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SCHOLA MEDICINAE

NEW UNIVERSAL HISTORY AND SCHOOL OF MEDICINE

TRANSLATED INTO ENGLISH

BY

ORIGINAL GREEK AND LATIN EDITION

WILLIAM ADOLPHUS, M.D.

Professor of the History of Medicine in the University of London, and of the History of the Faculty of Medicine in the University of Paris.

INTRODUCTION



NEW YORK: PUBLISHED BY

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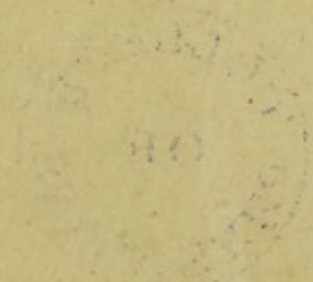
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J. Henry Williams
Aug. 6. 1841

SCHOLA MEDICINÆ,

OR, THE

NEW UNIVERSAL HISTORY AND SCHOOL OF MEDICINE,

TRANSLATED INTO ENGLISH

FROM THE

ORIGINAL GREEK AND LATIN EDITION,

BY

WILLIAM ROWLEY, M.D.

Member of the University of Oxford, the Royal College of Physicians in London, Physician to the St. Mary-le-bone Infirmary, &c. &c.

CONTAINING,

I. The HISTORY of medicine from the creation of the world to the present period, with the errors of medical sects, systems, and hypotheses.

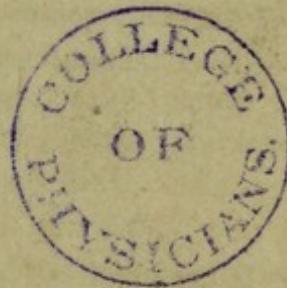
II. The ANATOMY of the human body, illustrated by sixty-eight copper plates, with parallel descriptions in single opposite pages.

III. PHYSIOLOGY, or the animal, vital, and natural functions of man in health, and how they are performed and preserved.

IV. PATHOLOGY, or the science of diseases, causes, symptoms, effects, on death and putrefaction, &c.

The whole arranged in a new mode, to facilitate the study of medicine, with the latest discoveries; intended for the contemplation of the studious in the learned professions of medicine, law, divinity, and for all who wish to comprehend the science of MAN.

ORDO EST ANIMA RERUM.



London :

Printed for the AUTHOR and SOLD at his House, No. 21, SAVILLE ROW:

Where may be had the GREEK and LATIN Edition, of SCHOLA MEDICINÆ, and the rational Practice of Physic, illustrated with numerous practical Prescriptions, &c. &c.

PRINTED BY J. BARFIELD, WARDOUR-STREET,
PRINTER TO HIS ROYAL HIGHNESS THE PRINCE OF WALES.

1803. 3

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INTRODUCTION TO SCHOLA MEDICINÆ;

OR,

THE UNIVERSAL SCHOOL OF MEDICINE, &c.

TO obviate some defects in medical education, to promote the acquisition of medical science with greater facility, to render the principles and practice of medicine less conjectural, and to diffuse its excellent and humane benefits through all the earth, on improved principles, were the exciting motives, that strenuously impelled the author to write *Schola Medicinæ Universalis Nova* in Latin.

The principal impediments to useful medical studies, it appeared from close inspection and much reflection, were the multiplicity of authors, the variety of dubious systems, and the contrariety of opinions with which medicine superabounded. Professors formerly made a great display of apparent erudition by diffusive lectures, redundant in words and speculations, parsimonious in matters of fact and absolute truths. This conduct in the teachers bewildered the understandings of the scholars; the former taught, and the latter imbibed prejudices from which they could never emancipate themselves through life: the destruction, instead of the preservation of the human species, have frequently been the consequence. Medicine, that divinest of arts! under such circumstances, became often a dangerous scourge instead of a blessing to human society, and yet, whoever dared to attempt improvement, or laudably endeavoured to produce a reformation, was certain of inevitable ruin for his temerity: for every innovator, however meritorious, was accounted rash; but every assentor to opinions, and supporter of common doctrines, was considered prudent, wise, and learned. The examples of punishment for the greatest exertions of human skill and industry have deterred many excellent men from delivering to society the honest fruits of their labours, and mankind, by these means, have been deprived of several useful discoveries. It requires *Herculean* spirit to cleanse the *Augæan* stable of the accumulation of ages: *sed nil desperandum*: led by sacred truth, error, and fallacy must vanish, however supported.

The introduction of an immense number of volumes is frequently supposed an indubitable specimen of profound learning, and juvenile vanity is pleasingly gratified by a free access to large libraries; but extensive libraries are, to many, great evils: for they oftener confound than instruct students, by overwhelming the memory, without informing and elevating the judgment.

The incessantly poring over books, collecting ancient and modern opinions from medical authors, and an alacrity in assenting to plausible doctrines, have been considered as studying medicine, and sufficient to entitle the scholar, with very little practical experience, to the confidence of the sick, as a regularly educated medical practitioner. The degrees of physic are too often obtained on so superficial a foundation, as common experience and the practice of some universities constantly exemplify, to the disgrace of modern science and literature.

A diligent student, however, who daily observes, and writes down the symptoms of diseases, as they occur at the *bedside* of the sick, their modern and most judicious treatment in an hospital of full practice, if he hath obtained anatomical knowledge by actual dissections, and pharmacy by actual practice, will comprehend more of the medical art in a few years, than the most industrious student, under the influence of the former mode, can ever acquire. This I assert from near fifty years observation and experience, not as a matter of opinion, but as an indubitable fact, repeatedly proved at the St. Mary-le-bone Infirmary, where I have the honour of being physician,* and at other hospitals, where pupils are initiated into the practice from the age of fourteen. After a classical education, they cannot too early commence their theoretical and practical studies, before passions, and less laudable pursuits inflame the imagination, and pervert the judgment.

The hospital student dedicating his time to the different branches of the art, not in casual reading, but in the actual practice of pharmacy, medical chemistry, surgery, and the medical treatment of diseases, under the inspection of able, honest, and experienced preceptors, who liberally communicate the faithful result of long, judicious observation, and who guard the juvenile mind against those flights of fancy, and numerous prejudices which are daily annoying the profession, will soon obtain a practical knowledge of the extent and power of the healing art, determined by repeated and real facts, ready to be applied on all subsequent occasions. The wader through stupendous volumes of endless repetitions and contradictions, supposing him sufficiently industrious for the purpose, if any excellence should occur, unless he unite practical remarks on numerous diseases by ocular demonstration in an hospital, and be possessed of a mental penetrating acumen void of all prepossession, pride, or prejudice, he is incapable of selecting the pure metal from the *scoria* with which it is obscured, or often surrounded; for he will often receive plausibilities as though they were sacred truths, and try inefficacious or novel unproved medicines, at the expence of the patient's life, or health, in important diseases.†

These considerations induced the author, early in life, to attempt the concentration of the most useful knowledge of ancients and moderns in *Historia et Schola Medicinæ*, that medical preceptors, if disposed, might convey science with less circumlocution and seducing speculation, and that
students

* In the medical department there, the field for observation and practice is immense, my prescriptions, taken collectively, amount to many thousands annually, which has been proved by an estimate made by Dr. Hooper, of the said Infirmary.

† If the student were to wade through the stupendous volumes of the great *Hoffman*, or the Commentaries of *Van Swieten*, for instance, would he discover the direct road for applying remedies to individual disease? No! he may acquire a wavering inconsistent practice, which an experienced *practical pupil* would be able to point out and correct. It is *practice* makes perfection in any practical art, not reading and contemplation: one excellent cure in a difficult disorder is worth a thousand of the most acute hypothetical reasonings, or speculations.

students inclined to be satisfied with truth, separated from all fleeting and idle hypothesis, by being early and promptly initiated into the past and present states of medicine, they might be enabled to industriously commence improvements, wherever defects were discoverable, and thus give a degree of perfection and stability to the healing art, unknown to our predecessors: which every humane practitioner must ardently wish.* These attempts to improve the modes of instruction, humanity and the art demanded, as some small return for the confidence the author hath enjoyed nearly fifty years as a medical practitioner in this great metropolis; for if his practice and experience had not been so very extensive, he could not have been able to make these and other numerous observations to be found in the Rational Practice of Physic, &c. The first road to amendment is to discover defects; the second to eradicate, if possible, error; the third to avoid future prejudices, by the exclusion of opinions however plausible; and fourthly, to be determined to generously embrace the truth, however it may remind us of past ill-formed conceits, from whatever quarter it may originate. By these liberal means hypothesis and falshood will be banished from the healing art, and it will speak a new language, the language of truth, to the confusion of all those, who, for temporary advantages, or vanity, lead juvenile students into vain, useless speculations, instead of impressing on their young minds the necessity of admitting *no proposition* that is not *fully proved*. The vain attempt to account for every phænomenon in nature, however incomprehensible, has led philosophers and physicians into continual error: they often confound the inquiry, which may be laudable, for the attainment. If men would first study LOCKE on the *extent* of human understanding, and what things the utmost industry may accomplish, they would not rush into the vice of supposing every thing obtainable that is sought; but they would rather modestly rest satisfied with what is acquirable, and acknowledge their incapacity in every inquiry that exceeds the limits of human comprehension. The lesson of the great philosopher cannot be too frequently inculcated to all human beings, *know thyself*. This study might exclude vicious arrogance, and self-conceited importance, from the medical art; for medicine should be the science of *humanity* and *humility*. If universal self-knowledge were more the object of man's consideration, all reports and assertions would be well considered and analysed before they received assent. Credulity is the vice of the ignorant through simplicity, and of the well-informed through inattention: but whatever may be its excellence in spiritual matters, it is highly reprehensible in philosophy. If any thing can mark the difference between strong and weak intellects, it is cool prudent caution, or imprudent vicious credulity; and it may be affirmed, without hesitation, that in proportion as any man is credulous in what cannot be comprehended, he is superficial, insane, or fatuitous. This doctrine, applied to medicine, attacks, in some instances, most of the writers and philosophers, sects, and system-makers, from

Hippocrates

* Many writers reason apparently well, and practice ill. In dangerous cases they often depend on inefficacious medicines. No inconsiderable part of the Latin work was arranged and written whilst the author was attending his *terms* at the *University of Oxford*, but various observations have arisen from the author's travels into *hot climates*, when in his Majesty's service, from 1760 to 1765, and through most parts of *Europe*, afterward, to inspect the excellence or defects of medical education and practice in the principal *Universities* and *Hospitals*: and he is convinced, from constant study, experience, and reflection, that *theory* without extensive *practice*, is like a *body* without a *soul*.

Hippocrates to the present day; but reserving to some future opportunity more on these subjects, it is time to give an account of the *Schola Medicinæ*, or school of Medicine, and to exhibit its arrangement, intentions, and utility, and in what it differs from all other medical writings hitherto published.

PREFACE IN LATIN

IS short, intimating that the *Schola Medicinæ* comprehends what is useful from the earliest ages to the present period, extracted from all authors, ancient and modern; yet so concise, as not to bewilder the student's mind in useless inquiries. What the author hath observed in his long study, practice, and reflection, is candidly, and without any reserve, introduced. The third volume, written in Latin, and ready for the press, containing, in a new and brief manner, the whole practice of all the branches of medicine, the utmost extent and power of the medical art in curing diseases, with every modern discovery that has been determined useful by facts, separated from those huge masses of speculation, opinions, and absurdity, which have constantly been forced into this practical art, will be hereafter published, if the present volumes be approved, and the author's life be spared to accomplish these intentions. It will appear in English.

THE HISTORY OF MEDICINE

COMPREHENDS, in an abridged view, all the writers of consequence from the earliest ages to the present time; their opinions, and the progress which physic has made, in so many ages, towards the degree of perfection, that distinguishes the most refined modern medicine from all preceding times. In this part, in the English translation, is now added a comprehensive view of HIPPOCRATIC MEDICINE.

At the end of the History is a Chronological Table from the beginning of the world, as generally received, to the present æra. This table is divided into columns, shewing the times when the principal inventors and improvers of medicine lived; namely, from the creation of the world; before Jesus Christ, in what Olympiad of the Greeks, and how many years from the building of Rome. By this Table may be discovered, when, and under what reign or government, the most eminent contributors to the art of medicine flourished; as likewise philosophers, princes, emperors, &c.

THE CONSPECTUS.

THEN follows a *Conspectus* shewing the methodical arrangement of the *Schola Medicinæ*, and a brief intimation of whatever the work contains. This Latin conspectus delivers, briefly, the anatomy, physiology, &c. of the human body.

PLATES IN THE HISTORY OF PHYSIC.

THERE are six plates in the History of Physic, which many may consider, unless antiquarians, more curious than useful. These are concisely explained, not in all instances, exactly corresponding with the Latin. There have been many medals and coins struck in honour of medical deities: the inscriptions still extant are almost innumerable, cut in stone, and still preserved among the curiosities

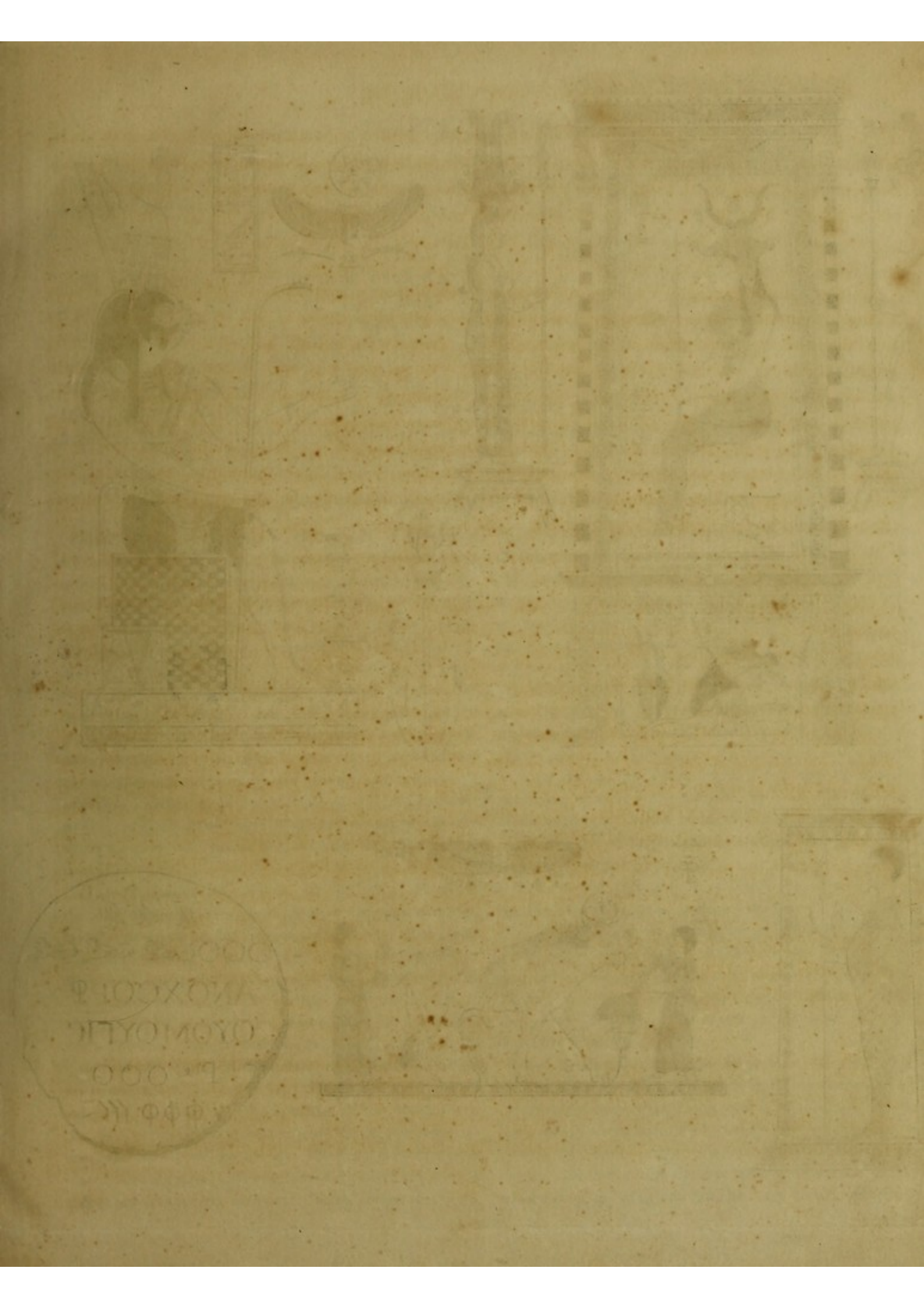


Plate I.



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riosity in Italy, a large collection of which I made in different travels. The explanations of the historical and medallic plates are the subsequent. They are arranged in a chronological order.

PLATE I.

IS a representation of the most ancient and curious piece of Ægyptian sculpture now remaining; known by the name of the *Tabula Bembina*, or *Isiaca*; perhaps removed (amongst other excellent antiques and works of art) from Italy to the famous Paris gallery, now erecting for the spoils of the late unparalleled and destructive war. The grand gallery extends, it is reported, from the garden of the *Thuileries* to the *Place de Louis Quinze*. The figures on the left and upper side consist of *Isis* on her throne in the middle; the two figures on each side with swelling breasts are supposed tutelary deities, &c. The letters of reference to the plate have been omitted, but the following description, chiefly from *Kircher*, will be a sufficient explanation.

Explanation of the first Plate of the History of Medicine.

THAT the reader may have a clearer view of the whole, I will give a plan, or scheme, taken from the *Mensa Isiaca*, called the *Tabula Bembina*; because the most eminent Cardinal Bembus first obtained it, an inestimable monument of Egyptian antiquity; which then, by the help of Æneas Vicus, of Parma, came into the possession of the Duke of Mantua, and was placed in his Gazo Phylacium, or cabinet of curiosities: afterwards, it was carried away at the siege of the city: lastly, I know not by what good fortune it was brought to the Duke of Savoy, and I hear, it is preserved amongst his rarest cimelia, or precious gems. From the schematism, or plan, of this plate, it seemed best to select the medium to prove the truth of what is here mentioned; from which will clearly appear the manner and way of representing the supreme deities of the Egyptians, which is as follows.

Here may be seen the throne, A. B. C. D. L. M. which the Hieromystæ, or sacred interpreters of religious mysteries, call the great gate of the gods, constructed with all the symbolic architecture; whose coronis, or highest ornament, or frons A. B. represents flames rising in the form of serpents. The second coronis C. D. with a winged globe, the third E. F. and basis L. M. of the throne, are marked in the same manner. The whole coronis, with two columns E. L. and F. M. is marked with white and black steps, of which E. L. sustain the small head of *Isis* put on it. To this throne is inserted a figure S. in a female dress, from the middle to the feet in the form of feathered drawers, from the middle rising towards the chest a swelling breast. Her head is covered by a sacred *vitta Ægyptica*, Meleager, or Ægyptian head dress, a turkey hen is expanded over head, which endeavours to fly,

on its back is a *calathus*, or sacred cup, from which the leaves of two *persea* spring, and two *cornua*, which include the circle marked with the figure of a scarabæus, or beetle; in one hand she holds a sceptre with the flower of the *lotus*, or herb, the seed of which the Egyptians made bread; with the other she expresses that gesture, in which any thing is commanded to be done in an imperious manner. She sits on a polished seat, on which is delineated the figure of a dog in a sitting posture. Under the throne is seen an abacus, the limbus, or border, of which, as well as all the circle of the throne, is decorated with stars. Within the abacus is placed a figure laying down, composed of a lion and hawk, *ερακο-λασιμορφος*, which is ornamented on the head with the phasis of the august, or sextile moon, with a star; containing by its anterior feet a canopus, but on its back vero *globu alatus* serpentifer is seen with a scepter.

The supreme corona A. B. of the throne, or gate, spread out like flames *οφιομορφων*, indicates the supreme intelligence filled with light and life, eternal, incorruptible, free from all contagion of matter; *Ηνκε μιν βλεψης μορφης αλε & ιρον τας λαμπομυθρους σκηληδον εν ολοις καλα βυθια κοσμου, κλυθε τυρος την φωτην*. When you see the sacred fire glittering without any form of the whole world, then you advert to the word of fire.—*Zoroaster in oraculis*.

— Besides, all the images on obelisks are nothing else than amulets, seu prophylactica, or spells, or charms, which by the mentioned analogical apparatus of things, as soon as they were consecrated, they believed that by the superior powers they derived virtue through a certain inevitable necessity, and that all the trains of evils were averted by the assistance of the genii who presided over them; concerning

which there are many very curious circumstances in the *Magia et Theologia Hieroglyphica*, to which we refer the reader. They held magic schemata of this kind of great efficacy and virtue in the cure of occult diseases; for the *genii*, to whom the rites and ceremonies were offered, were supposed to appear during sleep to those who were expiated by a previous faith, or disposition, and teach them the cure of diseases, as the scribe Astrampsychus relates concerning the epic. He consulting *Isis* concerning an incurable disease in the night time, saw the same standing with ox's horns a flowery tutulus, a variegated garment, in the same manner as they represent her hieroglyphically adorned in adytis, or altars; she offered to him with her hands the herb *motmutin*, the only medicine for the disease with which he suffered, which herb, when after sleep he had carefully obtained, he cured himself, and as many as were troubled with this disease, by its application, from the fear of death. See many circumstances concerning these things in hieroglyphic medicine, and magic. The Greeks imitated this.

— Two fingers are placed near it, the one R. with a male, the other X. with a female habit, *tutuli*, or tutelary deities, with flowery sceptres and swelling breasts, who seem by their looks towards Jynges, the first mind, to attend his commands; the leaders or guardians of the sensible world according to Psellus et Jyngis, the administrator of these, and they indicate the active and passive principle of things; by the virile and female habit with the swelling breasts, they pourtray fecundity; by their contracted hands they shew efficacy in acting; by their *tutuli* and sceptres, they exhibit a power given to them in all things from the lynx; in the *tutulus trigonus* affixed to the globe, they shew that all things flow from an archetypus trigonus, or archetype triangle;* by the serpents contorting themselves in the tutelary figure X. the vital motion is observed in all things; by the word *tutuli*, they demonstrate, according to the ideas conceived in the Supreme Mind, they shew that He administers the orders of things; all which are confused by so many and so great mysteries, that, I will not say one page, nor one whole book, can properly explain them; wherefore it is sufficient to give

a specimen of the mystic solertia, or comforts, with which the wise ancients adorned their sepulchres: he who is desirous of attaining farther information may consult the hieroglyphic works, where he will find all fully described, and differently proved, in the *Theologia Ægyptiaca*, and in the Exposition of the *Tabula Bembina* by Kircher, in the works of Jablonski, &c.

Second figure—*Osiris*.

Third figure—*Horus*.

IV. You observe in the Ophis stone three sparrows cut out, then three circles, and afterwards three sphynxes like lionesses; after that the *Conjuratio Numinum*, or conjuration of the deities, in few words in the Egyptian language. To understand this, I will explain it with equal brevity. By the three sparrows the threefold intelligible world, or archetype of the stars, *Osiris*; by the three circles, an evident mark of divinity; by the three sphynxes signifies three times three of the world; and as *Osiris ancipitrus*, or *Osiris* with a hawk's head, is the author of heat; so is *Momphta* of moisture; from their just attemperation, all things originate, which are perceived in a threefold degree of nature; so also from their discrasia, or intemperies, it is necessary that sterility is produced, to avert which they placed a patella of this kind as an *amuletum*, or amulet, on the head of the statue of *Momphta*, in addition to that which they pretended to obtain by magic murmur, or abjuration. The words in the Egyptian or Coptic Language are in English, O three times powerful divine *Osiris*, *Mophta*, *Mophta*, *Mophta*! I beseech you three times by this sign, *Thoth*, *Thoth*, *Thoth*, i. e. *Mercuris*, who, as the keeper of the three sacred favissæ, or cisterns, the keeper, the keeper, powerful with the threefold sceptre of thy dominion, &c.

V. *Onuphus*, a sacred bull:—for *Nuphi*, or *enuphi*, or even *anuphi*, signifies good but ehe, or ahe, signifies a bull, *Onuphim*; *onuphim*, may very conveniently be interpreted a good ox, because it portended good to Egypt, also *Henuphi* signifies *ubertas*. in the Coptic Language, it expresses *copia*, *ubertas*, *abundantia*, plenty.

The other five plates are representations of rings, medallions, &c. from real antiques, in fine preservation. They were engraved, or struck on various occasions; on one side of most is the head of some emperor, &c. on the other side is the representation of the deities, who, it was supposed, in those ages, presided over medicine. Among these are discovered *Isis*, *Osiris*, &c. of the Egyptians;

Apollo,

* This savours something of the Trinity, and similar vestiges remain among the Asiatics, &c.

