, p. 54).
7. *auricular surculus of external deep branch of portio major and minor of facial nerve (Bellingeri, 1818)*
   Synonym for macrodissected adult human ***auricular branch of posterior auricular nerve (Arnold, 1834)***; in the original Latin, *surculus auricularis*, see Table II.
8. *nervus auricularis posterior rami musculorum retrahentium (Arnold,1834)*
   Synonym for macrodissected adult human ***auricular branch of posterior auricular nerve (Arnold, 1834)***; Table IX:VII-22. *Musculorum retrahentium* is posterior auricular muscle, also known as retractor muscle of ear; see Todd (1836–1839, Vol. 2, p. 552).

9. *ascending filament of posterior auricular branch of facial nerve (Cruveilhier, 1836)*
   Synonym for macrodissected adult human ***auricular branch of posterior auricular nerve (Arnold, 1834)***; in the original French, *filet ascendant*, p. 943.
10. *auricular filament of posterior auricular branch of facial nerve (Cruveilhier, 1836)*
    Synonym for *ascending filament of posterior auricular branch of facial nerve Cruveilhier, 1836)*; in the original French, *filet auriculaire*, p. 943.

auricular branch of vagus nerve (Arnold, 1834)

As described for macrodissected adult human, a proximal branch of the ***vagus nerve trunk (Wrisberg, 1786; Günther, 1786)*** appearing to arise from the ***proximal vagal ganglion (>1840)*** and soon joined by the ***communicating branch of glossopharyngeal nerve with auricular branch of vagus nerve (>1840)***. In the region of the facial canal, it is joined by the ***communicating branch of intermediofacial nerve with vagus nerve (>1840)*** before passing through the tympanomastoid fissure and dividing into two branches, one joining the ***posterior auricular nerve (Meckel, 1753)*** and the other distributing to skin on part of the cranial surface of the auricle and posterior wall and floor of the external auditory meatus and adjoining part of the outer surface of the tympanic membrane; see Mettler (1948, Fig. 61), Durward (1951, Fig. 907-*Aur.*), Williams & Warwick (1980, p. 1079). For Arnold's discovery and use in macrodissected adult human, see pp. 12, 13.

TRANSLATIONS:

1. *ramo auriculare nervi vagi (Arnold, 1834)*
   Original Latin form of ***auricular branch of vagus nerve (Arnold, 1834)***; pp. 12, 13.

LATER SYNONYMS:

1. *auricular branch of pneumogastric nerve (Cruveilhier, 1836)*
   Synonym for macrodissected adult human ***auricular branch of vagus nerve (Arnold, 1834)***; in the original French, *rameau auriculaire du pneumo-gastrique*, p. 942.
2. *Arnold's nerve (>1840)*
   Eponym for ***auricular branch of vagus nerve (Arnold, 1834)***; see Lekakis (2003, p. 28).

PARTLY CORRESPONDS:

1. *branchlet of auricular branch of vagus nerve to external auditory meatus (Arnold, 1834)*
   Macrodissected adult human branch of ***auricular branch of vagus nerve (Arnold, 1834)*** to external auditory meatus; in the original Latin, *ramus auricularis nervi vagi, ramuli meatus auditorii externi*, p. 14.

auriculotemporal nerve (Haller, 1762)

As described for macrodissected adult human, it generally arises from the ***posterior branch of mandibular nerve (>1840)*** as two roots encircling the middle meningeal artery and joining to form a trunk eventually dividing into ***superficial temporal branches of auriculotemporal nerve (>1840)***; see Hamilton (1976, Fig. 798), Williams & Warwick (1980, p. 1066), and Henle (1871, Fig. 243-*at*), who illustrated it beautifully. For Haller's original use in macrodissected adult human, see p. 219. It was known to Galen; see ***[auriculotemporal nerve (Haller, 1762)] (Galen, c173)***.

TRANSLATIONS:

1. *nervos temporales auricularem (Haller, 1762)*
   Original Latin form of ***auriculotemporal nerve (Haller, 1762)***; p. 219.
2. *nervus auriculo-temporalis (Henle, 1871)*
   Latin form of ***auriculotemporal nerve (Haller, 1762)***; p. 396.

EARLIER REFERENCES:

Described, not named or illustrated:

1. ***[auriculotemporal nerve (Haller, 1762)] (Galen, c173)***
   Described for macrodissected adult beef, pig, and/or macaque but not human; see May translation (1968, p. 444 note 38), Duckworth translation (1962, pp. 193, 196, 235). Winslow provided a rough description for macrodissected adult human, referring to 1st and 2nd branches of *inferior maxillary nerve (Heister, 1717)*; Section VI, pp. 65–66.

Illustrated and described, not named:

1. ***[auriculotemporal nerve (Haller, 1762)] (Du Verney, 1683)***
   Clearly illustrated for macrodissected adult human; Plate 13-*G*, also see Vieussens (1684, p. 173 and Tab. 22-9).

Earlier synonyms:

1. *superficial temporal branch of third branch of fifth pair (Meckel, 1748)*
   Synonym for macrodissected adult human ***auriculotemporal nerve (Haller, 1762)***; in the original Latin, *ramus temporalis superficialis tertii rami Quinti paris*, Figure 1-*81* and p. 97.
2. *superficial temporal nerve (Meckel, 1748)*
   Synonym for macrodissected adult human ***auriculotemporal nerve (Haller, 1762)***; in the original Latin, *nervus temporalis superficialis*, p. 98.
3. *posterior subcutaneous temporal nerve of third branch of fifth pair (Meckel, 1753)*
   Synonym for macrodissected adult human ***auriculotemporal nerve (Haller, 1762)***; in the original French, *le nerf sous-cutané postérieur des temples du troisième rameau du nerf de la cinquième paire*, pp. 58, 67.
4. *auricular branch of third trunk of fifth pair (Haller, 1762)*
   Synonym for macrodissected adult human ***auriculotemporal nerve (Haller, 1762)***, p. 229.

LATER SYNONYMS:

1. *posterior branch of inferior maxillary nerve (Le Cat, 1768)*
   Synonym for macrodissected adult human ***auriculotemporal nerve (Haller, 1762)***; Plate VII, Figure 1-*1*.
2. *external temporal branch of inferior maxillary nerve (Le Cat, 1768)*
   Synonym for macrodissected adult human ***auriculotemporal nerve (Haller, 1762)***; Plate VII, Figure 1-*1*.
3. *superficial temporal branch of inferior maxillary nerve (Le Cat, 1768)*

Synonym for macrodissected adult human ***auriculotemporal nerve (Haller, 1762)***; Plate VIII, Figure 1-*Φ*.

4. *external temporal nerve (Le Cat, 1768)*
   Synonym for macrodissected adult human ***auriculotemporal nerve (Haller, 1762)***; Plate VII, Figure 2-*1*.
5. *auricular nerve (Günther, 1786)*
   Synonym for macrodissected adult human ***auriculotemporal nerve (Haller, 1762)***; in the original Latin, *nervus auricularis*, p. 53.
6. *posterior superficial temporal nerve (Mayer, 1794)*
   Synonym for macrodissected adult human ***auriculotemporal nerve (Haller, 1762)***; in the original Latin, *nervus temporalis superficialis posterior*; Part 5, Table VII-*XI* (p. 53).
7. *cutaneous temporal nerve (Burdin, 1803)*
   Synonym for macrodissected adult human ***auriculotemporal nerve (Haller, 1762)***; see translation (1803, Vol. 1, p. 176).
8. *anterior auricular nerve (Bock, 1817)*
   Synonym for macrodissected adult human *superficial temporal nerve (Meckel, 1748)*; in the original Latin, *nervus auricularis anterior*, p. 47.
9. *cutaneous temporal surculus of inferior maxillary branch (Bellingeri, 1818)*
   Synonym for macrodissected adult human ***auriculotemporal nerve (Haller, 1762)***; in the original Latin, *surculus temporalis cutaneous*, see Table I.
10. *glandulocutaneous nerve (Jacobson, 1818)*
    Basically macrodissected adult mammalian ***auriculotemporal nerve (Haller, 1762)***; in the original Latin, *nervus maxillaris inferior ramus glandulo-cutaneus*, p. 18.
11. *superficial temporal nerve of third trunk of fifth (Swan, 1830)*
    Synonym for *superficial temporal branch of third branch of fifth pair (Meckel, 1748)*; Plate XIII-*13*.
12. *auricular branch of inferior maxillary nerve (Quain, 1832)*
    Synonym for macrodissected adult human ***auriculotemporal nerve (Haller, 1762)***; p. 676.
13. *ramus meatus auditorii externii Meckel (Quain, 1832)*
    Eponym for macrodissected adult human ***auriculotemporal nerve (Haller, 1762)***; p. 676. Quain provided no citation to Meckel's work.

PARTLY CORRESPONDS:

1. *lesser auricular nerves (Günther, 1786)*
   Macrodissected adult human ***anterior auricular nerves (>1840)*** and ***external acoustic meatus nerves (Meckel, 1817)*** considered together; in the original Latin, *auriculares minores*, p. 53.
2. *second auricular branch of superficial temporal nerve (Bock, 1817)*
   Apparently, trunk of macrodissected adult human ***auriculotemporal nerve (Haller, 1762)*** distal to where the ***anterior auricular nerves (>1840)*** branch off; in the original Latin, *ramus auricularis secundus*, p. 50.

autonomic ganglia (Langley, 1900)

As described for vertebrates, macrodissected ***ganglia (Galen, c173)*** in the ***peripheral nervous system (Meckel, 1817)*** that are distinguished from ***craniospinal ganglia (>1840)*** and for description are divided into sequentially more distal ***paravertebral ganglia (Durward, 1951)***, ***prevertebral ganglia (Quain, 1832)***, and ***terminal ganglia (Gaskell, 1886)***; see Crosby et al. (1962, p. 521). They are often embedded in ***prevertebral plexuses (Quain, 1837)*** and ***terminal plexuses (Swanson & Bota, 2010)***; also see ***autonomic nerves (Langley, 1898)***. Based on cellular architecture and connections, they are considered ***peripheral nervous system gray matter regions (Swanson & Bota, 2010)***. For Langley's use see pp. 677–678. Galen provided the first evidence for their existence; see ***[autonomic ganglia (Langley, 1900)] (Galen c173, c177, c192)***.

EARLIER REFERENCES:

Described, not named or illustrated:

1. ***[autonomic ganglia (Langley, 1900)] (Galen c173, c177, c192)***
   Galen described without naming three pairs of ***autonomic ganglia (Langley, 1900)***: the ***superior cervical ganglion (Vieussens, 1684)*** (see Duckworth translation, 1962, pp. 217–218; May translation, 1968, pp. 695–696; Savage-Smith 1971, p. 179), *cervicothoracic ganglion (>1840)* (see Duckworth translation, 1962, pp. 217–218; Savage-Smith, 1971, p. 179), and perhaps ***celiac ganglion (Walter, 1783)*** (see Savage-Smith 1971, p. 179). This is where he introduced the term ***ganglia (Galen, c173)***, which he described as having the consistency of ***nerve (Herophilus, c335–c280 BC)*** and lying on small ***nerves (Herophilus, c335–c280 BC)*** conducting over a long path; previous usage referred to a ganglion as an encapsulated tumor on a tendon or aponeurosis; see May translation (1968, p. 695).
2. ***[autonomic ganglia (Langley, 1900] (Willis, 1664)***
   Willis referred to a variety of them as *ganglioform infoldings (Willis 1664)* or *knots (Crooke, 1615)* that serve as animal spirit storehouses; see Pordage translation (1681, p. 165). His comprehensive description of the ***autonomic ganglia (Langley, 1900)*** and their connections was the first of its kind; see Sheehan (1936, p. 1088).

Earlier synonyms:

1. *vegetative system ganglia (Wutzer, 1817)*
   Basically equivalent to ***autonomic ganglia (Langley, 1900)***; in the original Latin, *ganglia systematis vegetativi*, pp. 52, 97.
2. *automatic system ganglia (Wutzer, 1817)*
   Basically equivalent to ***autonomic ganglia (Langley, 1900)***; in the original Latin, *ganglia systematis automaticum*, p. 52.
3. *ganglia of sympathetic nervous system (Wutzer, 1817)*
   Synonym for *vegetative system ganglia (Wutzer, 1817)*; in the original Latin, *ganglia systematis nervi sympathici (vegetativi)*, p. 97.

PARTLY CORRESPONDS:

1. *esophageal small ganglion (Walter, 1783)*
   Walter described at least two small ***ganglia (Galen, c173)*** associated with the macrodissected adult human

esophageal plexus (1762); in the original Latin, *ganglio-lum oesophageum*, Table III-*441,482*.

2. *esophageal ganglion (Cloquet, 1828)*
   Synonym for macrodissected adult human *esophageal small ganglion (Walter, 1783)*; in the original French, *ganglion oesophagien*, Plate CLXXVII-*203,208*.

autonomic nerves (Langley, 1898)

In macrodissected adult vertebrate, they consist of ***white matter (Meckel, 1817)***, and their origin—along with the anastomotic networks of ***communicating branches (Winslow, 1733)*** associated with them, *autonomic plexuses (Strong & Elwyn, 1943)*—appears to be from ***autonomic ganglia (Langley, 1900)*** in the ***peripheral nervous system (Meckel, 1817)***, not from the ***craniospinal nerves (Herrick, 1915)***. They are a component of what current usage (see *Nomina Anatomica*, 1983, p. A78) refers to as the *autonomic part of peripheral nervous system*. "The peripheral autonomous nervous system appears to be a direct survival of that diffuse type of nervous system which is found in the lowest animals which possess nerves at all, such as some jelly-fishes and worms" (Herrick, 1915, p. 227). ***Autonomic nerves (Langley, 1898)*** and ***autonomic ganglia (Langley, 1900)*** are distinguished macroscopically, although the latter are often embedded within *autonomic plexuses (Strong & Elwyn, 1943)*. For Langley's use, see p. 241); at least some were identified long ago: see *nerves to spongy flesh (Galen, c192)*.

EARLIER REFERENCES:

Earlier synonyms:

1. *sympathetic nerves (Sharpey et al., 1867)*
   Generally synonymous with macrodissected adult human ***autonomic nerves (Langley, 1898)***, p. cxxiii.

PARTLY CORRESPONDS:

1. *nerves to spongy flesh (Galen, c192)*
   Refers partly to ***autonomic nerves (Langley, 1898)*** supplying glands, in macrodissected adult beef, pig, and/or macaque, but not human; see Duckworth translation (1962, p. 111).
2. *inferior gastric nerves (Wrisberg, 1800)*
   As described for macrodissected adult human, probably associated with the *inferior gastric plexus (Portal, 1803a)* along the greater curvature of the stomach; in the original Latin, *nervos gastricos inferiores*, pp. 563, 568.
3. *superior gastric plexus (Portal, 1803a)*
   As described for macrodissected adult human, probably equivalent to ***right gastric plexus (>1840)*** and ***left gastric plexus (>1840)*** considered together; in the original French, *plexus gastrique supérieur*, p. 193. Also see *superior coronary plexus of stomach (Meckel, 1817)*.
4. *small coronary plexus (Portal, 1803a)*
   Synonym for macrodissected adult human *superior gastric plexus (Portal, 1803a)*; in the original French, *petit plexus coronaire*, p. 193.
5. *inferior gastric plexus (Portal, 1803a)*
   As described for macrodissected adult human, probably equivalent to ***right gastroepiploic plexus (Wrisberg, 1800)*** and ***left gastroepiploic plexus (Wrisberg, 1800)*** considered together; in the original French, *plexus gastrique inférieur*, p. 194.
6. *solar plexus (Cloquet, 1816)*
   For macrodissected adult human, all ***prevertebral plexuses (Quain, 1832)*** and ***terminal plexuses (Swanson & Bota, 2010)*** in the abdomen, ending with the ***inferior mesenteric plexus (Rau, 1720)***; in the original French, *plexus solaire*, pp. 703–709.
7. *superior coronary plexus of stomach (Meckel, 1817)*
   Synonym for macrodissected adult human *superior gastric plexus (Portal, 1803a)*; see translation (1832, Vol. 3, p. 86).
8. *inferior coronary plexus (Meckel, 1817)*
   Synonym for macrodissected adult human *inferior gastric plexus (Portal, 1803a)*; in the original Latin, *plexus coronarius stomachicus inferior*; see translation (1832, Vol. 3, p. 86).
9. *solar plexus (Cruveilhier, 1836)*
   For macrodissected adult human, essentially synonymous with *solar plexus (Cloquet, 1816)* and ***superior mesenteric plexus (Rau, 1720)*** considered together; in the original French, *plexus solaire*, pp. 1013, 1018.
10. *epigastric plexus (Cruveilhier, 1836)*
    Synonym for *solar plexus (Cruveilhier, 1836)*; in the original French, *plexus épigastrique*, p. 1013; see Mitchell (1953, p. 272).
11. *epigastric nervous center (Cruveilhier, 1836)*
    Synonym for *epigastric plexus (Cruveilhier, 1836)*; in the original French, *centre nerveux épigastrique*, p. 1014.
12. *visceral plexuses (Cruveilhier, 1836)*
    For macrodissected adult human, the four great visceral plexuses include the ***pharyngeal plexus (Neubauer, 1772)***, ***cardiac plexus (Keill, 1698)***, *solar plexus (Cruveilhier, 1836)*, ***superior hypogastric plexus (Tiedemann, 1822)***, and ***inferior hypogastric plexus (Tiedemann, 1822)*** considered together; in the original French, *plexus viscéraux*, p. 1032.
13. *autonomic plexuses (Strong & Elwyn, 1943)*
    Anastomotic networks of ***autonomic nerve (Langley, 1898)*** branches, and in macrodissected adult human distinguished from ***autonomic ganglia (Langley, 1900)*** that may be embedded within them; Figure 148.

B

basal plate (>1840)

As described for developing vertebrate, right or left wall of the ***neural tube (Baer, 1837)*** between the ***floor plate (>1840)*** ventrally and ***limiting sulcus (>1840)*** dorsally; see Alvarez-Bolado & Swanson (1996, p. 13 ff.), Nieuwenhuys et al. (2008, p. 9). It was not clearly described by 1840.

basilar sulcus of pons (Gordon, 1815)

As described for macrodissected adult human, the longitudinal depression on the ventral surface of the ***pons (Haller, 1747)*** and its ***middle cerebellar peduncle (Rolando, 1819)*** in the median plane and usually lodging the basilar artery; see *Terminologia Anatomica* (1998, p. 112), Nieuwenhuys et al. (2008, Fig. 3.12-32). For Gordon's use in macrodissected adult human, see p. 112. It was first clearly delineated by Casseri; see ***[basilar sulcus of pons (Gordon, 1815)] (Casseri, 1609)***.

TRANSLATIONS:

1. *sulcus pontis basilaris (>1840)*
   Latin form of ***basilar sulcus of pons (Gordon, 1815)***; see Foster (1894, p. 2874). Burdach (1822, p. 299) simply gave *sulcus basilaris*; see *Terminologia Anatomica* (1998, p. 112).

EARLIER REFERENCES:

Illustrated, not named or described:

1. ***[basilar sulcus of pons (Gordon, 1815)] (Casseri, 1609)***
   Clearly illustrated for macrodissected adult human; Table VII, *Organi olfactus*, Figure II, between right and left *B*.

Earlier synonyms:

1. *sinus protuberantiae annularis (Santorini, 1775)*
   Synonym for macrodissected adult human ***basilar sulcus of pons (Gordon, 1815)***; p. 15.
2. *medial longitudinal sulcus of annular protuberance (Vicq d'Azyr, 1786)*
   Synonym for macrodissected adult human ***basilar sulcus of pons (Gordon, 1815)***; in the original French, *sillon longitudinal et moyen de la protubérance annulaire*, Plate XVIII-23.
3. *basilar furrow of pons (Gordon, 1815)*
   Original English form of ***basilar sulcus of pons (Gordon, 1815)***; p. 112.

LATER SYNONYMS:

1. *longitudinal groove on base of pons for basilar artery (Tiedemann, 1826)*
   Synonym for macrodissected fetal human ***basilar sulcus of pons (Gordon, 1815)***; p. 77. For original description in German, see Tiedemann (1816, p. 50).

basolateral amygdalar complex (>1840)

Based on histology and connections in mammal, a major ventral part of the ***cortical subplate (>1840)*** including the ***lateral amygdalar nucleus (>1840)***, ***basolateral amygdalar nucleus (>1840)***, ***basomedial amygdalar nucleus (>1840)***, and ***posterior amygdalar nucleus (Canteras et al., 1992)***; see Johnston (1923, p. 456 ff., who referred to basal and lateral nuclei of amygdala or amygdaloid nuclei), Nieuwenhuys et al. (2008, Fig. 5.6-36), Price et al. (1987, who referred to *basolateral nuclei of amygdaloid complex*), Swanson & Petrovich (1998), Swanson (2004). It was first clearly delineated by Steno; see ***[basolateral amygdalar complex (>1840)] (Steno, 1669)***.

EARLIER REFERENCES:

Illustrated, not named or described:

1. ***[basolateral amygdalar complex (>1840)] (Steno, 1669)***
   First clearly illustrated in transverse section through macrodissected adult human; Plate III.

Earlier synonyms:

1. *amygdalar nucleus (Burdach, 1822)*
   First description and illustration of macrodissected adult human ***basolateral amygdalar complex (>1840)***; in the original German, *den Mandelkern*, p. 173, Table III-δ. For modern comparison see Nieuwenhuys et al. (2008, Fig. 5.6-36).

2. *nucleus amygdalae (Burdach, 1822)*
   Original Latin form of *amygdalar nucleus (Burdach, 1822)*; p. 173, Table III-*δ*.
3. *amygdala (Arnold, 1838a)*
   Synonym for macrodissected adult human *amygdalar nucleus (Burdach, 1822)*; p. 68.

bed nuclei of terminal stria (Gurdjian, 1925)

As described for macrodissected adult human, and with cellular architecture and connections for all mammals, a dorsomedial component of the ***pallidum (Swanson, 2000a)*** surrounding the ***anterior commissure (Lieutaud, 1742)*** as it nears the median plane and characterized by a massive input from the ***terminal stria (Wenzel & Wenzel, 1812)***; see Swanson (2004, Tab. B). For Gurdjian's use in histological material from rat, see pp. 140, 152, 160. He used the singular, partly Latin, *bed nucleus of stria terminalis*. There are many ways of subdividing the ***bed nuclei of terminal stria (Gurdjian, 1925)***; see Swanson (2004, Tab. B), Bota & Swanson (2010). It was probably first identified vaguely as the *gray layer of taenia striata (Vicq d'Azyr, 1786)*.

TRANSLATIONS:

1. *bed nucleus of stria terminalis (Gurdjian, 1925)*
   Alternate form of ***bed nuclei of terminal stria (Gurdjian, 1925)***; pp. 140, 152, 160.
2. *bed nuclei of stria terminalis (Swanson et al., 1987)*
   Alternate form of ***bed nuclei of terminal stria (Gurdjian, 1925)*** for adult rat; p. 135, also see Ju & Swanson (1989, p. 587).

EARLIER REFERENCES:

Earlier synonyms:

1. *gray layer of taenia striata (Vicq d'Azyr, 1786)*
   Layer of *gray substance (Vesalius, 1543a)* around rostral (anterior) end of macrodissected adult human *taenia striata (Vicq d'Azyr 1786)*, or ***terminal stria (Wenzel & Wenzel, 1812)***, probably vague reference to ***bed nuclei of terminal stria (Gurdjian, 1925)***. Vicq d'Azyr also wrote that Tarin (1750) mentioned a semitransparent differentiation of horn-like color in this region of macrodissected adult human; Plates V-*o*, VI-32/33.
2. *horny layer of taenia striata (Vicq d'Azyr, 1786)*
   Synonym for *gray layer of taenia striata (Vicq d'Azyr, 1786)*; see Plates V-*o*, VI-32/33.
3. *tubercle of semicircular commissure (Serres, 1824–1826)*
   G*ray substance (Vesalius, 1543a)* mass in macrodissected adult human and monkey, probably corresponding to *gray layer of taenia striata (Vicq d'Azyr, 1786)*; in the original French, *tubercle de la commissure demi-circulaire, ou de la lame cornée*, Vol. 2, p. 464.

biventral lobule (>1840)

As described for macrodissected adult human, the part of the ***cerebellar hemisphere (Willis, 1664)*** between ***gracile lobule (>1840)*** and ***tonsil (Malacarne, 1776)***, and lateral to the ***pyramis (Malacarne, 1776)*** of the ***cerebellar vermis (Meckel, 1817)***; see Angevine et al. (1961, Fig. 24), Larsell & Jansen (1972, Figure 118), Carpenter (1976, Fig. 14.1), Williams & Warwick (1980, Fig. 7.74), *Terminologia Anatomica* (1998, p. 119), Nieuwenhuys et al. (2008, Fig. 20.2). On comparative anatomical grounds, Larsell & Jansen (1972, Fig. 118) called it the *ventral parafloccular lobule*. It was first described as the *biventral lobe (Malacarne, 1776)*.

EARLIER REFERENCES:

Earlier synonyms:

1. *biventral lobe (Malacarne, 1776)*
   Synonym for macrodissected adult human ***biventral lobule (>1840)***; p. 50, see Larsell & Jansen (1972, p. 52), Clarke & O'Malley (1996, p. 645).
2. *lateral lobule of inferior vermiform process (Vicq d'Azyr, 1784)*
   Synonym for macrodissected adult human ***biventral lobule (>1840)***; in the original French (plural), *lobules latérales du processus vermiforme inférieur*, p. 568.
3. *monticule of inferior vermiform process (Vicq d'Azyr, 1784)*
   Synonym for macrodissected adult human ***biventral lobule (>1840)***; in the original French (plural), *monticules du processus vermiforme inférieur*, p. 568. Vicq d'Azyr wrote that Haller (1762, p. 72) described this region well and used the singular term *colliculus*.
4. *lateral expansion of large part of inferior vermis (Vicq d'Azyr, 1784)*
   Synonym for macrodissected adult human ***biventral lobule (>1840)***; in the original French (plural), *expansions latérales de la grosse portion du vermis inferior*, p. 573 and Vicq d'Azyr (1786, Pl. XXX, Fig. 3-*16,17*).
5. *wing of large part of inferior vermis (Vicq d'Azyr, 1784)*
   Synonym for macrodissected adult human ***biventral lobule (>1840)***; in the original French (plural), *alies [alae in Latin] de la grosse portion du vermis inferior*, p. 573 and Vicq d'Azyr (1786, Pl. XXX, Fig. 3-*16,17*).
6. *inferior anterior lobe (Meckel, 1817)*
   Synonym for macrodissected adult human ***biventral lobule (>1840)***; p. 466, see (Burdach 1822, p. 295).
7. *cuneiform lobe (Meckel, 1817)*
   Synonym for macrodissected adult human ***biventral lobule (>1840)***; p. 466. Burdach (1822, p. 295) gave the Latin form, *lobus cuneiformis*.
8. *internal inferior lobe (Meckel, 1817)*
   Synonym for macrodissected adult human ***biventral lobule (>1840)***; see translation (1832, Vol. 2, p. 429).
9. *digastric lobe (Meckel, 1817)*
   Synonym for macrodissected adult human ***biventral lobule (>1840)***; see translation (1832, Vol. 2, p. 429)—*digastric* is a translation of the Latin *biventer*.

body of caudate nucleus (>1840)

As defined arbitrarily for macrodissected adult human, the middle segment of the ***caudate nucleus (Arnold, 1838b)*** between ***head of caudate nucleus (>1840)*** rostrodorsally and ***tail of caudate nucleus (Arnold, 1838b)*** caudoventrally; see Carpenter (1976, p. 497, Fig. 17.4). It

was clearly illustrated by Vieussens; see ***[body of caudate nucleus (>1840)] (Vieussens, 1684)***.

EARLIER REFERENCES:

Illustrated and described, not named:

1. ***[body of caudate nucleus (>1840)] (Vieussens, 1684)*** Clearly illustrated for macrodissected adult human; part of *striata corpora superna anteriora (Vieussens, 1684)* just to left of *F* in Table XIII, left side.

body of corpus callosum (Arnold, 1838a)

As described for macrodissected adult human, the main central part of the ***corpus callosum (Galen, c177)***, between ***genu of corpus callosum (Reil, 1809b)*** rostrally and ***splenium of corpus callosum (Burdach, 1822)*** caudally; see Mettler (1948, p. 100, Fig. 68). For Arnold's use in macrodissected adult human, see p. 76 (and p. 75). It was first clearly illustrated by Steno; see ***[body of corpus callosum (Arnold, 1838a)] (Steno, 1669)***.

TRANSLATIONS:

1. *corpus corporis callosi (Arnold, 1838a)* Original Latin form of ***body of corpus callosum (Arnold, 1838a)***; p. 76.

EARLIER REFERENCES:

Illustrated, not named or described:

1. ***[body of corpus callosum (Arnold, 1838a)] (Steno, 1669)*** First clear indication of its shape, illustrated in midsagittal view of macrodissected adult human ***brain (Smith Papyrus, c1700 BC)***; Plate I.

Earlier synonyms:

1. *trunk of corpus callosum (Burdach, 1822)* Synonym for macrodissected adult human ***body of corpus callosum (Arnold, 1838a)***; in the original Latin, *truncus corporis callosi*, p. 141.
2. *middle part of corpus callosum (Spurzheim, 1826)* Synonym for macrodissected adult human ***body of corpus callosum (Arnold, 1838a)***; p. 231-*μ*.
3. *superior part of corpus callosum (Rolando, 1831)* Synonym for macrodissected adult human ***body of corpus callosum (Arnold, 1838a)***; in the original Italian, *parte superiore del corpo calloso*, Figure 2-*f*.

LATER SYNONYMS:

1. *body of great commissure (Arnold, 1838b)* Synonym for macrodissected adult human ***body of corpus callosum (Arnold, 1838a)***; in the original Latin, *corpus commissurae maximae*, Table VII, Fig. 2-*k*.

body of lateral ventricle (Bell, 1803b)

As described for macrodissected adult human, the part of the ***lateral ventricle (Vesalius, 1543a)*** between the level of the ***interventricular foramen (>1840)*** rostrally and the caudal end of the ***splenium of corpus callosum (Burdach, 1822)*** caudally; thus, it lies between ***anterior horn of lateral ventricle (Bell, 1803b)*** rostrally and ***atrium of lateral ventricle (>1840)*** caudally; see Millen & Woollam (1962, pp. 33–44, Figs. 13, 16), Carpenter & Sutin (1983, pp. 41–45, Fig. 2.20). If no ***posterior horn of lateral ventricle (Haller, 1747)*** is present, as in many other mammals, the ***body of lateral ventricle (Bell, 1803b)*** borders the ***inferior horn of lateral ventricle (Bell, 1802)*** at the level of the ***splenium of corpus callosum (Burdach, 1822)***; see Millen & Woollam (1962, pp. 33–44, Figs. 13, 16), *Terminologia Anatomica* (1998, p. 127). For Bell's use in macrodissected adult human, see p. 81. It was known generally to Galen; see ***[body of lateral ventricle (Bell, 1803b)] (Galen, c173)***.

EARLIER REFERENCES:

Described, not named or illustrated:

1. ***[body of lateral ventricle (Bell, 1803b)] (Galen, c173)*** In *On the Usefulness of the Parts*, Galen referred to the part of the ***lateral ventricle (Vesalius, 1543a)*** adjacent to the *fornix (Galen, c177)*, roughly the ***body of lateral ventricle (Bell, 1803b)***; see May translation (1968, p. 416). He macrodissected adult beef, pig, and/or macaque but not human explicitly.

Earlier synonyms:

1. *hind recess of ventricle (Vesalius, 1543a)* Roughly synonymous with macrodissected adult human ***body of lateral ventricle (Bell, 1803b)***; see Singer translation (1952, p. 98 and Fig. 6).

LATER SYNONYMS:

1. *middle part of lateral ventricle (Meckel, 1817)* Synonym for *central part of lateral ventricle (Meckel, 1817)*; see translation (1832, Vol. 2, p. 463).
2. *central part of lateral ventricle (Meckel, 1817)* Synonym for macrodissected adult human ***body of lateral ventricle (Bell, 1803b)***; see translation (1832, Vol. 2, p. 463) and *Terminologia Anatomica* (1998, p. 127).

brachial plexus (Camper, 1760)

As described for macrodissected adult human, it is derived mainly from the ***spinal nerve ventral branches (>1840)*** of the 5th–8th ***cervical nerves (Galen, c173)*** and first ***thoracic nerve (Diemerbroeck, 1672)***; see Williams & Warwick (1980, Fig. 7.200). Variable contributions from the fourth ***cervical nerve (Galen, c173)*** and second ***thoracic nerve (Diemerbroeck, 1672)*** are also present in prefixed and postfixed patterns, respectively; see Kerr (1918, p. 298 ff.), Williams & Warwick (1980, p. 1094). As described by Schwalbe (1881, p. 915; also see Durward, 1951, Fig. 923) the adult human ***brachial plexus (Camper, 1760)*** is joined to the ***spinal cord (Galen, c162–c166)*** by ***brachial plexus roots (Schwalbe, 1881)*** and is then formed sequentially by ***brachial plexus trunks (Schwalbe, 1881)***, ***brachial plexus divisions (Paterson, 1887)***, and ***brachial plexus cords (Schwalbe, 1881)***, followed by the distal branches or *brachial nerves (Vesalius, 1543a)*. Kerr used the same plan with somewhat different terminology: trunks, branches, and fascicles, followed by the nerves (1928, p. 307 ff.). For Camper's use in macrodissected adult human, see p. 9; it was first described clearly as the *plexus of nerve pairs (Galen, c192)*.

TRANSLATIONS:

1. *plexus brachialis (Camper, 1760)* Original Latin form of ***brachial plexus (Camper, 1760)***; p. 9.

EARLIER REFERENCES:

Earlier synonyms:

1. *plexus of nerve pairs (Galen, c192)*
   Synonym for ***brachial plexus (Camper, 1760)*** in macrodissected adult beef, pig, and/or macaque but not human; see Duckworth translation (1962, p. 244). Galen sensibly discussed differences between different types of animal, as well as between animals within a type; see Duckworth translation (1962, pp. 243–256) and May translation (1968, pp. 598–599). He wrote, "I have told previously about the nerves going to the arms, how they arise and are interwoven. I have also said that Nature creates such minglings of nerves for the sake of safety, and hence she takes care to do so particularly among those nerves that are unsupported or that must follow a long path." (May translation, 1968, p. 704). He also referred to the "long nerves which, beyond the plexus, extend to all these regions [of the arm]" (Duckworth translation, 1962, p. 243).
2. *plexus of nerves that enter arm (Vesalius, 1543a)*
   Vesalius provided outstanding illustrations and detailed description of macrodissected adult human ***brachial plexus (Camper, 1760)***; Richardson & Carman translation (2002, p. 237 ff.). Eustachi (1552) also illustrated it beautifully for macrodissected adult human with a clear right–left asymmetry; see Albinus edition (1761, Tab. 18, Fig. 2-*28*).
3. *plexus in neck (Vesalius, 1543a)*
   Synonym for macrodissected adult human ***brachial plexus (Camper, 1760)***; see Richardson & Carman translation (2002, p. 257).
4. *net-resembling fold under clavicle (Diemerbroeck, 1689)*
   Synonym for macrodissected adult human ***brachial plexus (Camper, 1760)***; p. 561.
5. *axillary plexus (Salmon, 1714)*
   Synonym for macrodissected adult human ***brachial plexus (Camper, 1760)***; p. 125.
6. *great plexus (Winslow, 1733)*
   Synonym for macrodissected adult human ***brachial plexus (Camper, 1760)***; Section VI, p. 80.
7. *cervicobrachial plexus (Portal, 1803b)*
   Synonym for macrodissected adult human ***brachial plexus (Camper, 1760)***; in the original French, *plexus cervico-brachial*, Vol. 4, p. 239.

PARTLY CORRESPONDS:

1. *brachial nerve (Vesalius, 1543a)*
   In macrodissected adult human, general term for a ***nerve (Herophilus, c335–c280 BC)*** of the arm after emerging distally from the ***brachial plexus (Camper, 1760)***; in the original Latin, *nervorum brachii*; see Richardson & Carman (2002, p. 237). Galen clearly described them for macrodissected adult beef, pig, and/or macaque but not human, referring to the "long nerves which, beyond the [brachial] plexus, extend to all these regions [of the arm]" (Duckworth translation, 1962, p. 243).
2. *nerves to arm (Vesalius, 1543a)*
   Set of *brachial nerves (Vesalius, 1543a)* for macrodissected adult human; in the original Latin, *nervi in brachium*; see Richardson & Carman translation (2002, p. 238).
3. *nerves to hand (Bauhin, 1605)*
   Synonym for macrodissected adult human *nerves to arm (Vesalius, 1543a)*; see Crooke translation (1615, p. 900 ff.).
4. *subclavian nerves (Cheselden, 1713)*
   In an obscure unillustrated section (p. 143) it is stated that macrodissected adult human *subclavian nerves (Cheselden, 1713)* arise from 5th cervical to 1st thoracic ***spinal nerves (Camper, 1760–1762)*** and have three branches—*inferior cubital nerve (Cheselden, 1713)*, *superior cubital nerve (Cheselden, 1713)*, and *nervus perforans (Cheselden, 1713)*— which possibly correspond to ***ulnar nerve (Cheselden, 1726)***, ***median nerve (Du Verney, 1697)***, and ***muscular branches of musculocutaneous nerve (Günther, 1786)***, respectively. Also see similar description in Cheselden (1722, p. 209).
5. *axillary nerve (Cheselden, 1713)*
   Synonym for macrodissected adult human *subclavian nerves (Cheselden, 1713)*; p. 143, also see similar passage in Cheselden (1722, p. 209).
6. *axillary nerves (Salmon, 1714)*
   Synonym for macrodissected adult human *nerves to arm (Vesalius, 1543a)*; p. 129.
7. *external thoracic nerves (Monro, 1783)*
   Appears in macrodissected adult human to indicate as a group the ***long thoracic nerve (Quain & Wilson, 1839)***, ***upper subscapular nerve (>1840)***, ***thoracodorsal nerve (>1840)***, and ***lower subscapular nerve (>1840)***; see Table 16- *27*, and also Table 15-*21*.
8. *scapular nerves (Günther, 1786)*
   Macrodissected adult human ***lower subscapular nerve (>1840)*** and ***suprascapular nerve (Bang, 1770)*** considered together; in the original Latin, *nervi scapulares*, p. 73.
9. *posterior thoracic nerves (Günther, 1786)*
   Macrodissected adult human ***long thoracic nerve (Quain & Wilson, 1839)*** and ***thoracodorsal nerve (>1840)*** considered together; in the original Latin, *nervi thoracici posteriores*, p. 73.
10. *anterior brachial plexus (Günther, 1786)*
    For macrodissected adult human, included ***musculocutaneous nerve (Du Verney, 1697)***, ***median nerve (Du Verney, 1697)***, ***ulnar nerve (Cheselden, 1726)***, ***medial cutaneous nerve of forearm (>1840)***, and ***medial cutaneous nerve of arm (>1840)*** considered together; in the original Latin, *plexus brachialis anterior*, p. 73.
11. *superior brachial plexus (Günther, 1786)*
    Synonym for *anterior brachial plexus (Günther, 1786)*; in the original Latin, *plexus brachialis superior*, p. 73.
12. *major brachial plexus (Günther, 1786)*
    Synonym for *anterior brachial plexus (Günther, 1786)*; in the original Latin, *plexus brachialis major*, p. 73.
13. *thoracic nerves (Soemmerring, 1791)*
    Probably synonymous with macrodissected adult human *external thoracic nerves (Monro, 1783)*; in the original Latin, *nervi thoracici*, p. 279.

14. *nervi extremitatis superioris (Meckel, 1817)*
    Synonym for macrodissected adult human *brachial nerves (Vesalius, 1543a)*; see translation (1832, Vol. 3, p. 22).
15. *thoracic nerves (Quain, 1828)*
    For macrodissected adult human, apparently three ***nerves (Herophilus, c335–c280 BC)*** considered together: ***long thoracic nerve (Quain & Wilson, 1839)***, ***medial pectoral nerve (>1840)***, and ***lateral pectoral nerve (>1840)***; pp. 417–418.
16. *anastomosis between fourth and fifth cervical nerve (Cloquet, 1828)*
    In macrodissected adult human, ***communicating branch (Winslow, 1733)*** between fourth and fifth cervical ***brachial plexus roots (Schwalbe, 1881)***; in the original French, *anastomose entre le quatrième et le cinquième nerf cervical*, Plate CLX, Figure 2-*56*. See Durward (1951, Fig. 924), Williams & Warwick (1980, Fig. 7.200).

brachial plexus cords (Schwalbe, 1881)

As described for the macrodissected adult human ***brachial plexus (Camper, 1760)***, three ***brachial plexus ventral divisions (Paterson, 1887)*** and three ***brachial plexus dorsal divisions (Paterson, 1887)*** usually recombine distally to form three ***brachial plexus cords (Schwalbe, 1881)***: the ***brachial plexus lateral cord (Paterson, 1887)***, ***brachial plexus dorsal cord (Paterson, 1887)***, and ***brachial plexus medial cord (Schwalbe, 1881)***, which in turn generate the *brachial nerves (Vesalius, 1543a)*. Schwalbe (1881, p. 915) referred to three cords: external, posterior, and medial; Paterson (1887, p. 621) referred to [lateral and medial] ventral and dorsal cords; Kerr (1918, pp. 309–312) referred to lateral, posterior, and medial fasciculi; and Durward (1951, Fig. 923) referred to lateral, posterior, and medial cords. For Schwalbe's use in macrodissected adult human, see p. 915 where *cords* in the original German was *Stränge*. They were known to Galen; see ***[brachial plexus cords (Schwalbe, 1881)] (Galen, c192)***.

EARLIER REFERENCES:

Described, not named or illustrated:

1. ***[brachial plexus cords (Schwalbe, 1881)] (Galen, c192)***
   Described for macrodissected adult beef, pig, and/or macaque but not human; see Duckworth translation (1962, pp. 247–248, 251–253). Meckel (1817) also vaguely described them for macrodissected adult human; see translation (1832, Vol. 3, pp. 23–24).

Illustrated, not named or described:

1. ***[brachial plexus cords (Schwalbe, 1881)] (Vesalius, 1543a)***
   Vesalius indicated the ***brachial plexus lateral cord (Schwalbe, 1881)*** and ***brachial plexus dorsal cord (Paterson, 1887)*** in his illustrations, which are difficult to interpret because he only showed one of the usual six ***brachial plexus divisions (Paterson, 1887)***; see Richardson & Carman translation (2002, p. 237). Eustachi (1552) illustrated the three cords much more clearly, including three variations; see Albinus edition (1761, Tabs. 18, 19).

PARTLY CORRESPONDS:

1. *thoracic nerves of axillary plexus (Bell, 1803b)*
   Included macrodissected adult ***thoracodorsal nerve (>1840)***, ***lateral pectoral nerve (>1840)***, and ***medial pectoral nerve (>1840)***, and related cutaneous ***nerves (Herophilus, c335-c280 BC)***; pp. 188–189.
2. *communicating arch between dorsal branches of radial and cubital nerves (Loder, 1803)*
   Synonym for macrodissected adult human *dorsal arch of hand (Meckel, 1817)*; in the original Latin, *arcus communicans inter ramum dorsalem nervi radialis et ramum dorsalem nervi cubitalis*; Table CLXXVIII, Figure 2-*74*.
3. *volar plexus (Caldani, 1813, 1814)*
   Macrodissected adult human network of ***communicating branches (Winslow, 1733)*** between ***lateral cutaneous nerve of forearm (>1840)*** and ***palmar branch of median nerve (Bock, 1827)*** in palm of hand; in the original Latin, *plexus volaris*, Table CCLIX, Figure 1-*24*.
4. *nervous ungual arch of thumb (Caldani, 1813, 1814)*
   Macrodissected adult human network of ***communicating branches (Winslow, 1733)*** at tip of thumb from corresponding ***dorsal digital nerves of radial nerve (>1840)*** and ***proper palmar digital nerves of median nerve (>1840)***; in the original Latin, *arcus unguicularis nervosus pollicis*, Table CCLIX, Figure 2-*14*.
5. *nervous ungual arch of index finger (Caldani, 1813, 1814)*
   Macrodissected adult human network of ***communicating branches (Winslow, 1733)*** at tip of index finger from corresponding ***dorsal digital nerves of radial nerve (>1840)*** and ***proper palmar digital nerves of median nerve (>1840)***; in the original Latin, *arcus unguicularis nervosus indicis*, Table CCLIX, Figure 2-*21*.
6. *anterior thoracic nerves (Meckel, 1817)*
   Probably included macrodissected adult human ***medial pectoral nerve (>1840)*** and ***lateral pectoral nerve (>1840)***; see translation (1832, Vol. 3, p. 24).
7. *dorsal arch of hand (Meckel, 1817)*
   Described for macrodissected adult human as consisting of terminal ramifications of ***superficial branch of radial nerve (Martin, 1781)*** communicating with terminal branches of ***ulnar nerve (Cheselden, 1726)*** and ***communicating branch of radial nerve with ulnar nerve (>1840)***; see translation (1832, Vol. 3, p. 26).
8. *dorsal digital nerves (Bock, 1827)*
   Macrodissected adult human dorsal digital ***nerves (Herophilus, c335–c280 BC)*** of hand, including ***dorsal digital nerves of radial nerve (>1840)*** and ***dorsal digital nerves of ulnar nerve (>1840)***; in the original Latin, *nervi digitales dorsales*, Table IV-*42*.
9. *thoracic branches of brachial plexus (Cruveilhier, 1836)*
   Synonym for macrodissected adult human ***lateral pectoral nerve (>1840)*** and ***medial pectoral nerve (>1840)*** considered together; in the original French, *branches thoraciques du plexus brachial*, p. 794.
10. *branch of communication of posterior branch of internal cutaneous nerve with radial cutaneous nerve (Quain & Wilson, 1839)*

Macrodissected adult human ***communicating branch (Winslow, 1733)*** between ***posterior branch of medial cutaneous nerve of forearm (>1840)*** and ***posterior cutaneous nerve of forearm (>1840)***; Plate XIX, Figure 1-*c*.

brachial plexus divisions (Paterson, 1887)

As described for the macrodissected adult human ***brachial plexus (Camper, 1760)***, three ***brachial plexus trunks (Schwalbe, 1881)*** each generate distally a ventral and a dorsal division, thus forming three ***brachial plexus ventral divisions (Paterson, 1887)*** and three ***brachial plexus dorsal divisions (Paterson, 1887)***—which then recombine to form three ***brachial plexus cords (Schwalbe, 1881)***, in the most usual pattern; see Kerr (1918, p. 307 ff.), Durward (1951, p. 1115 and Fig. 923), Williams & Warwick (1980, p. 1095). For Patterson's use in macrodissected adult human, see p. 621. They were known to Galen; see ***[brachial plexus divisions (Paterson, 1887)] (Galen, c192)***.

EARLIER REFERENCES:

Described, not named or illustrated:

1. ***[brachial plexus divisions (Paterson, 1887)] (Galen, c192)***
   Galen described but did not name systematically all six divisions for macrodissected adult beef, pig, and/or macaque but not human, and even referred to those from the ***brachial plexus upper trunk (>1840)*** and ***brachial plexus middle trunk (>1840)*** as *divisions*; see Duckworth translation (1962, pp. 245, 247–248, 252–253). Meckel (1817) described all six divisions for macrodissected adult human although they were not named systematically; see translation (1832, Vol. 3, p. 23).

Illustrated and described, not named:

1. ***[brachial plexus divisions (Paterson, 1887)] (Vesalius, 1543a)***
   Vesalius did a poor job with them, illustrating only dorsal division of ***brachial plexus lower trunk (>1840)***; see Richardson & Carman translation (2002, p. 237, part *M* of the figure).

Illustrated, not named or described:

1. ***[brachial plexus divisions (Paterson, 1887)] (Eustachi, 1552)***
   Eustachi did a much better job than Vesalius (1543a) in illustrating all six for macrodissected adult human, including three different variations; see Albinus edition (1761, Tabs. 18, 19).

Earlier synonyms:

1. *primary divisions of axillary plexus (Quain, 1828)*
   For macrodissected adult human, Quain accurately described all six ***brachial plexus divisions (Paterson, 1887)***; pp. 415–416.
2. *primary divisions of brachial plexus (Quain, 1828)*
   For macrodissected adult human, Quain accurately described all six ***brachial plexus divisions (Paterson, 1887)***; pp. 415–416.

brachial plexus dorsal cord (Paterson, 1887)

As described for macrodissected adult human, it arises from the three upper ***brachial plexus dorsal divisions (Paterson, 1887)*** and in turn generates the ***radial nerve (Du Verney, 1697)*** and ***axillary nerve (Winslow, 1733)***; it supplies extensor muscles. See Durward (1951, Figs. 923, 924), Williams & Warwick (1980, p. 1095). For Paterson's use in macrodissected adult human, see p. 621. It was known to Galen; see ***[brachial plexus dorsal cord (Paterson, 1887)] (Galen, c192)***.