Apollo, Æsculapius, Hygeia, &c. &c. of the Greeks and Romans. Many of the inscriptions are in Greek, and some few in Latin. I could here expatiate much on these subjects, having, at a former time of life, studied the *Coptic Language*, assisted by the excellent grammar of that worthy man, now no more! Mr. WOIDE, of the Museum. These researches proved, that the deities of the Egyptians were the identical gods the Greeks and the Romans afterwards adored. The names, indeed, were different, but, in general, the meaning of the names corresponded in the *Coptic*, the Greek, and Roman. The same attributes, and, in some respects, similar modes of worship were adopted by Egyptians, Greeks, and Romans. I think, I have proved, by these investigations, that many of the Greek deities, which that extraordinary people boasted to be of Greek origin, were not so, but borrowed from the Egyptians, and, in some instances, from the Persians. These subjects, which are not much to the present purpose, and only agreeable to the antiquarian, I shall desist from speaking more on, for the present; but at some future period these investigations may be resumed, and some lights thrown on those curious opinions of the ancients concerning their deities, which the blind zeal for different religions and sectaries hath almost totally obscured. The Romans admitted the worship of whatever gods the people chose to adore, or according to the country they emigrated from: whether this hath been political, it is not easy to determine.*

Plate

* On going to view the ruins of *Herculaneum* and *Pompeii*, near *Naples* and *Mount Vesuvius*, I observed, that in *Pompeii*, the old lava and rubbish arising from the famous eruption in the time of *Pliny* had been cleared away, so as to enable the curious traveller to walk in the streets, enter and examine the houses in all their various parts; on the stocco walls are many elegant paintings, as fresh as though they were painted but a few days ago. In one street is an entire chapel, which was dedicated to *Isis* and *Bacchus*; the one an *Egyptian*, the other a *Greek*; and, nearly opposite, is the house of a Roman surgeon, where all the instruments mentioned by *Celsus* were found, and which are now deposited in the palace of *Portici*, belonging to the King of *Naples*. In this palace are eleven or twelve rooms full of the antiquities of the cities of *Herculaneum* and *Pompeii*; a catalogue of which I took, and have in my possession. What is remarkable, among other things, is an inscription on the floor, or rather Mosaic or tessalated pavement in the refectory of the above-mentioned chapel—*CORNELIA CELSA*. The famous *Cornelius Celsus*, whose work is the most sensible, perhaps, of any of the ancients, as well as the most elegant classic Latin extant, lived near the period of this eruption of *Mount Vesuvius*, which destroyed those cities, as likewise *Apuleius Celsus* lived nearer, or at the same time. It does not appear very improbable that this *Cornelia Celsa* was some relation of *Celsus*, and that one or the other lived in that very house, where complete sets of surgeons instruments were found, as likewise places formed for anatomical purposes under some of the apartments. In my small collection of bronzes may be perceived the progress of the art of sculpture from the rude Egyptian figure, to the highest perfection among the Greeks and Romans. The antique bust of *Cicero*, in my possession, is a *chef d'œuvre* of art, as to anatomical accuracy. What is remarkable, that on the side of the cheek in the antique *Cicero* at *Oxford*, the wart is on the right cheek, just on the inferior margin of the *os malæ*, or cheek bone; that sculpture shews the great orator younger than mine. In the face of my antique, just in the same spot, wherein the *Cicer*, or rather excrescence, appears prominent in the *Oxford* statue, is an indentation in mine, as though the excrescence had been extirpated, and the part after the removal had formed an hollow. They both correspond as to the situation of the wart, only that in the *Oxford* it remains protuberating beyond the skin; in my bust of *Cicero* it seems to have been sunk or removed; or if my beautiful bust could have been taken from a mask soon after the cruel death of that excellent orator, and moral writer, the *Cicer* might have sunk after the loss of blood from the jugulating wounds given by the ruffian, whose life, the glory of *Rome* had saved. There is such a striking resemblance between the face of *Cicero*, and the Honourable Mr. Thomas Erskine, one of the most respectable ornaments of our British bar, that every one, at first view, exclaims, behold Mr. Erskine in the expressive face of the great *Cicero*! The bust, I have, could not have been finished before the

INTRODUCTION, &c.

Plate the Second of the History of Medicine.

I. Salus, the image of health, is not rare in coins.—The veneration of health, or salus, was very great among the Greeks, as well as the Romans: from hence these frequent inscriptions—to perpetual health—to public health—to sacred or holy health—to Æsculapius and health, &c. in Gruter and Reynesius, &c.

II. A sacrifice to health.

III. Æsculapius sacrificing to the sun and moon.

IV. Isis with Mercury's golden wand, or rod.*

V. A pantheon head, not female but male, with the horn of the Arietius Jupiter Ammon; the calathus, or sacred cup, intimates Serapis, the trident Neptune, the serpent Æsculapius, &c.

VI. Isis joined to Serapis and Osiris.

VII. A golden ring with Serapis.

VIII. A ring with the healthful goddess.

IX. A sacrifice to the god of physic by the Pergamenians.

X. Serapis worshipped by the Rhodians.

XI. Serapis adored at Rhodes.

XII. The people at Cos, where Hippocrates flourished, adoring Æsculapius, Diana, &c.

XIII. Minerva and Æsculapius. The Pergamenians coming from Arcada worshipped Æsculapius and Minerva, Lucian, in his witty manner, says, that Æsculapius exercised the art of medicine in this city, at Pergamus, and had opened a shop, meaning the temple, where credulity and superstition led the faithful, as usual, to offer their prayers, in hopes of dreaming what might prove beneficial. A juggle not unlike modern magnetism.†

XIV. In coins familiar to Alcilia. The head of health, and the image expresses sickness or ill-health, administering the serpent, the symbol of Æsculapius, as a remedy, with much devotion, from that beautiful figure.

Explication

the great orator's cruel death; the expression in the face is striking, and corresponds with some antique seals of which I had impressions. The face, the *pomum Adami*, the muscles of the neck, the clavicles, superior parts of the breasts, &c. are all exquisitely delineated and finished with the most expressive strokes of art. There are but three antique busts of Cicero extant in Europe except that which I possess, which I procured in an extraordinary manner. This may appear a digression, but as I have hinted in my book on the necessity of encouraging Anatomy, that the defects in modern sculpture are owing to want of exquisite anatomical knowledge, some liberal and generous prince, protector of the arts, may hereafter, not suffer the students and artists to copy from Greek or Roman originals, when, if more judicious modes of studying geometry, mathematics, optics, and catoptrics, were adopted, and proper encouragement given to persons of great merit and abilities, men would appear who would soon equal, if not surpass, the most cultivated ages of the Greeks and Romans. The most excellent artists would not servilely and humbly copy, but would elevate their minds, and give the grandest specimens of originality in their admirable productions. It is the interest, it is the duty of princes and nobles to encourage the arts, literature, and all men of genius; for who can display their virtues, reprehend their vices, or conceal their defects, like men of discernment, and writers of abilities? When the most distinguished characters in literature and excellent morals are neglected, and suffered to pine in want, in countries abounding with opulence and every species of luxury; when truth, honour, probity, and every laudable virtue seems nearly extinguished, and many of the great through Europe, are only famous for dissipation, immorality, or frivolity, it may be depended on, that similar negligences have been the destruction of states. Had Louis Sieze been more vigilant, and had he attended more to the wise prescience of literature, than to the flattery of corrupted and corrupting sycophants, who generally pursue their own interests, that worthy, well-intentioned monarch's fall and death could not have happened; nor any of the horrid cruelties that succeeded the French revolution. Learning and sagacity are mischievous weapons when provoked by contempt and want. A few thousands annually presented from the royal purse would make the weeping face of science smile, and royalty would be immortalized; not as the nominal, but as the real lover and protector of the fine arts. Louis Quatorze knew this secret, and has left institutions at Paris, that will ever be respected by all posterity; however civil disorders may, for a time, obscure their lustre. The great Colbert, his minister, must live for ever in the hearts of all men of science. The Apotheosis of Homer, that excellent antique sculpture, on which I have written, displays the highest stretch of human art.

* It was figured by the Egyptians like two serpents knit together in the middle, which knot was called Hercules's knot. This wand, as also the harp, was given to him by Apollo, wherewith he had power to bring souls out of hell, and to cast any one into a sleep. Vid. Serv. in Æn. viii. 139. and Pliny ix. 3.

† This is not a translation, and in many other parts the original Latin is not closely adhered to, but in general the explanations are improved.















Explication of Plate III. of the History of Medicine.

I. *Æsculapius* carried to Rome, and a *thensa*, or divine rites, decreed by *Cæsar*. A serpent is seen placed on an altar. History teaches, that *Æsculapius* was carried in the form of a serpent from *Epidaurus* to Rome, &c. Before Christ 291 years, in the year of the world 3693, in the 122d Olympiad, and 463 years from the building of Rome, as may be seen in the Chronological Table in my History of Medicine in *Schola Medicinæ*, &c. This medical god was constantly implored in sickness; vota, or vows, were made and fulfilled, as may be seen from an immense number of inscriptions in my possession, taken chiefly from remains found in or near the temples of *Æsculapius*. But you see a serpent on the altar—for history teaches that *Æsculapius* carried to *Epidaurus* was in the form of a serpent; and it is evident that he was represented in this coin, from the last coin of the *Rubrici*; for in it this altar is seen with the serpent and a ship projecting from it. With respect to the *thensa* decreed to *Cæsar*, is certain from *Suetonius*; what is therefore wonderful if *Rubrius*, being dismissed by *Cæsar* after *Corfinium* was taken, *hoc monumentum ejus gratiam quæsierit?* Bergerus.

II. Rev. Harduin describes and illustrates this coin, and

the celebrated *Patinus* hath asserted an opinion somewhat different; *Telesphorus* is seen in it, who is also called *Eve-merion*, to whom *Pausanias* relates that the *Pergameni* sacrifice. The celebrated *Patinus* observes, that the garment which covers him from the head to the foot is by *Martial* called *Ligonius Bardocu cullus*. *Cephalon*, the prætor, again made it, when the coin was struck.

III. In this is seen, that *Adrian* hath hoped and invoked. For it is evident, that he had such miserable health, that it repented *Adrian* of his adoption, and a premature death averted *caducum parietem*.

IV. *Apis*, found under *Adrian*.

V. VI. The Egyptians and *Pergamenians* wish every sort of health to *Antoninus Pius*. The Egyptians indeed *Serapis*, but the *Pergamenians* for health and felicity address *Æsculapius*.

VII. VIII. *Serapis*.

IX. M. *Aurelius*. This coin, signed in the tenth year, exhibits *Isis* winding in the form of a serpent. The serpent is the genius of health.

X. The *Nicomedians* implore health to *Marcus Aurelius*.

Explication of Plate IV. of the History of Medicine.

I. *Commodus* and *Æsculapius*. *Æsculapius*, the most noted deity of the *Pergamenians*, without doubt vigilated for the common welfare.

II. Health of the human mind.

III. *Serapis* conservator, or preserver.

IV. *Serapis* and *Isis*.

V. *Julianus Serapis* and *Hermanubis*.

VI. *Severus* with a serpent—*Æsculapius* is known under *Adrianople*, (sub *Ἀδριανόπολι*.)

VII. *Albinus* and *Minerva*:

VIII. *Albinus* and *salus*, or health.

IX. *Caracalla* and *Geta* commend their health to the *Pergamenian Æsculapius*.

X. *Macrius* and *Salus*. Public vows.

Explication of Plate V. of the History of Medicine.

I. *Eliogabulus* and *Serapis*.

II. *Gordianus* and *Serapis*, &c. To the second many things are to be observed; and first, indeed, I have not read ΕΦΕΣΙΩΝ ΑΛΕΞΑΝΔΡΕΩΝ as in *Patin* and *Harduinus*, but with the copula ΕΦΕΣΙΩΝ ΚΑΙ ΑΛΕΞΑΝΔΡΕΩΝ; so that two cities are celebrated in this coin, without doubt—for the Egyptians openly avowed *Serapis*, as the *Ephesians* did *Diana*.

III. *Hostilianus*. *Serapis* in a temple.

IV. *Gallus*. *Serapis* in a temple. This money was struck by the people of *Antioch*, as may be seen, under the reign of *Hostilianus*, &c.

V. *Gallus* and *Serapis*.

VI. *Gallus* to the salutiferous *Apollo*.
Volusianus.

VII. In this coin *salus*, it expresses the pestiferous lues, or plague. How much this goddess hath been fatigued, or to those tired with vows. There are a thousand ways to death for those, whom the plague hath spared, &c. &c.

Valerianus.

Apollo preserver.

Galienus.

IX. Isis and Nemesis. A coin struck by the people of Smyrna.

X. Galienus with Bacchus and Æsculapius, according to many opinions; but it appears to me to be Æsculapius and Hygeia.

PLATE VI.

I. Galienus with Æsculapius.

In the coin struck by the Sidetes—and what shall we say to the plague, which is related to have been so dreadful under the Emperor Galienus at Rome, or in the cities of Achaia, in one day five millions of men died of a similar disease? Æsculapius was then of the greatest assistance, and hence it is not wonderful that the Sidetes did stamp an impression of him on their coin.

II. Quietus with Apollo the conservator. As Apollo prefers a branch of laurel to the arrows or bow, it is just to suppose that this refers to medical not warlike assistance; but more on this in *Bergerus*.

III. Probus and Salus.

IV. Diocletianus with Isis.

In this place I will premise in a few words, that the Isis of the Egyptians was the same with the Ceres of the Greeks, and hence the Egyptians, in the twelfth year of the Emperor Diocletian (for that is evident from the additional numeral letters L. IB. as Achilleus rebelled before the eighth year, and was overcome by Diocletian; the famine, or want, which came afterwards, this coin exhibits elegantly, &c.

V. Isis with Horus.

The Greeks, when they speak of Horus, always interpret him as Apollo. Thus Herodotus, lib. ii. c. 144. relates, Ὡρον Οσίριος παῖδα τον Ἀπόλλωνα Ἕλληες ὀνομαζουσιν. Horus, the son of Osiris, whom the Greeks call Apollo, and c. 156. Αἰγυπτίσι δὲ Ἀπόλλων μὲν Ὡρος. And Apollo is also, in the Egyptian, called Horus.

VI. Isis.

VII. Apis embalmed according to the manner of the Egyptians, as may be seen in many real antique mummies that have reached our time.

VIII. Osiris, or the author of health.

In *Diodorus*, lib. i. p. 11. they say that these gods (the sun and moon) govern the universe, nourishing and performing all things, at three periods of the year, in an invisible manner performing a circuit, viz. in the spring, summer, autumn. Which, although they have a very different nature, yet make the year with the best consent efficient, or with an excellent consent every thing good is produced by the changes in the year, &c.

THESE plates shew the mythological credulity of the Egyptians, Greeks, and Romans, with the dignity of their medical deities, whom they revered with as much faith, fear, and hope, as any religious sectaries since their times. Irreverence to their gods was punished with death, or universal detestation, as *Socrates* experienced, and as may be seen in the orations of *Demosthenes*, when he wished to render an enemy odious in the sight of the people, &c.

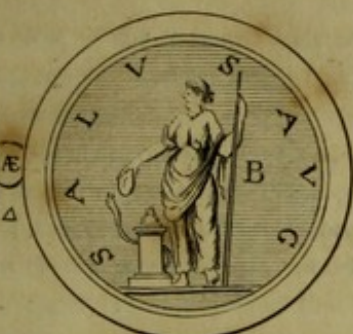
After the *History*, and a *Chronological Table*, giving, in a short view by columns, the periods when the principal philosophers, physicians, and other eminent personages, flourished; commencing from the supposed beginning of the world to the Peloponesian war, from that time to Justinian, and from thence to the present time. A Conspectus of the whole work appears; which is, of itself, a short system of anatomy and physiology.

IN THE ANATOMICAL PART.

Plate I. contains a very elegant male and female figure, drawn by Mr. Edwards, of the Royal Academy, and engraved by that excellent artist Mr. Sharp, to explain the external parts, &c. page 3.

Plate *I. Two figures with the references to the former plate opposite to the page of *Greek* description, and referring to the *Latin* description, &c. in the *Latin* edition; but in the present English there is no double description.

Plate



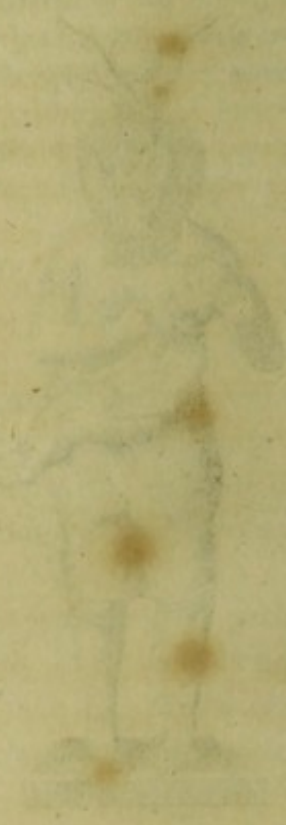
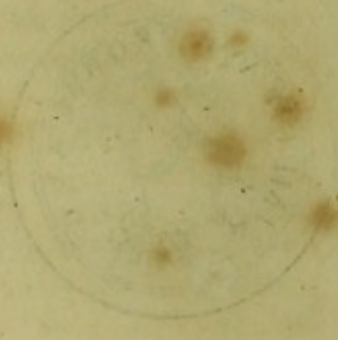
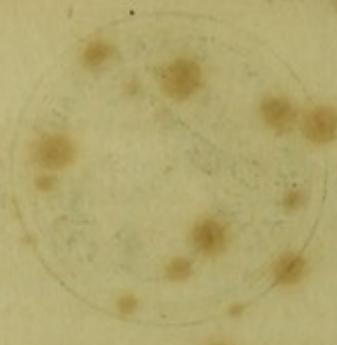


Plate II. shews the constituent parts of the human body, with the description in *Greek* and *Latin*, now page 4.

Plate III. is of the bones and their junctures, connections, &c. with *Greek* and *Latin* descriptions, now page 5.

Plates IV. and V. shew the front and back view of the human skeleton, with *Greek* and *Latin* descriptions, now p. 6.

Plate VI. describes various bones with *Greek* and *Latin* descriptions, now page 8.

Plate VII. shews a side view of the human skeleton, a fœtal skeleton, with the differences between the infant and adult, and the teeth, now page 9.

Plate VIII. exhibits the parts composing muscles, examined with a microscope, as an introduction to myology, p. 10.

Plate IX. a front view of the muscles, the references in the opposite single page, with the *names, origin, insertion, and use*, in three columns distinctly exemplified, so that the student with the greatest facility, especially if he dissect with the plates before him, must obtain a perfect knowledge of all muscular motion, now page 11.

Plates X. XI. XII. XIII. XIV. XV. XVI. shew the second, third, and fourth, layer of muscles, in the fore and back view, with references in single pages to each plate, p. 13, &c.

Plate XVII. A view of the muscles of the whole body laterally, now page 19, with reference plate.

Plate XVIII. shews various muscles not reducible under the former nine plates. After this the myology is com-

pleted with the manner of dissecting muscles, and the different subjects necessary to be chosen by the anatomist for preparing the bones, muscles, nerves, injections, &c. with many useful rules to be observed in anatomical studies and dissections. This is in the *Latin* edition.

Angiologia, or the knowledge of vessels, which are arteries, sanguiferous veins, and lymphatic vessels; these are all perspicuously exhibited in three columns, in a manner entirely new.

Plates XIX. XX. are front and back views of the arteries of the whole body, as they appear when injected, p. 21. &c.

Plate XXI. is a view of all the veins of the whole human body, with a reference in one page shewing the origin in extremities, their various directions and terminations, &c. in the manner the blood passes from all the veins to the *cava*, from a very fine drawing of Mr. *Paillou's*, p. 23.

Plate XXII. is of the lymphatic glands and lacteal vessels, by which is shewn how nutrition is performed: by lacteal absorption and passage of the chyle to the thoracic duct, subclavian vein, &c. p. 24.

Plate XXIII. is a whole elegant figure drawn by *Paillou*, representing the lymphatic glands and the lymphatic vessels of the whole human body, explained in three columns under the heads of *name and seats of glands—vasa inferentia* and *vasa efferentia*, by which a complete knowledge of the whole lymphatic system, its diseases, &c. is easily acquired, p. 25.

ADENOLOGIA, or an EXPLICATION of the GLANDS,

Contains all the ancient opinions and modern discoveries of the glands of every species, their situations and uses, in the *Latin* edition, but more concise in this.

A conspectus of all the glands in three columns, under the heads of *name and seat, habit, function*. This mode of exhibition is entirely new, and greatly abridges the science of *Adenologia*.

NEUROLOGIA, or DOCTRINE of the NERVES.

The ancient and modern opinions of the nerves, containing extracts in *Greek* and *Latin* from *Rufus Ephesius*, *Herophilus*, *Erasistratus*, *Galenus*, *Oribasius*, *Vesalius*, *Eustachius*, *Leeuwenhock*, *Willis*, *Vieussens*, *Winslow*, *Monro*, sen. *Whytt*, *Haller*, *Meckel*, *Zinn*, *Moscatti*, *Pater de la Torre*, *Prochaska*, *Alex. Monro*, junior, *Walker*, and some new ideas of the present author on the nerves, &c. taken from the treatise on nervous diseases, &c.

Plate XXIV. is a complete section, as large as life, of the basis of the cranium, shewing the origin and direction of the nerves to the sensitive organs, &c. through the foramina from the brain, p. 26.

Plate XXV. shews the basis of the brain, or cerebrum, with the vessels, p. 27.

Plate XXVI. The plexus of the cerebrum, corpus callosum,

sum, corpora striata, thalami nervorum opticorum, pineal gland, &c. &c. p. 28.

Plate XXVII. The arteries of the brain, &c. of the full size, p. 29.

Plate XXVIII. Of the medullary spine, pineal gland, &c. a complete treatise of the brain and all its parts, with a comparative view of the weight of the brains of most animals, with the weight of their bodies, including *man*, &c. to ascertain the different quantity of brain each animal possesses compared with man; in which it is proved that the human brain is not the largest, as vulgarly received, p. 30.

Of the cerebellum, medulla oblongata, spinalis, &c.

Plate XXIX. and XXX. exhibit the ganglions of nerves and funiculi, p. 31, &c.

Plate XXXI. shews the component parts of nerves magnified by a microscope in thirteen figures. This investigation exposes many erroneous doctrines of the nerves, p. 33.

The vessels of the cerebrum, cerebellum, and medullary spine.

Plate XXXII. as large as life, shewing the intercostal cervical nerve, or sympatheticum magnum, ganglions, &c. proceeding to the heart, diaphragm, &c. This elaborate demonstration, in concert with others, shews evidently, how one *viscus*, or part being affected by irritation, or compression, may affect others, even remote from the seat of disease.

Plate XXXIII. A reference plate to the foregoing, as large as life, p. 35.

Plate XXXIV. Shews the nerves of the right side going to the heart. with two more figures of ganglions, &c. nerves, &c.

HERE ENDS the FIRST VOLUME in the LATIN EDITION.

Plate XXXV. large as life, or further explication of Plate XXXIII. &c. of arteries, veins, nerves, ganglions, muscles, &c. nervous ramifications, &c. p. 54.

Plate XXXVI. A complete view of the nerves of the thorax and abdomen, &c. large, p. 61.

Plate XXXVI. (2) A reference plate to the former, large as life.

Plate XXXVII. shews the celiac ganglion, mesenteric plexus, and right hypogastric nerves, with veins, arteries, vertebræ, &c. p. 73.

Plate XXXVII. (2) is a reference plate to the former, full as large as the adult.

Plate XXXVIII. Nervum sympatheticum magnum and par octavum in the left side, p. 80.

Plate XXXVIII. (2) The reference plate to the former, large as an adult.

Plate XXXIX. exhibits the nerves of the liver and stomach from the conflux of the right and left celiac ganglions, &c. &c. exhibiting how the stomach may affect, or be affected by diseases of other parts, p. 87.

Plate XXXIX. (2) Large reference plate to the last. The mode of dissecting and preparing the nerves for anatomical demonstration fully explained. These representations of all the nervous system are most beautifully drawn and engraved, and the references in number amount to some thousands. These minute demonstrations will gratify the most inquisitive and contemplative mind by a series of real facts of the supreme government and influence of the brain and nerves, as ministers of feeling and all human sensations, sympathies, antipathies, &c. &c.

SPLANCHNOLOGIA

Treats of the integuments, viscera dedicated to forming chyle, secreting urine, semen for generation, the organs of breathing, of the circulation of the blood, and lastly, the organs of the senses.

Plate XL. Shews the internal parts composing the thorax and abdomen, with references in one page arranged in three columns under the heads of name and situation—structure, connections, and uses; by which the contents of the thorax and abdomen are briefly and clearly explained, so as to leave an impression on the mind not to be easily effaced, p. 90.

Plate XLI. Shews the abdomen, the intestines, &c. being removed. The liver, gall bladder, pancreas, spleen, kidneys, ureters, bladder, large vessels, &c. are represented in *situ naturali*.

Differences between the adult and the embryo in the Latin, but in this edition in a future part.

On the EYE and DOCTRINE of VISION.

Plate XLII. shews the arteries, tunics, and humours of the eye in five figures, which prepares the mind for the skillful consideration of eye diseases, p. 92.

Plate XLIII. shews the nerves of the bulb of the eye, vessels, &c. ganglion, ophthalmicum, with the ciliary nerves, &c. muscles, &c. p. 93.

Plate XLIV. exhibits the membrana coronis ciliaris, by which is joined the chrystalline lens with the vitreous humour, &c. their minute arteries—Meibomius's glands, viæ lachrymarum, &c. in ten figures, p. 94.

Plate XLV. Origin of the tunics of the eye, reticulum

choroidi instratum, plicæ processuum ciliarium, or plaits of the ciliary processes, annulus, or ring of the iris, &c. in six figures, p. 95.

Plate XLVI. Muscles of the bulb of the eye in five figures, p. 96.

Plate XLVII. The representation of the heart injected with wax in two figures, with the auricles, large vessels, &c. concerned in the circulation of the blood, p. 97.

Plate XLVIII. explains the circulation of the blood, the valves of the heart, &c. as the valvulæ mitrales, tricuspidales, &c. &c. p. 98.

An epitome of anatomy for the junior students, and for those intended only to practise surgery, &c. in which is abridged all that is necessary to be known for the purposes of practice, particularly for surgery, and midwifery, &c. p. 105.

Hygology, or the doctrine of the fluids of the human body, whether secreted, or not secreted.

PHYSIOLOGIA.

The explanation of the functions and actions of all parts of the living or animated human body. Anatomy demonstrates all the parts in the dead body; physiology considers and explains the manner in which the living body performs the functions necessary for life and health, &c.

The physiology of the human body is greatly abridged, and yet is ample, as to utility. It is shewn in a new point of view in three columns in the Latin edition, from which are excluded all idle hypotheses and vain speculations; under the heads of physiology—scholia—pathology—by which at one view are seen the doctrines of the parts and functions, the real causes of their action, as far as human understanding extends, and their appearances after death from diseases, which form the foundation of morbid causes, and rational plans of cure.

Plate XLIX. shews the pharynx and larynx, or the organs of swallowing, voice, &c. in many figures from dissections fully explained, p. 99.

Plate L. Of the organ of hearing, p. 100.

Plate L. (2) Reference plate to the former, p. 100.

Plate LI. Of the omentum, intestines, &c. in which some errors are corrected, p. 101.

Plate LII. Second plate of the same with the bile, ducts, &c. to shew the course of the bile, p. 102.

Plate LIII. The genital parts of men, arranged in a concise manner, p. 103.

Plate LIV. The genital parts of women, external and internal, p. 104.

An epitome of modern physiology, containing the principal objects necessary to be remembered in the theory and practice of physic, now translated with additions, p. 155.

The plates in the Schola Medicinæ, including reference plates, amount to sixty-eight, elegantly engraved by capital artists, among whom will be found Sharp, Royce, Cooke, &c. The bones and muscles, arterial and venal systems, are particularly designed for surgery students, and the whole work, for those who wish to become learned physicians. The various plates of the nerves,

their ganglions, connexions, plexuses, &c. &c. of all the principal parts of the human body, are particularly interesting to every physician who would wish to account for the various symptoms of diseases, either directly of parts, or indirectly by sympathy. In these minute investigations many hundreds of references in the reference plates lead the studious pupil *gradatim* to a profound knowledge of the minutest causes of all different human sensations and signs of diseases, arranged and exhibited in such a manner as to leave, it is hoped, a durable impression on the mind, ready on all occasions to be usefully applied to medical practice.

In short, the *Schola Medicinæ* is intended to answer the most ample purposes of instruction; to render most other books unnecessary, as far as *facts* and *just reasoning* extend; and, to early fortify the juvenile mind against those frothy conjectural effusions, which too often, *pro tempore*, injure the Pæonian art. It must be submitted to the discernment of the learned and candid, to determine on its probable utility, by considering the labour of the arrangement and execution, and by comparing the practical use of the *Schola Medicinæ* with any other single production extant.

The methodising of the work, its gradual execution, the slow progress of the drawings and engravings, with which the letter-press was frequently obliged to keep pace, have consumed a period of above twenty-five years, as far as the author's other writings, and an extensive medical practice, would permit. It was written in *Latin*, that it might become more universally useful to all nations. The stile, it is hoped, is perspicuous, concise, and intelligible; those who have neglected their *Latin*, may, perhaps, find that performance useful in regaining, what may, in some measure, have been lost, and the junior students, it is hoped, will be incited to pursue their studies in the learned languages, which will amply reward their labours, and give additional lustre to that profession, in which they should attempt excellence as members. It is the duty of every physician to leave the art better than he found it, by dedicating to study the idle hours consumed in amusement: for dissipation and Bacchanalian excesses are always inimical to serious reflection.*

The necessity and utility of this work, it is presumed, will be acknowledged, when it be considered, that no one book comprehending anatomical plates, with references to each in one page of letter-press, and a complete physiology and pathology exhibited at one view, by *columns* that run parallel, has ever yet been published. The labour of consulting various writings separately would require such a collection, that the expence would be enormous, and the advantages to pupils doubtful, through the great errors in their arrangement. Many writers of former works have rather wished to appear splendid than useful, and much time has been lost in endless repetitions of flying from the *copper-plate* to the *references*; from the *references* to the *copper-plate*: the tediousness of which mode of conveying instruction is often considered by students so prolix or difficult, that ignorance is preferred, frequently, to science, when obtained only by such laborious means. All these difficulties are now obviated. In the present performance, all that is contained in each plate is compressed into *one* concise page of letter-press opposite, by being printed in a small type, cast expressly for the purpose, and each page is divided into *columns*, in such a manner, as not only to give

* Some of the remaining copies of the *Latin* edition may be had without the plates, by those who purchase the English edition, at a moderate expence.

give an exact description of the parts viewed, but likewise their connections, uses, &c. The result of the most tedious and laborious study is contained, frequently, in a short sentence, or self-evident proposition; thus is reduced, into a small compass, all that is necessary to be well known or remembered, when applied to the *medical, chirurgical, or obstetric* art. By these means hath a few pages contracted what is necessary to be comprehended in anatomy, except, that the *nerves*, their *ganglions*, &c. have required longer descriptions. Besides this concise and useful arrangement, there is an *abridged* anatomy and physiology, containing the whole modern knowledge. To render, however, the *Latin* work important, it contains a more diffusive description, for the use of lecturers, teachers, or professors, planned and executed in such a manner, that all which is useful in the large volumes of anatomical writers, &c. will be found in this work; without that prolixity for which some authors and lecturers have been so justly censured, by all who would wish to facilitate instruction, and render the deepest erudition of the art accessible to all capacities. To all junior students it may be an introduction previous to hearing lectures, and afterward, the companion of the dissecting room; to those who have passed through their studies, it may prove a very concise and useful recapitulator, by the exhibition of those anatomical preparations and facts, from which all actual and demonstrative knowledge was acquired requisite for successful practice. Credulity, the parent of error, will, then, no longer pervade the science.

The PRACTICAL APPLICATION of SCHOLA MEDICINÆ.

I. For obtaining anatomical knowledge and physiology.

On viewing the print, with or without anatomical preparations, let the engraving be examined, or compared with the *real* subject, and the written description, connection, and use of the part, be read in *Schola Medicinæ*: by this procedure, it is impossible not to easily comprehend, in a very short time, the anatomical structure, situation, and use of every part of the human body.*

II. In *physiology*, let the pupil read the description and use of any part or function in the *first column*, and the *scholia*, or reasoning, if any, in the *second column*, by which is readily acquired the *nature, action, power, and utility*, of any part, or parts, during *life*.

III. In *pathology*, the knowledge of the causes and effects of diseases will be easily ascertained, by directing the eye to the *third column* of any part, where will be found the appearances, from
dissections,

* Words and things are easiest taught, and best comprehended, together. The attainment of all languages, arts, and sciences, is quicker acquired by such means, than by the common slow methods of communicating knowledge, which oftener darken than enlighten. *Descriptions*, however well expressed, cannot convey clear ideas of diseases so immediately, as a *view* of the sick. At the St. Mary-le-bone Infirmary, I have *classed* disorders in a new manner, in *separate* wards, and on the *door* of each is written *male, or female, pulmonic, fever, chronic, small-pox, chirurgical, venereal, casual, childrens, convalescent, &c. &c.* The name at the *entrance* gives the *genus* of the disease, and the numerous sick, within each airy ward, give the individual varieties of *every species*. The prescriptions taken, in the medical department, amount annually to many thousands; which extensive practice, arranged in the foregoing manner, affords pupils a rapid opportunity of comprehending the *routine* of medical practice, when united with other advantages. Mr. *White*, obligingly attending to many hints on the common defects in the structure of hospitals, delivered by me, has displayed an uncommon judgment in the plan of this humane infirmary, calculated to answer all the beneficent purposes of the noblemen and gentlemen, who are guardians of the poor of this most opulent and liberal quarter of *London*.

dissections, after death. Thus blending, in one view, the actual living functions, the reasonings resulting, and the visible defects of all the parts of the human body, *post mortem*, a complete knowledge of the *real* causes of most diseases may be acquired, without having recourse to the imaginary conceits of dubitable hypothesis. In this work, the pathology succeeds the physiology.

IV. In the rational practice of physic, surgery, &c.

The previous science already described prepares the medical practitioner to reflect sensibly on the positive danger, difficulties, or probable facility in the treatment of diseases, and performing operations. With this rational foresight, and a perception of the resistance to be expected in any disorder, united to the previous and present state of the patient's constitution, the indications of cure and contra-indications are discoverable, and apt remedies may be judiciously prescribed, from their known and experienced power and efficacy. To attempt healing the sick without comprehending the complicated and real causes of diseases, determined by anatomical, physiological, and pathological facts, is like attempting to sail in a ship on the ocean without ballast, rudder, or compass. It is random quackery to depend on any particular nostrum, or remedy, in the cure of different disorders; for, if it be *harmless*, the afflicted may be lost for want of an active remedy; if *violent*, it may kill by rash or injudicious application. By penetrating, however, into the origin of diseases from dissections and experience in former instances, and by having concluded from the *appearances after death*, what could have *produced* the *effects* observable in life; a physician will not only be able to proceed in practice satisfactorily, but judge of past professional errors, and form an accurate and sagacious estimate of all future inquiries and improvements. Such a well-informed practitioner in medicine, actuated by logical reasoning, will cautiously examine novelties, but will be always open to conviction. The flights of fancy may *amuse*, but in all important concerns *reason* should be satisfied. The plausible deceptions which so often disgrace the medical profession, will be perceived with a glance of the eye; the mind will reflect with the rapidity of a flash of lightning on the competency or incompetency of human intellects, in whatever may be the object of research. The delusions that lead the indolent or superficial, make no impression on such a character. If he be strictly an honest and discerning man, truth is embraced, and merit respected wherever discoverable: professional prejudices, duplicity, and fallacy, are detected, exposed, and rejected. If such honourable members of society have enemies, they can only be the enemies of truth and integrity. It is the sincere wish and hope of the author, that every medical student will industriously study the profession, act with great probity, humanity, and honour, and seriously consider the important trust committed to his charge, after the regular studies the art requires. The preservation of health, the power often of life and death, is submitted to medical care and skill. To assume an air of wisdom, and be superficial, or incapable, is an heinous offence against Heaven and all human society; to be as skilful as the art admits, is an indispensable duty. If medical pupils avoid incomprehensible pursuits, and follow the methods shortly to be recommended to obtain real knowledge, and if they keep a journal under the heads of *name, age, symptoms, disease, remedies, and observations*, divided into columns, according to the form in use at the *St. Mary-le-bone Infirmary*, it is next to impossible for the studious not to well comprehend the general *arcana* of practical medicine in the space of two or three years, from whence they may proceed

to the university with credit. It should, however, be recollected, that universities are generally under the dominion of the sacred theological profession, and the discipline observed, agreeably to the statutes, is more adapted to the purposes of religious faith, or classical erudition, than medicine. Seven years are consumed in obtaining the degree of Master of Arts, in which acquisition no medical studies whatever are enforced; though every other branch of academical learning may be obtained in the highest degree of perfection. Any Master of Arts may enter on the medical line, have a Bachelor of Physic's degree in one year, and a licence *medicinam exercere per totam Angliam*. How capable any student may be to visit the sick, and prescribe remedies in all diseases, after such an education, is not difficult to determine. It is hoped, however, that a more rational mode of study will be established, and that *Schola Medicinæ* may assist in promoting such a desirable and necessary alteration; for which the work was principally written, in the author's apartments at St. Alban's Hall, Oxford.* As a book of information on the subjects of which it treats, it may be useful to the students of law, physic, and divinity, to philosophers, and even the nobility and gentry: for every gentleman and magistrate should have some general knowledge of the human body. To professors of learned universities it solicits protection, as it is presumed it may greatly tend to abridge their labours. The mode of procedure, recommended in *Schola Medicinæ*, is directly contrary to the former university plans of medical education; for these say, *ubi philosophia desinit, ibi medicina incipit*: but it is insisted on, that youths, intended to practice medicine, should be first instructed in anatomy very young, and familiarised to practice by a studious and accurate observation of the sick in all possible situations of disease. After receiving the numerous facts with diligence, that an extensive medical practice presents, the student may inquire, at leisure, into the causes and effects he hath actually observed, with all the various phenomena of nature at the university. *Aristotle* has justly asserted, *nihil est in intellectu quod non ante fuit in sensibus*.† To advise or teach pupils to reason and account for what they have *not seen*, or to *meditate* on any visible subject by only *written descriptions*, is nearly as sagacious, as to attempt to teach a person born blind the names, tints, and different shades of colours; or those born deaf, the sweet modulations and musical chords, that produce the most ravishing harmony, to a refined musical ear. Who can expect that any person should be enabled to discern and comprehend the beauties, logical arrangement, and perfections of literary composition, who is ignorant of words, sentences, and grammar? The practice of anatomy, and of all the preparatory branches of medicine, is the grammar to the art of physic, and leads the mind safely to the more minute inquiries and sublimer studies. It is proceeding directly *ad rem*; whilst all other modes are, more or less, circuitous, doubtful, or fallacious, and often terminate in a vain supposition of actual knowledge where little profound science exists. *Morbi non verbis curantur, sed remediis*; as the greatest of the Romans *CÆLUS* says, the general and particular application of which can

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only

* The chief reason of writing the work at Oxford was the opportunity of examining extensive libraries, to collect and compile different parts of the Latin *Schola*, &c. and it is mentioned, with great gratitude, that the author's intentions were liberally promoted by the learned anatomical professor Dr. *PARSONS*, and other eminent, profound scholars, who are an honour to that distinguished university.

† This excellent true proposition has laid the foundation of the greatest part of the celebrated Mr. *LOCKE*'s essay on the extent of human understanding, and if strictly attended to, would chase from the human mind, all chimerical false notions and prejudices. *LOCKE* should not only be read, but studied with close attention.

only be obtained by deep reflection, the avoiding prejudices, and by long experience. Those who know not these advantages may affect to censure those who do; but by such censures they only proclaim their own want of erudition in that art which it is their serious duty to better comprehend. All degrees of human wisdom and merit are relative. It is by comparison, that the beauties and deformities of nature and art are discoverable to the discerning, experienced, and contemplative. To an ignorant person of no taste, the sculpture of the rudest block, or the vile daubing of a sign painting, are little inferior to the sublime works of *Praxitiles*, *Phidias*, or *Apelles*.

The Latin edition of *Schola Medicinæ* differs from the present in English; for the former gives the physiology in one column, the second column contains frequently explanations, and a third column gives the appearances of all the parts of the body in a state of disease, or the morbid effects arising from whatever complaint the part might have been previously subject to during life, and which led to fatality. By these means, the living function is first considered, how it is performed, by what powers it is preserved in a state of perfect health; how, and by what means it is impeded, perverted, or destroyed. For a physician, who comprehends the active principles necessary for the healthful support of a function, whether animal, vital, or natural, and in what degree each assists in its due performance; on reflection, and viewing the diseased state, that destroyed the power, during life, on which its free action depended, will be able, if he be experienced in the powers of remedies, to prevent many of those causes, which prove fatal in numerous diseases. He will likewise be enabled to form a judgment, on the efficacy of proposed treatment in all cases. This science of morbid anatomy, is a great modern improvement, and will lead, under prudent restrictions, more to the perfection of the art of physic, than any yet devised. It is truth, it is ocular demonstration, it is conclusive. It banishes error, and fallacious preconception.

In the rational practice of physic, a great collection of morbid appearances, after death, is exhibited, not only of preceding authors, but all I have observed myself, in conjunction with those writers, will be arranged hereafter in the practical part of physic; that will be founded and supported by those irrefutable evidences. In which case, neither hypothesis, nor speculations, systems, nor sects, will be admitted, any farther, than when supported by truth, just reasoning from morbid appearances, and actual success, or its reverse in practice. There are some hopes, if physicians direct their minds to those objects, more than following doubtful or ambiguous systems, such as have lately appeared, that the art will soon arrive at the utmost degree of perfection. Confine chemistry, that useful science, within its due bounds; reject all chimeras of novices in the art, examine all pretensions by those lights of truth, which the art amply possesses; set no store by the supposition that medicines of unknown efficacy, can, or ought, to supplant those from which we have long experienced the most salutary benefits. Select the best, reject the worst and unsuccessful modes of practice, however countenanced by those whose prejudices, or slender experience cannot justify their attempt at dangerous innovation. How many unsubstantial caprices, have, within these few years, been obtruded into the art, tried, and condemned; yet supported with a fury little short of insanity, whilst the rage lasted. Encourage practical and real improvements; but always consider the quarter, and probable capacity and experience, from whence they originate. Delusions may pervade the best intended minds; but, it is the office of experience and judgment,

to reflect, reason, analyse, form analogies, and not be led into error, through precipitancy, or a puerile delight in plausible, though ill conceived novelties of versatile projectors. Never desert that which has been experienced successful; for what may probably prove deceptive. Proceed always with caution, prudence, candour, and integrity. Fair reputation follows honourable conduct.

In this edition is delivered a pathology different from that of the Latin, to prepare the young student, and store the mind with that necessary knowledge, by which, it is presumed, he may proceed to practice. Some, and indeed, the greatest part, is taken from Gaubius, Caldanus, Plenck, and others, and it is admitted contrary to the opinion of some learned men, that the morbid state of the fluids, act first on the nervous system, then on the heart and arteries, and from thence to the remotest parts, producing increased morbid perturbations through a part, or the whole human body; this, however, will be more fully proved in the practical work which will follow the preparatory principles.

Whoever will take the trouble to examine all other productions on anatomy, physiology, and pathology, and compare them with the present, will be convinced, that this is better adapted, as a single book, for students, than most others. It is not intended to depreciate any learned works, for there are many excellent, and it is from several that the present offering to the learned, in part, has been selected, and delivered in a form different from all that have preceded, to facilitate medical studies. A greater excitement to industry cannot be conceived, nor better expressed, than by the great *Hippocrates*, ο βίος βραχύς, ἡ δὲ τέχνη μακρὴ, ὁ δὲ καιρὸς ὀξύς ἡ δὲ πειρὰ σφαλὲρ ἡ δὲ κρίσις χαλεπή.—“*Life is short, the art long, the occasions momentous, judgment difficult,*” &c. It will therefore be of the greatest importance to establish all useful truths as *early in life* as possible, and to abandon and suppress all useless inquiries, as deviations from the main points to be considered in practice. The different studies recommended in *Schola Medicinæ* having been fulfilled, long *experience* afterwards forms the GREAT physician, and he will be the GREATEST, who is convinced, through life, he has SOMETHING TO LEARN.

These important truths are most respectfully submitted to the profession in general, and to those in particular, who are expert anatomists, physiologists, and pathologists; but above all, to those, who with these sciences, have joined true theory, to a long experience and unprejudiced observation in practice. With such learned practitioners, the author has little to apprehend; they will glance at imperfections with a benevolent candour; they will generously consider the difficulty of the undertaking, and will be much more gratified, to find any thing to commend than censure—*errare est humanum*—to be perfect is impossible. As to the cavils of envy, or the deceptive misrepresentations of malevolence, or falsehood, forbearance, as usual, will be the only response. The consciousness of having faithfully endeavoured to serve society, elevates the mind above little professional jealousies, or the malicious rude attacks of miserable concealed illiberal-critics, who frequently write, for the sake of mischief, what they do not even themselves believe, and whose praise would be a real disgrace. The enjoyment of unlimited professional confidence, amongst all ranks, after a practice of near fifty years, first as a surgeon, and afterwards as a physician, in this great metropolis, has excited in the mind the most lively sense of gratitude; a gratitude! that no opposition will shake; nor, during the short remainder of life, will ever be effaced!

No. 21, SAVILLE-Row, May 1, 1803.

Dr. ROWLEY's other Latin and English Works, &c.

I. *Schola medicinæ universalis nova Historiam, anatomiam, physiologiam atque pathologiam specialem continens, cum 68 tabulis æneis auctore Gulielmo Rowley, M.D. of which the present work is an abridged translation. The Latin edition in two volumes, price 4l. 4s. 0d.*

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SHORT EXPLANATION, EXTRACTED FROM THE
RATIONAL PRACTICE OF PHYSIC.

As the modes of reasoning adopted by the author, in many parts of these works, may appear new, particularly to those who are under the influence of hypothetical systems, and not accustomed to reason logically, it may be necessary to give a short explanation of the manner in which the reasonings are conducted.

Mathematical, geometrical, mechanical, and many chemical hypotheses, formerly and lately in vogue for constructing the various and visionary theories in medicine, in a great measure, are excluded, and facts, originating from the evidence of the senses, from ocular demonstrations, are exhibited to explain the *causes* of diseases, and to search for adequate remedies to remove those causes.

First. The anatomical structure and physiology of the parts or functions, are explained in different treatises, by connected facts and reasonings, as far as were thought expedient.

Secondly. From the appearances *after death*, the impediments and morbid affections that had happened in life, are attempted to be ascertained by inductive reasonings.

Thirdly. Propositions from these sources of true intelligence are formed, in many instances, both theoretical and practical.

Fourthly. From considering the origin and magnitude of diseases, explained by the foregoing means, their stages, real and probable effects in the living human body, are all the prognostics discovered, and what benefits may be expected from the art of medicine in various diseases; by which facts and reflections, rational expectations are encouraged, and rash boastings and irrational promises discountenanced; medicine, thus conceived, and practised, strictly adheres to reason and truth.

Fifthly. By concentrating all the foregoing facts, and considering, from long and past experience, the force, power, and probable consequences of a disease, with its stages; whether it be acute or chronic; the age, sex, strength, and constitution of the individual affected, are ascertained the powers and mode necessary for the removal of the causes of disease.

Sixthly. In the election of remedies, those that are *important* are adopted and prescribed, where they can be exhibited with safety and rationality to the patient, and *palliative* methods of treatment are never proposed, but in cases wherein *radical cures* cannot be, with any hope of success attempted.

Among the great variety of prescriptions for the *robust* and *florid*, *pale*, and *debilitated*, *irritable* or more *torpid*, &c. there are few which the author's own experience has not proved safe and efficacious in the cases, and under the circumstances they are recommended.* It has always been considered the duty of a physician, to act on clear principles and with energy, or *not act*, and to be always more solicitous to attack a disease by efficacious remedies, than to please the patient's taste at the hazard of life, or the injury of the constitution. The ordering *trifling saline* and *sweetened draughts*, when disorders demand the most decided and powerful practice, is a disgrace to the art: *sed est modus in rebus*.

The mind of a physician should be always directed, and ardently animated, to attack the causes of disease, and be elevated superior to the difficulty medicine has to encounter. Timidity, or rashness, are equally dangerous in the treatment of many morbid affections: the former frequently loses the fairest opportunities of saving life; the latter, is the companion of ignorance and empiricism.

* There is certainly a great difference in the constitutions of different patients, some abound with *serum*, others with a superabundance of *red particles* in the blood, which form the *pale* and *florid*; the fat superabound with oil, the lean not. Will any confined system or *sed* be adequate to this diversity?

THE
HISTORY OF MEDICINE;

TRANSLATED FROM THE
LATIN EDITION OF SCHOLA MEDICINÆ.

THE origin of all things is obscure, and involved in the dark clouds of fabulous history. Credulous antiquity honoured the first inventors of the Arts and Sciences, by placing them amongst the gods; yet the Pagans themselves cannot deny that they were men. The invention of many things, as well as Medicine, began with the first inhabitants of the world; but this, from its object—the preservation of life—became more useful to mankind than any other. Every consecration arose from the utility or benefits that eminent men rendered to society: for it will be difficult to find any personage, who has attained to such dignity, without having done some essential services.

Experience gave rise to Medicine; opportunity, or the necessity of trial, gave origin to experience. Custom increased the stock of knowledge; for, in ancient times, the sick were exposed in public roads, to enquire of passengers, whether they had ever laboured under the same disease, and by what means they were cured.

Another circumstance which assisted their acquisition of medical skill, was the custom of patients writing down the method by which they had been relieved, and giving it to their priests to be deposited in the temples.

That animal body, called Man, formed with the greatest ingenuity, increases, from a small beginning, by nourishment, assimilated, or prepared by various organs, and distributed to every part, by which it is preserved, and frequently conducted to a very advanced age, ultimately terminating in natural death. In a state of healthy existence, it is capable of resisting various injuries from external causes, and even of overcoming their effects.

The increase and preservation of the body are effected by its own peculiar actions: for example—by these actions the nourishment or food is converted into chyle and blood, which, in its motion through different vessels, is so altered, as to restore those parts that were destroyed, or removed by the ordinary functions of life; an increased, or diminished motion, frequently disturbs these actions, renders the body weak, and unable to resist their effects: hence arise infirmities, and diseases; premature death, or a cessation of the vital functions, from the debility of protracted old age.

A continuation of bodily strength depends on the equality of those actions, which are mostly regulated by moderate exercise, government of the passions, and plain diet: by these means, a strength of body is acquired, capable of making greater resistance against affecting causes; but increased motion of body or mind, various excesses, and a luxurious idle life accelerate the approaches of diseases and death.

What has been already said of the general changes of life, has been dictated by experience, and will be more particularly elucidated in its proper place; it will, however, explain why the first inhabitants of the earth, and those of the present day, who practise rustic, or simple habits of life, are less subject to indisposition than those who depart from the best precepts of rational diet, and thus voluntarily rather destroy than preserve their health.

But, various injuries of life—as change of atmosphere, or seasons; abstinence, or excess; external violence, and

many other causes—sometimes inevitable—occasion, in proportion to their effects, different degrees of derangement in the functions of life: men, therefore, were always liable to pain, were often debilitated, injured, or destroyed by accidental causes, before the vital powers were incapable of performing their functions from old age; hence, the causes of disease and death become more evident.

It was also observed, that diseases were frequently removed by the natural powers of the body only, or by a spontaneous increase of action, the cause of disease was expelled through various parts of the body: thus fevers, hæmorrhage, or effusion of blood, ulcers, abscess, and convulsions—real causes of disease in themselves, became the means of restoring health, and proved the extent of corporeal power in resisting, or removing disease.