EARLIER REFERENCES:

Described, not named or illustrated:

1. ***[brachial plexus dorsal cord (Paterson, 1887)] (Galen, c192)***
   Referred to for macrodissected adult beef, pig, and/or macaque but not human; see Duckworth translation (1962, p. 247). Meckel (1817) vaguely described it for macrodissected adult human in terms of a small trunk; see translation (1832, Vol. 3, p. 23).

Illustrated, not named or described:

1. ***[brachial plexus dorsal cord (Paterson, 1887)] (Vesalius, 1543a)***
   Vesalius illustrated it clearly for macrodissected adult human, although his view of ***brachial plexus (Camper, 1760)*** is difficult to interpret because he only showed one of the usual six ***brachial plexus divisions (Paterson, 1887)***; see Richardson & Carman translation (2002, p. 237, part *D* of the figure).

Earlier synonyms:

1. *large cord formed by great part of fourth and fifth cervicals (Monro, 1783)*
   Based on little description and good for the time illustration, probably indicates macrodissected adult human ***brachial plexus dorsal cord (Peterson, 1887)***, primarily because it generates the ***radial nerve (Du Verney, 1697)*** and ***axillary nerve (Winslow, 1733)***; Table 16-*16*. Monro followed *cervical nerves (Vesalius, 1543a)*.

PARTLY CORRESPONDS:

1. *scapular nerve (Du Verney, 1697)*
   According to Camper (1760, p. 9), Du Verney originated this term for macrodissected adult human, probably corresponding to Camper's description of ***upper subscapular nerve (>1840)*** and ***lower subscapular nerve (>1840)*** considered together; also see *scapular nerve (Monro, 1732)* and Winslow (1733, Sect. VI, pp. 79–81).
2. *posterior brachial plexus (Günther, 1786)*
   Main part of macrodissected adult human ***brachial plexus dorsal cord (Paterson, 1887)*** with ***radial nerve (Du Verney, 1697)*** and ***axillary nerve (Winslow, 1733)*** considered together; in the original Latin, *plexus brachialis posterior*, p. 78.
3. *inferior brachial plexus (Günther, 1786)*
   Synonym for *posterior brachial plexus (Günther, 1786)*; in the original Latin, *plexus brachialis inferior*, p. 78.
4. *minor brachial plexus (Günther, 1786)*
   Synonym for *posterior brachial plexus (Günther, 1786)*; in the original Latin, *plexus brachialis minor*, p. 78.

5. *infrascapular nerve (Mayer, 1794)*
   Probably synonym for macrodissected adult human *scapular nerve (Du Verney, 1697)*; in the original Latin, *nervus infrascapularis*; Part 5, Table V, Figure 1-*G*.
6. *subscapular nerve (Mayer, 1794)*
   Probably synonym for macrodissected adult human *scapular nerve (Du Verney, 1697)*; in the original Latin, *nervus infrascapularis*; Part 5, Table V, Figure 1-*G*.
7. *subscapular nerves (Bell, 1803a)*
   Synonym for macrodissected adult human *scapular nerve (Du Verney, 1697)*; Plate V-*7*.
8. *sub-scapulary nerves (Burdin, 1803)*
   Probably corresponds to ***upper subscapular nerve (>1840)***, ***thoracodorsal nerve (>1840)***, and ***lower subscapular nerve (>1840)*** considered together; see translation (1803, Vol. 3, p. 191).
9. *middle subscapular nerve (Bock, 1827)*
   Probably synonym for macrodissected adult human *scapular nerve (Du Verney, 1697)*; in the original Latin, *nervus subscapularis medius*; Table II-*23*. Also see *inferior subscapular nerve (Bock, 1827)*.
10. *sub-scapular nerves (Quain, 1832)*
    Synonym for macrodissected adult human *sub-scapulary nerves (Burdin, 1803)*; p. 682.

brachial plexus dorsal divisions (Paterson, 1887)

As described for the macrodissected adult human ***brachial plexus (Camper, 1760)***, the three ***brachial plexus trunks (Schwalbe, 1881)*** each generate a ventral and a dorsal division, thus forming three ***brachial plexus ventral divisions (Paterson, 1887)*** and three ***brachial plexus dorsal divisions (Paterson, 1887)***—which then recombine to form three ***brachial plexus cords (Schwalbe, 1881)***, in the most common pattern. Thus, there are upper, middle, and lower dorsal divisions. The dorsal divisions supply extensor muscles; see Kerr (1918, p. 307 ff.), Durward (1951, p. 1115 and Fig. 923), Williams & Warwick (1980, p. 1095). For Paterson's use in macrodissected adult human, see p. 621. They were known to Galen; see ***[brachial plexus dorsal divisions (Paterson, 1887)] (Galen, c192)***.

EARLIER REFERENCES:

Described, not named or illustrated:

1. ***[brachial plexus dorsal divisions (Paterson, 1887)] (Galen, c192)***
   Galen described but did not name all three dorsal divisions for macrodissected adult beef, pig, and/or macaque but not human—even referring to those from ***brachial plexus upper trunk (>1840)*** and ***brachial plexus middle trunk (>1840)*** as *divisions*; see Duckworth translation (1962, pp. 245, 247–248, 252–253). Meckel (1817) described for macrodissected adult human the three ***brachial plexus dorsal divisions (Paterson, 1887)*** without systematically naming them; see translation (1832, Vol. 3, p. 23).

Illustrated, not named or described:

1. ***[brachial plexus dorsal divisions (Paterson, 1887)] (Vesalius, 1543a)***
   Vesalius only illustrated (but did not name) dorsal division of ***brachial plexus lower trunk (>1840)*** for macrodissected adult human; see Richardson and Carman translation (2002, p. 237, part *E* in the figure).
2. ***[brachial plexus dorsal divisions (Paterson, 1887)] (Eustachi, 1552)***
   Eustachi illustrated all three for macrodissected adult human, including variations; see Albinus edition (1761, Tabs. 18, 19).

Earlier synonyms:

1. *posterior set of primary divisions of brachial plexus (Quain, 1828)*
   For macrodissected adult human, three ***brachial plexus dorsal divisions (Paterson, 1887)***; p. 415.

brachial plexus lateral cord (Schwalbe, 1881)

As described for macrodissected adult human, it arises distally from the two rostral ***brachial plexus ventral divisions (Paterson, 1887)*** and in turn generates the ***lateral pectoral nerve (>1840)***, ***musculocutaneous nerve (Du Verney, 1697)***, and ***lateral root of median nerve (>1840)***. It and the ***brachial plexus medial cord (Schwalbe, 1887)*** form two ventral ***brachial plexus cords (Schwalbe, 1881)*** supplying flexor muscles; see Paterson (1887, p. 621), Durward (1951, Figs. 923, 924), Williams & Warwick (1980, p. 1095). For Schwalbe's use in macrodissected adult human see p. 915, where *lateral cord* in the original German was *lateraler Strang*. It was known to Galen; see ***[brachial plexus lateral cord (Schwalbe, 1887)] (Galen, c192)***.

EARLIER REFERENCES:

Described, not named or illustrated:

1. ***[brachial plexus lateral cord (Schwalbe, 1887)] (Galen, c192)***
   Galen described clearly its formation in macrodissected adult beef, pig, and/or macaque but not human; see Duckworth translation (1962, p. 248). Meckel (1817) vaguely described it for macrodissected adult human in terms of a more or less complicated ***brachial plexus (Camper, 1760)***; see translation (1832, Vol. 3, p. 23) and Durward (1951, Fig. 924).

Illustrated, not named or described:

1. ***[brachial plexus lateral cord (Schwalbe, 1887)] (Vesalius, 1543a)***
   Vesalius indicated it in illustrations of macrodissected adult human, which are difficult to interpret because he only showed one of the usual six ***brachial plexus divisions (Paterson, 1887)***; see Richardson & Carman translation (2002, p. 237). Eustachi (1552) illustrated it much more clearly for macrodissected adult human, including three variations; see Albinus edition (1761, Tabs. 18, 19).

Earlier synonyms:

1. *large cord formed by all five undermost cervical nerves (Monro, 1783)*
   May indicate macrodissected adult human ***brachial plexus lateral cord (Schwalbe, 1887)*** because

it generates ***musculocutaneous nerve (Du Verney, 1697)***; Table 16–22.

brachial plexus lower trunk (>1840)

As described for macrodissected adult human, it is formed by the distal merging of the caudal two (8th cervical and 1st thoracic) ***brachial plexus roots (Schwalbe, 1881)***; see Durward (1951, Fig. 923). It was known to Galen; see ***[brachial plexus lower trunk (>1840)] (Galen, c192)***.

EARLIER REFERENCES:

Described, not named or illustrated:

1. ***[brachial plexus lower trunk (>1840)] (Galen, c192)***
   Clearly described for macrodissected adult beef, pig, and/or macaque but not human; see Duckworth translation (1962, pp. 251–252), "This nerve [1st ***thoracic nerve (Diemerbroeck, 1672)***] blends and unites with that other one [8th ***cervical nerve (Galen, c173)***]. The unified nerve [***brachial plexus lower trunk (>1840)***] which is formed from both these two, after it has gone forward a little way, divides again, and unites with those ones which are higher than it and which originate from the sixth pair [***brachial plexus dorsal cord (Paterson, 1887)***]…" Vesalius (1543a) illustrated it for macrodissected adult human; see Richardson & Carman translation (2002, p. 237).

Earlier synonyms:

1. *common trunk formed by union of eighth cervical and first dorsal nerve (Meckel, 1817)*
   Refers at least partly to macrodissected adult human ***brachial plexus lower trunk (>1840)***; see translation (1832, Vol. 3, p. 23).

brachial plexus medial cord (Schwalbe, 1881)

As described for macrodissected adult human, a continuation of the lower ***brachial plexus ventral division (Paterson, 1887)*** distally generating the ***medial pectoral nerve (>1840)***, ***medial cutaneous nerve of arm (>1840)***, ***medial cutaneous nerve of forearm (>1840)***, ***ulnar nerve (Cheselden, 1726)***, and ***medial root of median nerve (>1840)***. It and the ***brachial plexus lateral cord (Schwalbe, 1887)*** form two ventral cords supplying flexor muscles; see Paterson (1887, p. 621), Durward (1951, Figs. 923, 924), Williams & Warwick (1980, p. 1095). For Schwalbe's use in macrodissected adult human see p. 915, where *medial cord* in the original German was *medialer Strang*. It was first delineated clearly by Eustachi; see ***[brachial plexus medial cord (Schwalbe, 1881)] (Eustachi, 1552)***.

EARLIER REFERENCES:

Illustrated, not named or described:

1. ***[brachial plexus medial cord (Schwalbe, 1881)] (Eustachi, 1552)***
   Illustrated for macrodissected adult human, including three variations; see Albinus edition (1761, Tabs. 18, 19).

Described, not named or illustrated:

1. ***[brachial plexus medial cord (Schwalbe, 1881)] (Meckel, 1817)***
   Vaguely described for macrodissected adult human as part of a common trunk; see translation (1832, Vol. 3, p. 23).

PARTLY CORRESPONDS:

1. *sixth nerve entering arm (Vesalius, 1543a)*
   For macrodissected adult human, ***medial cutaneous nerve of arm (>1840)*** and ***medial cutaneous nerve of forearm (>1840)*** considered together; see Richardson & Carman translation (2002, p. 246) and *subcutaneous nerve (Vesling, 1647)*.
2. *sixth sinew pertaining to arm (Geminus, 1553)*
   Synonym for macrodissected adult human *sixth nerve entering arm (Vesalius, 1543a)*; originally spelled *syxte synowe pertayninge to arme*, see *The table of the figures of synowes*.
3. *sixth nerve of hand (Bauhin, 1605)*
   Synonym for macrodissected adult human *sixth nerve entering arm (Vesalius, 1543a)*; see Crooke translation (1615, p. 903).
4. *subcutaneous nerve (Vesling, 1647)*
   Synonym for macrodissected adult human *sixth nerve entering arm (Vesalius, 1543a)*; see Table 3 of Chapter 14, Figure V-*H*.
5. *internal cutaneous nerve (Schaarschmidt, 1750)*
   Apparently, synonym for macrodissected adult human *sixth nerve entering arm (Vesalius, 1543a)*; in the original Latin, *nervus cutaneus internus*, p. 70.
6. *chiasma Camperi (Günther, 1786)*
   Branches of macrodissected adult human ***brachial plexus (Camper, 1760)*** relating ***median nerve (Du Verney, 1697)*** and ***ulnar nerve (Cheselden, 1726)***, but not generally recognized today; p. 74. For contemporary illustrations see Camper (1760, Table I, Figure I), Mayer (1794, Part 5, Table V, Figure 2, and p. 28), Loder (1803, Table CLXXVIII-*49*).
7. *chiasm of Camper (Günther, 1786)*
   English form of *chiasma Camperi (Günther, 1786)*.
8. *superficial volar arch (Mayer, 1794)*
   communicating branch (Winslow, 1733) between ***superficial branch of ulnar nerve (Fyfe, 1800)*** and a ***common palmar digital nerve of median nerve (>1840)***; in the original Latin, *arcus superficialis volaris*, Part 5, Table III, Figure 1-*5*. Also see *superficial palmar arch (Meckel, 1817)*.
9. *chiasm (Loder, 1803)*
   Shortened form of *chiasm of Camper (Günther, 1786)*; in the original Latin, *chiasma*, Table CLXXVII-*144*.
10. *great anastomotic branch between median and cubital nerves (Loder, 1803)*
    Synonym for macrodissected adult human *superficial volar arch (Mayer, 1794)*; in the original Latin, *ramus anastomoticus magnus inter nervuum medianum et cubitalem*, Table CLXXX, Figure 1-*84*.
11. *volar neural arch of hand (Loder, 1803)*
    Synonym for macrodissected adult human *superficial volar arch (Mayer, 1794)*; in the original Latin, *arcum nervosum volarem manus*, Table CLXXX, Figure 1-*84*.

12. *cubito-cutaneous nerve (Burdin, 1803)*
    Synonym for macrodissected adult human *sixth nerve entering arm (Vesalius, 1543a)*; see Vol. 1, p. 192. Also see Cloquet (1816, p. 644) and Meckel (1832, Vol. 3, p. 29), neither of whom provided citations but refer to Chaussier, the source of Burdin's terminology.
13. *anastomotic nerve with second common digital branch of median nerve and ulnar volar nerve of fourth finger (Caldani, 1813, 1814)*
    For macrodissected adult human, ***communicating branch (Winslow, 1733)*** between most lateral ***common palmar digital nerve of median nerve (>1840)*** and *ulnar volar nerve of fourth finger (Caldani, 1813, 1814)*; in the original Latin, *nervus anastomoticus cum ramo secundo [sic] digitali nervi mediani et cum nervus ulnaris volaris quarti digiti*, Table CCLIX, Figure 2-30.
14. *internal cutaneous nerve of arm (Cloquet, 1816)*
    Synonym for macrodissected adult human *sixth nerve entering arm (Vesalius, 1543a)*; in the original French, *nerf brachial cutané interne*, p. 644.
15. *superficial palmar arch (Meckel, 1817)*
    Described for macrodissected adult human hand as resulting from union of filament from ***superficial branch of ulnar nerve (Fyfe, 1800)*** with *cubito-palmar nerve of third finger (Meckel, 1817)*; see translation (1832, Vol. 3, p. 28) and Durward (1951, Fig. 931).

brachial plexus middle trunk (>1840)

As described for macrodissected adult human, arbitrarily defined as roughly the distal half of the seventh cervical ***brachial plexus root (Schwalbe, 1881)*** to complement the ***brachial plexus upper trunk (>1840)*** and ***brachial plexus lower trunk (>1840)***. It divides to form the ***brachial plexus ventral division (Paterson, 1887)*** and ***brachial plexus dorsal division (Paterson, 1887)***; see Durward (1951, Fig. 923). It was clearly delineated by Vesalius; see ***[brachial plexus middle trunk (>1840)] (Vesalius, 1543a)***.

EARLIER REFERENCES:

Illustrated and described, not named:

1. ***[brachial plexus middle trunk (>1840)] (Vesalius, 1543a)***
   Vesalius clearly illustrated and described it for macrodissected adult human, pointing out that the configuration of ***brachial plexus (Camper, 1760)*** is quite variable between cadavers; see Richardson & Carman translation (2002, p. 237).

brachial plexus roots (Schwalbe, 1881)

As described for macrodissected adult human, the ***spinal nerve ventral branches (>1840)*** for the 5th–8th ***cervical nerves (Galen, c173)*** and the first ***thoracic nerve (Diemerbroeck, 1672)*** considered together, proximal to the ***brachial plexus trunks (Schwalbe, 1881)***; *roots* in the original German was *Wurzelin* (Fig. 471). For modern descriptions see Durward (1951, p. 1068 and Fig. 923), Williams & Warwick (1950, p. 1096). They were first described by Galen; see *root of nerves (Galen, c173)*.

EARLIER REFERENCES:

Earlier synonyms:

1. *root of nerves (Galen, c173)*
   In this context Galen described ***brachial plexus roots (Schwalbe, 1881)*** of macrodissected adult beef, pig, and/or macaque but not human; see May translation (1968, p. 598). Vesalius (1543a) used the same basic terminology for macrodissected adult human; see Richardson & Carman translation (2002, p. 237).
2. *brachial nerves (Camper, 1760)*
   Synonym for macrodissected adult human ***brachial plexus roots (Schwalbe, 1881)***; in the original Latin, *nervi brachiales*; p. 9 and Table 1, Figure 1:*a–e*.
3. *anterior branches of superior dorsal and four inferior cervical nerves (Meckel, 1817)*
   Synonym for macrodissected adult human ***brachial plexus roots (Schwalbe, 1881)***; see translation (1832, Vol. 3, p. 23).

brachial plexus trunks (Schwalbe, 1881)

As described for the macrodissected adult human ***brachial plexus (Camper, 1760)***, the five ***brachial plexus roots (Schwalbe, 1881)*** merge distally into three trunks, each in turn dividing into ventral (lateral and medial) and dorsal ***brachial plexus divisions (Paterson, 1887)***; p. 915. Schwalbe (p. 915) referred to superior, middle, and inferior trunks, Kerr (1928, pp. 307–309) referred to cephalic, intermediate, and caudal trunks, and Durward (1951, Fig. 923) referred to upper, middle, and lower trunks. They were known to Galen; see ***[brachial plexus trunks (Schwalbe, 1881)] (Galen, c192)***.

EARLIER REFERENCES:

Described, not named or illustrated:

1. ***[brachial plexus trunks (Schwalbe, 1881)] (Galen, c192)***
   Clearly described for macrodissected adult beef, pig, and/or macaque but not human; see Duckworth translation (1961, pp. 245–252).

Illustrated and described, not named:

1. ***[brachial plexus trunks (Schwalbe, 1881)] (Vesalius, 1543a)***
   Illustrated for macrodissected adult human, although description not as clear as Galen's; see Richardson & Carman translation (2002, p. 237).

PARTLY CORRESPONDS:

1. *common trunks of great plexus (Winslow, 1733)*
   Winslow referred to macrodissected adult human ***brachial plexus upper trunk (>1840)*** and ***brachial plexus lower trunk (>1840)*** individually as common trunks of corresponding ***brachial plexus roots (Schwalbe, 1881)***; Section VI, p. 80. He also referred to "the single Trunk of the 6th [7th ***cervical nerve (Galen, c173)***] Pair" (Sect. VI, p. 84), thus calling all three "trunks".
2. *common trunks of brachial plexus (Meckel, 1817)*
   Meckel referred to macrodissected adult human ***brachial plexus upper trunk (>1840)*** and ***brachial plexus lower trunk (>1840)*** individually as common trunks of

corresponding ***brachial plexus roots (Schwalbe, 1881)***; see translation (1832, Vol. 3, p. 23).

brachial plexus upper trunk (>1840)

As described for macrodissected adult human, formed by merging of the rostral two (5th and 6th cervical) ***brachial plexus roots (Schwalbe, 1881)***; see Durward (1951, Fig. 923). It was known to Galen, see ***[brachial plexus upper trunk (>1840)] (Galen, c192)***.

EARLIER REFERENCES:

Described, not named or illustrated:

1. ***[brachial plexus upper trunk (>1840)] (Galen, c192)***
   Mentioned for macrodissected adult beef, pig, and/or macaque but not human: "…the one [***nerve (Herophilus, c335–c280 BC)***, that is, ***brachial plexus upper trunk (>1840)***] which originates from the junction of the two nerves which we mentioned [the 5th and 6th ***cervical nerves (Galen, c173)***]…" (Duckworth translation, 1962, p. 245). He described its three distal branches very accurately (Duckworth translation, 1962, pp. 245–251), just as illustrated by Williams & Warwick (1980, Fig. 7.200). Vesalius (1543a) illustrated ***brachial plexus upper trunk (>1840)***, but not its three distal branches, for macrodissected adult human; see Richardson & Carman translation (2002, p. 237).

Earlier synonyms:

1. *trunk formed by fourth and fifth subcervicals (Monro, 1783)*
   Synonym for macrodissected adult human ***brachial plexus upper trunk (>1840)***; Monro's numbering of cervical ***spinal nerve ventral branches (>1840)*** was one less than currently used, following *cervical nerves (Vesalius, 1543a)*, and he noted that this trunk also receives a small thread from third *subcervical nerve (Monro, 1783)*; Table 15-*10*. It was referred to as "large cord" in the next Table (16-*16*).
2. *common trunk formed by union of fifth and sixth cervical nerves (Meckel, 1817)*
   Synonym for macrodissected adult human ***brachial plexus upper trunk (>1840)***; see translation (1832, Vol. 3, p. 23).
3. *trunk formed by union of fifth and sixth cervical nerves (Meckel, 1817)*
   Synonym for macrodissected adult human ***brachial plexus upper trunk (>1840)***; see translation (1832, Vol. 3, p. 23).

brachial plexus ventral divisions (Paterson, 1887)

As described for the macrodissected adult human ***brachial plexus (Camper, 1760)***, the three ***brachial plexus trunks (Schwalbe, 1881)*** each generate a ventral and a dorsal division, thus forming three ***brachial plexus ventral divisions (Paterson, 1887)*** and three ***brachial plexus dorsal divisions (Paterson, 1887)***—which then recombine to form three ***brachial plexus cords (Schwalbe, 1881)***, in the most common pattern. Thus, there are upper, middle, and lower ventral divisions, which supply flexor muscles; see Kerr (1918, p. 307 ff.), Durward (1951, p. 1115 and Fig. 923), Williams & Warwick (1980, p. 1095). For Paterson's use in macrodissected adult human, see p. 621. They were known to Galen; see ***[brachial plexus ventral divisions (Paterson, 1887)] (Galen, c192)***.

EARLIER REFERENCES:

Described, not named or illustrated:

1. ***[brachial plexus ventral divisions (Paterson, 1887)] (Galen, c192)***
   Galen described but did not name all three ventral divisions for macrodissected adult beef, pig, and/or macaque but not human—even referring to those from ***brachial plexus upper trunk (>1840)*** and ***brachial plexus middle trunk (>1840)*** as *divisions*; see Duckworth translation (1962, pp. 245, 247–248, 252–253). Meckel (1817) described all three for macrodissected adult human, and referred to those from ***brachial plexus middle trunk (>1840)*** and ***brachial plexus lower trunk (>1840)*** as *anterior branches*, whereas he referred to that from ***brachial plexus upper trunk (>1840)*** as inferior ***nerve (Herophilus, c335–c280 BC)*** arising from *trunk formed by union of fifth and sixth cervical nerves (Meckel, 1817)*; see translation (1832, Vol. 3, p. 23).

Earlier synonyms:

1. *anterior set of primary divisions of brachial plexus (Quain, 1828)*
   For macrodissected adult human, three ***brachial plexus ventral divisions (Paterson, 1887)***; p. 415.

brachium of inferior colliculus (>1840)

As described for macrodissected adult human, and mammal generally with histological methods for ***axons (Kölliker, 1896)***, a short longitudinal ***central nervous system white matter tract (>1840)*** between ***inferior colliculus (Haller, 1762)*** caudally and ***medial geniculate complex (>1840)*** rostrally, on the dorsolateral surface of the ***tegmentum (Swanson, 2000b)*** just superficial to the ***nucleus of brachium of inferior colliculus (>1840)***; see Carpenter (1976, Fig. 2.19), Swanson (2004, Atlas Levels 40–44), Nieuwenhuys et al. (2008, Fig. 3.10-*6*). It was known to Willis; see ***[brachium of inferior colliculus (>1840)] (Willis, 1664)***.