In very early times, many remedies were known: some by natural reflection; others by accidental circumstances; others again became known by their effects on the brute creation. The tongue and mouth of the sick being dry, required water to quench thirst; water or fluid, collected under the skin, was removed by an incision; blood was seen to flow from a ruptured vein: the purgative influence of hellebore was discovered, by its effects, on a goat.

Hence it appears, that a knowledge of the cause and symptoms of diseases, the powers of life in repelling, or removing them, and the application of various remedies had been observed in all ages, even amongst the most uncultivated race of mankind: and, consequently, the real origin of Medicine was derived from such experience.

This natural physic, discovered and established by experience alone, was yet very imperfect; the effects of salutiferous and deleterious simples were only known, and chiefly possessed by the lower order of people, greatly resembling our present illiterate herb-doctors; yet it must be confessed, that some of them, from having devoted more attention to the subject, increased their knowledge: the sick were therefore judiciously exposed in the public roads, to receive all possible benefit from the experience of passengers.

Since it has been proved that natural Medicine was coeval with the existence of man, it will next follow to shew where it was first cultivated with particular attention, where reduced into a science, its inventor, the earliest physicians, and the time it began to be practised by private men. It may be distinguished into three periods—Obscure, Fabulous, and Historical.

In the first period, from the creation of the world to the flood, although we know it existed, we have scarcely any tradition of its effects, except what may be collected from Sacred History.

In the second period, every thing is obscured by allegory and fable, often with little regard to truth.

The third begins from the time when the actions of men were handed down to posterity with greater accuracy and perspicuity.

It is well known, that amongst the early inhabitants of the world, it was customary to represent actions by humorous relations, hyperbolic and hieroglyphic figures, concealing naked truth under the effusions of fancy.—Cicero, *de Natura Deor.* Lib. II. remarks, “That it was customary to enroll those amongst their gods, who had conferred important benefits on society.”

An inventor of the Science of Physic is to be sought after amongst those who lived soon after the general deluge; for, prior to that epoch, it does not seem that Medicine had arrived to such a degree of excellence, as to be enumerated with the Arts: for in the sacred codicil of antediluvian inventions, several Sciences are particularly noticed—as Agriculture, Music, Metallurgy, Smithery, &c. but not a syllable of Medicine.

But if we particularly peruse fabulous history, as far as relates to Physic, we shall find Horus, king of the Assyrians, son of Isis and Osiris, celebrated as first inventor of Medicine: some believe him to have been the Apollo of the Greeks, and Phœbus of the Latins, according to Diodorus Siculus, who observes, “By Horus, is meant Apollo, who was taught the art of curing, and prophecy by his mother Isis, and has deserved well of mankind by his oracles and cures.”

The following verses of Ovid, in which Apollo is made to speak for himself, corroborate this opinion:

“*Inventum medicina meum est, opiferaque per orbem*

“*Dicor, et herbarum subjecta potentia nobis.*”

But many doubt whether Horus and Apollo were the same.—Le Clerc says, that Apollo never existed, but was merely a fictitious character of the Poets. There seems to be some probability for such conjecture. Hyginus observes, that Apollo only discovered diseases of the eyes: and this is even doubtful; for if Diodorus Siculus be correct, in saying, that Horus

was

was instructed in the Medical Art by his mother Isis, it must be evident that he was not the inventor; nor could Apollo be entitled to that honour, if he were the same person as Horus.

But Bacchus, king of the Assyrians, Lybians, and Indians, was esteemed by his people, as inventor of medicine. The Egyptians attributed the invention to Hermes, who was the Mercury of the Romans, the Grecian monuments testify, that the same honour was given to Æsculapius. We therefore find several reputed inventors of Medicine.

Amidst such difference of opinion, all the ancients agree in one point, that some Deity was its inventor, which is also confirmed by Hippocrates, *Libro de Vet. Med.* and by Cicero, in *Tusc. L. III.* "*Deorum immortalium inventioni consecrata est ars medica.*"

The Sacred History agrees with this sentiment, "Every cure is from GOD."—Again, "The Most High created the medicines of the earth." But we shall not dispute about that: every thing we enjoy are the gifts of GOD; none but the impious ever doubted it; none but fools have dared to deny it. It is our business to enquire, who was the first person that became so eminent in the art as to deserve the reputation of being the inventor.

It is very evident, that nothing certain can be decided in such doubtful affairs: and I cannot forbear smiling at critics, who lose their time and trouble in such endless pursuits; for the whole is absurdity, and must strike every reflecting mind, that Medicine was invented by no individual, nor reduced into an art by the labour of one person only, but practised by every one occasionally, according to necessity, by various experiments, in different nations; afterwards, the number of remedies and observations being increased by a variety of cases, the general knowledge got into the hands of a few, who devoted their time to the removal of diseases, and studied Physic as a profession. Whoever these were, they must have been the first Physicians, although their field of science was not extensive: but, however little they knew of Medicine, possessing more information than the generality of mankind, they were highly respected; one of them, more eminent than the rest, who had, perhaps, cured a greater number of patients, or the principal Physician of a particular nation, was esteemed inventor of the art, although, in fact, this was not the case, and the profession very imperfect, and the title conferred more honorary than just. Hence we find, that each nation had its inventor of Medicine, who was, by skill and success, superior to his cotemporaries.—I am of opinion, that the various histories may be adjusted, and the useless disputes of critics easily conciliated. Baglivi speaks very much to the purpose, in saying, "Necessity discovered Medicine; experience perfected it, which, in the early ages, was inconsistent and uncultivated: but in time, by the daily accession of new observations corroborating each other, and particularly by the influence and government of reason, it has become a learned and liberal art."—Lib. I. Cap. II. Sec. I.

We know, on the authority of Strabo and Herodotus, that there was an ancient custom amongst the Assyrians, Babylonians, Chaldeans, &c. of exposing their sick in the public roads and forum, to request medical assistance from passers-by. Strabo, speaking of the Assyrians, observes, "It was an established custom for them to expose the sick in the public ways, to enquire of passers-by whether they knew any remedy for such disease; for no person, possessing information on the subject, was so illiberal as to be restrained from giving it with pleasure." To effect this purpose with greater certainty, it was decreed by public law, that no person was permitted to pass the sick, without being interrogated, or mentioning a remedy, if he knew one: which is also well described by Herodotus, in the following passage, "There was a wise law in force amongst the Babylonians, to carry their sick into the forum, as they were totally without Physicians: those who approached the sick, consulted together, whether they had personally laboured under the same complaint, or remembered to have seen others in that situation, and agreed to attempt, what then had been done to restore health; nor was it usual to pass by in silence, if they had even nothing but enquiries to make about the disease."

From these documents, we must again observe, that Physic was cultivated, during the earliest ages of antiquity, in a vague indeterminate manner, by any person promiscuously, according to circumstances, before the establishment of Physicians. Medicine, therefore, was not invented by *one man alone*; but the foundation of this art was laid by the collateral experiments and observations of many.

The Chaldeans were the ancient Philosophers of the Assyrians, on the authority of Strabo, who says, "There was an establishment of learned natives formed at Babylon, who discoursed chiefly on Philosophy, and were called Chaldei." The most eminent of these were called Magi, a name then considered very honourable, and only appropriated to learned men. It is not perfectly clear, whether they studied Medicine in particular; or, as a part of Philosophy, some assert, but without certain evidence, that Zoroaster, king of the Bactriani, had a knowledge of Medicine. The same king is said to be the

the first who discovered the art of magic; and to have observed, with greater accuracy, planetary motion, and formation of the world. In later times, physic and magic were practised together.

The knowledge of physic was thence carried to Egypt, and cultivated more than in other countries, and by them attributed to the invention of Hermes Trismegistus, whom the Latins called Mercury, and named after him the herb mercurialis. The same Hermes is said to have instructed Osiris, king of Egypt, and his wife and sister Isis, in Medicine, as well as other arts: for in very ancient inscriptions, it appears, that Hermes was the preceptor, or, at least, the adviser of Isis; and that Osiris and Isis were esteemed amongst the number of their gods, for the important benefits bestowed on mankind; particularly, on account of the abundance of corn, and medical assistance. Diodorus Siculus confirms this, by saying, that "Isis invented many remedies, according to the Egyptians, was most skilful in the Science of Medicine, and therefore invented many ingenious things; on which account, being carried to immortality, takes a principal delight in practising the art." It is also said, that "Many persons were, by her, restored to health, after having been declared incurable by Physicians, from the difficulty of their complaints; that others, blind and lame, on application to this goddess Isis, were reinstated in the possession of their former good health."

We therefore find compositions of very ancient remedies, bearing the name of Isis, which critics suspect were only so named, that they might be in greater esteem, and public confidence.—See *Le Clerc. Histoire de Medicine.*

Clemens Alexandrinus says, "That all the knowledge of Egypt was written by Hermes, in forty-two books: the last six, relating to Medicine; in which the structure of the human body, generally—the eyes in particular; various instruments for the operations of surgery; many diseases; and feminine complaints, were attentively described." But critics maintain, that these books on Medicine are spurious, and the produce of a later age, honoured with the title of Hermes, to become more popular; or that they were the works of a more modern Hermes, which is more probable, as Cicero *de Nat. Deor.* observes, "That there had been five different Hermes."

Whichever of these was the person, it is clear, that there were Physicians in Egypt in very early times; and that the Egyptians first reduced physic into an art, and exercised it as a profession: for, independant of what Strabo mentions about the custom of exposing the sick, proofs can be brought from Sacred History, that Joseph the Israelite, who lived four hundred years before Moses, ordered the body of his father Jacob to be embalmed by his Physicians. "*Præcepitque servis suis medicis, ut aromatibus condirent patrem.*"—Genes. Cap. L. Ver. 2.

Hence it is decidedly evident, that it was usual to preserve the body with balsams; and that they had a knowledge of medicines that resisted putridity. Many ancient Egyptian mummies have reached our time.

Moses therefore cannot have been esteemed Hermes of the Egyptians, as Artapanus insinuates, on the authority of Eusebius, since Hermes Trismegistus was called inventor of the art; and there were Physicians in practice four hundred years before Moses existed.

The Sacred Codicil proves, that Moses himself possessed all the science and knowledge of Egypt, which is also seen by his description of a leprous person: he was certainly acquainted with Chemistry, if it can be credited, that he burnt the golden calf on pot-ashes, which secret was not revived till the time of *Stahl*, who discovered it by *hepar sulphuris*.

But more ancient documents can be produced of the Egyptians having cultivated physic: it appears, on the testimonies of *Heliodorus* and *Diogenes Laertius*, that their priests were not only skilled in the practice of Medicine, but also had their knowledge described on monuments, to derive the greatest possible advantage from repeated experience.—See *Horapoll. Hieroglyph. Lib. I. Cap. LXXXVIII.*

It is also clear, that their clergy was respectable and numerous, since a third part of Egypt was given to them for the support and exercise of their religion. *Diodorus Siculus* evinces, that this dignity went by succession to posterity. *Herodotus* clearly explains, that there were not only many physicians in Egypt, but also that each had a particular department: and says, "The profession of physic is so diffused, that there are physicians for each peculiar disease; nor will they engage with many at the same time. Every thing abounds in Medicine. Some undertake diseases of the eyes; others attend to complaints of the head; others again confine their practice to the teeth; some cure affections of the bowels, whilst others devote their time to the management of obscure complaints."

Mailletti, formerly French Consul in Egypt.—Vide, *Lettres Interessantes Pour la Medicine*, says, "The same custom was then prevalent."

But

But the ancient Egyptians used to practice medicine gratis, as they were remunerated by a public fund, and therefore had no occasion for private gratuity. They followed the rules prescribed by Hermes with such exactness, that it was unlawful to deviate from them. If the patient could not be cured by those methods, the physicians were not blamed; but if they transgressed the directions of Hermes, they forfeited their life: for the legislature was of opinion, that the system, established by long observation and practice, confirmed by the best professors, was not likely to be improved by a few individuals.* The following laws were therefore enacted, which we find thus described by Herodotus and Diodorus Siculus:—That no person should transgress the rules to be observed in the disorder he had undertaken to remove, nor trouble himself with other complaints, but adhere to his own particular sphere. That no physician should practice physic, otherwise than as described in Hermes's book, without risk of punishment if he did not succeed. And, finally, that the patient should not be purged before the fourth day, for fear of disturbing the humours.—This Aristotle mentions; but does not approve of it. Diodorus observes, that all their medicine consisted in abstinence, vomits and clysters; which light practice gained the praises of Socrates, who says, “The clergy, possessing such great advantages, invented physic to assist the body; and not such as consisted of dangerous medicines, but what could be taken with as much safety as our daily food, and was productive of such benefit that none can deny; but the Egyptians enjoyed good health, and lived to an advanced age.”—In *Encom. Busirid.*

The manner of embalming, or preserving their dead, is worth mentioning; for its effects are to be seen by the Egyptian mummies now in existence, with sacred characters, gilt and painted, two thousand years old.

There was a particular kind of men attached to their religious colleges, who had the management of this business. The principal of them, and who directed the others, and made an agreement with the relations of the deceased about the expenditure, was called *Scriba*; he also pointed out the part of the body to be opened. After this, another, named *Paraschista Incisor Abdominis*, cut open the abdomen with an Æthiopian stone, and immediately retired. The *Pollinctores* then came and finished; one passing his hand through the incision already made into the abdomen, took out the viscera, except the heart and kidneys. Another washed the cavity of the body with palm wine and aromatics. It was then macerated with Egyptian nitre for thirty, some say fifty; and, according to Herodotus, seventy days: afterwards, smeared with pitch from the cedar-tree. The *Pollinctores* now preserved the body with *myrrh*, *cinnamon*, and other aromatics, in such a manner, that the limbs retained their former motions, the eye brows, hair of the eye lids, and body in general, remain unchanged: it was then wrapped in cloths, with a particular kind of gum, which was also used as glue, or cement, and conveyed to its relatives.

Embalming was not always practised alike: there were three methods—one very expensive; another more moderate; and a third cheap. Diodorus says, the first used to cost a talent of silver: the abdomen was laid open, as above described; and the brain drawn out, by hooks, through the nostrils. The second cost twenty minæ, in which they did not even open the abdomen. The third cost very little, according to Herodotus, who says, “The third method of embalming, by which those of small property are preserved, consists in cleansing the body by ablutions, and drying it, for seventy days, with salt.”

There seems, likewise, to have been another method of embalming, if we may credit the assertions of Mr. Green, who has paid particular attention to the subject: and declares, that when he saw a mummy, in which, not only the soft parts, but the very bones were discoloured, and almost black, from the balsam having penetrated so intimately; he was induced to believe, that the Egyptians boiled the bodies in some balsam, until all the aqueous particles were exhaled, and the oily, gummy particles of the balsam supplied their place, by which it could be more permanently preserved.—See *Transactions of the Royal Society of London*: and a *Commentary of the learned Rouelle Memoires de l'Academie de Paris*, 1750.

Many conclude, from these circumstances, that Anatomy was well understood by the Egyptians, at that time. However, Schultz, in *Hist. Med.* clearly refutes this opinion: for if they used to cut into the body, for the sake of embalming it, they could not, by that action, acquire any knowledge of its structure, since every thing was done with confusion, or rapidity; and the person, after making the incision, was obliged to retire immediately, or be stoned.

Nor

* Though this, too much, confined the art; yet it prevented daring inexperienced adventurers from promulgating visionary conceits, at the risk of destroying society, as is too often the case, at present.

Nor is the authority of Pliny, in this point, of any importance: who says, that the kings of Egypt opened the bodies of the dead themselves, to discover the cause of disease; for that happened in far later times—in the reigns of the immortal Ptolemys, who certainly encouraged the study and industry of Physicians, by large premiums, and procured bodies for them: but, on the other hand it appears, that the Egyptians were very little acquainted with anatomical facts, from their whimsical suppositions, that the nerve of the ring-finger went to the heart; and that the heart gradually continued to increase until the fiftieth year; and, afterwards, to decrease, annually, in the same proportion—which fancies are handed down as real dogmata of the Egyptians. Besides, as Diog. Laertius proves—They taught, that the bodies of living animals consisted of four elements: and Seneca says, they used to divide each element into male and female. They also believed in the influence of Planets upon the human body; as well as good and evil devils, who were to be worshipped: having the power of restoring health, and inflicting disease, they were to be appeased by verses, (incantations) that all disease arose from them; and that peculiar good and evil spirits (Genii) presided over each particular part.

As to medical matters, the Egyptians possessed, besides other milder remedies, *Nepenthes*, or Medicine against Anger and Sadness, so much celebrated by Homer: to which the Poet attributes such powers, that whoever drank some of it, mixed with wine, could not experience Sorrow through the whole day—not even if his father or mother were to die; or if he saw a brother, or any intimate esteemed friend, stabbed in his presence.

The Poet says, that Helen took the *Nepenthes*, in Egypt, from Polydamna, wife of Thon. Diodorus Siculus says, that in his time, the women at Thebes, in Egypt, used the same medicine, which was probably an opiate.

We should likewise mention the *Æsculapius*, or *Asclepius* of the Egyptians, who was the scholar, (discipulus) some say, the relation of *Hermes*; for he was received into the number of gods, and worshipped every where with divine honours. This person must not be mistaken for the *Æsculapius* of the Greeks, who is of more modern date, and was present at the expedition of the Argonauts; but some doubt, whether he was entirely a fictitious person, or only the *Æsculapius* of the Egyptians, changed: and although Cícero adduces three separate *Æsculapii*; the first of which was son of *Apollo*, and invented surgical instruments and bandages; another, who was brother of *Mercury*, and killed by a flash of lightning; and the third, was the first that gave purgatives, and drew out the teeth: yet M. Le Clerc and Schultz believe there was only one Phœnician, or Egyptian *Æsculapius*.—However, I am more willing to believe the authority of Cicero in this respect.

But, above all, the following are most proper to be considered, and worthy our notice, in establishing a knowledge of ancient Egyptian Medicine. *Æsculapius*, of the Egyptians, and the other fathers of Physic, are said to have lived soon after the flood.

The expedition of Argonauts was not undertaken till eleven hundred years afterwards; and this was about fifty years before the siege of *Troy*. During this long space of time, there is nothing in the Egyptian Annals of Medicine, worth mentioning: but the History of Grecian Medicine begins with the Government of the Argivi; and the Greeks seem to have received their knowledge of this, as well as many other sciences, from the Egyptians, after a mutual intercourse had been established between them.

Melampus, an Argive, son of Amythao and Aglaia, seems to have been the first Physician amongst the Greeks; for, although Celsus said that *Æsculapius* was celebrated in Greece as the most ancient Author on Medicine, yet, if Chronology be true, Melampus must have been more ancient than *Æsculapius*, if the latter were present in the expedition of the Argonauts; but Melampus, the former, is said to have lived one hundred and fifty years prior to that period: but, if both be true, he must have been a very old man, and alive at the time of the Argonauts, to have been able to take care of Iphiclus, his companion, in the Argonautic expedition.

This Melampus was a good Poet, a Shepherd, Physician, and Prophet: after observing that his goats were always purged, after eating hellebore, discovered its purgative effects, and using it as a remedy for men, he cured the insane daughters of Proetus with it, and called it by his own name, which has remained from that time, and is now known by the name *Melampodium*.

He was well rewarded for his ingenuity, by acquiring one of the daughters as a wife, with a third part of the kingdom for himself; and another for his brother BIAN TI, with a similar allotment of territory.

He seems to have been the first who gave purgatives; on which account, Servius says, he was called Cathartes, or Purger.

Purger. He was also the first who gave a mineral medicine; and persuaded Iphiclus, who was without issue, (improvis) to take rust of iron.

We learn by Pausanias, that, after death, temples were erected to his memory, sacrifices offered; and, in fact, that he was worshipped by some as a deity. He left a son, who was heir to his science, but was not of equal celebrity; his name was Thyodainas.

Chiron Centaurus now follows, who, according to Xenophon, taught Æsculapius Medicine; and instituted the practice of hunting amongst other ancient heroes of Greece.

He is not only celebrated for a knowledge of Medicine, but also for its application to animals. He is said, by Pliny, to have written on Botany, and the *Materia Medica*. There is a plant, which bears his name to this day, (Centuary) which formerly was also called Chironium. It appears, likewise, that he cured wounds and ulcers; because ulcers, difficult of cure, were called—proverbially, *Chironia*, as if the skill of Chiron, had been necessary to heal them. We also find by Virgil's *Georg.* Lib. 3. v. 549. that both Melampus and Chiron were in great esteem; mentioning the plague, and wishing to shew the insufficient power of medicine, he speaks of these two as excellent:

cessere magistri

Phyllirides Chiron, Amythaoniusque Melampus.

Æsculapius, son of Apollo and Coronis, was his pupil, and made such progress in Medicine, that he was deservedly reckoned inventor of the art amongst the Greeks. He is reported to have travelled round the world, and exercised his talents on the sick; but is most celebrated from having been one of the heroes of the Argonautic expedition.

Plato and Suidas relate, that he was so liberal, that he re-called the poor from the infernal regions, and was planet-struck, or died of gangrene of the lungs, which gave rise to the opinion that he was killed by lightning; as the same word *sideratio* has both significations amongst the ancients. On account of the many and eminent services to mankind, he was deservedly numbered amongst the gods; not only by the Greeks, but also by the Romans; and afterwards by other nations in a great number of temples erected to his memory. Schulz has given an index of them, taken from Pausanias.

He left two sons by his wife Epio; namely, Podilarius and Machaon, who followed Agamamnon to the Trojan war, rendering very great assistance in the campaigns. Homer observes, that they did not practice in the plague, nor other camp diseases, but confined their attention to wounds only, by operations and applications; from which it appears, that no other part of Medicine was then practised, and consequently their department, as Celsus justly remarks, was first cultivated. It is also evident, from Celsus's account, that Medicine was, at that time, simple, yet sufficient and good, on account of the manners of the age, which were neither corrupted by sloth nor luxury. War always demanded surgery.

Seneca likewise mentions the same thing, *Epist.* XCV.—“*Medicina quondam paucarum fuit scientia herbarum, quibus sisteretur fluens sanguis, vulnera coirent paullatim, deinde in hanc pervenit tam multiplicem varietatem. Nunc est mirum, tunc illam minus habuisse negotii, firmis adhuc corporibus et facili cibo, nec per artem voluptatemque corrupto.*”

These are the early advances of Grecian Medicine—inconsiderable indeed; yet promoted, in no nation more than amongst the Greeks, particularly in the family of Æsculapius, till the time of Hippocrates at Cos, by whom Medicine was first reduced into the form of a Science.

Crotona was a town in Italy, to which Pythagoras went, after his return from Egypt, not being willing to reside at Samos, his own country, which was then under the power of a tyrant. Pythagoras here instituted a most renowned school, celebrated also, according to Celsus, for the study of Medicine. Democedes, son of a Physician, and himself a most eminent practiser of the art, came from this school, (Crotona) the fame of which became so great, that they were reckoned, in those times, the best Physicians, who studied there.

Democedes could not support the anger and moroseness of his father Polycrates; therefore, leaving Crotona, he went to Ægina, where he staid a year, and surpassed the most celebrated Physicians of that place, although he had no instruments for the exercise of his art; on which account the inhabitants of Ægina, next year, gave him a talent; and, the third year, the Athenians presented him with a hundred minæ: but Polycrates, the tyrant of Samos, the fourth year, sent him two talents; whence it appears, that in those ages, there were men supported by public salaries, who flourished in Medicine. Democedes went to Samos, on those conditions, to have the care of Polycrates, who was sent for soon after by Oræta, one

of

of the king of Persia's principal lieutenants: Democedes, and several other Greeks, who were with Polycrates, were kept as prisoners. Soon afterwards, Orieta, being suspected, and assassinated by the Persians in his own family, and all about him, were carried into Persia, Democedes was taken amongst the slaves, and concealed his medical knowledge as much as possible.

It happened that Darius, the king, when hunting, suddenly leaped from his horse, and luxated his foot. He continued in excessive pain for seven days: the Egyptian Physicians were called, and could do no good; their applications were entirely fruitless. The king was then informed, that he had, amongst the slaves, one Democedes, who understood those affairs. Darius ordered him to be sent for immediately, and exercise his skill: but he was tenacious of Grecian liberty, he dissembled his knowledge: however, being ill-treated and flogged, he, at last, confessed the truth. He prepared an emollient fomentation to relax the tension, and resolve the inflammation, and soon cured the king.

From this occurrence, the former esteem of Egyptian Physicians diminished, and that of the Crotonians was increased. In fact, the king was so much enraged at the ignorance and perverse practise of the others, that he ordered all of them, except Democedes, to be crucified; but Democedes interceded, and procured a reprieve. He also cured Atossa, a queen of Darius, of a bad, wide-spreading ulcer of the breast, supposed to be cancerous, when she was in imminent danger. Having thus gained the greatest favour and protection of the Persian court, he thought of nothing but returning to his country, and permission was, at last, granted to him. He was not of the family of the Æsclepiades, though a Greek, and lived an hundred years before Hippocrates.

These are the principal people from the Crotonian school, in Physic; the Philosophers were expelled from Crotona, and another University opened at Agrigentum, of which the most celebrated Physicians were Alcmaeon, the most ancient of Grecian Anatomists. Empedocles, who restored a woman that had been dead some days; and Acron, the prince of Empirics, to whom Empedocles was an enemy.