EARLIER REFERENCES:

Illustrated and described, not named:

1. ***[brachium of inferior colliculus (>1840)] (Willis, 1664)***
   Discovered but not named for macrodissected adult human and sheep; see Pordage translation (1681, Tabs. IV-*N*, VIII-*I*), Meyer (1971, p. 17).

Earlier synonyms:

1. *processus versus principia nervorum opticorum (Santorini, 1775)*
   Synonym for macrodissected adult human ***brachium of inferior colliculus (>1840)***; p. 33, see Burdach (1822, p. 336).
2. *lateral ridge of lower corpus bigeminum (Gordon, 1815)*
   Synonym for macrodissected adult human ***brachium of inferior colliculus (>1840)***; p. 94.

3. *brachium of inferior quadrigeminal body (Burdach, 1822)*
   Synonym for macrodissected adult human ***brachium of inferior colliculus (>1840)***; the original Latin (plural), *brachia corporum quadrigeminorum inferiorum*, p. 113.
4. *posterior brachium of quadrigeminal body (Arnold, 1838a)*
   Synonym for macrodissected adult human ***brachium of inferior colliculus (>1840)***; the original Latin (plural), *brachia corporum quadrigeminorum post*., p. 57.

brachium of superior colliculus (>1840)

As described in macrodissected adult human, and mammal generally with histological methods for ***axons (Kölliker, 1896)***, the caudal extension of the ***optic tract (Vicq d'Azyr, 1784)***, between ***dorsal lateral geniculate nucleus (>1840)*** rostrally and ***superior colliculus (Haller, 1762)*** caudally; see Williams & Warwick (1980, pp. 935, 977), Nieuwenhuys et al. (2008, Fig. 3.10-*4*). For topographic description it has ***thalamic brachium of superior colliculus (>1840)*** and ***pretectal brachium of superior colliculus (>1840)*** segments. It was first clearly delineated by Willis; see *appendix of nates (Willis, 1664)*.

EARLIER REFERENCES:

Earlier synonyms:

1. *appendix of nates (Willis, 1664)*
   Probably corresponds to ***brachium of superior colliculus (>1840)***, although it might refer to ***superior cerebellar peduncle (Procháska, 1800)***, or possibly to both; see Pordage translation (1681, p. 65). However, the ***brachium of superior colliculus (>1840)*** itself was described and illustrated for macrodissected adult human and sheep; see Pordage translation (1681, p. 64, Tabs. IV-*N*, VIII-*I*). Also see Meyer (1971, p. 17).
2. *fibrous protuberance (Diemerbroeck, 1689)*
   Apparently corresponds to macrodissected adult human ***brachium of superior colliculus (>1840)***; Diemerbroeck wrote that optic (visual) nerve, and only *optic nerve (Galen, c173)*, proceeds from it; pp. 400–401.
3. *lateral ridge of upper corpus bigeminum (Gordon, 1815)*
   Synonym for macrodissected adult human ***brachium of superior colliculus (>1840)***; p. 93, see Burdach (1822, pp. 336–337) for early history.
4. *anterior brachium of quadrigeminal body (Arnold, 1838a)*
   Synonym for macrodissected adult human ***brachium of superior colliculus (>1840)***; the original Latin (plural), *brachia corp. quad. ant*., p. 57.

brain (Smith Papyrus, c1700 BC)

A general term for the rostral topographic division of the ***central nervous system (Carus, 1814)***. ***Invertebrate brain (>1840)*** and ***vertebrate brain (Cuvier, 1800)*** are distinguished and treated separately because the evolutionary relationship between the two is not clear and because whereas there is a common basic plan for the ***vertebrate brain (Cuvier, 1800)*** based on development, there are multiple basic plans for the ***invertebrate brain (>1840)*** and many invertebrates have nothing resembling a ***brain (Smith Papyrus, c1700 BC)***. The terms listed below relate directly to the general term ***brain (Smith Papyrus, c1700 BC)***. For these definitions see Swanson & Bota (2010). A term equivalent to "brain" (the hieroglyph for *ais*) was used for the soft tissue ("marrow" in English) contents of the adult human skull (or more accurately the cranium) by the ancient Egyptians, who removed it with a hook through the nostrils as well as a hole in the cribriform plate of the ethmoid bone, and discarded it as unimportant before mummification; see direct quote of Herodotus (c480–c425 BC) in Longrigg (1998, p. 84) and Nunn (2002, p. 43). The best-known and oldest surviving use of the term is in the Edwin Smith Surgical Papyrus, a c1700 **BC** copy of a manuscript composed c3000 **BC**; see Breasted (1930), Nunn (2002, pp. 50–51), Allen (2005, p. 75). Thirteen cases of skull fracture accompanying war injuries were discussed. The term "brain" has been said to be unknown in any other language or treatise in this age, the third millennium BC (Breasted 1930, p. 12), although Walker (1998, p. 19) mentioned without reference that the first specific Egyptian reference to the ***brain (Smith Papyrus, c1700 BC)*** is found in a manuscript dating from about 4200 BC. In *On the Sacred Disease*, Hippocrates (c415 BC) stated that in humans, as in all other animals, a thin membrane divides the *encephalon (Homer, c9th century BC)* down the middle into two parts—the ***brain (Smith Papyrus, c1700 BC)*** " is double"; see Adams translation (1972, p. 351). According to Galen (see May translation, 1968, p. 417), Praxagoras (fl. c320–c300 BC) and Philotimus (a pupil of Praxagoras) and their followers believed that the ***brain (Smith Papyrus, c1700 BC)*** is an outgrowth of the ***spinal cord (Galen, c162–c166)***. This idea was revived in modern times by Bartholin (see 1662, p. 136) and Malpighi, who compared the ***spinal cord (Galen, c162–c166)*** and ***brain (Smith Papyrus, c1700 BC)*** to a cabbage plant, where sap is carried from the roots [***nerves (Herophilus, c335–c280 BC)***], up the stalk [***spinal cord (Galen, c162–c166)***] to the head [***brain (Smith Papyrus, c1700 BC)***]; see Collins (1685, pp. 1070–1072), Tiedemann (1826, p. 149 ff.), Meckel (1832, Vol. 2, p. 466), and Meyer (1967). The ***brain (Smith Papyrus, c1700 BC)*** was not illustrated realistically in print until 1517; see Gersdorff (1517), Clarke & O'Malley (1996, p. 384). The term *brain* came to have two different meanings; see *whole brain (Aristotle)* and *anterior part of brain (Aristotle)*.

ALTERNATE SPELLINGS:

1. *braegen (Anglo-Saxon)*
   Alternate form of ***brain (Smith Papyrus, c1700 BC)***; see Gordh & Headrick (2001, p. 138).
2. *braine (archaic English)*
   Alternate form of ***brain (Smith Papyrus, c1700 BC)*** in English until the 17th century; see Vicary (1548, p. 30), *Oxford English Dictionary* (Online).
3. *brane (archaic English)*
   Alternate form of ***brain (Smith Papyrus, c1700 BC)*** in English until the 17th century; see *Oxford English Dictionary* (Online).

4. *braynes (archaic English)*
   Alternate form of ***brain (Smith Papyrus, c1700 BC)*** in English until the 17th century; see Brunschwig (1525, p. [5]), *Oxford English Dictionary* (Online).
5. *brayn (archaic English)*
   Alternate form of ***brain (Smith Papyrus, c1700 BC)*** in English until the 17th century; see Brunschwig (1525, p. [8]), *Oxford English Dictionary* (Online).
6. *brayne (archaic English)*
   Alternate form of ***brain (Smith Papyrus, c1700 BC)*** in English until the 17th century; see Brunschwig (1525, p. [8]), *Oxford English Dictionary* (Online).
7. *breine (archaic English)*
   Alternate form of ***brain (Smith Papyrus, c1700 BC)*** in English until the 17th century; see *Oxford English Dictionary* (Online).

TRANSLATIONS:

1. *ais (Smith Papyrus, c1700 BC)*
   English form of Egyptian hieroglyph for ***brain (Smith Papyrus, c1700 BC)***; see Rocca (2003, p. 21), Nunn (2002, pp. 50–51, 217).
2. *encephalos (Homer, c9th century BC)*
   Greek word for ***brain (Smith Papyrus, c1700 BC)***, used in the *Iliad* to describe combat injuries near Troy; see Longrigg (1998, p. 168), Rocca (2003, p. 21). It was used in this sense for macrodissected adult human by Gibson (1684, pp. 349–351).
3. *enkephalos (Homer, c9th century BC)*
   Alternate form of *encephalos (Homer, c9th century BC)*.
4. *encephalon (Homer, c9th century BC)*
   Neuter form of Greek word *encephalos* (*enkephalos*); now standard usage in English, see *Oxford English Dictionary* (Online) and Rocca (2003, p. xvii). It was used seven times in the *Iliad* and three times in the *Odyssey*; see Skinner (1949, p. 132). Willis (1664) used the term for macrodissected adult humans and other mammals in the sense of *encephalon (Homer, c9th century BC)* and *whole brain (Aristotle)*, that is, for his *cerebrum (Willis, 1664)*, *oblong marrow (Willis, 1664)*, and ***cerebellum (Aristotle)***, considered together; see Pordage translation (1681, pp. 78, 81).
5. *enkephalon (Homer, c9th century BC)*
   Alternate form of *encephalon (Homer, c9th century BC)*.
6. *cerebrum (Celsus, c30)*
   Latin form of *encephalon (Homer, c9th century BC)*; Celsus published the first scientific work in Latin; see Singer (1959), May translation (1968, p. 394). In *On the Usefulness of the Parts*, Galen wrote, "To appreciate more clearly and plainly the significance of what I have said, call the encephalon by its Roman name, which was not taken from its position or from any other accident but is indicative of the very essence of it, and you will see clearly that there is nothing to prevent your saying that in man the *cerebrum* (for that is what the Romans call it) is in the head, and that in crabs it is in the breast." (May translation, 1968, pp. 394–395).
7. *encephalon (Galen, c173, c177)*
   In *On the Usefulness of the Parts*, Galen wrote that the Greek term *encephalon* simply means "something in the head" and is derived from its location in the body; see May translation (1968, p. 393). In *On Anatomical Procedures*, Galen wrote or implied that he used the term *enkephalon* to indicate the *anterior brain (Aristotle)* and the *posterior brain (Aristotle)* considered together; see Wiberg translation (1914, p. 21), Singer translation (1999, p. 229).
8. *enkephalon (Galen, c177)*
   Variant form of *encephalon (Galen, c177)*.

LATER SYNONYMS:

1. *marrow of skull (Smith Papyrus, c1700 BC)*
   An alternate translation, term, or synonym for ***brain (Smith Papyrus, c1700 BC)***; see Breasted (1930, p. 167).

brain sand (Soemmerring & Lisignolo, 1785)

Small calcified bodies found primarily in the aging human ***pineal gland (Galen, c192)***, but also in the *pituitary gland (Galen, c192)* and ***choroid plexus (Galen, c177)***; see Crosby et al. (1962, p. 271), *Dorland's* (2003, p. 1654). Also see Soemmerring & Noethig (1786), Vicq d'Azyr (1786, Pl. XXVII, Fig. VII-*10*), Meckel (1817; see translation, 1832, Vol. 2, p. 439), Burdach (1822, p. 332). It was first observed by Galen; see ***[brain sand (Soemmerring & Lisignolo, 1785)] (Galen, c192)***.

TRANSLATIONS:

1. *acervulo cerebri (Soemmerring & Lisignolo, 1785)*
   Original Latin form of ***brain sand (Soemmerring & Lisignolo, 1785)***; see title-page.

EARLIER REFERENCES:

Described, not named or illustrated:

1. ***[brain sand (Soemmerring & Lisignolo, 1785)] (Galen, c192)***
   Observed in macrodissected adult ***pineal gland (Galen, c192)*** of horse, ox, and similar large mammals; see Duckworth translation (1962, p. 2) and Burdach (1822, p. 332).

Earlier synonyms:

1. *gravel (Winslow, 1733)*
   Synonym for macrodissected adult human ***brain sand (Soemmerring & Lisignolo, 1785)***; Section X, p. 37.

LATER SYNONYMS:

1. *acervulus (Soemmerring & Lisignolo, 1785)*
   Simply shortened form of *acervulo cerebri (Soemmerring & Lisignolo, 1785)* for macrodissected adult human; p. 13.
2. *acervulus of pineal gland (Bock, 1824)*
   Synonym for macrodissected adult human *acervulus (Soemmerring & Lisignolo, 1785)*; in the original Latin, *acervulus glandulae pinealis*, p. 155.

brain vesicles (Malpighi, 1673)

The rostral topographic division of the vertebrate ***neural tube (Baer, 1837)***, which is followed by the caudal division, the ***spinal cord part of neural tube (>1840)***. Malpighi recognized three vesicles in the chick embryo at 40 hours of incubation, and then five vesicles in the 3-day chick embryo; Table II, Figure XI-*C* and Table III, Figure XVIII. Baer (1837, pp. 106–107) generalized this description for all vertebrates, calling the *five vesicles (Baer, 1837)*, or ***secondary brain vesicles (>1840)***, the morphological units from which the ***vertebrate brain (Cuvier, 1800)***

is built (p. 107) and lined up one after another sequentially, though curved ventrally (downward) at the rostral (front) end very early on (p. 108). Coiter observed them long ago; see *transparent globules (Coiter, 1572)*.

TRANSLATIONS:

1. *cerebri vesiculae (Malpighi, 1673)*
   Original Latin for ***brain vesicles (Malpighi, 1673)***; see p. 16.

EARLIER REFERENCES:

Earlier synonyms:

1. *transparent globules (Coiter, 1572)*
   Synonym for ***brain vesicles (Malpighi, 1673)***; Coiter described three of them in the 9-day macrodissected chick embryo, although their precise identification is unclear; in the original Latin, *tres globulos transparentes*, see translation (1969, p. 34).

LATER SYNONYMS:

1. *brain cells (Baer, 1837)*
   Probably synonym for ***brain vesicles (Malpighi, 1673)***; in the original German, *Hirnzellen*, p. 106. Also see Baer (1828, p. 29).
2. *cerebral cells (Baer, 1837)*
   Synonym for ***brain vesicles (Malpighi, 1837)***; in the original Latin, *cellulae cerebrales*, p. 106.
3. *head cells (Baer, 1837)*
   Synonym for ***brain vesicles (Malpighi, 1837)***; in the original German, *Hauptblase*, p. 107.

brainstem (Schwalbe, 1881)

A topographic division of the ***vertebrate brain (Cuvier, 1800)*** that is a combination of the ***interbrain (Baer, 1837***), ***midbrain (Baer, 1837)***, ***pons (Haller, 1747)***, and ***medulla (Winslow, 1733)***; see Swanson & Bota (2010). Perhaps the first hint of it was *base of brain (Rufus of Ephesus, fl. c90–120)*. For Schwalbe's use in macrodissected adult human, see p. 396.The term was used more recently in this sense by Mettler (1948, Fig. 119), Carpenter & Sutin (1983, p. 27), Nauta & Feirtag (1986, Fig. 69), and Brodal (1992, p. 285).

TRANSLATIONS:

1. *Hirnstamm (Schwalbe, 1881)*
   Original German form of ***brainstem (Schwalbe, 1881)***; p. 396.

EARLIER REFERENCES:

Earlier synonyms:

1. *base of brain (Rufus of Ephesus, fl. c90–120)*
   In *On the Names of the Parts of the Human Body*, he wrote that the inner and posterior surface of the adult *encephalon (Homer, c9th century BC)*, or ***brain (Smith Papyrus, c1700 BC)***, is called the *base*, and that the *parencephalon (Aristotle)*, or ***cerebellum (Aristotle)***, is an extension of it. In his *Anatomy of the Parts of the Body*, he wrote that the *spinal marrow (Hippocrates)*, or ***spinal cord (Galen, c162–c166)***, is not a special substance but an extension of the ***brain (Smith Papyrus, c1700 BC)***—obviously the *base of brain (Rufus of Ephesus, fl. c90–120)*; see Clarke & O'Malley (1996, pp. 13–14). This may be the first vague reference in writing to the ***brainstem (Schwalbe, 1881)***, although it is not possible to know its exact extent; also see Todd (1983, p. 86) and *base of brain (Galen, c173)*. The English word *base* in Greek and Latin is *basis*.
2. *base of brain (Galen, c173)*
   In *On the Usefulness of the Parts*, Galen wrote that all *pairs of nerves from brain (Galen, c192)*—his first was the *optic nerve (Galen, c173)*—come off the base of the macrodissected ***brain (Smith Papyrus, c1700 BC)***, so his use of the term is roughly equivalent to ***brainstem (Schwalbe, 1881)*** in macrodissected adult mammal excluding human; see May translation (1968, pp. 417, 446).
3. *base of encephalon (Galen, c173)*
   Synonym for *base of brain (Galen, c173)*.
4. *entire base of brain (Galen, c173)*
   Synonym for *base of brain (Galen, c173)*. In *On the Usefulness of the Parts*, Galen at one point (May translation, 1968, p. 719) referred to the entire *base of brain (Galen, c173)*, in distinction to part of it associated with the ***cerebellum (Aristotle)***—that is, the *base of cerebellum (Galen, c173)*, which corresponds roughly to ***pons (Haller, 1747)*** and ***medulla (Winslow, 1733)***, considered together. The *entire base of brain* was usually referred to by Galen simply as the *base of brain (Galen, c173)*.
5. *entire base of encephalon (Galen, c173)*
   Alternate translation of *entire base of brain (Galen, c173)*.
6. *foundation of brain (Brunschwig, 1525)*
   The exact meaning of the term is unclear, but it was probably used in the sense of *base of brain (Galen, c173)*; the original text reads, "foundation of the braynes out of which the senewes [***nerves (Herophilus, c335–c280 BC)***] take their begynnynge" (p. [5]).

PARTLY CORRESPONDS:

1. *middle belly of brain (William of Saliceto, 1275)*
   An informed guess is macrodissected adult human ***interbrain (Baer, 1837)*** and ***midbrain (Baer, 1837)*** surrounding the ***lateral ventricle (Vesalius, 1543a)*** and ***cerebral aqueduct (>1840)*** respectively; see Rosenman translation (1998, p. 181).
2. *mid part of brain (Mondino, 1316)*
   Vaguely defined term probably refers roughly to macrodissected adult human ***interbrain (Baer, 1837)*** and ***midbrain (Baer, 1837)*** considered together. In his *Anathomia*, Mondino referred to the part of the ***brain (Smith Papyrus, c1700 BC)*** associated with the *great fore ventricle (Mondino, 1316)*, the right and left ***lateral ventricle (Vesalius, 1543a)*** together, in contrast to the part associated with the *middle ventricle (Galen, c173)*, or ***third ventricle (Galen, c173)***. One relevant passage reads: "Through this lacuna [***hypothalamic part of third ventricle (Swanson, 2004)*** and *infundibulum (Rufus of Ephesus, fl. c90–120)*; also see *lacuna cerebri (Mondino, 1316)*] the mid part of the brain is purged of superfluous matter. The fore part of the brain is purged of superfluous matter through the *colatoria narium* [cribriform plate]" (see Singer translation, 1925, p. 92). Further on he wrote, "Now raise the next following, to wit the mid part of the brain. Thou wilt see a second pair of nerves

[*second pair of nerves arising from brain (Galen, c173)*, the ***oculomotor nerve (Estienne, 1545)***], fine and hard, which go to the eyes to give them voluntary motion" (see Singer translation, 1925, p. 93). However, the situation is unclear because elsewhere, Mondino wrote, "But thou wilt ask why the mid ventricle did not have a mid brain separate, as the other ventricles had? It must be answered that the reason was that this ventricle is, as it were, the way and passage between these other two and so ought not to separated from them as regards the brain" (see Singer translation, 1925, p. 93). Possibly something was been lost in translation at some stage.

3. *anterior spinal marrow (Varoli, 1573)*
   Varoli distinguished in macrodissected adult human an *anterior* part (within the cranium) of the *spinal marrow (Hippocrates)*, which roughly includes the ***midbrain (Baer, 1837)***, **pons (Haller, 1747)**, and ***medulla (Winslow, 1733)*** considered together; see Varoli (1573, Fig. II: *1-3* on f. 19), Clarke & O'Malley (1996, pp. 635, 821–822), and *cerebrum oblongatum (Colombo, 1559)*. Garrison & McHenry (1969, p. 43) claimed that Varoli dealt with the ***cerebral peduncle (Tarin, 1753)***, which is doubtful, and Clarke & O'Malley (1996, p. 634) claimed that he suggested four tracts (in the anterior spinal marrow)—two posterior (dorsal) ones related to the ***cerebellum (Aristotle)*** and two anterior (ventral) ones related to sensation, which is likely. Also see *base of brain (Varoli, 1573)*.
4. *primary origin of spinal marrow (Varoli, 1573)*
   Synonym for *anterior spinal marrow (Varoli, 1573)*; see Clarke & O'Malley (1996, p. 822).
5. *other part of spinal marrow (Varoli, 1573)*
   Synonym for *anterior spinal marrow (Varoli, 1573)*; see Clarke & O'Malley (1996, p. 822).
6. *medulla cauda (Bartholin, 1651)*
   Latin form of *tail of marrow (Bartholin, 1662)*; p. 317.
7. *long part of marrow (Bartholin, 1662)*
   At one point (p. 133) Bartholin used this term to indicate the macrodissected adult human ***midbrain (Baer, 1837)***, ***pons (Haller, 1747)***, and ***medulla (Winslow, 1733)*** considered together; in the original Latin, *medulla oblongata* (1651, p. 317). See *medulla oblongata (Bartholin, 1651)*. It is a synonym for *anterior spinal marrow (Varoli, 1573)*.
8. *tail of marrow (Bartholin, 1662)*
   Synonym for *long part of marrow (Bartholin, 1662)*; p. 137.
9. *roots from brainlet (Bartholin, 1662)*
   That component of the macrodissected adult human *part within skull of medulla oblongata (Bartholin, 1662)* associated directly with the ***cerebellum (Aristotle)***, thus including parts of the ***midbrain (Baer, 1837)***, especially the ***inferior colliculus (Haller, 1762)***, the ***pons (Haller, 1747)***, and the ***medulla (Winslow, 1733)*** derived from at least the ***superior cerebellar peduncle (Procháska, 1800)*** (p. 141) and ***inferior cerebellar peduncle (Günther, 1786)*** (Tab. IV, Fig. 1-*C*, p. 136). They are smaller than the *roots from brain (Bartholin, 1662)*; also see *trunk of spinal marrow (Bartholin, 1662)*.
10. *basis of oblong marrow (Willis, 1664)*
    Vaguely defined term apparently includes roughly ***interbrain (Baer, 1837)*** and ***tegmentum (Swanson, 2000)*** considered together; see Pordage translation (1681, pp. 66–67).
11. *base of oblong marrow (Willis, 1664)*
    Full English translation of *basis of oblong marrow (Willis, 1664)*.
12. *pedestal of oblong marrow (Willis, 1664)*
    Synonym for *basis of oblong marrow (Willis, 1664)*; see Pordage translation (1681, p. 66).
13. *neck of medulla spinalis (Collins, 1685)*
    Apparently a synonym for the *anterior spinal marrow (Varoli, 1573)*; p. 1070; also see *medulla vero cerebri oblongata (Bauhin, 1605)*.
14. *long process of medulla spinalis (Collins, 1685)*
    Synonym for *neck of medulla spinalis (Collins, 1685)*; p. 1070.
15. *caudex of medulla oblongata (Collins, 1685)*
    Apparently referred approximately to ***midbrain (Baer, 1837)***, **pons (Haller, 1747)**, and ***medulla (Winslow, 1733)*** considered together; pp. 1008, 1015. Described more clearly shortly thereafter by Ridley; see *caudex medullaris (Ridley, 1695)*. Collins did indicate specifically the ***pons (Haller, 1747)*** in an illustration; see p. 1017 and Table 48-*L*.
16. *caudex (Collins, 1685)*
    Abbreviated form of *caudex of medulla oblongata (Collins, 1685)*; p. 1017.
17. *long pith (Diemerbroeck, 1689)*
    Term used by the English for *long part of marrow (Bartholin, 1662)*; pp. 402–405.
18. *long pith of brain (Diemerbroeck, 1689)*
    More complete form of *long pith (Diemerbroeck, 1689)* and complemented by *pith of spine (Diemerbroeck, 1689)*; p. 557.
19. *caudex medullaris (Ridley, 1695)*
    Term referring approximately to macrodissected adult human ***tectum (Baer, 1837)***, **pons (Haller, 1747)**, and ***medulla (Winslow, 1733)*** considered together; p. 9. The *caudex medullaris* begins "where the *Crura Medulla Oblongata* come together in one body, constituting the *Caudex Medullae Oblongatae*" (p. 145). Dorsally the ***tectum (Baer, 1837)*** is part of the *caudex medullaris* (p. 9) whereas ventrally what he referred to as *thalami nervorum opticorum* was said to extend to or over the "forward and upper part of the Annular Process", roughly the ***pons (Haller, 1747)***; p. 145. In this ambiguous description, the rostral border of the *caudex medullaris* probably cuts diagonally from rostrodorsal, rostral to the ***tectum (Baer, 1837)***, to caudoventral at the rostral border of the commissure of the ***middle cerebellar peduncle (Rolando, 1819)***, the ***transverse pontine fibers (>1840)***. *Caudex* is an older Latin form of *codex*, the trunk of a tree.
20. *pons Varolii (Cowper, 1698)*
    Cowper illustrated and described this "cerebellar matter" in macrodissected adult human as extending

rostrally as far as the caudal end of the ***mammillary body (Ludwig, 1779)***, which he called *white protuberances*; Table IX, Figure 1-*Y*.