In Lybia, a province of Asia, there was a city, called Cyrene, formerly esteemed for the education of several Philosophers—as Aristippus, a disciple of Socrates, and founder of the Cyrencian school; Eratosthenes, Callimachus, and Carneades. Nothing particular is said of the Physicians of this place, except that they were next in estimation to the Crotonians.

Galen tells us, that there was a respectable school instituted at Cnido, that endeavoured to rival Cos, but in vain: and that Hippocrates was not ashamed of receiving certain things (maxims) from the Cnidians; though, on the other hand, he reproaches them with neglecting Semiotica, and a deficiency of remedies; and that their medicines were too drastic: and also, that they said little worth notice with regard to diet: Euryphon, Author of *Sententiæ Cnidie*; and Ctesias, a relation of Hippocrates, were educated in this school of Cnido. He was afterwards Physician at the court of Artaxerxes, king of Persia; and a respectable Historical Writer, part of whose writings still remain.

The Rhodian school was the most ancient, but soon sunk into disrepute; and even in the time of Hippocrates, according to Galen, was lost in oblivion, at a time when Cos was the principal seat of the Æsclepiades, and possessed the highest esteem; for it collected and concentrated all prior knowledge.

At Epidaurus, there was not only a Medical School, but also a sacred temple of Æsculapius, very celebrated for exposure of the sick, for oracles, and the cure of diseases. Since this was esteemed the place where the deity was born, we need not wonder at its celebrity, and the strict observance and adoration paid to it, until the image or statue was removed to Rome, during the raging of a plague at Epidaurus: it was retained there, and a temple erected in the island of the Tyber.—See *Livy*, Epist. XI. and *Val. Max.* Lib. I. Cap. VIII.

We see that Medicine, as well as other Arts, had a very imperfect origin: and that Egyptian and Grecian Physic, in those ages, was very simple. That period may be looked upon as the infancy of the art: but pure necessity induced men to attend to each part particularly; to distinguish wholesome things from such as were unwholesome; to observe what could be useful for the body. But since they neither knew the power of remedies, and nature of diseases *à priori*, they were obliged to learn many things by chance, natural instinct, or unforeseen accidents.

An event is called chance which happens suddenly, and cannot be accounted for by any known cause—as when the son of Croesus, born dumb, on seeing an armed soldier rushing at his father, suddenly found his speech, and called out—*O homo! ne patrem occidas*. Such fortuitous occurrences often happen in diseases with advantage to the sick. Thus we read of an epilepsy, a most formidable disease, being accidentally cured by wounds and burns of the head. An history of this kind is related

related by *Marcellus Donatus*, Lib. XI. Cap. IV. of a noble Gaul, labouring under epilepsy, who was travelling, went to Italy to consult the most eminent Physicians, but was robbed on the journey, and, amongst other injuries, received a dreadful wound on the forehead, with considerable loss of the bone: after remaining a long time under cure for this wound, which was at last healed, he was also relieved from the epilepsy, which usually attacked him every month before. A girl, troubled with epileptic fits, fell into the fire, and burnt her face and forehead in a most terrible manner: a considerable discharge of pus and sanies flowed from the wound, and she was free from her complaint, whilst it continued; but when the discharge ceased, her complaint (epilepsy) returned.—Willis's *Patholog. Cerebri*. Cap. III.

Such accidents proving advantageous to persons afflicted with these complaints, induced Physicians to try similar remedies; therefore we find incisions on the head, canterizing the scalp down to the external table of the cranium, scarifications and setons ordered for these maladies.

A raving madman jumps from his bed, and falling on the floor, strikes his nose violently, a profuse hemorrhage from the nostrils follows, and he is cured. This is a mere accident; but must convince every one, who is not even bred to Physic, that an effusion of blood, from the nose, is salutary in this disease. Hence, ancient Physicians, when there was no effusion, naturally endeavoured to produce it artificially, by irritating the nostrils with sharp things, to relieve their patients.

Cases are recorded of dropsical people being cured by an accidental bursting of the navel, or the skin broken by an external bruise, by which apertures, all the water escaped, the distended parts collapsed, and gradually recovered their former tone. These accidents taught Physicians to relieve their hydropic patients, by making an artificial opening, called tapping.

After a suppuration of the lungs, with adhesion of the pleura, matter penetrated through the ribs, muscles, and skin, spontaneously, which taught Physicians to imitate this action; and endeavour to cure empyema, by *paracentesis thoracis*, or perforating the integuments, and intercostal muscles, with a sharp instrument.

By chance, men found that the most formidable and obstinate diseases—as palsy, gout, melancholia, and mania, were sometimes completely removed by violent affections of the mind, and were judiciously induced to try similar means in these cases.

Chance discovered the Antiseptic virtues of Scordium; for those dead bodies, on the field of battle, which were near Scordium, were found to be longer in becoming putrid.

We shall not, however, easily attain our object in Physic, if we follow every casual event as a general rule.

Natural instinct was another source of medical practice, which may be called a spontaneous mental desire, or corporeal action; for, on observing the effects which followed, both salutary and pernicious, in repeated instances, men were taught what to follow, and what to avoid: thus it was discovered, that cold water was prejudicial in inflammatory fevers, but frequently of service in the *febris ardens*, or

An unexpected event, which is an effect quite contrary to what was expected—as vomiting being produced by a purgative medicine, and increase of pain, instead of its alleviation, being occasioned by an opiate, &c. This may arise from idiosyncrasia, or individual peculiarity of constitution, from error of the Physician, in mistaking the diagnosis of the disease, or improper selection of remedies: nor are such errors unfrequent at present, whilst men obstinately adhere to pre-conceived opinions, without following the dictates of experience and science.

It is much to be wished, that Physicians, in general, would copy the example of Hippocrates and Sydenham, candidly confess their errors, and relate the unexpected effects of their remedies: this would apprise practitioners of certain dangers, and teach them to profit by the mistakes of others; but, instead of that, they often split on the same rock, and transmit errors from age to age.

The natural instinct observable in brute animals, may also be enumerated as contributing towards a knowledge of Medicine. Melampus discovered the powers of hellebore from its effect on goats: thus also we learn the resolvent virtues of grass in visceral obstructions, and biliary calculi, with which animals are afflicted, after being fed, in the winter, on hay in stables; but when permitted, in spring, to graze in meadows, their viscera are found healthy and sound.

Thus, also, was a medicine, useful in phthisis, lately discovered, and kept a secret by Daniel Langhans, a Swiss Physician, which, he says, was found out from sheep. Pliny makes a very pertinent remark on this subject: "*Pudendumque rursus,*

"*omnia animali, quæ sint salutaria ipsis nosse, præter hominem.*" And if we give credit to this Author, the use of bleeding and clysters was also learned from animals.—Lib. VIII. Cap. XXVI. he says, "*Hippopotamus in quiddam medendi parte etiam magister exstitit. Assidua namque satietate obesus cuit in littus recentes arundinum cæsuras speculatus: atque ibi acutissimam videt stirpem, imprimens corpus, venam quandam in crure vulnerat atque ita profusio sanguinis, morbidum alias corpus exonerat et plagam limo rursus obducit.*" And in Cap. XXVII. speaking of the same animal teaching men the use of clysters, "*Simile quiddam et volucris in Egypto monstravit, quæ vocatur ibis: rostri aduncitate per eam partem se perlucens, qua reddi ciborum onera maximè salubre est.*"

But if these observations of Pliny are not correct, the examples, related above, are sufficient; and it is very certain, that Physicians can take some lessons, at this time, about the effects of particular remedies—from Shepherds of the Alps, whose employment gives them a more accurate knowledge of the nature and propensities of particular animals.

Since empirics, in former times, as well as the present, practised medicine, by experience only, or simple observation of effects, without any other basis for their guide—than chance, natural instinct, or unexpected events—which give rise to the name; for *empiria* signifies experience, void of all reasoning, or a simple observation of facts, without a knowledge of causes. This, in fact, we all admit, lays the foundation of Medicine; but is not alone sufficient to make a good Physician, since, in most cases, a knowledge of causes and reasoning are required, in dubious cases, to form a proper distinction.

The recollection of experiments, fortuitous occurrences, and unexpected events, taught men what was salutary, or unwholesome, and under what conditions it was advantageous, or mischievous; so that by mere observation, they could be given with greater certainty of success.

Notice has been taken already of the manner of exposing the sick in the *forum* and public roads, amongst the ancient Assyrians and Egyptians; but, afterwards, when men became celebrated for the study of Medicine, and were deified, after temples had been erected to their memory, and they were worshipped with divine honours, and the sick carried into [their presence, to implore relief in their complaints, by worshipping their images: this was called *incubare sive incubatio*; whence the phrase *incubare deo* is derived.

This practice was chiefly followed in the temples of *Æsculapius*, at Athens, Pergamus; but, of all other places, Epidaurus was most celebrated.

There was also a temple of *Æsculapius*, in the island of *Cos*; at *Tricca*; and various temples, for the worship of other gods in different parts of Greece—as that of *Serapis*, that of *Pluto* and *Proserpine*, and the cave of *Charon*: and it appears from *Suetonius*, that the Romans carried their incurables to the temple of *Æsculapius*, on the *Tyber*.—We find, likewise, in the writings of *Strabo*, that not only the sick themselves, but the priests offered up prayers for their recovery.

The supplicants, to render the gods more propitious, used to fast several days, offer sacrifices, and wash in sea water. They sought for remedies in dreams: either the sick themselves, or the priests, were instrumental, by having the particulars of the case, with a petition to the god, written, and sealed up, upon which they lay down, and dreamed. Then, in sleep, they either saw what was to come to pass, or, only certain signs and symbols, that were construed to satisfy their minds; or they imagined they saw the gods delivering oracles: and these different methods went under different denominations. But, after health was restored by this dreaming process, it was necessary to render thanks to the deity, and offer presents, called *Donaria*. And we learn from *Pausanias*, that those chiefly, who were recovered by oracles, used to give gold and silver. There were other means of returning thanks, by causing pictures to be drawn of their state, before and after the cure; sometimes with an account of the case and cure, which were hung upon the walls or pillars of the temple. There were various kinds of written descriptions; for they had either the name of the god or goddess on them, by way of thanks; or the title given to the disease, the name of the sick person, history of the complaint, and remedies. There was also another method of testifying their gratitude, by making artificial images, of different materials, to represent the parts afflicted. Not only simple medicines, but many compositions of remedies, and also surgical instruments were found in the temples of the gods—as in the temple of *Vulcan*, near *Memphis*, there was a plaister found, marked with the name of *Isis*; and another, called *emplastrum sacrum*. However, there was a custom, most followed amongst the Greeks, of dedicating to the gods, in the temple, any composition that had been found useful in private hands, by which the benefit was more universally diffused—as we find by *Ætius*, the historian, that a goldsmith, who discovered a very useful *collyrium*, left it in his will to the temple

temple at Ephesus; and king Antioch, according to Pliny, dedicated his *Theriaca*, in verse, to Æsculapius. A leaden instrument for extracting teeth was publicly exhibited in the temple of Apollo, at Delphos, in the time of Erasistratus. Ancient temples, therefore, may be esteemed the first Records of Medicine, as they contained a considerable collection of practical cases, though destitute of order, arrangement, and principles. Amongst so many cases, and approved medicines, it was more easily to make choice of remedies; and by repeated experiments, their salutary power became better known, and increased the medical art.

ANALOGY, which is reasoning, drawn from a comparison of the past with the present, to form a judgment of the future state. When this began to be practised, and men were already in possession of many medical observations, as well as the power of various remedies, it was naturally presumed, that what had been formerly found useful in this or that case, and proved by repeated experience, was expected to be of service, if applied to the same disease in another patient; and we can trust tolerably well to analogy, if necessary caution be used, otherwise, nothing is more fallacious. It is necessary that the particulars of the past and present state, when compared together, should be perfectly equal, then the conclusion will be certain with regard to the future: without this equality in comparison, it must be erroneous, and prejudicial: for example, if, from observation, any person should find that a draught of cold water, with acid of vitriol, was salutary in the putrid fever, and therefore give the same in inflammatory fever, would make a most terrible mistake, and endanger the patient's life; because the analogy is quite contrary, and the circumstances, in part only, and not perfectly equal: or, if any one, after having observed a vomiting, that arose from accumulated bile, cured by a vomit, should prescribe the same in a vomiting that was occasioned by inflammation of the stomach, he might easily destroy life; for the analogy is not just, because the circumstances are not parallel in every particular.

From these things, the certainty of Medicine was considerably diminished: and Celsus was of this opinion, when he did not hesitate saying, "*Est enim hæc ars conjecturalis, neque respondet ei plerumque non solum conjectura sed etiam experientia.*"—Page 13. *Præfat.*

But Medicine ought not to be deemed merely conjectural, because occurrences happen in diseases contrary to the Physician's expectation. The error is not in Physic, but its Professors, who are not sufficiently cautious in using analogy, and often consider different diseases to be the same: for example—in putrid and inflammatory peripneumony, or mistake the *angina putrida* for the *angina inflammatoria*; each of which requires a distinct and opposite method of treatment, as I have demonstrated.*

If different species of a disease be confounded together, it is not the fault of Medicine, but of Physicians, not understanding how to make a just analogy, nor sufficiently considering whether all circumstances be equal, or arising from the same causes.

Besides, if even all circumstances be equal, and the expected effect does not follow, Medicine is not therefore to be called conjectural; for there are peculiarities in certain constitutions, called idiosyncrasy, which neither the Physician, nor any human reason can foresee: for instance, it is well known, that rhubarb is a very safe and effectual purgative, yet if any Physician give Peter an ordinary dose, with the intention of purging him, and it should not purge, but vomit, the fault is neither to be attributed to Physician nor Physic; but the cause of this phenomenon is a particular idiosyncrasy peculiar to Peter.

Van Swieten once prescribed lapis cancerorum for a patient—certainly a most innocent remedy; but, after taking it, he became excessively swelled all over the body: and when he heard that crabs-claws had been given him—said, he could have foretold the effect, had he known what was prescribed. There are, likewise, persons possessing a peculiar idiosyncrasy—abhor cats, wine, cheese, crabs, a calf's-head: my father was acquainted with a lady, who could not bear three drops of wine mixed in a full pint of water. But these examples are very rare, and do not occur in one in a thousand, therefore do not make much exception to a general rule; nor should Medicine be called conjectural on that account.

The sagacious CELSUS, who deemed it so, soon afterwards, limits his sentiments within the bounds of prudence: and says,
" Si

* The one a putrid infectious angina, arising from putrid miasma, or contagion: the other, from sudden cold.—See *Treatise on the Malignant Ulcerated Sore Throat, &c.* And the successful method of curing scarlet fever, by which not above one in five hundred died, as fully proved, publicly, at the St. Mary-le-bone Infirmary, and entirely dependent on treatment; for great numbers, at that period, in different parts of London, perished—Syrup of extract of bark, with vitriolic acid, pure air, and tincture of roses, were the only remedies used, which have been long published.

"*Si, quid igitur vix in millesimo corpore aliquando decipit id notam non habet, cum per innumerabiles homines respondeat. Est itaque Medicinæ fides, quæ multo sapius, perque multo plures ægros prodest.*" Therefore, such peculiar phænomena are to be registered amongst fortuitous occurrences, which no man can foresee with certainty, unless he had before known the natural idiosyncrasy of the person: for which reason, CELSUS observes, that a Physician, accustomed to his patients, is preferable to a stranger.

This is the reason, and a just one, why a Physician, long knowing the constitutions of his patients, will prescribe more judiciously, if a man of abilities, than those who are not accustomed to their individual peculiarities; and it well becomes a prudent Physician, always to accurately enquire into all particulars, or he may err, though pursuing the best general modes of cure, owing to contra-indications.

When speaking of Egyptian Medicine, we mentioned their practice, of different men, of confining their attention to particular diseases, being sanctioned by severe laws; and they could not deviate from this method, without danger of punishment.

Another source of information was, the vigilant industry of the ancients in observing the phenomena and events of diseases. they not only took particular notice of the sex, age, temperament, strength, and former habits of the patient, but also of the various circumstances of the disease as its beginning, increase, or height, decrease, and termination; how Nature assisted herself in many cases, and liberated the patient from the complaint by a crisis, or perceptible evacuation of supposed morbid matter. They also minutely examined the urine, fæces, respiration, situation, or manner of lying; tongue, eyes, skin, and abdomen. Examples of this kind abound, not only in the first and third books of the Epidemics of Hippocrates; but in his other works, particularly *Coacæ Prænotiones*, and Book of Prognostics.

How I have inculcated the necessity of examining and penetrating into the various constitution of patients, may be seen in most of the practical writings. This knowledge tramples all hypothetical and speculative systems under foot.

We have already noticed, that various remedies were described by the ancients in the *tabulæ*, or pictures, dedicated to their gods in the temples, and likewise some of the most approved compositions left them by will; so that even in the time of Hippocrates, many simple medicines were in use, and several compounds—as may be seen in Le Clerc's History of Medicine, Part III. Cap. XXIV. & XXV.

In ancient times, Medicine was practised by priests in the temples; and it was their interest and care to keep it a secret, under the veil of religion: therefore they made use of surprising tricks and deceptions, quite irrelevant to the purpose, to delude the ignorant; and it did not require much art to deceive the afflicted, who were already rendered timid by their complaints. Thus they endeavoured to make Medicine private and family emolument, transmitted from father to son, and kept every thing under the serious cloak of religion; but, in fact, they were continually meeting privately, to drink and carouse: and as they pronounced the oracles instead of the gods, so they received, for the deities, the rich presents, and choice delicacies, brought by the grateful patients, and consumed them in private conviviality, and Bacchanalian excesses.

It is certain, that they did not even prescribe the most simple remedy, without the parade of religious ceremonies, and fabulous histories, abounding in superstition, of which an example may be seen, at this day; in the Tiberian Temple of Æsculapius at Rome, and founded in the time of the Emperor Antoninus, containing Four Histories of Diseases, and their Cures, thus written:

The first—"A man, named Caius, lately received an answer from the oracle, to advance up to the altar, and go from the right to the left side, then to put his five fingers upon it, take them off, and apply to his eyes, by which he presently recovered his sight, amidst a great concourse of people, that rejoiced, and congratulated him on such a miraculous cure," which cunning dictated, and vulgar credulity credited.

Every one must see, that this cure was only feigned, and totally superstitious, though highly extolled.

The second—"The god delivered an oracle to the son of one Lucius, labouring under pleurisy, and not expected to survive, desiring him to approach the altar, take some ashes from it to mix them with wine, and apply to his side. He recovered, and gave public thanks to the god. The people were extremely joyous, and congratulated him."

This cure is perfectly natural; for ashes abound in alkaline salt, which dissolving in the wine, forms a very powerful solvent; and the ashes of every vegetable produces the same: nor is it at all necessary for them to be taken from the altar.

The

The third—"The oracle of Æsculapius advised one Julian, who was vomiting blood, and given over by every person, to take some pine-nuts from the altar, and eat them with honey, for three days, &c.

This cure is very probable; and, at present, pine-nuts, almonds, and demulcents, with honey, are recommended to hæmoptoic patients. Abstinence from food in many cases was judicious, and will perform wonders.

The fourth—"The oracle recommended one Valerius Aprus, a blind soldier, to anoint his eyes, for three days, with a collyrium, composed of the blood of a white cock and honey. When his eyes were restored he returned the God thanks publicly."

This cure was either fabricated or superstitious, for the man could not have been blind; but his eyes were inflamed.

We see, by these examples, what means the cunning priests used to impose upon their patients, and deceive the gaping multitude, at pleasure. There is scarcely an imposition, however irrational, which is not credited by the multitude.

The history of Iphiclus the Argonaut, who had no heir, for which he consulted Melampus, may be reckoned of this kind. He first ordered the prophets to sacrifice two bulls, and when their entrails were cut into small pieces, Melampus procured birds to form his holy augury, which decided from the vulture, that Iphiclus should take a knife that was fixed in a holy oak, and drink the rust of it mixed with wine for ten days, that he would then be cured and become prolific: history adds that Iphiclus proceeded in this manner, and the event happened as the vates had foretold; but indeed as steel taken with wine is a very good strengthening medicine, it might remove the sterility of Iphiclus if arising from relaxation, if even the bulls had not been sacrificed, nor the birds brought into the mystery, nor was it indispensibly necessary for the steel to have been fixed in the sacred tree, but merely moistened with the acid juice of any vegetable; but these deceptions were practised for purposes already mentioned. Hippocrates even obliged his pupils to take an oath, not to reveal the secrets of the art, which was a great impediment to the progress of medicine.

The extispiscia of the priests may be properly said to have been the origin of anatomy, since none but the most healthy animals were sacrificed, and from their constant practice of inspecting, and accurately investigating the entrails, they acquired a knowledge of the situation, shape, connection, order, and other peculiarities of an healthful animal body: although their experiments were totally confined to animals. These demonstrations were known to antiquity, particularly to the Romans, and Cicero sacrificed victims to the gods, before he set out to the army, to satisfy the superstitious multitude about the future success of the war, wisely accommodating his refined intellectuals to vulgar prejudices.

The custom of embalming bodies, which was a very ancient practice, and already mentioned at large in Egyptian history, likewise greatly contributed to the acquisition of medical information.

The management of wounds, or origin of surgery, which in after ages became a separate department, and Platner contends that it was practised before physic. Cicero mentions that Æsculapius, son of Apollo, invented the probe, and was the first person that used bandage in wounds. Homer observes that his sons Podalirius and Machaon, physicians in the Trojan war, did not attend so much to medical as surgical cases, using the knife and external applications.

Patroclus is next after them, who cured Eurypylus during the confinement of Podalirius by a wound. This same Podalirius is said to be the first who opened a vein, and Æsculapius the third, whoever he might have been, was the first person who extracted teeth. Hippocrates himself was well acquainted with surgery, and instituted several operations.

After him Diocles Carystius mentioned with respect by Celsus, was celebrated in surgery, and invented an instrument to draw out darts; and Homer must have been well skilled in anatomy, to have given such an accurate description of wounds, so that some have not hesitated to assert that a tolerable compendium of the science of anatomy may be extracted from his works; at least, it is evident, that in the age, when Homer wrote, surgery was known and practised.

The surgical healing of wounds was extremely useful to medicine, and greatly contributed to its increase, for the treatment of inflammation, suppuration, gangrene, and scirrhus seems to have been applied to internal diseases.

The custom of butchers slaughtering animals, did not much increase the knowledge of the structure of the human body, yet the history and latent causes of diseases were sometimes illustrated by it. Thus they found that by daily and violent exercise fat animals became lean, and that the medulla of bones was totally exhausted by too great motion; and also that by too much inactivity, biliary and urinary concretions, obstructions in the viscera were produced, remediable only, by exercise and eating grass: these, and many other things were noticed, which were equally applicable to men.

The opening living animals for philosophical uses rendered assistance to medicine. Alcmaeon the Crotonian, a pupil of

Pythagoras

Pythagoras, was the first who practised anatomy amongst the Greeks, according to Chalcidius the commentator on Plato, who says, "*Alcmaeon Crotoniensis in physicis exercitatus, quique primus exsectionem (anatomem) aggredi ausus est, de oculi natura multa et præclara in lucem protulit.*" Le Clerc also observes that he was the first who opened animals, and quotes the same passage, but in which there is nothing particular said about them. Indeed it is much to be doubted whether Alcmaeon was a disciple of Pythagoras, if so, he certainly never opened living animals, because the Pythagoreans believed in the doctrine of transmigration of souls, and considered it sacrilege to hurt animals; if therefore he was the first, who professed anatomy, he must have exercised his art, only on the dead bodies of men and animals.

EMPEDOCLES of Agrigentum is supposed to have been cotemporary with him, who was also from the school of Pythagoras, and an eminent physician, he likewise opened bodies, according to Plutarch, "*Auditum fieri docuit quando aer allabatur cochleiformi fabricæ illi, quam in interiori auris parte exactè elaboratum instar tintinnabuli suspensam esse et pulsari dixit.*" From this it appears that the cochlea, a most abstruse part of the internal organ of hearing, was even taken notice of by Empedocles.

As to DEMOCRITUS it is generally admitted that he occupied a great part of his time and studies, by which he greatly injured his health, in dissecting animals, to discover the seat of the bile, and investigate the cause of madness; on which account the Abderites wrote to Hippocrates, and solicited him, by considerable offers, to come to Abdera, and undertake the cure of Democritus, whom they believed to be mad. He came, and brought with him some hellebore; but when he found Democritus profoundly occupied in contemplating nature, he said the Abderites had more occasion for hellebore than him (Democritus), and after discoursing with Democritus, confessed himself instructed by the conversation. This subject is treated of in the letters between Hippocrates, Democritus, and the Abderites, which were published in the works of Hippocrates, but, by some of the literati, supposed to be spurious.* The sentiments, however, would do honour to any age or country.

Galen

* These letters are translated in my work on Female and Nervous Diseases, Madness, &c. in four volumes, London, 1794, in which are most of my writings in English. The letters were most probably published by his son amongst other posthumous works.

"One of the most ancient and most curious anecdotes concerning madness is amongst the works of Hippocrates, who was called by the Abderites to come to Abdera to cure Democritus of insanity. The embassy and epistles on this famous occasion demonstrate the origin of the doctrine of madness, as arising from black bile or melancholy, which opinion prevailed for above 2000 years.

"The most considerable circumstance concerning Democritus is, the dissection of animals, to discover the cause of madness. His countrymen, observing him to pursue these kind of studies, which were very extraordinary in those ages; retiring and living in sepulchres; engaged in the deepest contemplation; they concluded, he was in a state of melancholy madness. This is no uncommon compliment to all men of extraordinary genius, or who possess an elevation of sentiment above the generality of cotemporaries. Democritus continually laughing, on all occasions, whether serious or mirthful, confirmed their suspicions. For this reason, they sent Anelesagoras, one of their chief citizens, to Hippocrates, that most eminent physician at Cos, with the subsequent epistle.