21. *optic thalamus (Pourfour du Petit, 1710)*
Pourfour du Petit's use of the term (*couche optique* in French) for macrodissected adult human clearly included the ***interbrain (Baer, 1837)*** and ***midbrain (Baer, 1837)***, excluding the ***cerebral peduncle (Tarin, 1753)***. He referred to the *optic thalamus (Pourfour du Petit, 1710)* as a *superior part of medullary crura* and the ***cerebral peduncle (Tarin, 1753)*** as an *inferior part of medullary crura*; p. 14; unpublished translation of L. Kruger and L.W. Swanson.
22. *superior part of medullary crura (Pourfour du Petit, 1710)*
Synonymous with or includes (distinction unclear) the *optic thalamus (Pourfour du Petit, 1710)*; also see *inferior part of medullary crura (Pourfour du Petit, 1710)*.
23. *cerebral peduncle (Winslow, 1733)*
Winslow's definition for macrodissected adult human is quite vague and appears to include very roughly the ***tegmentum (Swanson, 2000b)*** and ***pons (Haller, 1747)*** exclusive of the ***cerebellar peduncles (Ridley, 1695)***. At one point he wrote that, "The great Branches of the Medulla Oblongata [a synonym for his cerebral peduncles] are two very considerable medullary Fasciculi, the anterior [rostral] Extremities of which are separated, and the posterior united, so that taken both together, they represent a *Roman V*. These fasciculi are flat, much broader before than behind; their Substance being composed of several longitudinal and distinctly prominent medullary Fibres. Their anterior Extremities seem to be lost at the lower part of the Corpora Striata; and it is for that reason that they are looked upon as the Pedunculi of the Cerebrum." (Sect. X, p. 41). But then he wrote, "We must observe in general concerning the Eminences of the Medulla Oblongata, that those which are medullary on their Outsides or Surfaces, are interiourly either intirely Cortical, or partly Cortical, and partly Medullary, or formed by a singular Mixture of these two Substances, which still remains to be unfolded, as well as many other particularities observable in examining the internal Structure of the Brain." (Sect. X, p. 43).
24. *large branch of medulla oblongata (Winslow, 1733)*
Synonym for *cerebral peduncle (Winslow, 1733)*; Section X, p. 41.
25. *great branch of medulla oblongata (Winslow, 1733)*
Synonym for *cerebral peduncle (Winslow, 1733)*; Section X, p. 41.
26. *anterior branch of medulla oblongata (Winslow, 1733)*
Synonym for *cerebral peduncle (Winslow, 1733)*; Section X, p. 41.
27. *crus anteriora medulla oblongata (Winslow, 1733)*
Synonym for *cerebral peduncle (Winslow, 1733)*; Section X, p. 41.
28. *femora medulla oblongata (Winslow, 1733)*
Synonym for *cerebral peduncle (Winslow, 1733)*; Section X, p. 41.
29. *crus cerebri (Haller, 1747)*
Haller's definition for macrodissected adult human included the fibrous ***cerebral peduncle (Tarin, 1753)*** and accompanying, though undefined and unillustrated, *gray substance (Vesalius, 1543a)* of the ***midbrain (Baer, 1837)*** and ***pons (Haller, 1747)***, exclusive of the ***tectum (Baer, 1837)***; p. 184. "The whole medulla of the brain is, in its lower part or basis, collected together into two very thick compressed columns, distinguished in their surface by a line running according to their length; and these have internally a cortical substance. These, which are the crura of the brain, meeting together downward, are covered by the subjacent crura of the cerebellum, and are inserted by apparent strata of fibres into the pyramidal bodies of the medulla oblongata; and with the other deeper fibres, which separate the inner transverse fibres that come from the cerebellum from the preceding, meet together with the medulla cerebelli to make up the beginning of the medulla oblongata."(see translation, 1754, pp. 294–295).
30. *basis of medulla of brain (Haller, 1754b)*
English form of *crus cerebri (Haller, 1747)*; pp. 294–295.
31. *crura of brain (Haller, 1754b)*
Refers in English to right and left *crus cerebri (Haller, 1747)*; pp. 294–295.
32. *processus cerebri ad pontem Varolii (Haase, 1781)*
Its meaning for macrodissected adult human is quite vague but probably is similar to *crus cerebri (Haller, 1747)*; p. 25.
33. *processus ad medullam oblongatam (Haase, 1781)*
Synonym for *processus cerebri ad pontem Varolii (Haase, 1781)*; p. 25.
34. *medulla oblongata (Vicq d'Azyr, 1786)*
Apparently used for macrodissected adult human ***medulla (Winslow, 1733)***, ***pons (Haller, 1747)*** without the ***pontine nuclei (Jacobsohn, 1909)*** and ***middle cerebellar peduncles (Rolando, 1819)***, and ***tegmentum (Swanson, 2000b)*** without the ***cerebral peduncles (Tarin, 1753)***, all considered together; Plate XXV, Figures I–II:*41/42*. Reil (1809c) used the term in essentially the same sense for macrodissected adult human; see Mayo translation (1823, p. 85).
35. *annular protuberance and its prolongations (Bichat, 1801)*
Corresponds roughly to macrodissected adult human ***pons (Haller, 1747)***, with the ***midbrain (Baer, 1837)*** rostrally and the ***medulla (Winslow, 1733)*** caudally; see translation (1822, Vol. 1, pp. 172–173).
36. *cerebral protuberance (Bichat et al., 1801–1803)*
Appears to correspond very roughly to macrodissected adult human ***midbrain (Baer, 1837)*** and ***pons (Haller, 1747)*** considered together, along with certain fiber tract prolongations to the ***forebrain (Goette, 1873)*** and ***cerebellum (Aristotle)***; in the original French, *protubérance cérébral*; pp. 107, 206. Also see Meckel (1832, Vol. 2, pp. 418–418).
37. *midbrain (Burdin, 1803)*
Apparently roughly corresponds to macrodissected adult human ***tectum (Baer, 1837)*** and ***pons (Haller,***

1747) considered together; in the original French, *mésocéphale*. Also see translation (1803, Vol. 1, pp. 165–166), where the Latin form, *mesencephalon*, is used. Also see Meckel (1832, Vol. 2, pp. 418–419), Todd (1845, pp. 157–159, 180 ff.).

38. *cerebral protuberance (Cloquet, 1816)*
Corresponds to macrodissected adult human ***tectum (Baer, 1837)*** and ***pons (Haller, 1747)*** considered together; in the original French, *protubérance cérébrale*, pp. 536–539.
39. *mesocephalon (Burdach, 1822)*
Latin translation provided for *midbrain (Burdin, 1803)*; p. 298, where it was also spelled *mesencephalon*. Meckel spelled it *mesocephalum*, see translation (1832, Vol. 2, p. 418).
40. *pyramidal bundle (Rolando, 1825a)*
In macrodissected adult human the ***cerebral peduncle (Tarin, 1753)*** and ***longitudinal pontine fibers (Arnold, 1838b)*** considered together; in the original French, *faisceaux pyramidaux*, Table 1, Figure 1-*p.e*. and Table III, Figure 1-*p*.
41. *pyramidal fascicle (Rolando, 1825a)*
Alternate translation for *pyramidal bundle (Rolando, 1825a)*.
42. *anterior pyramid (Rolando, 1825a)*
Rolando tended to use it in macrodissected adult mammals to include the ***longitudinal pontine fibers (Arnold, 1838b)*** and ***pyramid (Willis, 1664)*** considered together; the original French (plural), *pyramides antérieures*; see Table III, Figure 1-*p* and Table IV, Figure 1-*p*.
43. *annular protuberance (Cloquet, 1828)*
Synonym for macrodissected adult human *cerebral protuberance (Cloquet, 1816)*; in the original French, *protubérance annulaire*, p. 383.
44. *nodus encephali (Quain, 1828)*
Synonym for *cerebral protuberance (Cloquet, 1816)*; p. 623.
45. *node of brain (Cruveilhier, 1836)*
The macrodissected adult human ***midbrain (Baer, 1837)***, ***pons (Haller, 1747)***, and probably ***medulla (Winslow, 1733)*** considered together; in the original French, *noeud de l'encéphale*, p. 528.
46. *reinforcing fascicle of bulb (Cruveilhier, 1836)*
For macrodissected adult human a large and vaguely defined column—which Cruveilhier referred to as a nucleus (*noyau*)—of mixed ***central nervous system white matter tracts (>1840)*** and ***central nervous system gray matter regions (>1840)***—starting between the right and left ***inferior olivary complex (>1840)***, filling most of the rest of the ***medulla (Winslow, 1733)***, and extending rostrally through the ***midbrain (Baer, 1837)*** and caudally in and around the ***inferior cerebellar peduncle (Günther, 1786)***; in the original French, *fasceau de renforcement du bulb*, p. 596.
47. *unnamed fascicle of bulb (Cruveilhier, 1836)*
Synonym for *reinforcing fascicle of bulb (Cruveilhier, 1836)*; in the original French, *faisceau innominé*, p. 596. Todd (1845, pp. 177–178, 186, Figs. 20, 28-*i*) referred in Latin to right and left *fasciculi innominata* and called them the *olivary* or *central columns*.
48. *isthmus of brain (Cruveilhier, 1836)*
Synonym for *node of brain (Cruveilhier, 1836)*; in the original French, *isthme de l'encéphale*, p. 602. Cruveilhier wrote that he was following *isthmus (Ridley, 1695)*, although the latter was probably more restricted, essentially, to the ***midbrain (Baer, 1837)***.

branch of oculomotor nerve to ciliary ganglion (>1840)

As described for macrodissected adult human, a branch (or up to three smaller branches) of the ***oculomotor nerve (Estienne, 1545)*** usually arising from the ***nerve to inferior oblique (>1840)***. It carries preganglionic parasympathetic ***axons (Kölliker, 1896)*** from the ***Edinger-Westphal nucleus (>1840)*** of the ***midbrain (Baer, 1837)*** to the ***ciliary ganglion (Loder, 1778)***; see Williams & Warwick (1980, p. 1058), *Terminologia Anatomica* (1998, p. 133). It was perhaps first clearly distinguished by Pourfour du Petit; see ***[branch of oculomotor nerve to ciliary ganglion (>1840)] (Pourfour du Petit, 1729)***.

EARLIER REFERENCES:

Described, not named or illustrated:

1. ***[branch of oculomotor nerve to ciliary ganglion (>1840)] (Pourfour du Petit, 1729)***
Clearly described for macrodissected adult human; p. 10. For an account of early work, see Haller (1743, p. 45 note 39).

Earlier synonyms:

1. *short branch of oculomotor nerve (Winslow, 1733)*
Synonym for macrodissected adult human ***branch of oculomotor nerve to ciliary ganglion (>1840).*** Winslow specifically referred to small short branch of *third pair of nerves from medulla oblongata (Winslow, 1733)* forming a small *lenticular ganglion (Winslow, 1733)*; Section VI, p. 62. Beautifully illustrated for macrodissected adult human by Zinn (1755, Tab. VI, Fig. 1-*y*).
2. *short root of ophthalmic ganglion (Zinn, 1755)*
Synonym for macrodissected adult human ***branch of oculomotor nerve to ciliary ganglion (>1840)***; in the original Latin, *radix brevior ganglii ophthalmici*, Table VI, Figure 1-*z*.
3. *short root of ciliary ganglion (Langenbeck, 1826-1830)*
Synonym for macrodissected adult human ***branch of oculomotor nerve to ciliary ganglion (>1840)***; in the original Latin, *radix brevis ganglii ciliaris*, Fascicle III, Table XVI-*r*.
4. *short root of lenticular ganglion (Todd, 1836–1839)*
Synonym for macrodissected adult human ***branch of oculomotor nerve to ciliary ganglion (>1840)***; p. 281.
5. *branch of ophthalmic ganglion to inferior division of third nerve (Quain & Wilson, 1839)*
Synonym for macrodissected adult human ***branch of oculomotor nerve to ciliary ganglion (>1840)***; Plate XIII, Figure 2-*h*.

6. *ciliary ganglion branch of communication to inferior branch of third nerve (Quain & Wilson, 1839)*
   Synonym for macrodissected adult human ***branch of oculomotor nerve to ciliary ganglion (>1840)***; Plate XXVII-*E,7*.
7. *lenticular ganglion branch of communication to inferior branch of third nerve (Quain & Wilson, 1839)*
   Synonym for macrodissected adult human ***branch of oculomotor nerve to ciliary ganglion (>1840)***; Plate XXVII-*E,7*.

LATER SYNONYMS:

1. *parasympathetic root of ciliary ganglion (>1840)*
   Synonym for macrodissected adult human ***branch of oculomotor nerve to ciliary ganglion (>1840)***; see *Terminologia Anatomica* (1998, p. 133).
2. *oculomotor root of ciliary ganglion (>1840)*
   Synonym for macrodissected adult human ***branch of oculomotor nerve to ciliary ganglion (>1840)***; see *Terminologia Anatomica* (1998, p. 133).

buccal branch of facial nerve (>1840)

As described for macrodissected adult human, a terminal branch (or sometimes branches) of the ***facial nerve trunk (>1840)*** extending rostrally (forward) to the angle of the mouth and supplying muscles converging on the mouth, including the buccinator; see Durward (1951, p. 1032 and Fig. 902). Williams & Warwick (1980, p. 1072) referred to the lower ***zygomatic branches of facial nerve (>1840)*** as an upper buccal branch of facial nerve. It was first alluded to by Galen; see ***[buccal branch of facial nerve (>1840)] (Galen, c173)***.

EARLIER REFERENCES:

Described, not named or illustrated:

1. ***[buccal branch of facial nerve (>1840)] (Galen, c173)***
   Alluded to for macrodissected adult beef, pig, and/or macaque but not human; see May translation (1968, pp. 455, 539), Duckworth translation (1962, pp. 194, 196), and Meckel (1748, p. 2 notes *d,e*).

Illustrated and described, not named:

1. ***[buccal branch of facial nerve (>1840)] (Vesalius, 1543a)***
   Mentioned and illustrated for macrodissected adult human; see Richardson & Carman translation (2002, p. 193).

Earlier synonyms:

1. *buccal nerve of inferior branch of hard nerve (Meckel, 1753)*
   Corresponds roughly to macrodissected adult human ***buccal branch of facial nerve (>1840)***; in the original French, *le nerf buccal de le rameau inférieur du dur*, Table 1-*221*.
2. *buccal branch of inferior branch of hard nerve (Meckel, 1753)*
   Synonym for *buccal nerve of inferior branch of hard nerve (Meckel, 1753)*; in the original French, basically *le rameau buccal de la rameau inférieur du dur*, p. 93.
3. *buccal branch of portio dura of auditory nerve (Albinus, 1761)*
   Synonym for macrodissected adult human ***buccal branch of facial nerve (>1840)***; original Latin description was *nervorum auditoriorum portio dura, ramus ad buccinatorem*, Table 21/2-*f*.
4. *buccal branch of portio dura of seventh cerebral nerve (Albinus, 1761)*
   Synonym for macrodissected adult human ***buccal branch of facial nerve (>1840)***; original Latin description was *septimi paris nervorum cerebri portio dura, ramus ad buccinatorem*, Table 21/2-*f*.
5. *facial branches of superior branch of hard part of seventh pair (Haller, 1762)*
   Synonym for macrodissected adult human ***buccal branch of facial nerve (>1840)***; pp. 229–230.
6. *infraorbital branch of superior branch of anterior branch of hard nerve (Loder, 1778)*
   Synonym for macrodissected adult human ***buccal branch of facial nerve (>1840)***; in the original Latin, *ramum infraorbitalem*, p. 26 (called *supraorbitalis* in error on p. 27).
7. *buccal branches of lower facial branches of descending branch of superficial branch of hard nerve (Günther, 1786)*
   Synonym for macrodissected adult human ***buccal branch of facial nerve (>1840)***; p. 59.
8. *inferior facial branch of hard nerve (Peipers, 1793)*
   Synonym for macrodissected adult human ***buccal branch of facial nerve (>1840)***; in the original Latin, *ramus facialis inferior duri*, p. 35.
9. *buccal branch of hard nerves (Mayer, 1794)*
   Synonym for macrodissected adult human *buccal branch of inferior branch of hard nerve (Meckel, 1753)*; in the original Latin, *ramus buccalis nervi duri*; Part 5, Table VII-*150* (p. 51).
10. *inferior nerve (Soemmerring, 1798)*
    Probably synonym for macrodissected adult human ***buccal branch of facial nerve (>1840)***; in the original Latin, *nervus inferior*, p. 253.
11. *descending nerve (Soemmerring, 1798)*
    Probably synonym for macrodissected adult human ***buccal branch of facial nerve (>1840)***; in the original Latin, *nervus descendens*, p. 253.
12. *labial branches of facial nerve (Burdin, 1803)*
    Probably synonym for macrodissected adult human ***buccal branch of facial nerve (>1840)***; see translation (1803, Vol. 1, p. 180).
13. *buccal nerves (Meckel, 1817)*
    Synonym for macrodissected adult human ***buccal branch of facial nerve (>1840)***. Meckel recognized three branches: central or middle, with ascending and anterior twigs, and superior; see translation (1832, Vol. 3, p. 56).
14. *anterior branches of facial nerve (Meckel, 1817)*
    Synonym for ***buccal branch of facial nerve (>1840)***; see translation (1832, Vol. 3, p. 56).
15. *buccal surculus of inferior branch of portio major and minor of facial nerve (Bellingeri, 1818)*

Synonym for macrodissected adult human ***buccal branches of facial nerve (>1840)***; in the original Latin, *surculus buccalis*, see Table II.

16. *buccal surculus of cervico-facial branch of portio major and minor of facial nerve (Bellingeri, 1818)*
Synonym for macrodissected adult human ***buccal branches of facial nerve (>1840)***; in the original Latin, *surculus buccalis*, see Table II.
17. *inferior facial branch of facial nerve (Cloquet, 1828)*
Synonym for macrodissected adult human ***buccal branch of facial nerve (>1840)***; in the original French, *rameau facial inférieur*, Plate CLVII-*71*.
18. *inferior facial branch of portio dura (Knox, 1832)*
Rough synonym for ***buccal branch of facial nerve (>1840)***; Plate II-*108*.
19. *buccal branches of superior branch of facial nerve (Arnold, 1834)*
Synonym for ***buccal branch of facial nerve (>1840)***; in the original Latin, *ramus superior nervi facialis rami buccales*, p. 12.
20. *buccal branches of cervicofacial branch of facial nerve (Cruveilhier, 1836)*
Synonym for ***buccal branch of facial nerve (>1840)***; in the original French, *rameaux buccaux*, pp. 946–947.

PARTLY CORRESPONDS:

1. *superior branch of buccal nerve (Meckel, 1753)*
Dorsal (superior) branch of *buccal nerve of inferior branch of hard nerve (Meckel, 1753)*; p. 93, also see *inferior branch of buccal nerve (Meckel, 1753)*.
2. *inferior branch of buccal nerve (Meckel, 1753)*
Ventral (inferior) branch of *buccal nerve of inferior branch of hard nerve (Meckel, 1753)*; in the original French, *la branche inférieure du buccal*, Table 1-*224*.
3. *internal maxillary plexus (Le Cat, 1768)*
A ***plexus (Galen, c192)*** involving ***communicating branches (Winslow, 1733)*** of macrodissected adult human ***buccal branch of facial nerve (>1840)***; Plate VIII, Figure 1-*x*.
4. *buccal plexus (Le Cat, 1768)*
A ***plexus (Galen, c192)*** involving ***communicating branches (Winslow, 1733)*** of macrodissected adult human ***buccal branch of facial nerve (>1840)***; Plate VIII, Figure 1-*x*.
5. *nervus anterior facialis infimus (Soemmerring, 1791)*
Probably synonymous with macrodissected adult human *inferior branch of buccal nerve (Meckel, 1753)*; in the original Latin, *nervus anterior facialis infimus*, p. 238.
6. *facial communicating branch (Mayer, 1794)*
Communicating branch (Winslow, 1733) associated with macrodissected adult human ***buccal branch of facial nerve (>1840)***; in the original Latin, *ramus communicans faciei*; Part 5, Table VII-*153* (p. 51).
7. *superior fascicle of buccal surculus of inferior branch of portio major and minor of facial nerve (Bellingeri, 1818)*
Dorsal branch of macrodissected adult human ***buccal branch of facial nerve (>1840)***; in the original Latin, *fasciculus superior*, see Table II.
8. *superior fascicle of buccal surculus of cervico-facial branch of portio major and minor of facial nerve (Bellingeri, 1818)*
Dorsal branch of macrodissected adult human ***buccal branch of facial nerve (>1840)***; in the original Latin, *fasciculus superior*, see Table II.
9. *middle fascicle of buccal surculus of inferior branch of portio major and minor of facial nerve (Bellingeri, 1818)*
Intermediate branch of macrodissected adult human ***buccal branch of facial nerve (>1840)***; in the original Latin, *fasciculus medius*, see Table II.
10. *middle fascicle of buccal surculus of cervico-facial branch of portio major and minor of facial nerve (Bellingeri, 1818)*
Intermediate branch of macrodissected adult human ***buccal branch of facial nerve (>1840)***; in the original Latin, *fasciculus medius*, see Table II.
11. *inferior fascicle of buccal surculus of inferior branch of portio major and minor of facial nerve (Bellingeri, 1818)*
Ventral branch of macrodissected adult human ***buccal branch of facial nerve (>1840)***; in the original Latin, *fasciculus inferior*, see Table II.
12. *inferior fascicle of buccal surculus of cervico-facial branch of portio major and minor of facial nerve (Bellingeri, 1818)*
Ventral branch of macrodissected adult human ***buccal branch of facial nerve (>1840)***; in the original Latin, *fasciculus inferior*, see Table II.

buccal nerve (Meckel, 1748)

As described for macrodissected adult human, a branch of the ***anterior branch of mandibular nerve (>1840)*** uniting with ***buccal branches of facial nerve (>1840)*** and supplying a branch to the lateral pterygoid muscle before innervating skin over the rostral (anterior) part of the buccinator muscle and mucous membrane lining its inner surface and the caudal (posterior) part of the buccal surface of the gum; see Williams & Warwick (1980, p. 1066). For Meckel's use in macrodissected adult human see pp. 82, 83; also see Meckel (1753, p. 64, Table 1-*101*). It was known to Galen; see ***[buccal nerve (Meckel, 1748)] (Galen, c173)***.

TRANSLATIONS:

1. *nervus buccinatorius (Schaarschmidt, 1750)*
Early Latin form of ***buccal nerve (Meckel, 1748)***; p. 27.

EARLIER REFERENCES:

Described, not named or illustrated:

1. ***[buccal nerve (Meckel, 1748)] (Galen, c173)***
Alluded to for macrodissected adult beef, pig, and/or macaque but not human; see May translation (1968, pp. 449–450) and Meckel (1748, p. 2 note *d*).
2. ***[buccal nerve (Meckel, 1748)] (Vesalius, 1543a)***
Vesalius mentioned its muscular and cutaneous branches for macrodissected adult human; see Richardson & Carman translation (2002, p. 189). Du Verney clearly illustrated its origin (1683, Pl. 13-3).

LATER SYNONYMS:

1. *great buccal nerve (Meckel, 1753)*
Synonym for macrodissected adult human ***buccal nerve (Meckel, 1748)***; Table 1-*232*.

2. *buccinator nerve (Meckel, 1753)*
   Synonym for macrodissected adult human ***buccal nerve (Meckel, 1748)***; in the original French, *le nerf buccal, ou buccinatoire*, p. 64. For English use see Meckel (1832, Vol. 3, p. 72), where *buccal nerve* was also given.
3. *buccal branch of third branch of fifth pair (Loder, 1778)*
   Synonym for macrodissected adult human ***buccal nerve (Meckel, 1748)***; in the original Latin, *ramus buccinatorius*, p. 18.
4. *bucco-labian nerve (Burdin, 1803)*
   Synonym for macrodissected adult human ***buccal nerve (Meckel, 1748)***; in the original French, *bucco-labial*. Also see translation (1803, Vol. 1, p. 176).
5. *buccal surculus of ganglioform plexus with inferior maxillary branch (Bellingeri, 1818)*
   Synonym for macrodissected adult human ***buccal nerve (Meckel, 1748)***; in the original Latin, *surculus buccinatorius*, see Table 1.
6. *buccolabial branch of fifth nerve (Bell, 1829)*
   Apparently, synonym for macrodissected adult human *bucco-labian nerve (Burdin, 1803)*; in the original Latin, *ramus buccinalis labialis*; p. 323, Plate VIII, Figure 1-*E*.
7. *fourth trunk of fifth nerve (Swan, 1830)*
   Synonym for macrodissected adult human ***buccal nerve (Meckel, 1748)***; Plate XIV, Figure 5-*5*.
8. *buccal branch of superior primary branch of inferior maxillary nerve (Quain, 1832)*
   Synonym for macrodissected adult human ***buccal nerve (Meckel, 1748)***; p. 675.
9. *buccal branch of inferior maxillary nerve (Quain & Wilson, 1839)*
   Synonym for macrodissected adult human ***buccal nerve (Meckel, 1748)***; Plate XIII, Figure 2-*b**.

PARTLY CORRESPONDS:

1. *muscular fascicles of buccal surculus of ganglioform plexus with inferior maxillary branch (Bellingeri, 1818)*
   Macrodissected adult human branches of ***buccal nerve (Meckel, 1748)*** to pterygoid and temporal muscles; in the original Latin, *fasciculi musculares*, see Table 1.
2. *glandular fascicles of buccal surculus of ganglioform plexus with inferior maxillary branch (Bellingeri, 1818)*
   Macrodissected adult human branches of ***buccal nerve (Meckel, 1748)*** to parotid duct and buccal mucous membrane; in the original Latin, *fasciculi glandulares*, see Table 1.
3. *buccal fascicle of buccal surculus of ganglioform plexus with inferior maxillary branch (Bellingeri, 1818)*
   Macrodissected adult human branch of ***buccal nerve (Meckel, 1748)*** to buccinator muscle; in the original Latin, *fasciculus buccalis*, see Table 1.
4. *bucco-labial fascicle of buccal surculus of ganglioform plexus with inferior maxillary branch (Bellingeri, 1818)*
   Macrodissected adult human branch of ***buccal nerve (Meckel, 1748)*** to "*m. buccinatorem, caninem, et triangularem*" (Tab. 1); in the original Latin, *fasciculus bucco-labialis*.
5. *ascending branches of buccal nerve (Cruveilhier, 1836)*
   Branches of macrodissected adult human ***buccal nerve (Meckel, 1748)*** extending dorsally (ascending) to region of cheek; in the original French, *rameaux ascendans*, p. 931.
6. *middle branches of buccal nerve (Cruveilhier, 1836)*
   Rostrally directed (horizontal) branches of macrodissected adult human ***buccal nerve (Meckel, 1748)*** to region lateral to lips; in the original French, *rameaux moyens*, p. 931.
7. *descending branches of buccal nerve (Cruveilhier, 1836)*
   Branches of macrodissected adult human ***buccal nerve (Meckel, 1748)*** extending ventrally (descending) to region ventrolateral to lips; in the original French, *rameaux descendans*, p. 931.

bulb of posterior horn (>1840)

As described for macrodissected adult human, a bulge in the dorsal (upper) part of the medial wall of the ***posterior horn of lateral ventricle (Haller, 1747)*** formed by passage of the ***occipital forceps (>1840)***; see Williams & Warwick (1980, p. 1029 and Fig. 7.146). Not clearly described by 1840.

TRANSLATIONS:

1. *bulbus cornus posterioris (>1840)*
   Latin form of ***bulb of posterior horn (>1840)***; see *Terminologia Anatomica* (1998, p. 127).

C

calcarine spur (Morand, 1748)

As described for macrodissected adult human, an elevation in the ventral (lower) part of the medial wall of the ***posterior horn of lateral ventricle (Haller, 1747)*** corresponding to the infolded ***occipital region (Vesalius, 1543a)*** associated with the rostral (anterior) part of the ***calcarine sulcus (>1840)***; see Williams & Warwick (1980, p. 1029, Fig. 7.146), *Terminologia Anatomica* (1998, p. 128), *Dorland's* (2003, p. 1746). It was probably first reported as the *pes hippocampi (Bergen, 1734)*, and Morand noted that it (sometimes) resembles a cock's spur; in French *l'ergot (Morand, 1748)*, and in Latin *calcar avis (Arnold, 1838a)*: "In this cavity one sees clearly an outgrowth or protuberance of the medulla [***cerebral cortex white matter (>1840)***], which I shall call *l'ergot* because it resembles perfectly the part of the claw of birds so named, in its outline, shape, and size, with this difference, that without presenting its entire thickness, it shows it only in relief." (p. 316; translated in Lewis, 1923, p. 226).

TRANSLATIONS:

1. *ergot (Morand, 1748)*
   Original French form, *l'ergot*, of ***calcarine spur (Morand, 1748)***; p. 316.
2. *calcar avis (Arnold, 1838a)*
   Latin form of ***calcarine spur (Morand, 1748)***; p. 88. See Meyer (1971, p. 21).

EARLIER REFERENCES:

Earlier synonyms:

1. *pes hippocampi (Bergen, 1734)*
   Probably refers to macrodissected adult human ***calcarine spur (Morand, 1748)***; see Tarin (1750, Tab. XIII, Fig. 3-*f*).

LATER SYNONYMS:

1. *eminentia minor (Günz, 1750)*
   Synonym for macrodissected adult human ***calcarine spur (Morand, 1748)***; see Haller (1762; p. 45, note *c* of Vol. IV, 1757).
2. *unguis (Haller, 1754a)*
   Synonym (meaning claw or nail) for macrodissected adult human ***calcarine spur (Morand, 1748)***; see Vicq d'Azyr (1786, pp. 7, 15), Lewis (1923, p. 227).
3. *colliculus (Haller, 1754a)*
   Synonym for macrodissected adult human ***calcarine spur (Morand, 1748)***; see Vicq d'Azyr (1786, pp. 7, 15).
4. *pes hippopotami minor (Mayer, 1779)*
   Mayer identified macrodissected adult human ***calcarine spur (Morand, 1748)*** as "small foot of the hippopotamus" (Tab. III-*r*; the German, *kleiner fuss des Seepferdes*, was used with Latin in parentheses) along with a number of clear digitations (Tab. III-*s*). The "small foot of the hippopotamus" comes off *leg of vault (Vesling, 1647)* and is in contrast to "large foot of the hippopotamus", the *pes hippopotami major (Mayer, 1779)*.
5. *small foot of hippopotamus (Mayer, 1779)*
   English form of *pes hippopotami minor (Mayer, 1779)*.
6. *pedis minoris hippocampi (Haase, 1781)*
   Haase "corrected" the term just introduced as *pes hippopotami minor (Mayer, 1779)*; p. 19. Also see Haller (1762, p. 34).
7. *small foot of seahorse (Haase, 1781)*
   English form of *pedis minoris hippocampi (Haase, 1781)*.
8. *digiti pedis minoris hippocampi (Haase, 1781)*
   Refinement in description of *pedis minoris hippocampi (Haase, 1781)*; p. 19.
9. *digits of small foot of seahorse (Haase, 1781)*
   English form of *digiti pedis minoris hippocampi (Haase, 1781)*. Also see *pes hippopotami minor (Mayer, 1779)*.
10. *hippocampus minor (Vicq d'Azyr, 1786)*
    Synonym for macrodissected adult human ***calcarine spur (Morand, 1748)***; in the original French, *petit hypocampe*, see Plate V-*x*, p. 9; Plate XXI, Figure I-*29*. Also see Meyer (1971, p. 21).
11. *second hippocampus (Vicq d'Azyr, 1786)*
    Synonym for macrodissected adult human ***calcarine spur (Morand, 1748)***; Plate V-*x*.

12. *colliculus caveae posterioris ventriculi lateralis (Vicq d'Azyr, 1786)*
    Synonym for macrodissected adult human ***calcarine spur (Morand, 1748)***; pp. 7, 9 note *1*.
13. *ocrea (Günther, 1786)*
    Synonym for macrodissected adult human ***calcarine spur (Morand, 1748)***; in English, a *greave*; p. 11.
14. *unciform eminence (Chaussier, 1807)*
    Synonym for macrodissected adult human ***calcarine spur (Morand, 1748)***; p. 68, given by Burdach (1822, p. 376) in Latin as *eminentia unciformis*.
15. *hintre oder kleine Wulst (Tiedemann, 1816)*
    Synonym for macrodissected adult human ***calcarine spur (Morand, 1748)***; p. 53, see Burdach (1822, p. 376).
16. *lesser hippocampus (Bell & Bell, 1816)*
    Synonym for macrodissected adult human ***calcarine spur (Morand, 1748)***; Vol. 2, p. 447.
17. *digital eminence (Meckel, 1817)*
    Synonym for macrodissected adult human ***calcarine spur (Morand, 1748)***; in the original Latin, *eminentia digitata*, see translation (1832, Vol. 2, p. 463) and Meyer (1971, p. 21).
18. *convolutions of digital cavity (Cruveilhier, 1836)*
    Synonym for macrodissected adult human ***calcarine spur (Morand, 1748)***; in the original French, *circonvolutions de la cavité digitale*, p. 663.
19. *ergot de Morand (Cruveilhier, 1836)*
    French eponym for macrodissected adult human ***calcarine spur (Morand, 1748)***; p. 697.

calcarine sulcus (>1840)

As described for macrodissected adult human, the deep and convoluted groove in the medial surface of the ***occipital region (Vesalius, 1543a)*** between ***lingual gyrus (>1840)*** ventrally and ***cuneus (Burdach, 1822)*** dorsally; see Williams & Warwick (1980, Fig. 7.114A), Nieuwenhuys et al. (2008, Figs. 5.17-*4*, 5.22-*10*). It was perhaps first delineated accurately by Soemmering; see ***[calcarine sulcus (>1840)] (Soemmering, 1778)***.

EARLIER REFERENCES:

Illustrated, not named or described:

1. ***[calcarine sulcus (>1840)] (Soemmering, 1778)***
   Accurately illustrated for macrodissected adult human in midsagittal view; Table III. Burdach reported that Malacarne (1780, Pt. II, p. 10) described without naming it, and Vicq d'Azyr (1786, Tab. III) also illustrated it.

Earlier synonyms:

1. *posterior cerebral fissure (Reil, 1809b)*
   Synonym for macrodissected adult human ***calcarine sulcus (>1840)*** described as second only to *Sylvian fissure (Vicq d'Azyr, 1784)* in magnitude. Reil also noted one of its indentations produces a prominence in ***posterior horn of lateral ventricle (Haller, 1747)***, the ***calcarine spur (Morand, 1748)***; see Mayo translation (1823, p. 73). Burdach (1822, pp. 166, 387) reported that Reil used the German term, *kleine hintre Grube* (p. 185), and gave the Latin form, *fissura posterior*.
2. *sulcus under cuneus (Burdach, 1822)*
   Synonym for macrodissected adult human ***calcarine sulcus (>1840)***; in the original German, *die Furche unter dem Zwickel*, p. 412. Also see Meyer (1971, p. 130).

cardiac branches of recurrent laryngeal nerve (>1840)

As described for macrodissected adult human, on the right side these small branches of the ***recurrent laryngeal nerve (Albinus, 1744)*** course to the ***cardiac plexus (Keill, 1698)***, whereas on the left side one relatively large branch typically arises near the origin of the left subclavian artery and courses past the left side of the aortic arch to the ***cardiac plexus (Keill, 1698)***; see Mitchell (1953, pp. 181–182), Williams & Warwick (1980, p. 1081). They were first identified by Eustachi; see ***[cardiac branches of recurrent laryngeal nerve (>1840)] (Eustachi, 1552)***.

EARLIER REFERENCES:

Illustrated, not named or described:

1. ***[cardiac branches of recurrent laryngeal nerve (>1840)] (Eustachi, 1552)***
   Illustrated branch of macrodissected adult human ***recurrent laryngeal nerve (Albinus, 1744)*** joining ***thoracic cardiac branches of vagus nerve (>1840)***; see Albinus edition (1761, Tab. 18, Fig. 2-*s*, p. 105).

Described, not named or illustrated:

1. ***[cardiac branches of recurrent laryngeal nerve (>1840)] (Falloppio, 1561)***
   Described for macrodissected adult human and attributed original observation to others without citation; see Diemerbroeck (1689, p. 418).

Illustrated and described, not named:

1. ***[cardiac branches of recurrent laryngeal nerve (>1840)] (Willis, 1664)***
   Described and illustrated for right ***recurrent laryngeal nerve (>1840)*** in macrodissected adult human and other common large mammals; see Pordage translation (1681, p. 147 and Tab. 9-*n*). Vieussens provided considerably more detailed description for macrodissected adult human, including branches directly to left atrium and ventricle of heart; Table 23-*z,3,4*.

Earlier synonyms:

1. *descending branches of recurrent nerves (Scarpa, 1794)*
   Roughly synonymous with macrodissected adult human ***cardiac branches of recurrent laryngeal nerve (>1840)***; in the original Latin, *recurrentis nervi rami descendentes*, Table III:*12,13,30–34*.
2. *filaments to cardiac nerves from pneumogastric nerve (Meckel, 1817)*
   Synonym for macrodissected adult human ***cardiac branches of recurrent laryngeal nerve (>1840)***; see translation (1832, Vol. 3, p. 48).
3. *cardiac filaments of recurrent nerve (Cruveilhier, 1836)*
   Synonym for macrodissected adult human ***cardiac branches of recurrent laryngeal nerve (>1840)***; in the original French, *filets cardiaques*, p. 963.

PARTLY CORRESPONDS:

1. *first cardiac branch of recurrent nerves (Mayer, 1794)*
   First of two macrodissected adult human ***cardiac branches of recurrent laryngeal nerve (>1840)***; in the original Latin, *ramus cardiacus primus nervi recurrentis*; Part 6, Table II, Figure 1-*73* (p. 12).
2. *second cardiac branch of recurrent nerves (Mayer, 1794)*
   Second of two macrodissected adult human ***cardiac branches of recurrent laryngeal nerve (>1840)***; in the original Latin, *ramus cardiacus secundus nervi recurrentis*; Part 6, Table II, Figure 1-*75* (p. 12).

cardiac ganglion (Neubauer, 1772; Haller, 1772)

As described for macrodissected adult human, the largest of a group of small ***terminal ganglia (Gaskell, 1886)*** embedded in superficial parts of the ***cardiac plexus (Keill, 1698)***; see Mitchell (1953, p. 252) and Williams & Warwick (1980, p. 1132) for human, and Al et al. (2007) for rat and mouse. For Neubauer's use in macrodissected adult human, see pp. 144-*4*, 154–157, and Table 2, Figure 1-*227*; for Haller's use, see p. *7*, note *20*. Scarpa (1794, Tab. III-*114,115*) and Lobstein (1823, p. 19) clearly used the term in the modern sense for macrodissected adult human. It was first clearly indicated as the *cardiac infolding (Willis, 1664)*.

EARLIER REFERENCES:

Earlier synonyms:

1. *cardiac infolding (Willis, 1664)*
   From illustrations, Willis clearly delineated ***cardiac ganglion (Neubauer, 1772; Haller, 1772)*** in macrodissected adult human and other large mammals, although the original Latin term is *plexum cardiacum*; see Pordage translation (p. 147; Tab. IX-*l,Δ*; and Tab. X).

LATER SYNONYMS:

1. *ganglion cervicale imum (Neubauer, 1772)*
   Synonym for ***cardiac ganglion (Neubauer, 1772; Haller, 1772)***; p. 154.
2. *ganglion parvum cervicale imum (Neubauer, 1772)*
   Synonym for ***cardiac ganglion (Neubauer, 1772; Haller, 1772)***; Table 2, Figure 1-*227*.
3. *cardiac ganglion of Wrisberg (Scarpa, 1794)*
   Eponym for ***cardiac ganglion (Neubauer, 1772; Haller, 1772)***; in the original Latin, *ganglion cardiacum Wrisbergh*, Table IV-*32*. Wrisberg's description was from 1786 in the *Sylloge commentationum anatomicarum. II. Nervis arterias venasque comitantibus.*
4. *ganglion of cardiac nerves (Soemmerring, 1798)*
   Probably synonym for ***cardiac ganglion (Neubauer, 1772; Haller, 1772)***; in the original Latin, *ganglion nervorum cordis*, p. 346.
5. *ganglion molle and pellucidum of Scarpa (Bell, 1803b)*
   Eponym for macrodissected adult human *cardiac ganglion of Wrisberg (Scarpa, 1794)*; p. 175.
6. *cardiac ganglion of sympathetic (Knox, 1832)*
   Synonym for macrodissected adult human ***cardiac ganglion (Neubauer, 1772; Haller, 1772)***; Plate III-*107*.
7. *soft and pellucid ganglion of deep cardiac nerve (Knox, 1832)*
   Synonym for *ganglion molle and pellucidum of Scarpa (Bell, 1803b)*; Plate III-*154* in Knox's translation of Scarpa (1794).

PARTLY CORRESPONDS:

1. *lesser cardiac infolding (Willis, 1664)*
   Willis divided *cardiac infolding (Willis, 1664)* into lesser and greater parts, with the former supplying right and anterior regions of the heart; see Pordage translation (1681, pp. 148, 151).
2. *greater cardiac infolding (Willis, 1664)*
   Willis divided *cardiac infolding (Willis, 1664)* into lesser and greater parts, with the latter supplying left and posterior regions of the heart; see Pordage translation (1681, pp. 148, 151).
3. *olivary ganglion (Cloquet, 1828)*
   Essentially, differentiation of macrodissected adult human ***cardiac ganglion (Neubauer, 1772; Haller, 1772)*** associated with ***coronary plexuses (Meckel, 1817)***; in the original French, *ganglion olivaire*, Plate CLXII-*83*.

cardiac plexus (Keill, 1698)

As described for macrodissected adult human, a ***terminal plexus (Swanson & Bota, 2010)*** formed by the various ***nerves (Herophilus, c335–c280 BC)*** associated with the heart and parasympathetic ***cardiac ganglion (Neubauer, 1772; Haller, 1772)***. It lies around the great vessels at the base of the heart and shows considerable variation between individuals. It is commonly divided now into arbitrary superficial and deep, or anterior (ventral) and posterior (dorsal) parts, and its main extensions are the ***preaortic plexus (Arnulf, 1939)***, ***coronary plexuses (Meckel, 1817)***, and ***atrial plexuses (>1840)***; see Durward (1951, pp. 1138–1140), Mitchell (1953, pp. 250–253), Williams & Warwick (1980, p. 1132). For Keill's use in macrodissected adult human, see pp. 293, 295. Falloppio is usually credited with discovering it; see ***[cardiac plexus (Keill, 1698)] (Falloppio, 1561)***.

TRANSLATIONS:

1. *plexus cardiacus (Keill, 1698)*
   Original Latin form of ***cardiac plexus (Keill, 1698)***; p. 293.
2. *cordis plexum (Haase, 1781)*
   Latin form of ***cardiac plexus (Keill, 1698)***, p. 119. Haase recognized superficial (*superficialem*) and deep (*profundum*) parts in macrodissected adult human.

EARLIER REFERENCES:

Described, not named or illustrated:

1. ***[cardiac plexus (Keill, 1698)] (Falloppio, 1561)***
   Falloppio provided a detailed description of five, or less commonly four, ***nerves (Herophilus, c335–c280 BC)*** to this "infolding" in macrodissected adult human, and according to Johnstone (1795, p. 13) his account was much more accurate than Willis's and stood the test of time; see Diemerbroeck translation (1689, p. 418). In his excellent historical overview, Senac (1749, Vol. 1, p. 116) credited Falloppio with discovering the ***cardiac plexus (Keill, 1698)***.

Illustrated, not named or described:

1. ***[cardiac plexus (Keill, 1698)] (Willis, 1664)***
   Willis certainly illustrated it for macrodissected adult human, including a *cardiac infolding (Willis, 1664)*, even if he did not describe it as such; Table 9. He also referred to some "nerve fibers" distributed to anterior, and others to posterior, regions of the heart; Table 9-*o,s.t*.

LATER SYNONYMS:

1. *great cardiac plexus (Neubauer, 1772)*
   Synonym for macrodissected adult human ***cardiac plexus (Keill, 1698)***; in the original Latin, *plexum cardiacum magnum*, p. 129.
2. *cardiac ganglion of Wrisberg (Quain, 1828)*
   Eponym for macrodissected adult human ***cardiac plexus (Keill, 1698)***; in the original Latin, *ganglion cardiacum*, Wrisberg, p. 667.
3. *aortic plexus (Quain, 1837, p. 814)*
   Alternate term Quain gave, in quotes, for macrodissected adult human ***cardiac plexus (Keill, 1698)***; p. 814.

PARTLY CORRESPONDS:

1. *nerveus plexus cardiacus superior (Vieussens, 1684)*
   Roughly equivalent to all but caudal (lower or inferior) end of ***cardiac plexus (Keill, 1698)***; Vieussens's description and illustration of it in macrodissected adult human was considerably better than that of ***[cardiac plexus (Keill, 1698)] (Willis, 1664)***; Table 23-*43*.
2. *nerveum plexum cardiacum superiorem (Vieussens, 1684)*
   Alternate form of *nerveus plexus cardiacus superior (Vieussens, 1684)*; Table 23-*8*.
3. *nerveo plexui cardiaco superiorem (Vieussens, 1684)*
   Alternate form of *nerveus plexus cardiacus superior (Vieussens, 1684)*; Table 23-*y*.
4. *nerveum plexum cardiacum inferiorem (Vieussens, 1684)*
   Roughly equivalent to caudal (lower) end of ***cardiac plexus (Keill, 1698)*** in macrodissected adult human; Table 23-*51*.
5. *lesser cardiack plex of par vagum (Collins, 1685)*
   Probably synonymous with *nerveum plexum cardiacum inferiorem (Vieussens, 1684)*; Collins described it as transmitting fibers to the forepart of the right chamber of the heart in macrodissected adult human; p. 1051.
6. *superior cardiac plexus (Drake, 1707)*
   Synonym for macrodissected adult human *nerveus plexus cardiacus superior (Vieussens, 1684)*; in the original Latin, *plexus cardiacus superior*, p. 517.
7. *great anterior plexus of heart (Senac, 1749)*
   Senac's description and illustration for macrodissected adult human were vague, but it lies dorsal to (behind) the aorta and probably corresponds roughly with *deep part of great cardiac plexus (Scarpa, 1794)*; in the original French, *grand plexus antérieur*, pp. 493–494 and Plate 5, Figure 3.
8. *great posterior plexus of heart (Senac, 1749)*
   Senac's description and illustration for macrodissected adult human were vague, but it probably corresponds roughly with *posterior plexus of heart (Haller, 1772)*; in the original French, *grand plexus postérieur*, pp. 493–494, and Plate 5, Figure 5.
9. *posterior plexus of heart (Haller, 1772)*
   Larger or superficial part of macrodissected adult human ***cardiac plexus (Keill, 1698)***; in the original Latin, *plexum cordis posteriorem*, p. 11-*[9]4*.
10. *superficial plexus of heart (Haller, 1772)*
    As described for macrodissected adult human, probably synonym for *superficial cardiac plexus (Lobstein, 1823)*; in the original Latin, *plexus superficiales cordis*, p. 12.
11. *magno nervo cardiaco (Wrisberg, 1786)*
    Synonym for macrodissected adult human *principal cardiac nerve (Lobstein, 1823)*; p. 29, see Lobstein (1831, p. 19). An English form is *large cardiac nerve*.
12. *novo nervo cardiaco (Wrisberg, 1786)*
    Synonym for macrodissected adult human *principal cardiac nerve (Lobstein, 1823)*; p. 29, see Lobstein (1831, p. 19). An English form is *new cardiac nerve*.
13. *communicating branches of superficial aortic nerves with anterior aortic plexus (Andersch & Soemmerring, 1792)*
    In macrodissected adult human, ***communicating branches (Winslow, 1733)*** of *superficial aortic nerves (Andersch & Soemmerring, 1792)* with *anterior aortic plexus (Andersch & Soemmerring, 1792)*; in the original Latin, *nervi cardiaci superficialis communicatorii rami plexus aortici anterioris*, p. 192.
14. *superficial cardiac plexus (Mayer, 1794)*
    Somewhat artificial division of macrodissected adult human ***cardiac plexus (Keill, 1698)***; in the original Latin, *plexus cardiacus superficialis*; Part 6, Table II, Figure 1-*38* (p. 11). Lobstein (see 1831, p. 21) described it as arising from three branches of ***superior cardiac nerve (Neubauer, 1772)*** encircling aorta and brachiocephalic artery and compared it to *deep seated cardiac plexus (Lobstein, 1823)*. According to Lobstein, left ***superior cardiac nerve (Neubauer, 1772)*** can arise from ***superior thoracic ganglion (Lieutaud, 1742)***; see translation (1831, p. 21).
15. *deep cardiac plexus (Mayer, 1794)*
    Somewhat artificial division of macrodissected adult human ***cardiac plexus (Keill, 1698)***; in the original Latin, *plexus cardiacus profundus*; Part 6, Table II, Figure 1-*38* (p. 11). Also see *deep seated cardiac plexus (Lobstein, 1823)*.
16. *great deep cardiac plexus (Scarpa, 1794)*
    Deeper ventral (anterior) parts of macrodissected adult human ***cardiac plexus (Keill, 1698)***; in the original Latin, *plexum cardiacum magnum profundum*, Table IV-22. English form from Knox (1832, Pl. IV-*31*).
17. *superficial nerve of heart (Andersch, 1797)*
    In macrodissected adult human, branch of *superficial cardiac nerve (Andersch & Soemmerring, 1792)*; in the original Latin, *nervum superficialem cordis*, Vol. 2, p. 50.
18. *inferior oblique nerve of ductus arteriosus (Andersch, 1797)*
    In macrodissected human, derived from left *external cardiac nerve (Andersch & Soemmerring, 1792)* and essentially component of ***cardiac plexus (Keill, 1698)***; in the original Latin, *nervum obliquum inferiorem ductus arteriosi*, Vol. 2, p. 31.
19. *anterior deep nerve of ductus arteriosus (Andersch, 1797)*

In macrodissected adult human, branch of *superficial branch of superficial cardiac nerve (Andersch, 1797)* and essentially component of ***cardiac plexus (Keill, 1698)***; in the original Latin, *nervum profundum anteriorem ductus arteriosi*, Vol. 2, p. 89.