"The Senate and People of Abdera to Hippocrates, Health.

"Our city, Hippocrates, is in very great danger, together with that person, who, we hoped, would ever have been its greatest ornament. But now, (O ye gods!) it is much feared, that we shall only be capable of envying others, since he, who through extraordinary study and learning, elevated the city, is fallen sick: so that it is much apprehended, if Democritus become mad, our city Abdera will be desolate: for, wholly forgetting himself, watching day and night, laughing at all things, small and great, and esteeming them as nothing; he occupies, after this manner, his whole life. One marries a wife; another trades; another pleads; another executes the office of magistrate; goes on an embassy; is chosen officer by the people; is rejected; falls sick; is wounded; dies: he laughs at all these: on beholding some to appear discontented; others pleased. He likewise inquires, what is done in the infernal regions, writes his contemplations, and affirms the air to be full of atoms; that he understands the language of birds, and often, rising in the night, sings to himself; and says, that he sometimes travels into the infinity of things; and asserts that there be innumerable Democritus's like him. Thus, together by the exercise of his mind, he destroys his body. These are the things we fear, Hippocrates! these are those which deeply afflict us. Come quickly, therefore, and preserve us by your advice. Despise us not; for we are not inconsiderable; and if you restore him, you shall not fail, either of money, or fame. Though you may prefer learning before wealth, yet accept of the latter, which shall be presented to you in great abundance.

"To restore Democritus to health, if our city were all gold, we would give it. We think our laws, Hippocrates, are sick. Come then, thou best of men, and cure a most excellent person. Thou wilt not come as a physician, but as the founder of all Ionia, to encompass us with a sacred wall. Thou wilt not cure a man, but a city, a languishing senate: and prevent its dissolution: thus becoming our law-giver, judge, magistrate, and preserver. To this purpose we expect thee, Hippocrates; all these, if you come, you will be to us. It is not a single obscure city, but all Greece, which implores thee to preserve this body of wisdom. Imagine that learning herself comes on this embassy to thee, begging that thou wilt free her from this danger.

"Wisdom

Galen tells us that Aristotle was considerably engaged in dissections, and made many discoveries in the art, for which he reckons him amongst the best anatomists, and according to Diogenes Laertius he not only wrote eight books on anatomy, but compiled a great work of fifty volumes on *de natura animalium*, which history tells us he was induced to execute at an enormous expence defrayed by Alexander the Great. Pliny gives the following account of it: "*Aliquot millia hominum in totius Asiae*

" Wisdom is certainly allied to every one; but especially to us who live so near her. Know for certain, that future ages will acknowledge themselves obliged to thee, if thou desert not Democritus, for he is capable of communicating the truth to all mankind. Thou art allied to Æsculapius by thy family, and by thy profession. He is descended from the brother of Hercules, from whom came Abderus, whose name, as you have heard, our city bears; wherefore, even to him, will the cure of Democritus be acceptable. Since therefore, Hippocrates, you see a whole people, and a most excellent person, falling into madness, hasten, we beseech you, to us. It is strange, that the exuberance of good should become a disease. Democritus, by how much he excelled others in acuteness of wisdom, is now in so much the more danger of being mad, whilst the common, unlearned people of Abdera enjoy their senses as formerly; and even they, who before were esteemed very foolish, are now most capable to discern the indisposition of the wisest person. Come, therefore, and bring along with you Æsculapius, and Epione, the daughter of Hercules, and her children, who went in the expedition against Troy: bring with you the receipts and remedies against sickness. The earth plentifully affords fruits, roots, herbs, and flowers to cure madness, and never more happily than now, for the recovery of Democritus. Farewell.

" Hippocrates returned this answer:

Hippocrates to the Senate of Abdera. Health.

" Your countryman Amelesagoras arrived at Cos that day on which was celebrated the Assumption of the rod, which, as you know, is an annual assembly and solemn feast amongst us, held at a cypress tree, which is carried by those particularly consecrated to the god. But finding by the words and countenance of Amelesagoras, that your business required much haste, I read your letter, and much wondered to find your city no less troubled for one man, than if the whole city were but one man. Happy indeed are the people, who know that wise men are their defence; not walls and bulwarks, but the sound judgment of wise persons. I conceive the arts are the dispensations of the gods, men the works of nature; and be not angry, ye men of Abdera, if I conceive, that it is not you, but nature itself, which calls me to preserve her work, which is in such imminent danger of falling. Wherefore, obeying that which is the invitation of nature and of the gods, rather than yours, I shall make haste to cure the sickness of Democritus, if it be a sickness; and not, as I hope, an error in you. It would be yet a greater testimony of your good will, if you were troubled only on suspicion. Neither nature nor the gods have promised me any thing for my coming; and therefore, men of Abdera, do not you force any thing upon me; but suffer the works of a liberal art to be free. They who take rewards, compel sciences to servitude, and make them slaves, depriving them of their freedom. Besides, it is possible, that such may dissemble in a great disease, and deny in a little; and when they have promised, not come, and come, when they are not sent for. Miserable indeed is human life; for that the insatiate desire of wealth continually invades it, as a winter wind! I wish that all physicians would join together to cure it of this disease, which is worse than madness; notwithstanding it is thought happy, but is indeed a pestilential sickness. All distempers of the mind are, as I conceive, high madness; for they excite, in the reason, strange opinions and fancies; which reason must be purified, and cured by virtue. As for me, if I at all made it my design to be rich, I would not, ye men of Abdera, come to you for ten talents; but would rather have gone to the great king of Persia, where there are vast cities full of all kind of wealth: there I would have practised physic; but I refused to cure a nation which are enemies to Greece; and to the best of my power have myself opposed the Barbarians. I thought it a dishonour to accept the wealth of a king, foe to our country, by which means I might become a destroyer of Greece. To get wealth, by all means, is not to be rich; the principles of virtue are sacred and just. Do you not think it an equal offence to cure our enemies, as to take money for the cure of our friends? But this is not my custom. I raise no wealth out of sickness; nor did I wish when I heard Democritus was mad, that it might prove so in reality: if he should be well, he is a friend; if he happen to be cured of his sickness, more a friend. I understand that Democritus is a person of firm and settled parts, the ornament of your city*.

" It is said that Hippocrates, in order to perform this voyage, sent to his friend Dionysius to take care of his family in his absence; to Damagetus, that he would provide a ship; to Cratevas, that he would furnish him with medicaments.

" How Hippocrates was received the next day at Abdera, he gives the following description to his friend Damagetus.

To Damagetus. Health.

" It was, as I conjectured, Damagetus; Democritus is not mad; but is extraordinary wise; and hath taught us wisdom; and with us, all men. I have sent back, with many thanks, the Æsculapian ship, on the prow whereof, to the picture of the sun, may be added health; for we made a quick voyage, and arrived the same day, that I had sent word, I could be at Abdera. I found all the people flocking together at the gate, in expectation, as it appeared, of our coming; not only men, but women, the old and the young, and by Jove, the very children; so much were they

" * Artaxerxes offered an hundred talents to Hippocrates to come into Asia, and cure a pestilence, which desolated the provinces and army. The sum, in silver talents, is supposed to be 35,000*l.* in gold about 400,000*l.* This shews the great riches of the Asiatics, and the patriotic virtue of that noble Greek to resist the temptation; though the island was threatened with a dangerous war. Men have been less scrupulous in our refined times: whenever they have an opportunity of acquiring immense wealth, *per fas vel nefas*.

"*Asia, Græciæque tractu Aristoteli parere jussa sint, omnium quos venatus, aucupia, piscatusque alebant: quibusque vivaria, armenta, alvearia, piscina, aviaria in cura erant; ne quid usquam gentium, ignoraretur ab eo: quos percontando 50 ferme volumina illa præclara de animalibus condidit.*" Hist. Mundi Lib. VIII. c. xvi.

Athenæus

"they affected at the madness of Democritus, who at that time was seriously employed in philosophy. When they perceived me, they seemed, a little, to be comforted, and to have some hope. Philopœmen offered to conduct me to my lodging, as all of them likewise desired; but I told them, Men of Abdera, I will do nothing before I have seen Democritus; which they no sooner heard, than they applauded, rejoiced, and brought me immediately along the forum; some following, others running before, crying out, Great king Jupiter, help, heal! I advised them to be comforted; for that it being the season of the Etesian winds, I was confident, there was not any sickness that would continue long: and in saying this, on I proceeded. The house was not far, nor indeed the city; we went to it, being near the city walls, whither they conducted me quietly. Behind the tower there was a high hill, very full of tall poplars; from whence we beheld the habitation of Democritus. Democritus himself sat under a shady, but low plane tree; in a thick grove all alone, squalid, upon a seat of stone, wan and lean, with a long beard. At his right hand, a little brook ran down the hill; upon which was a temple consecrated, as it should seem, to the muses, encompassed with vines, which grew there spontaneously. He sat very composed, having a book on his knees, and round about him lay other books; with the bodies of many animals dissected. Sometimes he wrote hastily; sometimes paused, seeming to consider things within himself. Soon after he arose and walked, and intently examined the dissected creatures; then laid them down again, and returned to his seat. The Abderites, standing about me, and hardly refraining from tears, said, You see, Hippocrates, the life of Democritus, how mad he is; he knows neither what he would have, nor what he does. One of them, who would have given me a farther description of his madness, on a sudden fell a sobbing, and howled like a woman at the death of her son, and then began to lament like a traveller robbed of his goods; which Democritus hearing, sometimes smiled, sometimes laughed, not writing any longer, but shaking his head. Men of Abdera (said I) remain here, while I approach nearer; that, by hearing him speak, and observing his constitution, I may judge clearly of the distemper: in so saying, I went gently down; the place was very steep, so that I could hardly keep myself from falling. When I came near, it happened, that he was writing something, in a rapture, earnestly; whereupon I halted, waiting till he should give over. It was not long before this occurred; and, perceiving me advance towards him, said, Hail, stranger! I answered, Hail, also, Democritus, the wisest of men! He, as I imagine, a little concerned, that he had not saluted me by name, replied, What may I call you? for my ignorance of your name is the reason that I styled you stranger. My name, said I, is Hippocrates, the physician. You are, said he, the glory of the Æsculapians, the fame of whose worth, and knowledge in physic, is arrived as far as me. What business has brought you hither? but first sit down. This seat, you see, is pleasant, green, and soft; better than high thrones, which are subject to the envy of fortune.—When I was seated; is it a public or private business, saith he, which brought you here? tell me freely, and we shall, to our utmost power, assist you. I answered, It is on your account, that I came hither, to be acquainted with you, a wise person, the occasion being afforded me by an embassy from your country. He replied, Then let my house entertain you. Having thus made trial of him several ways, and not perceiving any thing like insanity; You know, said I, Philopœmen, one of this town? Exceeding well, answered he, you mean the son of Damon: he lives near the Hermæan fountain. The same, replied I; he has been an old acquaintance, and kindly received me for his guest. But you, Democritus, I intreat to afford me a better entertainment; and, first tell me, what it is, that you are writing. He, after a little pause, answered, concerning madness. Good Jupiter, said I, you write seasonably against the city! What city, Hippocrates? answered he. I replied, that I only spoke at random. But what do you write of madness? What else said he, but explaining what it is, how it comes to be generated in man, and how it may be cured. These animals, which you behold, I have dissected for that purpose; not as hating the works of the gods, but to make inquiry into the nature and seat of cholera. You know, where bile abounds too much, it most commonly causes madness in men: it is in every person; but in some less, in others more: its excess causeth diseases, being a matter partly good, partly bad. By Jove, said I, Democritus, you speak truly and wisely, and I judge you happy, who can enjoy a serenity I cannot partake of. But why cannot you? saith he. I answered, Because either travels, children, or estate, sicknesses, deaths, servants, marriages, or the like, interrupt my repose. Hereupon he fell into his usual passion, and laughed for some time exceedingly, suspending discourse. Why, said I, Democritus, do you laugh? Whether is it, that I have spoken well or ill? Upon this, he laughed more than before, which the Abderites, who stood a distance off, perceiving, some shook their heads, others beat their foreheads, others tore their hair; for, as they afterwards said, they observed him to laugh at that time more than ever he had before. Democritus, thou best of wise men, replied I, I desire to know the reason of this passion? What have I said that seems ridiculous? for if it proves such, I may reform it, but if otherwise, you may desist from this unreasonable laughter. By Hercules, said he, if you can convince me, Hippocrates, you will effect a cure greater than any you have yet performed. Wherefore, said I, should you not be convinced? Know you not, that you act absurdly in laughing at the death of a man, sickness, madness, murder, or any thing worse than these; and on the other side, on marriages, assemblies, the birth of infants, solemn rites, magistracies, honours, and, generally, at every thing that is nominated good? Those things which deserve to be pitied excite laughter; and, those, for which we should rejoice, you laugh also; therefore you appear not to place any difference between good and evil. Then, said he, You speak well, Hippocrates; but you are not yet acquainted with the reason of my laughter, which, when you know, I am confident you will prefer to the cause for which you travelled here, and convey it as a medicine to your own country, thereby improving both yourself and others. In requital, perhaps you will think yourself obliged to teach me physic; when you shall understand, what trouble all men take for things that deserve not labour; things of no value,

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Athenæus says, "*Aristotelem ab Alexandro magno octingenta talenta ad condendam animalium historiam accepisse.*" But Schulz in his *Historia Medicinæ* lib. VIII. cap. xvi. brings strong arguments to prove that this was mere report. Whether this be true or not, Haller was of opinion that all the books of Aristotle on the history and description of animals, are worth reading. The account of incubation is by no means despicable; and his description of the egg is really good, also his explanation of the situation of the human foetus and its gradual advancement to perfection.

In

"and consume their lives unprofitably in actions that deserve nothing but ridicule. What, said I, is all the world sick, and knows it not? If so, they can send no where to solicit help: for what is beyond the world? He replied, There are infinite worlds, O Hippocrates; have not so mean an idea of the riches of nature! Teach me this, said I, Democritus, some other time; for I am afraid, if you begin to talk of this infinity, that you will fall again into a fit of laughter. But now inform me the reason, that you laugh at the accidents of life. Then looking stedfastly upon me, You think, saith he, there are two circumstances occasioning my laughter; good and ill; whereas indeed, I laugh but on one principle. Man, full of folly, destitute of upright actions, playing the infant in all his designs, undergoing great toils for little benefit, travelling to the end of the earth, and sounding bottomless depths to get silver and gold; never ceasing to accumulate, and with an increase of store, increasing endless troubles; lest, if he should want, he might be thought miserable. He digs into the bowels of the earth by the hands of slaves; whereof some are buried by the earth falling on them: others dwell under ground, as though it were their native soil, searching for gold and silver, sifting one sand from another; cutting and tearing their mother earth, which they both admire and trample. How ridiculous is this, to love that part of the earth which lies hid, and condemn that which lies open to them! Some buy dogs, others horses; some delight in having large possessions, which they may call their own, and would command multitudes, when they are not able to command themselves. They marry wives, and in a short time are divorced; they love, and then hate; they take delight in children, and when they are grown up, disinherit them; they war, and despise peace: they conspire against kings, murder men, dig the earth to find silver, with the silver they have found, they buy land; what the land which they have bought yields, of corn or fruits, they sell, and receive silver again. To what changes and misfortunes are they subject! When they possess not riches, they desire them, when they are acquired, they are hid, or scattered. I laugh at their ill-designed projects, I laugh at their misfortunes. They violate the laws of truth, through contention and enmity with one another; brethren, parents, and countrymen fight and kill each other, for those possessions, of which, after death, none can be possessors. They pursue an unjust course of life; they despise the poverty of their friends and country; mean and inanimate things they account for riches: they will part with a whole estate to purchase statues, because the statue seems to speak; but those who speak, indeed, they hate. They affect things difficult to be acquired; they who dwell in the continent, covet the productions of the sea; they who inhabit islands, those of the continent; perverting all things to their own depraved desires. In war they praise valor, while they are daily subdued by luxury, avarice, and all passions; and in the course of his life, every man is a Thersites. Why did you, Hippocrates, reprove my laughter? No man laughs at his own insanity, but at the madness of another. They who think themselves to be sober, laugh at those who appear to them to be drunk: some laugh at lovers, whilst they themselves are sick of a worse distemper; some at those who travel by sea, others at those who follow husbandry; for men do not agree with one another, neither in arts, nor actions. All this, said I, Democritus, is true; neither is there any argument that may better prove the unhappy state of man; but these actions are caused through necessity, by reason of the government of families, the building of ships, and other civil offices, wherein a man must necessarily be employed; for nature did not produce him, to be idle. Again, height of ambition causes several men to deviate from the paths of justice; they aim at all things, as if there were nothing immoral; not being able to foresee the darkness that attends their futile attempts. For, Democritus, what man is there, that, when he marries, thinks of divorce, or death? Who is there, who, while he educates children, thinks of losing them? The like on husbandry, navigation, dominion, and all other offices of life. No man foresees, that his expectations may prove abortive; but every one flatters himself with hopes of good success, and does not anticipate the worst. Why therefore is this ridiculous? Democritus replied, You are yet far from understanding me, Hippocrates, neither perceive, through want of knowledge, the bounds of serenity and perturbation; for if they ordered these things prudently, they might easily discharge their duty, and evade my laughter; whereas now, they are blind to the offices of life, and with minds void of reason, are carried away by inordinate appetites. It were enough to make them wise, if they would but consider the mutability of things, how they wheel about continually, and are suddenly changed; whereas they, looking upon these as firm and settled, fall into many inconveniences and troubles, and correcting things injurious, they tumble headlong into many miseries. But if a man would rightly consider, and weigh in his mind all things that he attempts, understanding himself, and his own abilities, he would not let his desires run to infinite, but follow nature; out of whose store all are nourished and supplied. As a corpulent body is in the greatest danger of sickness, so a high estate is in the greatest danger of falling. Great minds are known in extremities. Some there are, who, taking no warning by that which happeneth to others, perish by their own ill actions; minding things manifest, no more than though they were not manifest; whereas they have many precedents to guide their life, of things effected and not effected, by which we ought to foresee the future. This is the occasion of my laughing. Foolish men punished by their own wickedness, covetousness, lust, enmity, treachery, conspiracy, envy: it is a hard thing to give a name to many of these evils, they being innumerable, and practised so privately. Their behaviour as to virtue is still worse; they affect lies, they follow pleasure, disobeying the laws: my laughter condemns their inconsiderateness, who neither see nor hear; whereas the sense of man only, of all others, is able to foresee future events. They hate all things, and then again

In another part of the work, mention will be made of Herophilus who first discovered the lymphatics, and Erasistratus, both of whom taught at Alexandria, and opened animals as well as human bodies. Their history belongs to later times, even Aristotle was posterior to Hippocrates, a considerable time.

How

" apply themselves to them; they condemn navigation, and yet sail on the sea; despise husbandry, then fall a plowing; put away their wives, then marry others; they bury their children, beget more, and bring them up; they wish to live long, and when old age comes, are grieved; never remaining constant in any state whatever. Kings and princes commend a private life; private persons a public. He that rules a state, praises the tradesman's life, as free from danger; the tradesman applauds the courtier, as full of honour and power; for they pursue not the direct, true, and smooth way of virtue, in which none of them will endure to walk, but crooked and rough paths. Some tumble down, others run themselves out of breath, to overtake superiors in fortune or reputation. Some are guided by incontinence to the beds of their neighbours: others are sick of a consumption, through insatiate avarice. Some, by ambition, are carried up into the air, and through their own wickedness thrown down headlong. They pull down, and then they build; they do good, and oblige others, then repenting, break the laws of friendship, commit wrong, fall at enmity, and fight with their nearest relations; of all which, avarice is the cause. Wherein do they differ from children that play, whose minds being void of judgment are pleased with every thing they meet with? In their desires they differ not much from brute beast; only the beasts are contented with that which is enough. What lion is there that hides gold under ground? What bull fights for more than he needs? What leopard is insatiably greedy? The wolf, when he has devoured as much as serves for his necessary nourishment, gives over; but whole days and nights put together are not sufficient for men to feast and riot. All brute beasts have their yearly set times for coition, and then leave; but man is continually transported with lust. How can I, Hippocrates, but laugh at him that laments the loss of his goods? and especially, if without regard to dangers, he travels over precipices and on the sea, how can I forbear to laugh exceedingly? Shall I not laugh at him whose ship founders, by lading it with rich merchandize, and then blames the sea for sinking it? If I seem injudiciously to laugh at these, there is, at least, something that deserves to be lamented. These stand not in need of the physic nor medicines of your predecessor, *Æsculapius*, who, preserving men, was struck dead by thunder*. Do you not see, that I am also partly guilty of insanity, who, to inquire into the causes of madness, dissect these several living animals, whereas, indeed, I ought to search for it in man himself? Do you not see that the whole world is full of inhumanity, stuffed, as it were, with infinite hatred against man himself? Man is from his very birth a disease: when first born he is useless, and sues for relief from others: when he grows up, foolish, wanting instruction: at full growth wicked; in his decaying age miserable, toiling, throughout all his time, imprudently. Such he is from the womb. Some being of furious, angry dispositions, are continually engaged in quarrels; others in adulteries and rapes; some in drunkenness; others in coveting the goods of their neighbours; others in consuming their own: so that if the walls of all houses, were transparent, we should behold some eating; others vomiting; others wrongfully beaten; others mixing poisons; others conspiring; others casting accounts; others rejoicing; others weeping; others plotting against their friends; others raving mad with ambition. Some actions there are, more remote within the soul. Some young; some old; suing; denying; poor; rich; starved; luxurious; sordid; imprisoned; murdered; buried; despising what they possess, and aiming at what they have not; impudent; niggardly; insatiate; vain glorious. Some setting their minds on horses; others on men; others on dogs; others on stone and wood. Some affect embassy; others the command of armies; others sacred rites. Some wear crowns; others armor. Some fight at sea; others at land; others till the ground. Some plead in the forum; others act on the theatre: every one is differently employed. Some embrace pleasure and intemperance; others rest and idleness. How then, can I but laugh at their conduct? It is to be feared that your art of physic will not please them; for intemperance produces frowardness, they esteem wisdom, madness; and I doubt much, that many things in your art are openly reproached, either through envy or ingratitude: for the sick, when they are cured, ascribe the cause either to the gods or chance. Many are of such a disposition as to hate those who have obliged them, and can hardly refrain from being angry if they have occasion for assistance. Numbers also, being themselves ignorant, prefer ignorance before science. Fools give their suffrages; neither will the sick commend; nor they who are of the same art give their approbation through envy. It cannot be, but you must have suffered injury of this kind; for I know very well, that you have often been treated unworthily, and reproached by malice and envy. There is no knowledge, nor attestation of truth. In saying this, he smiled, and seemed to put on a divine look, casting off that which he had before. Then, I said, excellent Democritus, I shall carry back with me to Cos the great gifts of your hospitality, full of your wise instructions. I shall return to proclaim your praises; for that you have made inquiry into human nature, and understood it. I shall go away cured in mind, it being requisite, that I take care for the cure of the bodies of others. To-morrow, and afterwards, we shall meet here again: which said, I arose, and he readily accompanied me. A man came to him, from whence I know not, to whom he delivered his books. When I came to the Abderites, who all this while staid for me, Men of Abdera, said I, I return you many thanks for the message you sent; for I have seen Democritus, the wisest of men, who only is able to reduce men to sound understanding. This, Damagetus, is all I have, with pleasure, to relate to you concerning Democritus. Farewell!

These epistles give an admirable description of that most excellent of men, Hippocrates, whose noble soul exerted its utmost efforts to relieve the afflicted, and prove serviceable to society:—an example well worthy of imitation—an example which, if followed, must raise medical reputation above all the detraction and calumnies of malicious enemies. Great, however, as Hippocrates was, his superior excellence excited envy among physicians of inferior abilities: these frequently compose the majority in most liberal professions. Great minds only can pursue noble objects, and

" attempt

* *Æsculapius*, the fabulous histories inform us, was destroyed by thunder.

How great an advantage was gained by opening living animals to illustrate physiology must be evident, for many things would have hitherto remained unknown, but for opening animals alive, certainly without this assistance, neither Herophilus, formerly, nor any one after him, could have detected the lacteal vessels, nor would the thoracic duct, by Pecquet; the circulation of the blood, by Harvey; the peristaltic motion of the intestines, by Wepfer; nor the irritability and sensibility of parts, by Haller, have ever been discovered. The utility of this method of proceeding in physiology, was very great, but it should be carefully restrained within due bounds; for the structure of brute animals ought to be very cautiously compared with human beings, and animals, under torture, may not demonstrate truth, in their dying moments.

The minute investigation of dead bodies after diseases, by the Egyptians, posterior to the time of Hippocrates, who were the first people that opened subjects to discover the latent causes of complaints, for there were anatomists appointed and supported by the kings, which plainly appears, by the words of Pliny, when speaking of the raphanus (horse radish) which was found useful in a consumption, or decay of the heart, a disease then very common in Egypt and discovered after death. Lib. XIX. cap. v. "*Tradunt et præcordiis necessarium hujus (raphani nempe) succum : quando phthisim cordi intus in hærentem non alio potuisse depelli compertum sit in Ægypto, Regibus corpora mortuorum ad scrutandos morbos insectantibus.*"

This seems to have been first done under the Ptolemys, the son of Lagus, and Ptolemy Philadelphus: but it is not very probable that the kings themselves performed or assisted at this work, when they had (appointed) people equal to the task, and perhaps the text of Pliny, *Regibus insectantibus* should rather be read *Regibus inspectantibus*, for even the kings might have been induced, by curiosity, to inspect the dissections, to discover the causes of disease and death.