20. *lateral deep nerve of ductus arteriosus (Andersch, 1797)*
In macrodissected adult human, derived from *superficial branch of superficial cardiac nerve (Andersch, 1797)* and essentially component of ***cardiac plexus (Keill, 1698)***; in the original Latin, *nervum profundum lateralem ductus arteriosi*, Vol. 2, p. 90.
21. *posterior superficial nerve of ductus arteriosus (Andersch, 1797)*
In macrodissected adult human, derived from *superficial branch of superficial cardiac nerve (Andersch, 1797)* and essentially component of ***cardiac plexus (Keill, 1698)***; in the original Latin, *ductus arteriosi nervo superficiali posteriori*, Vol. 2, p. 90.
22. *lateral superficial nerves of ductus arteriosus (Andersch, 1797)*
In macrodissected adult human, derived from *superficial branch of superficial cardiac nerve (Andersch, 1797)* and essentially component of ***cardiac plexus (Keill, 1698)***; in the original Latin, *nervi superficialis lateralis ductus arteriosi*, Vol. 2, p. 90.
23. *communicating branch of anterior aortic plexus (Andersch, 1797)*
Relatively small macrodissected adult human ***communicating branch (Winslow, 1733)*** between *superficial branches of superficial cardiac nerve (Andersch, 1797)* and *anterior aortic plexus (Andersch, 1797)*; in the original Latin, *ramus communicatorius plexus aortici anterioris*, Vol. 2, pp. 91–93.
24. *communicating nerves of anterior aortic plexus (Andersch, 1797)*
Relatively large macrodissected adult human ***communicating branches (Winslow, 1733)*** between *superficial branches of superficial cardiac nerve (Andersch, 1797)* and *anterior aortic plexus (Andersch, 1797)*; in the original Latin, *nervi communicatorii plexus aortici anterioris*, Vol. 2, p. 92.
25. *anterior aortic plexus (Andersch, 1797)*
Apparently part or extension of macrodissected adult human ***cardiac plexus (Keill, 1698)*** around ventral (anterior) parts of aorta in thorax, including descending aorta; in the original Latin, *plexum aorticum anteriorem*, Vol. 2, p. 92.
26. *interarterial superficial plexus (Andersch, 1797)*
Part or extension of macrodissected adult human ***cardiac plexus (Keill, 1698)*** under aortic arch; in the original Latin, *plexum superficialem inter arteriosum*, Vol. 2, p. 95.
27. *posterior lateral nerve of ductus arteriosus (Andersch, 1797)*
In macrodissected adult human, derived from *superficial branch of superficial cardiac nerve (Andersch, 1797)* and essentially component of ***cardiac plexus (Keill, 1698)***; in the original Latin, *nervum posteriorem ductus arteriosi*, Vol. 2, p. 98.
28. *highest superficial nerve of anterior ventricle of heart (Andersch, 1797)*
In macrodissected adult human, derived from *superficial nerve of heart (Andersch, 1797)* and essentially component of ***cardiac plexus (Keill, 1698)*** related to right ventricle; in the original Latin, *nervus superficialis supremus ventriculi anterioris cordis*, Vol. 2, p. 104.
29. *middle superficial branch of anterior ventricle of heart (Andersch, 1797)*
In macrodissected adult human, derived from *superficial nerve of heart (Andersch, 1797)* and essentially component of ***cardiac plexus (Keill, 1698)*** related to right ventricle; in the original Latin, *ramus superficialis medius ventriculi anterioris cordis*, Vol. 2, p. 106.
30. *lowest superficial branch of anterior ventricle of heart (Andersch, 1797)*
In macrodissected adult human, derived from *superficial nerve of heart (Andersch, 1797)* and essentially component of ***cardiac plexus (Keill, 1698)*** related to right ventricle; in the original Latin, *ramum superficialem infimum ventriculi anterioris cordis*, Vol. 2, p. 107.
31. *trunk of great deep cardiac nerve of left side (Fyfe, 1800)*
For macrodissected adult human, appears to correspond roughly to, or to generate, *anterior branch of cardiac ganglion (Lobstein, 1823)*, *middle branch of cardiac ganglion (Lobstein, 1823)*, and *posterior branch of cardiac ganglion (Lobstein, 1823)*; Vol. 2, p. 319.
32. *inferior cardiac plexus (Cuvier, 1800)*
Synonym for macrodissected adult human *nerveus plexus cardiacus inferiorem (Vieussens, 1684)*; in the original French, *plexus cardiaque inférieur*, Vol. 2, p. 232.
33. *anterior cardiac plexus (Burdin, 1803)*
For macrodissected adult human, part of ***cardiac plexus (Keill, 1698)*** associated specifically with right ventricle and left atrium; see translation (1803, Vol. 1, p. 210).
34. *posterior cardiac plexus (Burdin, 1803)*
For macrodissected adult human, part of ***cardiac plexus (Keill, 1698)*** associated specifically with left ventricle and right atrium; see translation (1803, Vol. 1, p. 211).
35. *deep seated cardiac plexus (Lobstein, 1823)*
Somewhat artificial division of macrodissected adult human ***cardiac plexus (Keill, 1698)***. Lobstein described its composition in detail—stating that each branch has triple origin from ***superior cardiac nerve (Neubauer, 1772)***, ***inferior cardiac nerve (Cloquet, 1816)***, and ***inferior cervical cardiac branches of recurrent laryngeal nerve (>1840)***—and contrasted it to *superficial cardiac plexus (Lobstein, 1823)*. He also described major differences between contributions from right and left ***nerves (Herophilus, c335–c280 BC)*** just listed; see translation (1831, pp. 18–23).
36. *great cardiac plexus (Lobstein, 1823)*
Synonym for *deep seated cardiac plexus (Lobstein, 1823)*; see translation (1831, p. 18).
37. *interior and anterior cardiac nerves (Lobstein, 1823)*
Branches in macrodissected adult human ***cardiac plexus (Keill, 1698)*** derived chiefly from ***superior cardiac nerve (Neubauer, 1772)***; see translation (1831, p. 18).

38. *middle cardiac nerves (Lobstein, 1823)*
Branches in macrodissected adult human ***cardiac plexus (Keill, 1698)*** derived principally from ***inferior cardiac nerve (Cloquet, 1816)***; see translation (1831, p. 18).
39. *exterior and posterior cardiac nerves (Lobstein, 1823)*
Branches in macrodissected adult human ***cardiac plexus (Keill, 1698)*** derived chiefly but not exclusively from ***inferior cervical cardiac branches of recurrent laryngeal nerve (>1840)***; see translation (1831, p. 18).
40. *middle nerves of cardiac plexus (Lobstein, 1823)*
Synonym for *middle cardiac nerves (Lobstein, 1823)*; see translation (1831, p. 18).
41. *deep seated nerves of heart (Lobstein, 1823)*
Two most conspicuous branches of *middle nerves of cardiac plexus (Lobstein, 1823)*—the ***inferior cardiac nerve (Cloquet, 1816)***—one being *principal cardiac nerve (Lobstein, 1823)* and the other *collateral branch of principal cardiac nerve (Lobstein, 1823)*; see translation (1831, pp. 18–19).
42. *cardiac nerves near heart (Lobstein, 1823)*
The *interior and anterior cardiac nerves (Lobstein, 1823)*, *middle cardiac nerves (Lobstein, 1823)*, and *exterior and posterior cardiac nerves (Lobstein, 1823)*, considered together; see translation (1831, pp. 19–23).
43. *principal cardiac nerve (Lobstein, 1823)*
As described for macrodissected adult human, branch of ***cardiac plexus (Keill, 1698)*** leading directly into ***cardiac ganglion (Neubauer, 1772, Haller, 1772)***; see translation (1831, p. 19).
44. *anterior branch of cardiac ganglion (Lobstein, 1823)*
As described in detail for macrodissected adult human, branch of ***cardiac ganglion (Neubauer, 1772, Haller, 1772)*** going on to form much of ***right coronary plexus (Scarpa, 1794)***; see translation (1831, p. 19).
45. *middle branch of cardiac ganglion (Lobstein, 1823)*
As described in detail for macrodissected adult human, continuation of *principal cardiac nerve (Lobstein, 1823)* past ***cardiac ganglion (Neubauer, 1772, Haller, 1772)*** going on to form, among other differentiations, ***left coronary plexus (Scarpa, 1794)***; see translation (1831, pp. 19–20).
46. *posterior branch of cardiac ganglion (Lobstein, 1823)*
As described in detail for macrodissected adult human, component of ***cardiac plexus (Keill, 1698)*** related primarily to pulmonary artery; see translation (1831, p. 20).
47. *collateral branch of principal cardiac nerve (Lobstein, 1823)*
As described in detail for macrodissected adult human, component of *deep seated nerves of heart (Lobstein, 1823)* not leading into ***cardiac ganglion (Neubauer, 1772, Haller, 1772)***; see translation description of its distribution (1831, p. 20).
48. *right lateral cardiac plexus (Swan, 1830)*
In macrodissected adult human, Swan divided ***cardiac ganglion (Neubauer, 1772, Haller, 1772)*** into *right lateral cardiac plexus (Swan, 1830)* and *left lateral cardiac plexus (Swan, 1830)*; pp. 5–6.
49. *left lateral cardiac plexus (Swan, 1830)*
In macrodissected adult human, Swan divided ***cardiac ganglion (Neubauer, 1772, Haller, 1772)*** into *right lateral cardiac plexus (Swan, 1830)* and *left lateral cardiac plexus (Swan, 1830)*; pp. 5–6.
50. *ventricular plexus (Swan, 1830)*
For macrodissected adult human, basically combination of ***preaortic plexus (Arnulf, 1939)*** and ***coronary plexuses (Meckel, 1817)***; p. 6.
51. *superficial layer of cardiac nerves (Cruveilhier, 1836)*
Synonym for macrodissected adult human *superficial cardiac plexus (Mayer, 1794)*, described as occupying anterior (ventral) surface of aortic arch, especially on right, and passing to anterior coronary artery; in the original French, *plan nerveux superficiel*, p. 1005.
52. *middle layer of cardiac nerves (Cruveilhier, 1836)*
Essentially, synonym for macrodissected adult human *middle cardiac nerves (Lobstein, 1823)* described as having two parts: one between trachea and aortic arch above right pulmonary artery, and the other smaller one between right pulmonary artery and aortic arch; in the original French, *plan nerveux moyen*, p. 1005.
53. *deep layer of cardiac nerves (Cruveilhier, 1836)*
Essentially, synonym for macrodissected adult human *deep seated cardiac nerves (Lobstein, 1823)* described as lying between right pulmonary artery and bifurcation of trachea; in the original French, *plan nerveux profond*, p. 1005.
54. *anterior auricular branches of deep cardiac plexus (Cruveilhier, 1836)*
For macrodissected adult human, numerous extensions of *great deep cardiac plexus (Scarpa, 1794)*, which Cruveilhier defined as composed of *middle layer of cardiac nerves (Cruveilhier, 1836)* and *deep layer of cardiac nerves (Cruveilhier, 1836)* considered together; in the original French, *rameaux cardiaques antérieur*, p. 1006.

caroticotympanic nerves (>1840)

As described for macrodissected adult human, extensions—usually described as ***superior caroticotympanic nerve (>1840)*** and ***inferior caroticotympanic nerve (>1840)***—of the ***internal carotid plexus (>1840)*** passing through the wall of the carotid canal to the ***tympanic plexus (>1840)***; see Durward (1951, Figs. 901, 905), Williams & Warwick (1980, p. 1200, Fig. 7.184). Jacobson is usually credited with their discovery; see ***[caroticotympanic nerves (>1840)] (Jacobson, 1818)***.

EARLIER REFERENCES:

Described, not named or illustrated:

1. ***[caroticotympanic nerves (>1840)] (Jacobson, 1818)***
Clearly described for macrodissected adult human; see Lobstein (1831, p. 36).

Earlier synonyms:

1. *anastomosis of Jacobson's nerve with sympathetic nerve (Langenbeck, 1826–1830)*
For macrodissected adult human, at least one of the ***caroticotympanic nerves (>1840)***; in the original Latin, *anastomosis nervi Jacobsonii cum nervo sympathico*, Fascicle III, Table XVII-*d*.
2. *branch of Jacobson's nerve to sympathetic nerve (Langenbeck, 1826–1830)*

Synonym for *anastomosis of Jacobson's nerve with sympathetic nerve (Langenbeck, 1826–1830)*; in the original Latin, *ramus nervi Jacobsonii ad nervum sympathicum*, Fascicle III, Table XXV-*x*.

3. *connection of carotid nerve with tympanic nerve (Arnold, 1834)*
   Probably synonym for macrodissected adult human ***caroticotympanic nerves (>1840)***; in the original Latin, *conjunctio nervus caroticus ramus externus cum nervo tympanico*, p. 18.
4. *anastomotic filament of external branch of carotid branch of superior cervical ganglion with branch of Jacobson (Cruveilhier, 1836)*
   Synonym for macrodissected adult human ***caroticotympanic nerves (>1840)***; in the original French, *filet anastomotique avec le rameau de Jacobson*, p. 986.
5. *lesser superficial petrosal nerve (Quain & Wilson, 1839)*
   Synonym for macrodissected adult human ***caroticotympanic nerves (>1840)***; in the original Latin, *nervus petrosus superficialis minor*, Plate XXVII-*t*.

carotid branch of vagus nerve (>1840)

In somewhat over half of macrodissected adult humans, one or more branches of the ***vagus nerve trunk (Wrisberg, 1786; Günther, 1786)*** join the ***carotid branches of glossopharyngeal nerve (Todd, 1836–1839)*** and/or *intercarotid plexus (Luschka, 1862)* to innervate the carotid body and/or carotid sinus; see Funke (1904), Fuse (1950), Boyd (1937, p. 395), Mitchell (1953, p. 174), ***carotid branches of glossopharyngeal nerve (Todd, 1836-1839)***. It was discovered by Willis; see ***[carotid branch of vagus nerve (>1840)] (Willis, 1664)***.

EARLIER REFERENCES:

Described, not named or illustrated:

1. ***[carotid branch of vagus nerve (>1840)] (Willis, 1664)***
   Described for macrodissected adult human; see Pordage translation (1861, p. 147).

Earlier synonyms:

1. *posterior carotid artery nerve (Andersch & Soemmerring, 1792)*
   Probably macrodissected adult human ***carotid branch of vagus nerve (>1840)***; in the original Latin, *nervus arteriae carotidis posterioris*, p. 133. Nicely illustrated by Loder (1803, Tab. CLXXVII-*66*).

carotid branches of glossopharyngeal nerve (Todd, 1836–1839)

As described for macrodissected adult human, branches of the ***glossopharyngeal nerve trunk (Wrisberg, 1786; Günther, 1786)*** varying in number and origin and innervating the carotid sinus and carotid body after contributing to the nearby junctional region of the ***internal carotid plexus (>1840)*** and ***external carotid plexus (>1840)***, sometimes called the *intercarotid plexus (Luschka, 1862)*; see Funke (1904), Boyd (1937, p. 393 ff.), Fuse (1950), Hamilton (1976, Fig. 807), ***carotid branch of vagus nerve (>1840)***. Common synonyms include *carotid sinus nerve (Hering, 1924)* and *carotid sinus branch of glossopharyngeal nerve (>1840)*, which are misleading. For Todd's use in macrodissected adult human, see p. 496. They were first noted by Haller; see ***[carotid branches of glossopharyngeal nerve (Todd, 1836–1839)] (Haller, 1762)***.

EARLIER REFERENCES:

Described, not named or illustrated:

1. ***[carotid branches of glossopharyngeal nerve (Todd, 1836–1839)] (Haller, 1762)***
   Described vaguely for macrodissected adult human; p. 232.

Earlier synonyms:

1. *second glossopharyngeal branch (Neubauer, 1772)*
   Synonym for macrodissected adult human ***carotid branches of glossopharyngeal nerve (Todd, 1836–1839)***; in the original Latin, *secundus ramus glossopharyngei*, Table 2-*77*. A number of such branches were clearly illustrated and described by Scarpa (1794, Tab. II).
2. *carotid filaments of glossopharyngeal nerve (Cruveilhier, 1836)*
   Synonym for macrodissected adult human ***carotid branches of glossopharyngeal nerve (Todd, 1836–1839)***; in the original French, *filets carotidiens*, p. 953.

LATER SYNONYMS:

1. *carotid sinus nerve (Hering, 1924)*
   Common synonym for ***carotid sinus branches of glossopharyngeal nerve (>1840)***; see Boyd (1937, pp. 386, 397) and ***carotid branch of vagus nerve (Todd, 1836– 1839)***. It is not, however, accurate.
2. *carotid sinus branch of glossopharyngeal nerve (>1840)*
   Convenient synonym for ***carotid branches of glossopharyngeal nerve (Todd, 1836–1839)***. It is not, however, accurate.
3. *nervus glossopharyngeus ramus sinus carotici (>1840)*
   Latin form of *carotid sinus branch of glossopharyngeal nerve (>1840)*; see *Terminologia Anatomica* (1998, p. 136).

carotid ganglion (Wutzer, 1817; Bock, 1817)

As described for adult human, one or more macroscopic sympathetic ***paravertebral ganglia (Durward, 1951)*** and scattered sympathetic ganglion cells, commonly associated with the ***internal carotid plexus (>1840)*** in the carotid canal and/or cavernous sinus; see Mitchell (1953, p. 215), Williams & Warwick (1980, p. 1127). For Wutzer's use in macrodissected adult human see p. 97; for Bock's use see p. 66. It was probably discovered by Willis; see ***[carotid ganglion (Wutzer, 1817; Bock, 1817)] (Willis, 1664)***.

TRANSLATIONS:

1. *ganglion caroticum (Bock, 1817)*
   Original Latin form of ***carotid ganglion (Wutzer, 1817; Bock, 1817)***; p. 66.

EARLIER REFERENCES:

Described, not named or illustrated:

1. ***[carotid ganglion (Wutzer, 1817; Bock, 1817)] (Willis, 1664)***
   Willis may have noted it, as quoted by Bell & Bell (1829, p. 503). Meckel (1748, p. 129 note *a*) also may have noted it in macrodissected adult human; in the

original Latin,…*intra canalem caroticum ganglia nervi intercostalis*, p. 129.

Earlier synonyms:

1. *cavernous ganglion (Laumonier, 1793)*
   Synonym for macrodissected adult human ***carotid ganglion (Wutzer, 1817; Bock, 1817)***; p. 262, see Lobstein (1831, p. 34).

LATER SYNONYMS:

1. *sympathetic carotid ganglion (Langenbeck, 1826–1830)*
   Synonym for macrodissected adult human ***carotid ganglion (Wutzer, 1817; Bock, 1817)***; in the original Latin, *ganglion caroticum Sympathici*, Fascicle III, Table XVI-*4*.
2. *ganglion of Laumonier (Lobstein, 1831)*
   Eponym for ***carotid ganglion (Wutzer, 1817; Bock, 1817)***, according to translator of Lobstein's 1823 book, Joseph Pancoast; see p. 34.
3. *Bock's ganglion (>1840)*
   Eponym for ***carotid ganglion (Wutzer, 1817; Bock, 1817)***; see *Dorland's* (2003, p. 752).

cauda equina (Anatomia Magistri Nicolai physici, early 12th century)

As described for macrodissected adult human, the set of ***spinal nerve roots (Tiedemann, 1816)*** arising from the caudal part of the ***spinal cord (Galen, c162–c166)*** and extending caudally (descending) around the ***terminal filament (Tiedemann, 1821)*** in the vertebral canal; see Hamilton (1976, Fig. 808), *Dorland's* (2003, p. 310). The first surviving written description of the ***spinal cord (Galen, c162–c166)*** as resembling a horse's tail may be in an early 12th-century manuscript ascribed to Anatomia Magistri Nicolai physici; see Corner (1927, p. 27). Du Laurens (1599) is usually credited with popularizing the term *cauda equina*; he recommended placing the tissue in water and dissociating the ***nerves (Herophilus, c335–c280 BC)***; see Crooke (1615, p. 483), Mettler (1947, p. 49), Singer (1957, p. 145), Hagelin (1989, p. 53).

EARLIER REFERENCES:

Illustrated and described, not named:

1. ***[cauda equina (Anatomia Magistri Nicolai physici, early 12th century)] (Vesalius, 1543a)***
   Described and crudely illustrated for macrodissected adult human: "In the lower half of the thorax it must become suitable for sending out hard nerves that mainly serve movement; so there it is no longer simple but is divided into innumerable offshoots. There its structure is like a large number of very thin threads stretched out straight together and bound by a membrane; and through each of the foramina through which the nerves travel one thread after another is sent out from the complex until just a single thread is left [***terminal filament (Tiedemann, 1821)***]." (Robertson & Carman translation, 2002, p. 222 and Fig. on p. 205). It was much better illustrated by Eustachi (1552); see Albinus edition (1761, Tab. 17, Fig. 2-*R*). Illustrations by Estienne (1546, p. 366) are totally inadequate.

LATER SYNONYMS:

1. *horse's tail (Anatomia Magistri Nicolai physici, early 12th century)*
   English form of ***cauda equina (Anatomia Magistri Nicolai physici, early 12th century)***, used for example by Crooke (1615, p. 483), spelled *Horse tayle*.
2. *willow switch (Anatomia Magistri Nicolai physici, early 12th century)*
   Alternate descriptor for ***cauda equina (Anatomia Magistri Nicolai physici, early 12th century)***; see Corner (1927, p. 73).
3. *bundle of lumbar and sacral nerves (Burdin, 1803)*
   Synonym for macrodissected adult human ***cauda equina (Anatomia Magistri Nicolai physici, early 12th century)***; see translation (1803, Vol. 1, p. 221).
4. *caudiform expansion (Tiedemann, 1816)*
   Synonym for ***cauda equina (Anatomia Magistri Nicolai physici, early 12th century)***, as observed in a 6-month human fetus; see translation (1826, p. 74).

caudal fovea (>1840)

As described for macrodissected adult human, a slight depression in the ***floor of fourth ventricle (Reil, 1807–1808a)*** at the rostral tip of the ***vagal triangle (>1840)***, along the ***limiting sulcus of fourth ventricle (>1840)***; see Crosby et al. (1962, Fig. 97), *Nomina Anatomica* (1983, p. A66). It was probably first described as the *posterior fovea (Arnold, 1838a)*.