The distinct arrangement of diseases into cause, origin, &c. as in the books of Hippocrates, by which we see how attentive the ancients were to every circumstance of a complaint.

The knowledge, choice, preparation of medicines, &c. these became gradually known, either by chance, spontaneous desire, or imitation of the natural instinct, observed in brute animals. The stronger kind of medicines seem to have been first known to the ancients, as purgatives and emetics; for since they were not so sensibly affected by the milder sort, their powers and effects were neither so soon observed, nor registered. But the writings of Hippocrates shew, that the ancients were acquainted with a considerable number of medicines, in which there is an account of many very efficacious remedies; Le Clerc has diligently collected and arranged them, so as to be seen at one view.

Besides, it is necessary to mention, that the ancients used the greatest caution in the application of remedies, and did not immediately give their medicine: for example, when Hippocrates was called to a patient labouring under diarrhoea, he did not prescribe a remedy to stop it immediately, but prudently enquired first, whether the patient was relieved or debilitated by the continuance of the diarrhoea, or whether it were an effort of nature to exonerate herself of some morbid cause by the evacuation, or whether, if longer continued, it would destroy the life of the patient? After carefully examining and reflecting on these things, he either left the diarrhoea to itself, or endeavoured to restrain it by proper remedies.

Hippocrates, the Coan, descended from the family of Æsculapius, and the eighteenth from him was born in the island of Cos, in the first year of the eightieth olympiad, thirty years before the Peloponessian war, and four hundred and sixty years anterior to the birth of Christ. Heraclides of Cos was his father, he had an uncle of his own name Hippocrates, the first. He was related to Hercules on the mother's side by a twentieth generation; for Æsculapius married the daughter of Hercules; he was cotemporary with the greatest men of Greece, Socrates, Herodotus, Thucydides, Democritus, and others. He was educated

attempt actions above the vulgar comprehension, but little minds industriously employ their whole genius in servilely adapting themselves to the common prejudices of the multitude. The superior excellence of the first are only known to the discerning few: the others, from similarity of souls and leisure for stratagem, impose on the major part of mankind.

These epistles, likewise, contain a description of the luxury of the inhabitants of Abdera, and mankind in general in those ages. The Greeks, about the same period, were in a most voluptuous, lethargic, and corrupt state, which soon terminated in the total subversion of their liberties: for Philip, the Macedonian prince, in proportion as they were indolent and credulous, became vigilant and enterprising, availing himself of the depravity and corruption of the times. He bribed the principal inhabitants and senators of the different states, and, by slow, imperceptible degrees, planned their overthrow. This was afterwards accomplished by his son and successor, Alexander. The most excellent and powerful orator, Demosthenes, could scarcely rouse a spirit of opposition in the Athenians; nor could they be excited to any noble or patriotic action to retard the growing power of Philip. A fatal supineness, and slothful security had seized their souls, and benumbed every enterprising faculty; thus they fell a sacrifice to the ambitious conqueror, and illustrious protector of Aristotle and science.

educated for medicine by his father Heraclides, after the manner of the Æsclepiades, and must have received extensive medical information from the tabulæ, hung up either in the temple at Cos or Cnido, all of which he copied, and described, interspersing them with his own observations; these were left to posterity. Some believe that Hippocrates was a disciple of Democritus, but there are no documents extant to prove this opinion, and if he learned any thing from him, it should rather seem to have been in the friendly conversation, or correspondence that existed between them, when Democritus was far advanced in years and Hippocrates in the meridian of life.

After the death of his parents, he left his own country, travelled about considerably, and died in Thessaly, but it is not known, for certain, in what year his death happened. Some, however, assert that he died at Larissa in the eighty-fifth year of his age, others maintain that he lived to one hundred and eight. He possessed the most excellent moral virtues, and his manners were unexceptionable; we have a just proof of his modesty and veracity, by the candour with which he relates the unfortunate termination of complaints, which, indeed, he seems rather to have chosen than the successful, and his frankness in confessing errors: on which account he merits the elegant panegyric bestowed on him by Celsus, Lib. VIII. cap. iv. "*A suturis se deceptum esse, Hippocrates memoriæ tradidit, more scilicet magnorum virorum et fiduciam magnarum rerum habentium. Nam lævia ingenia, quia nihil habent, nihil sibi detrahunt. Magno ingenio multaque nihilominus habituro, convenit etiam simplex veri erroris confessio, præcipueque in eo ministerio, quod utilitatis causa posteris traditur; ne qui decipiantur eadem ratione, qua quis ante deceptus est.*"

He was well acquainted with philosophy, and Celsus says, followed the dogmas of Heraclitus, he made a proper distinction between that study and medicine, and was a man of great science and wit; he totally confined himself to practical observations and empirical experience; but at the same time always endeavoured to make a proper advantage of using analogy, by carefully drawing conclusions from frequently reiterated experiments, and most of them are found to be true, in the present day. On this account, he was certainly the first who laid the foundation of dogmatic medicine, which, though not perfect in all its parts, yet was such as to gain universal approbation, and serve as a model in every age.

It has been disputed, whether he practised anatomy on the human subject. Le Clerc and Schulz deny it, but Haller, who must be considered the best judge in this controversy, declares it evident from passages in the book de Articulis, which is admitted to be genuine. "*Corpora humana et de industria quidem ab Hippocrate incisa fuisse, ut qui confirmet suam sententiam ex anatomico experimento in quo clavicula occurrit, homini ita pene propria particula, ut ex alio animali eam Hippocrati innotuisse minime videatur.*"

None can deny but that he was familiar with osteology, and also well skilled in surgery, as sufficiently appear by his writings, from which it is clear that surgery, in those times, was a branch of medicine, and practised universally by physicians; and Haller declares, that the surgical writings of Hippocrates, on wounds of the head, fractures, and on the joints, excel his other works. He wrote his books on medicine, in Greek, following the *Ionic* dialect, and ought to be deservedly reckoned by all posterity, the chief of ancient medical authors; but amongst so many books bearing the name of Hippocrates, there may be some spurious, not forged in these times, but either by his sons, his son in law, Polybus, or by his pupils, or some later Hippocrates. The difference of style, and frequent reasoning interspersed in many places, which Hippocrates himself was certainly very averse to, shew the fabrication: for which reason, Le Clerc considers all the books of Hippocrates spurious, that abound in reasonings. There are a great many various editions of the works of Hippocrates; that published by Foësius in folio, Greek and Latin, is one of the best. Renatus Charterius gave a very good edition, thirteen vols. folio, at Paris, in 1679, in which are included the whole works of Galen, and an index of corrections and variæ lectiones at the end of each volume. Some prefer the Latin edition by John Marinelli, in three vols. folio, published at Venice, 1737, from its being more compendious and useful, because in the second volume, all the parallel places in Hippocrates are shewn, and there is a most complete index by Pinus, which fills the third.

As to the family of Hippocrates, Galen tells us, he had two sons, Thessalus and Draco; each of whom had a son, named Hippocrates. Thessalus, says Galen, neither altered nor diminished the dogmas of Hippocrates: he was an admirable character, though he did not remain in his own country, like Polybus, but attached himself to Archelaus, king of Macedonia.

Nothing is mentioned, in particular, about Draco, except that his son cured Roxana, wife of Alexander the Great, and was her Physician; yet this is doubted by many, and remains unproved. But Polybus, a native of Cos, and son-in-law to Hippocrates, chiefly interested himself for the family, whom Galen greatly esteemed, and praised—calling him the disciple

disciple and successor of Hippocrates, who made no change in the established dogmas; and preferred serving his own country to going abroad on more advantageous conditions: from which it appears, that Hippocrates educated pupils in Medicine. Soranus confirms this; and the oath of Hippocrates proves it: therefore he did not reserve the Medical Art, exclusively, for his own family, as the Asclepiades had done, but taught it to others, who were not related to him, preferring humanity to the desire of gain. The most eminent of these pupils were Prodicus, Dexipus, and Apollonius. Those who wish to see a more circumstantial account of Hippocrates, and these persons, may consult writers on Medical History, particularly Le Clerc and Schulz.

After the death of Hippocrates, however, his tenets did not fall into disrepute; and although we find, by his book *De Veteri Medicina*, that several sects of Physicians existed in his time, yet Hippocratic learning continued to prevail, and remained a long time cultivated in the family of Asclepiades, even down to the time of the Emperor Claudius, when Xenophon of Cos, Physician to that Emperor, called himself one of the Asclepiades; and procured for the Coans, exemption from tribute. This can be clearly shewn from Tacitus, who says—*Annal. Lib. XII. p. m. 249*—“*Retulit dein (Claudius in Senatu) de immunitate Cois tribuenda, multaque super antiquitate eorum memoravit: Argivos vel Coelum, Latonæ parentem, vetustissimos insulæ cultores; mox adventu Æsculapii artem medendi illatam maximeque inter posteros ejus celebrem fuisse, nomina singulorum referens, et quisque quibus ætatibus vixissent. Quin etiam dixit Xenophontem, cujus scientia ipse uteretur, eadem familia ortum; precibusque ejus dandum, ut omni tributo vacui in posterum, Coi sacrum, et tantum Dei ministram insulam colerent.*”

But the learning of Hippocrates did not remain all this time uncorrupted, nor amongst the Asclepiades only, but received various modifications by different persons, to the time of Aretæus, who does not seem to have lived till after some of the Roman Emperors. The succeeding part on the medical learning of Hippocrates, extracted from a much larger history of medicine than the present, written many years ago; will tend to illustrate, how far the justly celebrated physician extended the art, which was not previously reduced to order, or method. His aphorisms are written in a manner and style equal to Aristotle's Poetics, and other extraordinary productions of the enlightened preceptor of Alexander the Great.

ON THE ANATOMY OF HIPPOCRATES;

WITH CRITICAL OBSERVATIONS.

HAVING offered some conjectures concerning the ancient state of physic before Hippocrates; the doctrines of that great man are next to be delivered. But it may be proper, previous to the entrance of a subject so important, to mention something of the medical schools at different places.

Herodotus says, there was a medical school at Cyrene, and a temple of Æsculapius erected, but the manner of worship differed from the Greek. (a) The same author notices another, founded at Crotona, the country of Damocedes, a famous physician contemporary with Pythagoras, who being banished from the city by the severity of his father Calipho, came first to Ægina; and afterwards to Athens. Here he lived in great repute; from whence he went to Samos, and cured Polycrates, king of that island, of a dangerous distemper. Some time after, he was taken prisoner, by the Persians; and endeavoured to conceal his profession, but being discovered, he was compelled to undertake the cure of Darius, whose foot was dislocated, and his queen Atossa, who had a cancer in her breast. He succeeded in these cures, and had the honour of being admitted to the table of that great prince. Some time after, despising all honors, and by disguising himself, he retired from court, and returning into his own country, married the daughter of the famous Milo. (b) This is, however, the only remains of the physic of Damocedes, or of the Crotonian school.

g

Galen

(a) Lib. 3.

(b) A famous strong man of Crotona, who is said to have carried an ox without breathing, the space of a furlong.

Galen mentions three schools, erected by the Asclepiadæ: one at Rhodes; this failed a considerable time before Hippocrates; not being mentioned by him, as are those of Cnidus, and Cos. The same author assigns the pre-eminence to the Coan school as it produced the greatest, and most excellent physicians. Cnidus was the second in reputation; and that of Italy the third. Some judgment may be formed of that at Cnidus from Hippocrates; (c) who says, those who compiled the Cnidian sentences, or observations, have observed exactly all the symptoms of every distemper. But they have forgot the greatest part of those things which a physician ought to know, without hearing the account of the sick person. He likewise says, that Elaterium, and milk, and whey, were their chief medicines. It seems they chiefly attended to the symptoms without any reasoning. The Cnidians used to cure (d) (by analogism) those who had an abscess in the lungs, after this manner. (e) Having observed that a cough threw up all that lay upon the lungs, they drew out the tongues of those who suffered under this disease, and endeavoured to pour some water down the aspera arteria, to discharge, by violent coughing, any matter upon the lungs.

From what has been collected; these ancient schools of medicine, seem not much calculated for improving the art. Indeed, in the age of Hippocrates science was in its infancy, some faint glimmerings of learning appeared amongst the philosophers; but less amongst the physicians. As philosophy however began to be studied, by many excellent men; physic, though before traditional, and involved in superstition and darkness, shone forth, amongst the rest, of the sciences, and seemingly, by the industry of one man, arrived at an uncommon degree of perfection. Hippocrates, the great founder and improver of the art, was said to be descended from Æsculapius; and was born in the island of Cos. The practice of medicine being hereditary in his family; some have imagined, that he acquired great knowledge from the experience of his ancestors; and the records of cures, preserved in the temple of Æsculapius: it is more rational to attribute his excellence to industry, and the happy possession of extraordinary powers of mind. But leaving such conjectures to those learned men, who continually indulge themselves in the contemplation of antiquity: we begin by displaying the amazing progress of the art itself; and examining his extensive knowledge in all the branches of medicine.

THE GENERAL OPINIONS OF HIPPOCRATES.

NATURE is sufficient for all things, in all (f) animals; or it is, to them, instead of all things. It knows, of itself, whatever is necessary, without being taught, or being under the necessity to learn of any one. There is one principle power alone; (g) and many others, subservient to this. It is by these powers that every thing is administered in the bodies of animals; these distribute the blood, spirits, and heat, into all parts; by which means they receive life and sensation.

Nature rejects every thing superfluous, and hurtful; (h) but it attracts, retains, and assimilates, every thing good and useful.

What we call heat, or hot, seems to be something immortal; which understands, sees, hears, and knows, both what is past, and what is to come.

The human body consists of three constituent principles; solids, fluids, and spirits, called the containing and contained parts. There are four humors; blood, phlegm, yellow bile, and black bile, or melancholy. The blood is naturally hot, fluid, and of a red colour, and sweet to the taste. The phlegm is cold, fluid, white, viscid, and somewhat saline. The yellow bile is dry, glutinous, and bitter, and extracted from the pinguious parts of the blood, and aliments. Melancholy, is black, cold, and dry, very glutinous, flatulent, and inclined to ferment.

The containing parts are composed of air, fire, earth, and water. This is the opinion of Pythagoras, Empedocles, and some of the most ancient philosophers. By the containing parts are meant bones, nerves, tendons, ligaments, cartilages, membranes, and fibres. Health continues, as long as the four humours remain in their natural conditions, as to their qualities, quantities, and proper mixtures. But when they are not mixed in their natural proportions, or are not possessed of their natural qualities, or if any humour become predominant, then is disease produced.

ANATOMY

(c) De ratione vic. in acutis, lib.

(d) Galen.

(e) The Cnidian practice violent and hazardous,

(f) Lib, Epidem.

(g) Lib. de Alimentis.

(h) Lib. de carnibus vel principijs.

ANATOMY AND PHYSIOLOGY OF HIPPOCRATES.

THE nature of man's body is the principle, or foundation, (*i*) on which all reasoning of physic is built. Some physicians and philosophers pretend, that a man cannot understand the art of physic unless he knows what man is, (*k*) what is his first formation, and how his body is made. But I am of opinion, that all that has been written by these people, belongs more to the art of painting than physic; and am persuaded, that man cannot clearly understand nature, but by means of physic, as those who are well skilled in that art, will soon perceive. These two passages have been produced by a number of commentators in vindication of their different sentiments. Those who would, inconsiderably, force Hippocrates to understand every thing; assert, from the first passage, that he was exceedingly well skilled in anatomy. Those who dispute his anatomical knowledge, have produced the latter, as confirmation of his ignorance in this branch. Neither of the foregoing assertions, we presume, amount to a positive proof on either side. He supposed the nature of man's body, consisted in his elementary principles, and notions, of the four humours. These most probably are, what he meant by the understanding the nature of the human body. His other assertions could only arise from observing that many philosophers, and physicians, disputed, in his time, on subjects, above human comprehension: and for this reason justly reprehended them.

The skin is naturally white, but, according as humours abound, it varies its colour. When the passages are open, for the semen, (*l*) or menses, the hair, or down, appears. The matter, which forms the hair, is either remote or immediate. The remote cause, is, superfluous moisture, which the glands, situate in the moist places, could not absorb: therefore, this moisture is pushed out into the skin, and where there are hairs, there are also glands. The glands receive the moisture, which comes to them; the hairs absorb it, for their production or nourishment, (*m*) being expelled by nature as superfluous. The reason of there being glands, and no hairs in some parts, is, because there is too great an abundance of moisture: for we see, that in watery and low grounds, seed will not take any root; nay the grass itself will not grow. The hair varies in colour, according to the predominant humour; for whatever humour the flesh attracts, such will the colour of the hair be.

Little is said concerning the muscles, except their name. The parts whose flesh is turned round, which is what we call *μῦς*, have all a belly, or cavity *Ασφυμφύλον* for all which is not composed of parts of a different nature, whether it be covered with membrane, or whether the flesh covers it, all that is hollow; and when well, is full of spirits; but when it is diseased, (*n*) it is filled with a sort of water, or corrupted blood. The arms, have flesh of this sort; the thighs, and legs the same; as well as the most lean, and fleshless parts.

The liver is the root of the veins, and the heart that of the arteries, from these the blood, (*o*) and spirits flow; and through means of these, is the heat diffused.

There are two hollow veins that come from the heart; one of which is called the artery; (*p*) the other the vena cava.

At the mouths, or inner gates of the arteries, there are three round membranes, disposed in their top, like a half circle; and they who pry into the secrets of nature, do much wonder, how these orifices, and ends of the great arteries, do close themselves. For if the heart be taken out, and one of these membranes be lifted up, and another pressed down, neither water, nor air, can pass into the heart; and these membranes, are more exactly disposed in the mouths of the left ventricle; and that, for a very good reason. (*q*) The heart dwells in a bladder, and it is a very strong muscle.

The large vessels of the heart, are called the fountain of nature; and he supposed, that the auricles served the heart as a fan; and that the soul was situated in the left ventricle owing to its great heat.

The motion of the arteries he called *σφύγμον*.

The heart is moved by its own nature, but the auricles privately swell, and fall again. (*r*)

All the veins do communicate and flow mutually with one another. (*s*)

The lungs are of their own nature cold, and are farther cooled by respiration. The lungs attract a nourishment contrary to their substance, whereas all other parts, (*t*) attract those which are similar to them. (*u*) The lungs are the seat of thirst. The lungs with their heat attract to themselves phlegm, out of the whole body; (*x*) especially the head. There is much heat in the heart; as being, of all members, the hottest. (*y*)

Part

(*i*) De locis homine.

(*o*) Lib. de alimento.

(*t*) Lib. de alimento.

(*k*) De prise. medicin.

(*p*) Lib. de Cern.

(*u*) Lungs the seat of thirst.

(*l*) De natur. puer.

(*q*) De corde.

(*x*) De morb.

(*m*) De glandul.

(*r*) De principiis.

(*y*) De princip.

(*n*) Lib. de arte.

(*s*) De loc. hom.

Part of what we drink goes into the lungs; (*z*) because if you give a swine drink, coloured with red vermillion, or any such like thing, and presently cut his throat, you will perceive the asperia arteria, coloured with the drink. The liquor found in the pericardium, (*a*) is a part of what we drink.

The great artery, includes more heat than the vena cava; and is the reservoir of the spirit ταμιεύει τὸ πνεῦμα there are, as yet, (*b*) other veins in the body, besides these two. As to that, which has the largest cavity, and is fixed to the heart, it runs through all the belly, and diaphragm; and sends a branch to each kidney, and at the loins, it divides, and sends branches to other parts, and to both legs. Above the heart, also, this vein divides itself to the right, and left; and, mounting to the head, distributes itself to each temple. To this may be joined other veins, which are, also, very large; but, in one word, all the several veins which are dispersed over the whole body, proceed from the vena cava, and the artery.

The largest veins of the human body, are disposed in this manner: there are four pair in all. The first pair, arise from behind the head, descending by the exterior part of the nape of the neck, on each side the spine, reach the hip and thighs; and passing thence through the legs, they reach the external ankle bones, and feet. For this reason, in pains of the back, or hip, bleeding in the ham, and in the external ankles, affords great relief. The second pair, coming from the head, descend from the ears along the neck; they are called the jugular veins, and follow the spine in its inner parts, till arriving at the loins, they branch out on both sides to the testicles, the thighs, and the insides of the hams; and pass thence, through the internal ancles, to the inner sides of the feet. For this reason, in pains of the testicles, and loins, bleeding in the internal veins of the ham, and ankle, is very useful. The third pair rise from the temples; and passing from the neck, towards the shoulders, reach the lungs, and from thence passing on one side, from the right to the left, run along the under breasts to join the spleen, and kidneys; and on the other side, passing from the left, to the right, run also by the breast, to the liver and kidneys, and at last they terminate in the strait intestine. The fourth pair, rising from the forehead, and the eyes, pass below the lungs, and clavicles; and thence, by the superior part of the arm, reach the elbow, the hands, and fingers; and they return again from the fingers, by the palm of the hand, by the elbow, and by the under side of the arm, in order to reach the armpits; and by the superior parts of the ribs on one side of the spleen, and on the other to the liver. These two branches, passing beyond the belly, terminate, at last, at the private parts.

There are two intestines, one straight, about the length of twelve cubits, being afterward full of folds, some call it colon: (*c*) and he observes, that this intestine in man, is like that of a dog, but larger. This intestine is fastened to a part, called, mesocolon.

The second intestine αἰσθητήρ is furnished with abundance of flesh all round, (*d*) and it terminates in the anus. The oesophagus, is a funnel, which reaches from the tongue to the stomach, in which part the meat is concocted. In his Lib. de Aliment, (*e*) he calls the stomach, the putrifying belly, κοιλία but oftener the word coction πρὸς ψίψιν and πρὸς σίψιν to concoct.

Digestion is performed, by the heat in the stomach; which, he calls, a part, all nervous, that joins to the liver, on the concave side.

The spleen is raw and spongy, and as it were another tongue. (*f*).

The liver abounds with more blood than the rest of the viscera; and to the liver is assigned the office of separating the bile Ἡπατίτις and that it has five lobes.

The diaphragm is called the seat of the understanding; φρενίς but this was suspected in the time of Hippocrates, if the book on the falling sickness be his. For there it is said, the part which is called phrenes, is called so falsely, and at random. This name is founded on an opinion, and not on any thing real: for I see not how this part contributes to prudence or understanding. All that it performs is, that when any one is surprised, with great and sudden joy, or grief, it beats, and causes a sort of uneasiness, or pain: for it is fine, and more strongly on the stretch, than any other part of the body; having no belly, or cavity, to receive what is good or bad; but being alike incumbered with one and the other. This part perceives, or has sense; but it is not the seat of wisdom, no more than the heart. Wherefore the name of this is as improper, as that of the ears of the heart, which have no hearing. He says, in one place, it is nervous; in another, that it is this membrane that causes madness; when the blood stagnates there, or moves slowly.

There

(*z*) Part of what we drink goes into the lungs.

(*d*) De Morb Epidem.

(*a*) De corde.

(*e*) Lib De Anat.

(*b*) Lib de carnibus.

(*f*) De morb mulier.

(*c*) Lib de anat.

The soul of man is seated in the left ventricle of the heart; and from thence commands the rest of the faculties of the soul: (*g*) and it is nourished, neither with meat, nor drink, from the stomach; but with a bright and pure substance, secreted from the blood. The soul creeps into a man being mingled with fire and water. (*h*) The soul of man is increased until death. The causes of all those things, whereby the soul is altered, are to be referred to the nature of the passages through which it penetrates. For as the vessels are affected, into which it retires, into which it falls, and with which it is mixed; such is their condition: and therefore we cannot, at all, cure them by diet: for it is impossible to alter or change the invisible nature.

The brain is the seat of coldness; (*i*) it attracts all kinds of expirations; whereof it becomes filled with vapors, because it is seated in the upper part; whereunto all vapours ascend. The excrementitious humors pass out of the brain by several ways: (*k*) through the nose, ears, eyes, palate, into the throat, and aspera arteria, through the veins into the spinal marrow, and blood. The brain is considered a gland; and he imagined, that smelling was performed by the brain drawing up the odors with the air. When a man draws in air by his mouth, (*l*) and his nose is shut, first of all the breath comes to the brain.

The ear is perforated, and in that part we hear; yet the empty cavities about the ear, do hear only a confused noise; (*m*) but that which enters through the membranes, into the brain, is heard distinctly, where there is a perforation through the membrane that invests the brain. We hear, because the holes of our ears reach to the dry and stony bone; to which is added a canal, or fistulous cavity, against which hard bone, the sounds do beat; and the hollow bone, because of its hardness, yields a resounding. Now in the hole of hearing, near that hard bone, there is a film, like a cobweb; (*n*) the driest of all the membranes of the body: but that which is driest is fittest to conceive or receive a sound, as may be proved by many arguments. When this membrane therefore yields the greatest resonance, then we hear best.

The brain has in it a faculty of smelling, though it be moist, and drove through cartilaginous bodies that are dry, together with the air, the odors of dry things. For the brain reaches even to the cavity of the nose, having no bone in its way, but only a soft gristle like a sponge, which you can call neither a bone nor flesh. If, therefore, the cavity of the nostrils be dry, then does the brain better and more exquisitely perceive the odors of dry bodies; for it cannot smell water, because it is moister than the brain; unless it is corrupted. (*o*) In like manner, when the nostrils are moist, we cannot smell, because all that time the brain draws not the air into itself.

There is no passage tending to the nose, but a loose and spongy substance, and that is the reason why we hear farther than we can smell; (*p*) for if the scent be far from the sense, it is diffused before it reaches thereto.