EARLIER REFERENCES:

Earlier synonyms:

1. *posterior fovea (Arnold, 1838a)*
   Synonym for macrodissected adult human ***caudal fovea (>1840)***; in the original Latin (pleural), *foveae posteriores*, p. 23.

caudal medullary velum (>1840)

As described for macrodissected adult human, a right and left thin crescentric layer forming part of the caudal half of the ***roof of fourth ventricle (Vesalius, 1543a)***. On closer inspection each layer consists of a ***central nervous system white matter tract (>1840)*** surfaced internally with ventricular ***ependyma (>1840)*** and externally with ***pia (Galen, c192)***. Each ***caudal medullary velum (>1840)*** extends from the side of the ***nodule (Reil, 1807–1808a)***, with the convex peripheral margin continuous with the ***arbor vitae (Winslow, 1733)*** and with the sides of the ***pyramid (Malacarne, 1776)***, ***uvula (Malacarne, 1776)***, and ***nodule (Reil, 1807–1808a)***. Its rostral border is free and continues as the ***choroid membrane of fourth ventricle (>1840)*** and underlying ***choroid epithelium of fourth ventricle (>1840)***, to the ***choroid line of fourth ventricle (>1840)***. Its ventrolateral corner merges with the ***floccular peduncle (Burdach, 1822)***; see Williams & Warwick (1980, p. 914, Fig. 7.75), Nieuwenhuys et al. (2008, Fig. 3.8). Vesalius probably first noted it; see ***[caudal medullary velum (>1840)] (Vesalius, 1543a)***.

EARLIER REFERENCES:

Described, not named or illustrated:

1. ***[caudal medullary velum (>1840)] (Vesalius, 1543a)***
   Vesalius apparently referred vaguely to it in macrodissected adult human; see Singer translation (1952, pp. 37, 50).

Earlier synonyms:

1. *valvulae semicirculares inferiores & posteriores (Tarin, 1750)*
   First clear illustration, and name for, ***caudal medullary velum (>1840)*** as described for macrodissected adult human; Table II, Figure 2-*n*; see Foster (1894, p. 2998). It may actually only refer to part of the ***caudal medullary vellum (>1840)***; see Gordon (1817, p. 50).
2. *semilunar valves (Malacarne, 1776)*
   Synonym for macrodissected adult human ***caudal medullary velum (>1840)***; in the original Latin, *valvulas semilunares*, p. 61; see Burdach (1822, p. 297). Clarke & O'Malley (1996, p. 645) associated them with the ***lateral recesses of fourth ventricle (>1840)***.
3. *semicircular valves of mammillary eminence of inferior vermis (Vicq d'Azyr, 1784)*
   More precise term for *valvulae semicirculares inferiores & posteriores (Tarin, 1750)*—the ***caudal medullary velum (>1840)***; p. 573 and Vicq d'Azyr (1786, p. 95; Pl. XXX, Fig. III-*12,13*); in the original French, *les lames semi-lunaires de l'éminence mammillaire du vermis inferior*. Also see *mammillary process of inferior vermis (Vicq d'Azyr, 1786)*.
4. *lateral pedicles of laminated tubercles (Chaussier, 1807)*
   Synonym for macrodissected adult human *semilunar valves (Malacarne, 1776)*; in the original French, *pédicules latéraux des tubercules lamineaux*, p. 103.
5. *posterior medullary velum (Reil 1807–1808a)*
   Synonym for macrodissected adult human ***caudal medullary velum (>1840)***; in the original German, *hintere Marksegel*, see Mayo translation (1822, pp. 25, 47 ff.). Burdach (1822, p. 297) pointed out that Meckel (1817, p. 467) used the Latin term, *velum medullare posterius.*
6. *posterior valve (Burdach, 1822)*
   Synonym for macrodissected adult human ***caudal medullary vellum (>1840)***; in the original German, *hintre Klappe*, p. 50.
7. *inferior medullary velum (Arnold, 1838b)*
   Synonym for macrodissected adult human ***caudal medullary vellum (>1840)***; in the original Latin (plural), *vela medullaria inferiora*, Plate III, Figure 5-*k*.

PARTLY CORRESPONDS:

1. *wings of inferior vermiform process (Gordon, 1815)*
   Synonym for lateral parts of macrodissected adult human ***caudal medullary velum (>1840)***; p. 115; also see Gordon (1817, p. 50) who pointed out that Reil had clearly described and illustrated lateral parts of ***caudal medullary vellum (>1840)***. Thus, Gordon described it as having a middle part and two lateral parts (1817, p. 53). Burdach (1822, p. 297) gave the Latin form, *alas processus vermiformis inferioris*.
2. *alae of inferior vermiform process (Gordon, 1815)*
   Synonym for *wings of inferior vermiform process (Gordon, 1815)*; p. 115.

caudal part of vestibular nerve (>1840)

As described for macrodissected adult human, a branch of the ***vestibulocochlear nerve trunk (>1840)*** generating the ***posterior ampullary nerve (>1840)***, ***saccular nerve (>1840)***, and ***cochlear communicating branch of vestibular nerve (>1840)***; see *Nomina Anatomica* (1983, p. A75). It was first described as the *superior and posterior fascicle of soft nerve (Cotugno, 1760)* and is commonly known as the *inferior part of vestibular nerve (>1840)*.

EARLIER REFERENCES:

Earlier synonyms:

1. *superior and posterior fascicle of soft nerve (Cotugno, 1760)*
   Synonym for macrodissected adult human ***caudal part of vestibular nerve (>1840)***; in the original Latin, *fasciculus superior, & posterior*, p. 409, Table II-*g3*.
2. *posterior fascicle of soft nerve (Cotugno, 1760)*
   Synonym for *superior and posterior fascicle of soft nerve (Cotugno, 1760)*; p. 409.
3. *outer branch of portio mollis (Monro, 1783)*
   Synonym for macrodissected adult human ***caudal part of vestibular nerve (>1840)***; Table 30, Figure 4-*K*.
4. *middle posterior branch of auditory nerve proper (Günther, 1786)*
   Synonym for macrodissected adult human ***caudal part of vestibular nerve (>1840)***; in the original Latin, *nervus auditorius proprius ramus posterior medius*, p. 61.
5. *anterior fascicles of acoustic nerve (Scarpa, 1789)*
   Roughly corresponds to macrodissected adult human ***caudal part of vestibular nerve (>1840)***; Table 8, Figure 2-*f*.
6. *posterior branch of auditory nerve (Soemmerring, 1791)*
   Basically, macrodissected adult human ***caudal part of vestibular nerve (>1840)***; p. 225, and Soemmerring (1798, p. 258); also see Meckel (1832, Vol. 3, p. 52). It is also the smaller branch; see Soemmerring (1806, Tab. III, Fig. 9-α).
7. *anterior fasciculus of acustic nerve (Bell, 1803b)*
   Synonym for macrodissected adult human *anterior fascicles of acoustic nerve (Scarpa, 1789)*; Plate X, Figure 2-*f*.
8. *posterior branch of acoustic nerve (Cloquet, 1828)*
   Synonym for macrodissected adult human ***caudal part of vestibular nerve (>1840)***; in the original French, *branche postérieure du nerf acoustique*, Table CXXX, Figure 9-*19*.
9. *inferior part of vestibular nerve (>1840)*
   Synonym for macrodissected adult human ***caudal part of vestibular nerve (>1840)***; see *Terminologia Anatomica* (1998, p. 136).

caudate nucleus (Arnold, 1838b)

As described for macrodissected adult human, one of two distinct components of the ***caudoputamen (Heimer***

& Wilson, 1975) forming much of the lateral wall of the ***lateral ventricle (Vesalius, 1543a)***. It is separated from the other component, the ***putamen (Burdach, 1822)***, by the ***anterior limb of internal capsule (>1840)*** and is commonly described as having ***head of caudate nucleus (>1840)***, ***body of caudate nucleus (>1840)***, and ***tail of caudate nucleus (Arnold, 1838b)***; see Carpenter (1976, p. 497, Fig. 17.4). For Arnold's use in macrodissected adult human, see Table IV, Figure 4-ζ, also see Meyer (1971, p. 16). It was clearly illustrated by Vesalius; see ***[caudate nucleus (Arnold, 1838b)] (Vesalius, 1543a)***.

TRANSLATIONS:

1. *nucleus caudatus (Arnold, 1838b)*
   Original Latin form of ***caudate nucleus (Arnold, 1838b)***; Table IV, Figure 4-ζ.

EARLIER REFERENCES:

Illustrated, not named or described:

1. ***[caudate nucleus (Arnold, 1838b)] (Vesalius, 1543a)***
   Very clearly illustrated without comment for macrodissected adult human, both grossly and in section; see Singer translation (1952, Figs. 4–8).

Earlier synonyms:

1. *tailed structure (Avicenna, c1030)*
   According to Garrison & McHenry (1969, p. 24), Avicenna referred to a tailed structure later named ***caudate nucleus (Arnold, 1838b)***. See *cauda corporis striati (Malacarne, 1780)*.
2. *striata corpora superna anteriora (Vieussens, 1684)*
   In first parceling of *striated body (Willis, 1664)*, Vieussens distinguished and provided this synonym for macrodissected adult human ***caudate nucleus (Arnold, 1838b)***, according to Meyer (1971, p. 13); Tables IX-*E*, X-*C*. According to Chaussier (1807, p. 62 note *1*), it refers to *striated body (Willis, 1664)* as a whole.
3. *processus anteriores medullae oblongatae (Vieussens, 1684)*
   According to Burdach (1822, p. 348), synonym for macrodissected adult human *corpora striata superna anteriora (Vieussens, 1684)*.
4. *internal superior part of striated body (Pourfour du Petit, 1710)*
   Roughly synonymous with macrodissected adult human ***caudate nucleus (Arnold, 1838b)***; in the original French, *les corps cannelez internes &/ou superieurs*, pp. 7, 14; also see *corpus striatum (Willis, 1664)*. It is probably similar or equivalent to *corpora striata superna anteriora (Vieussens, 1684)*.
5. *cauda corporis striati (Malacarne, 1780)*
   Malacarne noted that *cauda* [tail] of macrodissected adult human *corpus striatum (Willis, 1664)* accompanies ***terminal stria (Wenzel & Wenzel, 1812)*** along ***inferior horn of lateral ventricle (Bell, 1802)***, a vague reference to ***caudate nucleus (Arnold, 1838b)***; Part 2, p. 56. See Burdach (1822, pp. 124, 349), Meyer (1971, p. 16). Arnold (1838b; Tab. I, Fig. 2-μ) used the form, *cauda corpora striatorum*.
6. *corpus striatum superior and internal part (Vicq d'Azyr, 1786)*
   Synonym for macrodissected adult human ***caudate nucleus (Arnold, 1838b)***; Plate IX, p. 27.
7. *inner portion of corpus striatum (Vicq d'Azyr, 1786)*
   Synonym Vicq d'Azyr used (p. 27) for macrodissected adult human ***caudate nucleus (Arnold, 1838b)***, according to Burdach (1822, p. 348), who gave the Latin, *portiones internae corporum striatorum*. Reil (1809b) also used this term and described a tail-like prolongation; see Mayo translation (1823, pp. 56, 62).
8. *pyriform eminences (Burdin, 1803)*
   Synonym for right and left ***caudate nucleus (Arnold, 1838b)***, referring to its appearance viewed from ***lateral ventricle (Vesalius, 1543a)***; see translation (1803, Vol. 1, p. 159), also see Burdach (1822, p. 348).
9. *colliculi nervorum ethmoidalium (Chaussier, 1807)*
   Synonym for macrodissected adult human right and left ***caudate nucleus (Arnold, 1838b)***; p. 63, according to Burdach (1822, p. 348).
10. *inner portion of cerebral ganglion (Reil, 1809b)*
    Synonym for macrodissected adult human ***caudate nucleus (Arnold, 1838b)***; in the original German, *innere Portion*, p. 144; see Meyer (1971, p. 29).
11. *internal part of superior great cerebral ganglion (Gall & Spurzheim, 1810)*
    Synonym for macrodissected adult human ***caudate nucleus (Arnold, 1838b)***; in the original French, *partie interne du grand ganglion cérébral supérieur*, Plate V-*l*.
12. *colliculus striatus (Wenzel & Wenzel, 1812)*
    Synonym for macrodissected adult human ***caudate nucleus (Arnold, 1838b)***; p. 262, Table III, Figure 1-*a*, according to Burdach (1822, p. 348).
13. *corpora striata antica inferiora (Meckel, 1817)*
    Synonym for macrodissected adult human right and left ***caudate nucleus (Arnold, 1838b)***; p. 513, according to Burdach (1822, p. 348).
14. *pyriformes prominentiae (Rolando, 1819)*
    Synonym for macrodissected adult human *eminentiae pyriformes (Burdin, 1803)*; Part 2, p. 9.

PARTLY CORRESPONDS:

1. *base of anterior ventricle both right and left (Manfredi, 1490)*
   Manfredi wrote that the very substance of the ***brain (Smith Papyrus, c1700 BC)*** forms the base of the *anterior ventricle (Galen, c173)*, seemingly referring to medial wall of macrodissected adult human ***caudate nucleus (Arnold, 1838b)***; see Singer translation (1917, p. 109). Also see *base of fore ventricle (Mondino, 1316)*.
2. *eminentiae similes coxis humanis (Berengario da Carpi, 1521)*
   Probably synonym for macrodissected adult human *base of anterior ventricle both right and left (Manfredi, 1490)*; f. 437, also see Burdach (1822, p. 347).
3. *anchae (Massa, 1536)*
   Fairly clearly referred to medial wall of macrodissected adult human ***caudate nucleus (Arnold, 1838b)***: "In [the ***lateral ventricles (Vesalius, 1543a)***] there are certain

elevated and more whitish substances called nates or anchae by modern anatomists, for they are humped, whitish, and elevated like human buttocks in the right and left cavities, or in the ventricle." (Lind translation, 1975, p. 237). They have nothing to do either with *buttocks (Galen, c177)*, as Massa himself pointed out (see Lind translation, 1975, p. 237), or apparently with *buttocks (Berengario da Carpi, 1522)*. Modern anatomists Massa referred to may base their terminology on *anchae (Mondino, 1316)*, although this is not clear, as contrasted with *buttocks (Galen, c177)*; see Lind translation (1975, p. 237).

4. *buttocks (Massa, 1536)*
   Synonym for *anchae (Massa, 1536)*; see Lind translation (1975, p. 237).
5. *nates (Massa, 1536)*
   Synonym for *anchae (Massa, 1536)*; see Lind translation (1975, p. 237).
6. *cone of striate body (Willis, 1672)*
   Roughly macrodissected adult human ***body of caudate nucleus (>1840)*** and ***tail of caudate nucleus (Arnold, 1838b)*** considered together; see Pordage translation (1683, p. 44, Tab. VIII-*G*). Also see *striated body (Willis, 1664)*.
7. *cauda of inner portion of corpus striatum (Reil, 1809b)*
   Roughly synonymous with macrodissected adult human *cone of striate body (Willis, 1672)*; see Mayo translation (1823, p. 65). Also see Carpenter (1976, p. 497, Fig. 17.4).
8. *body of caudate nucleus (Arnold, 1838b)*
   Macrodissected adult human ***head of caudate nucleus (>1840)*** and ***body of caudate nucleus (>1840)*** considered together; in the original Latin (plural), *corpus nuclei caudati*, Table IV, Figure 5-*r* and Table V, Figure 4-*η*. See Carpenter (1976, p. 497, Fig. 17.4), Nieuwenhuys et al. (2008, Fig. 5.31).

caudoputamen (Heimer & Wilson, 1975)

As described for macrodissected adult human the ***caudate nucleus (Arnold, 1838b)*** and ***putamen (Burdach, 1822)*** considered together and separated by the ***anterior limb of internal capsule (>1840)***; see Nieuwenhuys et al. (2008, pp. 429–435, called *caudate-putamen complex*). For mammals in general, based on cellular architecture and connections, the largest and dorsomedial component of the ***striatum (Swanson, 2000a);*** dorsal to ***accumbens nucleus (Ziehen, 1897–1901)***, ***medial amygdalar nucleus (Johnston, 1923)***, and ***central amygdalar nucleus (Johnston, 1923)***, and lateral to ***lateral septal complex (Risold & Swanson, 1997)***. For Heimer & Wilson's use in rat, see Figure 1-*CP*. It was not delineated as such by 1840.

cavernous nerves of clitoris (>1840)

As described for macrodissected adult human female, they extend from certain terminal branches of the ***vaginal nerves (Walter, 1783)*** to supply erectile tissue of the clitoris; see *Terminologia Anatomica* (1998, p. 143), *Dorland's* (2003, p. 1237). They were not clearly described by 1840.

cavernous nerves of penis (>1840)

As described for macrodissected adult human male, they extend from the ***prostatic plexus (1840)*** to supply erectile tissue of the penis; see *Terminologia Anatomica* (1998, p. 143), *Dorland's* (2003, p. 1237). They were not clearly described by 1840.

cavernous sinus (Winslow, 1733)

As described for macrodissected adult human, a component of the ***circulatory system***; a right and left irregularly shaped sinus of the ***dura (Galen, c177)*** lying on either side of the body of the sphenoid bone; see Williams & Warwick (1980, pp. 746–747, Figs. 6.126, 127A,B), *Dorland's* (2003, p. 1706). For Winslow's use in macrodissected adult human, see Section VI, p. 62. It was probably first identified as the *receptacula sellae equinae lateribus apposita (Vieussens, 1684)*.

TRANSLATIONS:

1. *sinus cavernosus (Winslow, 1733)*
   Original Latin form of ***cavernous sinus (Winslow, 1733)***; Section VI, p. 62.

EARLIER REFERENCES:

Earlier synonyms:

1. *receptacula sellae equinae lateribus apposita (Vieussens, 1684)*
   Description of, or synonym for, macrodissected adult human ***cavernous sinus (Winslow, 1733)***; p. 7, see Burdach (1822, p. 400). The *receptacle* was used in a translation by Best (1969, p. 161) of a passage from Morgagni (1719). A history of its early description was provided by Haller (1743, pp. 40–41 note *16*).

LATER SYNONYMS:

1. *sinus sphenoïdales (Malacarne, 1780)*
   Synonym for macrodissected adult human ***cavernous sinus (Winslow, 1733)***, according to Burdach (1822, p. 400), without a specific citation.
2. *sinus polymorphi (Schreger, 1803)*
   Synonym listed for macrodissected adult human ***cavernous sinus (Winslow, 1733)***; Burdach (1822, p. 400); in referring to it he also mentioned Ortelob without providing a citation.

celiac branches of anterior vagal trunk (>1840)

In macrodissected adult human, commonly 3–4 closely applied branches of the ***anterior vagal trunk (Wrisberg, 1780)*** arising near the cardiac orifice of the stomach and running along the left gastric artery, frequently uniting with the ***celiac branches of posterior vagal trunk (>1840)*** and entering and distributing within the ***celiac plexus (Winslow, 1733)***; see Mitchell (1953, p. 187 and Fig. 80), *Nomina Anatomica* (1983, p. A76). They were perhaps first clearly identified as the *anastomotic branch of anterior gastric plexus with branch of semilunar ganglion (Günther, 1786)*.

EARLIER REFERENCES:

Earlier synonyms:

1. *anastomotic branch of anterior gastric plexus with branch of semilunar ganglion (Günther, 1786)*

Essentially, synonym for macrodissected adult human ***celiac branches of anterior vagal trunk (>1840)***; in the original Latin, *r. anastomotici cum ganglii semilunaris ramis*, p. 66.

celiac branches of posterior vagal trunk (>1840)

As described for macrodissected adult human, 3–4 closely applied bundles from the ***posterior vagal trunk (Wrisberg, 1780)*** extending caudally (down) near the left gastric artery to enter and distribute within the ***celiac plexus (Winslow, 1733)***; see Mitchell (1953, p. 187 and Fig. 80), Williams & Warwick (1980, p. 1081), *Terminologia Anatomica* (1998, p. 137). They were probably first known to Willis; see ***[celiac branch of posterior vagal trunk (>1840)] (Willis, 1664)***.

EARLIER REFERENCES:

Illustrated and described, not named:

1. ***[celiac branch of posterior vagal trunk (>1840)] (Willis, 1664)***
   Probably mentioned and illustrated for macrodissected adult human and other common large mammals; see Pordage translation (1681, p. 158 and Fig. 11-*η*).

Earlier synonyms:

1. *fascia communicans memorabilis (Wrisberg, 1800)*
   Essentially synonymous with macrodissected adult human ***celiac branch of posterior vagal trunk (>1840)***; XV, p. 11.
2. *great abdomino-cephalic anastomotic branch (Lobstein, 1823)*
   Synonym for macrodissected adult human *fascia communicans memorabilis (Wrisberg, 1800)*; see translation (1831, p. 98).
3. *fascia communicans of Wrisberg (Lobstein, 1823)*
   Eponym for macrodissected adult human *fascia communicans memorabilis (Wrisberg, 1800)*; see translation (1831, Pl. III, Fig. 3-*d*).

celiac ganglion (Walter, 1783)

As described for macrodissected adult human, the largest and most constant ***prevertebral ganglion (Quain, 1832)*** of the ***celiac plexus (Winslow, 1733)***; see Mitchell (1953, p. 273), Williams & Warwick (1980, p. 1133). For Walter's use in macrodissected adult human, see Tables II:*1–10* and III:*244–258*; he described and named at least 12 "subganglia" whose number and size vary, p. 13. Mayer (1794; Part 6, Tab. VI:*a-m*, pp. 41-42; Tab. VII:*a-m*, p. 49; Tab. VIII:*a-n*, pp. 57–58) clearly described and illustrated either 11 or 12 for macrodissected adult human. It was probably discovered by Galen; see ***[celiac ganglion (Walter, 1783)] (Galen c173)***.

TRANSLATIONS:

1. *ganglion celiacum (Walter, 1783)*
   Original Latin form of ***celiac ganglion (Walter, 1783)***; see p. 13, Tables II:*1–10* and III:*244–258*.

EARLIER REFERENCES:

Described, not named or illustrated:

1. ***[celiac ganglion (Walter, 1783)] (Galen c173)***
   Probably described without naming for macrodissected adult beef, pig, and/or macaque but not human; see May translation (1968, pp. 695–696, 711), Duckworth translation (1962, pp. 217–218), Savage-Smith (1971, p. 179).

Earlier synonyms:

1. *chief mesenteric infolding (Willis, 1664)*
   From illustration almost certainly refers to macrodissected adult human and quadruped ***celiac ganglion (Walter, 1783)***; in the original Latin, *plexus mesentericus lateris primus*; see Pordage translation, p. 158 and Table XI-*H*.
2. *mesenteric infolding (Willis, 1664)*
   Synonym for *chief mesenteric infolding (Willis, 1664)* in macrodissected adult human and other common large mammals; see Pordage translation (1681, Tab. XI-*H*). Willis wrote it is infolding or ***ganglion (Galen, c173)*** for stomach and spleen on left (rostral or higher) side and infolding or ***ganglion (Galen, c173)*** for liver on right (caudal or lower) side; see Pordage translation (1681, pp. 166 and 168, respectively).
3. *superior mesenteric infolding (Willis, 1664)*
   Synonym for *chief mesenteric infolding (Willis, 1664)* in macrodissected adult human and other common large mammals; see Pordage translation (1681, Tab. XI-♂).
4. *plexus ganglioformis semilunaris nervi intercostalis (Vieussens, 1684)*
   Synonym for macrodissected adult human *chief mesenteric infolding (Willis, 1664)*; Table 23-*57*. A literal translation is "*semilunar ganglionic infolding of intercostal nerve.*"
5. *semilunar ganglion (Winslow, 1733)*
   Synonym for macrodissected adult human ***celiac ganglion (Walter, 1783)***; in the original Latin, *ganglion semilunaris*, Section VI, p. 98.
6. *semilunar plexus (Winslow, 1733)*
   Synonym for *semilunar ganglion (Winslow, 1733)*; in the original Latin, *plexus semilunaris*, Section VI, p. 98.
7. *great semilunar ganglion (Haller, 1762)*
   Synonym for macrodissected adult human *semilunar ganglion (Winslow, 1733)*; in the original Latin, *ganglion magnum semilunare*, p. 261. Johnstone (1765, p. 180) soon translated as *great semi-lunar ganglion*.
8. *great abdominal ganglion (Wrisberg, 1780)*
   Synonym for macrodissected adult human ***celiac ganglion (Walter, 1783)***; in the original Latin, *ganglion magnum abdominis*, see Wrisberg reprint (1800, p. 275).

LATER SYNONYMS:

1. *great celiac ganglion (Günther, 1786)*
   Günther's preferred term for macrodissected adult human ***celiac ganglion (Walter, 1783)***; in the original Latin, *ganglion magnum coeliacum*, p. 94.
2. *solar ganglion (Günther, 1786)*
   Synonym listed for macrodissected adult human ***celiac ganglion (Walter, 1783)***; in the original Latin, *ganglion solare*, p. 94.