There are some, who, writing on the nature of things, have affirmed, that the brain makes a sound, which cannot be, for the brain is humid and moist; and no moist body can make a sound.

The sight is nourished by the humidity of the brain. (*q*)

Hippocrates called the arteries beating veins, and frequently confounds the nerves, arteries, and veins, calling them promiscuously, *τὸν αἷμα*.

The origin of the nerves, he says, is from the neck to the spine. (*r*).

OF THE BONES.

THE bones give stability, rectitude, and form to the body. Where there is more fat than gluten, there are bones formed: they are condensed by heat, and so grow hard and dry. By his book *De fracturis*, we may presume, that he had a tolerable knowledge of the bones, their situation, and connexion. Pausanias relates, that a brazen skeleton was consecrated by Hippocrates, to the Delphian Apollo.

The generation of teeth is threefold, the first from the semen in the uterus; (*s*) the second from the milk; the third from more solid aliments.

The figure of all the bones depends on the magnitude of the brain and skull. (*t*)

h

BREASTS

(*g*) De corde.

(*h*) De diæta.

(*i*) Brain, the seat of coldness.

(*k*) De loc. in homin.

(*l*) De morbo sacro.

(*m*) De locis in homin.

(*n*) De carnibus.

(*o*) De carnibus.

(*p*) De loc. in homin.

(*q*) De loc. in homin.

(*r*) De natur. ossium

(*s*) De carnibus.

(*t*) The figure of the bones depend on the magnitude of the brain.

BREASTS AND GLANDS.

THE breasts receive the excrementitious moisture: for if any disease, or other event, take away a woman's breasts, (*u*) her voice becomes shriller, and she is much troubled with a pain in her head.

The uses of the glands and the breasts are alike, for they absorb the superfluities of the whole body. (*x*) The nature of women's breasts, is fleshy, and spongy, and the aliment they receive, they turn into milk. The milk comes from the uterus to the breasts, which after the birth, must be for the nourishment of the infant. This the epiploon presses out, and sends upwards, (*y*) being strengthened by the growth of the fœtus.

After a woman has born a child, if she also has given suck before, the milk will arise into the breasts, as soon as the infant begins to move. When the infant moves, it gives warning to the mother. The fœtus, in the third or fourth month, becoming great, strains or presses the vessels full of blood, and by this compression, there is made an expression to the upper parts.

The almonds, says Hippocrates, are for the purpose of receiving the moisture of the brain. (*z*) This moisture it converts into saliva, whereby all the parts within the mouth, even the œsophagus, and the aspera arteria, and tongue, are all kept from drying, and rendered more glib and nimble.

ON CONCEPTION, &c.

IN women, who are weak or delicate, the menses sometimes continue flowing for the space of seven days. (*a*) The discharge of the menses is, more or less, according to the variety, colour, temperament, age, habit, and time of the year. The women who are fair, or white, have such abundance of humour, that it issues various ways; contrary to those who have brown and swarthy skins, (*b*) being commonly drier. In moderate, and middling temperate women, the quantity of the discharge is equal to hemine, (i. e. eighteen ounces).

To perfect generation, there is required a concurrence (*c*) and mixture of the male and female semen. (*d*) The semen is of a fiery, and airy nature. By the airy part, it distends the whole frame of nature; and by the fiery, it is stimulated to action. The ligaments of the womb do hold it like a bridle.

In the right sinus, or bosom of the womb, the male children are conceived; (*e*) and in the left, the female. When the semen is received into the uterus, it is there closely shut up. (*f*) It will scarce admit a needle or small probe.

The wombs of women are the cause of all their diseases. (*g*)

There is a double kind of semen in both sexes, (*h*) the one strong and hot, the other weaker and colder. The first is called semen masculum, or male seed; the other semen femininum, or female seed; and out of these, as they overcome one another, he thinks, that a male, or female, is generated.

The seeds injected, and drawn into the uterus, are exquisitely mixed, immediately; or otherwise, (*i*) they are neither nourished, or animated. And if any man deny that the souls are united in conception, let him be considered ignorant. (*k*)

The woman who is pregnant of a male child, is well coloured; (*l*) she that is pregnant with a female is swarthy, or pale coloured. Male children are situated on the right side, females on the left. (*m*) If a woman has conceived of a male, the right breast will swell; if of a female, the left.

The geniture in seven days hath whatsoever (*n*) it ought to have. For common and prostituted women, when they find they have conceived, they undo it within their own bodies, by wicked means, and so there falleth from them as it were a flesh: which flesh, if it be cast into cold water, and diligently observed, you shall in it perceive all the members, the place of the eyes, ears, hands, fingers, thighs, feet, toes, and the secret parts.

When the infant begins to move, the milk acquaints the mother with it. (*o*) for presently, upon the motion of the infant, the breasts swell, and the nipples are distended. If the right breast should fall, or lessen in size, it indicates the abortion of a male child;

(*u*) De glandulis.

(*a*) De diata.

(*e*) Male children conceived of the right side of the womb, females of the left.

(*g*) De loc. homin.

(*l*) Aph. 48, sect. v.

(*x*) De natura pueri.

(*b*) Lib. de mulier.

(*h*) Two sorts of semen in both sexes

(*m*) Aph. 38, sect. v.

(*y*) De natura pueri.

(*c*) De natur. pueri.

(*i*) Union of souls

(*n*) De principiis.

(*z*) De glandul.

(*d*) Mixture of the male and female semen.

(*f*) Closeness of the uterus, Aph. 54, sect. v.

(*k*) De natur. pueri.

(*o*) De natur. pueri.

child; if the left breast, a female. So if the right breast be enlarged, and projects out, it is a sign that a male is conceived; if the left, a female. (*p*)

The chief cause of the struggling of the infant in the birth, is the want of nourishment. (*q*)

A female child has its confirmation of parts, (*r*) by the forty second day at farthest. A male infant at thirty days. The first beginning of motion, in male children, is at the third month; in females at the fourth month. So that there is a certain proportion of the conformation and motion of the infant, and a double time coming between them. Male children, therefore, (*s*) because they receive their form the thirtieth day, do move the ninetieth: (*t*) now the ninetieth day makes up the third month. Females, because they have their conformation the forty-second day, are moved the one hundred and twentieth, which compleats the fourth month. (*u*)

In his book, *De Principiis*, he promises to make manifest why nature dispenses all things in seven days.

The *septimestris partus*, is circumscribed within thirty weeks: that is two hundred and ten days.

The semen issues from all the moisture which is contained in the whole body. (*x*) The semen falls from all parts; sound semen from sound parts; and sick or diseased, from diseased parts. The semen is diffused out of the brain, into the loins, and medulla of the spine; (*y*) and from thence into the kidneys; from the kidneys it is conveyed through the testes to the parts destined for coition.

In his book, *De Natura Ossium*, he says, that the jugular veins proceed from both sides of the head, into the testes; and thither convey the semen. So that according to Hippocrates, there are two ways of conveying the semen to the parts of generation; by the spine, and by the jugular veins.

When you would generate a female, tie the right testicle of the male; (*z*) when you desire a male, tie up the left.

There is in men and women, both male and female, semen. (*a*) It is the best, and strongest part of all the humours, contained in the whole body.

Those women who have moist wombs do not conceive; (*b*) because their geniture is extinguished.

If the semen which proceeds from the man, does concur together, in a right line, (*c*) and meet with that which flows from the woman, then does the female sooner conceive.

If the geniture proceeding of both sexes, be retained in the matrix of the woman, (*d*) they are presently mixed uniformly into one.

The first nourishment of the infant, is by the naval string, through the abdomen. (*e*)

Before the infant is born, it draws the purest blood from the mother. (*f*)

The infant, as it is situated in the uterus, hath its hands on its knees, (*g*) and its head bent down to its feet.

The parts of an infant, are formed together, increased all together, not one part more, before, or after another. (*h*) But those that are great by nature, appear before those which are less. It seems to me, that there is no particular part first formed in the body; but all parts are the beginning; all parts the end; all parts first; and all last.

The geniture, after it is mixed and retained, what day or hour soever it be avoided, doth all appear covered with a film, or crust, (*i*) (meaning the fetal membranes). For the geniture, being heated and puffed up, or fermenting, is compassed with a film, even as bread, when it is baked, is surrounded with a crust.

A male unites its parts sooner, and is sooner articulated; (*k*) but afterward it grows more slowly, and in a longer time. The male child is sooner formed in the matrix, because he is hotter; (*l*) for conformation is the work of heat.

Males are generated of hot semen; (*m*) females of colder. This is the reason why a female is formed, and articulated later than a male; (*n*) because the semen of one is moister, and weaker, than the semen of the other.

TWINS.

(*p*) *Aph.* 38. sect v.

(*t*) The fetus when formed.

(*y*) De genitura.

(*d*) De mal. pueri.

(*h*) De diæta and De locis in homin.

(*m*) De diæta.

(*q*) Cause of labour.

(*u*) Pythagorean doctrine of numbers.

(*z*) De Superfætatione.

(*e*) De alimento.

(*i*) De natur. pueri.

(*n*) De natur. pueri.

(*r*) *Lib.* De natur. pueri. De septiment.

(*x*) De genitur. Demorbo sacro et de ære. aquis, et locis.

(*a*) De genitura.

(*f*) De natur. pueri.

(*k*) *Lib.* Epidem.

(*s*) De natur. pueri.

(*b*) *Aph* 62 sect. i. (*c*) De morbi mulier.

(*g*) De natur. pueri.

(*l*) Heat the cause of conformation.

TWINS.

TWINS are caused by the semen being divided equally, and carried to both sides of the uterus. (*o*)

If from both parents, masculine semen issues, then are two males generated; (*p*) if feminine semen, then two females. If both masculine, and feminine, then of the masculine is a male conceived, and a female of the feminine.

Moreover, twins that are both males, or both females, do, for the most part survive. (*q*) But if they prove a male, and a female, the female does seldom live, or at least is very weak; because it is not formed and perfected at the same time, wherein the male is formed and perfected.

The woman, who is pregnant with twins, (*r*) commonly falls in labour of both infants in one day; and if they be of one sex, they are contained in one membrane.

There are three reasons why twins have a great likeness to each other. (*s*) First, the places wherein they receive their augmentation, are equal; whether they be conceived on the right or on the left side of the matrix: (*t*) because, by a wonderful providence of nature, the right are equal to the left, that so the whole body might be equally balanced. Again, because they are conceived together. Lastly, because they are the same elements: for they suck the same blood, and enjoy the same vital spirit, which they draw from the mother, by the umbilical vessels.

OF MOLES, OR FALSE CONCEPTIONS.

CONCERNING the conception of a mole, this is the truth: (*u*) when a great abundance of blood clogs a little ill-disposed semen, there cannot be a true, or legitimate conception; yet the abdomen swells as though the female was pregnant.

This is the certain and greatest sign of the mole, or false conception, if no milk appears in the breasts. A woman may bear a mole, two or three years.

ON SUPERFÆTATION.

IN his book Epidemics, there is related a remarkable example of superfætation in a woman of Larissa, who the fortieth day after the delivery of a legitimate child, (or one born in the seventh month) voided another preposterously conceived.

Superfætation happens to those women, the mouth of whose wombs, after their first conception, is not close shut. (*x*)

Terpida, a woman of Doriscus, (a city of Thrace) when she had gone, with twins, five months, by some mischance suffered abortion. (*y*) The one issued forth, presently, compassed with a membrane; the other she carried forty days after.

A woman pregnant with twins, if either of her breasts fall and grow loose, she will miscarry with one of her children by abortion. (*z*) If it be on the right breast, of a male, if the left breast, she will miscarry of a female.

ON THE NOURISHMENT OF THE FÆTUS.

THE fœtus in the womb gathering its lips together, (*a*) sucketh out of the mother's womb, and draws both aliment, and spirit to its heart; when the mother respires.

The first aliment is through the abdomen, by the navel. (*b*)

In the middle of the flesh, is the navel separated; (*c*) by which the infant respires, and acquires its increase.

The navel is the passage for the air and aliment to sustain the infant, and is the only ingress by which it cleaves to the mother; (*d*) by this means is the fœtus made partaker of those things that are received into the mother's body. (*e*)

When the infant is born, the midwife ties the navel string, as being no more necessary for nourishment; (*f*) and then opens the mouth to shew it another way, by which it should receive nourishment.

A woman

(*o*) De diætâ.

(*p*) How twins are caused,

(*q*) De diætâ and De natur. pueri.

(*r*) De superfætatione.

(*s*) Reasons why twins have a resemblance.

(*t*) De diætâ.

(*u*) De morb mulier.

(*x*) De Superfætatione.

(*y*) Lib. Epidem. lib. 7.

(*z*) Aph. 38 sect. v.

(*a*) De principio

(*b*) De nutritione.

(*c*) De natur. pueri.

(*d*) De octime strinatu.

(*f*) De natura pueri.

(*e*) The child nourished by the navel.

A woman pregnant, is all over of a palid greenish colour; (*g*) because her pure blood is daily drawn from her, (*h*) and descends for the nourishment of the fœtus.

First the infant breaths but little; (*i*) and draws a small quantity of blood from the womb: (*k*) his breathing is increased when it draweth more blood, it descending more plentifully into the matrix.

CRITICAL OBSERVATIONS ON THE ANATOMY OF HIPPOCRATES.

THE anatomical acquisitions of Hippocrates, have been the subject of dispute for several ages. Some of his admirers have asserted, that he understood every branch of science, equally with the moderns; whilst his detractors, and others, who support the pretensions of the moderns, as being superior to the ancients, will scarce allow him that merit he was justly intitled to. It has been allowed, by several learned men, that it is almost impossible to form a true judgment of the anatomy of Hippocrates. For whatever is written on this branch, is dispersed in different parts of his work; and in selecting the most important passages, no inconsiderable labour and judgment are required. Some of the books are supposed spurious, because neither Erotian nor Galen, mention them, and it was five hundred years after his death, before his writings were regularly digested, and published, by Dioscorides, and Artimidorus, two physicians of Alexandria. From these circumstances, some have imagined, that, at different periods, after his decease, several passages were fostered into his works, which belonged not to the original. If such an opinion had any foundation in truth, there would have appeared, most probably, some later discoveries, in anatomy, physiology, philosophy, or surgery; or some of the improvements made by his successors, in the succeeding century. Now, as men in general, are too tenacious of their discoveries, and improvements, to permit others to assume the honour of their inventions: as none of the succeeding discoveries, either in anatomy, physic, or philosophy, appear in his writings; as several of his opinions perfectly coincide, with those of cotemporary philosophers, as it appears that the opinions in general correspond both in his books, which have been supposed spurious, and those acknowledged legitimate: it should seem, that the work as it now appears, is in general genuine; or at least they are his works, joined with those of his son, Polybus, whose sentiments must have been nearly the same. Some passages in the text may be excepted against; and the various readings of different commentators might be insisted on; but, as commentators, in all ages, have disputed on trifles; as they have frequently enveloped in a cloud what was quite transparent; and as several have indulged themselves in misinterpreting the original meaning of the author, to accommodate his ancient notions, to their modern prejudices: let us pass them over in silence, and uninfluenced by any such confined principles, let him receive praise or censure, according to his merits or defects.

The notions of Hippocrates concerning the powers of nature, or that invisible incomprehensible part of man, by which all the animal functions are performed, are not unworthy of attention. They are quite superior to many speculations that have appeared since; he drew his notions from strict observation; for, what can be more strictly true, than that nature rejects every thing superfluous and hurtful, and attracts, and assimilates every thing useful? On this simple notion alone, may we determine on the necessary proportions of diet, exercise, rest, and all human actions; indeed nature ought to be our monitor in every thing that is received by the human body according to different habits.

His elementary principles, and four humours, of blood, phlegm, choler, and melancholy, were introduced in his age; (*l*) and he, like the physicians of every age and country, accommodated his writings, to the prevailing philosophy of the times. Though nothing has so much retarded medical improvements, (*m*) as the slavish and unthinking servility of physicians, to philosophers. On the skin, he seems to have some true notions; (*n*) that its colour depended on what humour was underneath. He had never properly distinguished between arteries, veins, nerves, and tendons, (*o*) which proves that he had never dissected with any degree of accuracy. He perceived the valves of the great vessels, but these he might be informed of by Democritus, or others, whose curiosity led them to inspect animals. Indeed, his being constantly engaged in the most extensive practice, must have in a great measure, prevented him from contemplating and dissecting for an accurate knowledge in anatomy. (*p*) For he says, others who pry into the secrets of nature, wonder much at the structure of the membranes, or valves of the great vessels.

i

What

(*g*) Signs of pregnancy.(*h*) De morb. mulier.(*i*) De natur. pueri.(*k*) He supposed the child breathed in the womb.(*l*) His notions of humours, agreeable to the doctrines of philosophers.(*m*) Its ill effects.(*n*) On the skin he had some true notions.(*o*) Confused in the arteries, nerves, veins, tendons, &c.(*p*) He laments to Democritus, that he had no time for such studies.

What he has advanced concerning the liver, and its use, is in general confused, (*q*) he had no conception of the conveyance of the bile into the intestines; but imagined the liver to be a viscus that made the blood, and in consequence called it the fountain of nature. His notions were very loose and uncertain, concerning the secretion of the bile, though he seems to think it performed by the liver. (*r*) The arteries he knew had a pulsation, but understood not how the blood was circulated. Indeed it was impossible that the most common observer could have not perceived a thing so evident, as the beating of the arteries; because they are plainly to be seen, in very thin or consumptive people. All the passages produced by Vanderlinden, and others, concerning the circulation of the blood, amount only to a proof, that Hippocrates knew that the blood circulated; (*s*) but had not the most distant notion how this salutary action was performed. The following are the principal passages, collected from different parts of his works on this subject.

The veins diffused through the body, supply it with spirit, fluidity, and motion, whilst many of them branch out, from one.

The liver is the root of the veins, (*t*) and the heart of the arteries: from these the blood and spirits flow; and through these the heat is diffused.

If he recover, or get the better of his disease, so that the blood becomes warm, (*u*) whether by means of such things as are administered, or by itself; it foment, is attenuated, and put into motion, carries spirits along with it, despumates itself; and is separated from the bile, and so the patient becomes sound. But whilst the blood does not move, it cannot be but the body must remain in a state of rest and sluggishness.

If the coldness and coagulation of the blood, be perfect, the patient dies.

For the blood being warmed and attracted, those things which are in the body perform a quick circulation; and then the rest of the body is purged by means of the spirits; (*x*) then that which is compact, becoming warm, is attenuated, and eliminated from the body through the skin: and this is called a warm sweat; and after this excretion, the blood is restored to its natural state, and the fever remits.

All these symptoms appearing, are the sign of health; (*y*) and that the body together with all its functions are sound.

But rivers not flowing in their usual manner, may be compared to the circulation of the blood, when they overflow their banks; they resemble the excess; and when they cease to fill their channels, they resemble the deficiency of the blood.

For when the circulation is slow, the senses are lost, by little and little; (*z*) and those who are most acute, are a little put out of order, by reason of the slowness of the circulation.

For the blood itself being naturally warm, and propelled by a certain force, cannot soon make its way through a narrow passage; (*a*) since it may meet with many hinderances and obstructions, whence fevers, pains, and other disorders arise.

The last passage, has a strong resemblance to the *Boerhaavian* theory of fevers, which he thought was chiefly owing to obstructions in the capillary vessels.

Hippocrates's notions of the distribution of the veins are imperfect. His dividing the intestines into two, (*b*) has no appearance of method, or an acquaintance with the parts. The structure, or use, of the diaphragm, (*c*) he understood not. His fixing the seat of the soul, in the left ventricle of the heart, (*d*) is a memorable example of that inherent inclination in the mind of men, to search after incomprehensible things. And it may be observed, the like success has attended the labours of all future enquirers from his time; (*e*) for, after thousands of pages have been written, speculation heaped on speculation, disputes supported and refuted, and innumerable absurdities obtruded on the world; these speculative and deep searchers for the seat of the soul, have left the subject involved in its original inexplicable darkness and uncertainty.

The heart and lungs, he imagined, received part of our drink. (*f*) This is absolutely false, and he never could have examined the anatomical structure of these parts, or he must have known the impossibility of liquor passing either to the heart, or through the trachea to the lungs.

He

(*q*) The use of the liver he understood not.

(*t*) De alimento.

(*y*) De Insomniis.

(*b*) Division of the intestines, not methodical.

(*e*) Ill-success attending enquiries concerning the seat of the soul.

(*r*) He knew the arteries had a pulsation.

(*u*) De morbis. lib. 2.

(*z*) De dieta, lib. i.

(*c*) Understood not the use of the diaphragm.

(*f*) His notion of drink going to the lungs and heart from the mouth false.

(*s*) But not how the blood circulated.

(*x*) De dieta, lib. 2.

(*a*) De flatibus, lib. vii.

(*d*) His notion of the seat of the soul.

He knew a little concerning hearing, and had seen the tympanum; (*g*) from his observation of its being the driest membrane in the body.

The philosophers who were cotemporary with him, likewise applied themselves to discover how hearing was performed, as hath already been mentioned.

As for the brain and nerves, he was entirely unacquainted with their uses. (*h*) Vision, likewise, he does not seem to have speculated on.

In the book *De Glandulis*, he calls the brain a gland; and in his book, *De Morbo Sacro*, he makes the brain the seat of wisdom. These are some of his contradictions, and it has been a matter of dispute, whether the book *De Glandulis* be genuine. Galen thought it spurious.

The uses of the glands, he seems to have understood, though imperfectly. (*i*) The secretion of the saliva, he mentions, and comprehended its use.

The thoughts on generation, conception, the union of the semen of the sexes, (*k*) its conveyance through the spine, or means of the jugulars to the genital parts; and his notions on twins, have no foundation in truth. These subjects were too intricate for the discussion of those early and infant ages of philosophy; indeed no extraordinary success has attended later enquirers, as will fully appear in the prosecution of this work. The opinions concerning the production of moles or false conceptions, are nearly true, (*l*) and agrees with the present general opinions on that subject. On the nourishment of the fœtus, he had formed a tolerable judgment; (*m*) except, where he imagines, that the fœtus respire in the uterus, (*n*) for we know this to be impossible.

From the whole then, it appears, that Hippocrates was defective in anatomical knowledge. (*o*) And can this be wondered at, when it was contrary to the custom of the Greeks to touch, muchless to open and inspect, dead bodies? This alone sufficiently accounts for the deficiency in this branch of the art. But is it not extraordinary that he even understood what he did? Does it not argue the most indefatigable industry, the most extraordinary powers of mind, the most consummate wisdom, for one man to acquire such a comprehensive knowledge in every branch of medicine? It certainly does. He must be considered by every unprejudiced judge, as a prodigy, one whose superior talents and exalted genius, led him to soar above all others; not only in universal benevolence and generosity of soul, but in all the learned accomplishments of the age he lived in.

ON THE MEDICAL PRACTICE OF HIPPOCRATES.

IN acute diseases, he observes that coldness in the extremities is a bad sign; (*p*) and that we must purge, if there be a tendency in nature, to expel the humor by excretion, upon the first appearance of the disease. (*q*) In general, his practice is, to allow the patient only a thin watery diet, and to wait patiently, and watch diligently, for whatever course nature takes to expel the disease, in which salutary purpose he assists.

The remedies in general are, emulsions, hydromels, and thin farinaceous ptisans. Oxymel, he likewise recommends, as it promotes expectoration, and renders respiration easy.

The

(*g*) He had some little knowledge of hearing.

(*i*) Glands he imperfectly understood.

(*l*) His notion of the mola tolerably true.

(*n*) But falsely imagined that the fœtus respired in the uterus.

(*o*) How extraordinary his knowledge, when the disadvantages he laboured under be considered.

(*p*) Epid. XXV. 7. Aph. 10. sect. iv.

(*h*) Ignorant of the use of the brain and nerves.

(*k*) His notions of generation, conception, &c. not true.

(*m*) On the nourishment of the fœtus, his notions just, in some degree.

(*q*) *Prænot.* 15. ix.

The following are his sentiments. (*r*) I praise that physician, who knows how to distinguish himself, above all others of his profession, by his skill in improving the common methods, in curing acute diseases; (*s*) which make the greatest havoc amongst mankind. Such are those, to which our ancestors, gave the names of pleurisy, peripneumony, lethargy, burning fever; (*t*) and other disorders which have an affinity with them; for these destroy the patient, by a fever, altogether continual, which accompanies them.

For when there is no pestilential disorder raging epidemically, (*u*) but only sporadical fevers, of various kinds; more die of these acute fevers, than all other diseases.

The generality of mankind, indeed, (*x*) are not capable of distinguishing the man who excels his brethren in true medical knowledge; and therefore they only praise, or condemn, especially when they see cures performed.

It is utterly unsafe to attempt an unreasonable and extravagant inanition of the vessels; (*y*) or offer food in the height of a disease, attended with inflammation; (*z*) or, in short, to make any sudden alteration in any respect, during the whole course of a distemper.

Men, ignorant of physic, can easily impose on mankind; (*a*) and pass for able practitioners, if they only understand a few technical terms, as hydromel, or ptisan, but knowledge is acquired by diligent study only. (*b*) Some physicians will not allow barley water unstrained; others will not allow boiled barley. (*c*) Some not the least particle of either solid, or fluid diet, till the seventh day. Others not till the full determination of the crisis. Ask them why? They are silent, not having any conclusive reasoning in support of such singular conduct. Thus, by the contradictions, and disagreements of the artists, the art itself falls into disrepute; and is reproached by the undiscerning multitude. He illustrates this, by comparing physicians to practitioners in augury. Those frequently disagree about the same omens. (*d*) If a bird appear on the left side, one prognosticates a favourable event; while another augurer foretells from the same thing, that something direful will certainly happen.

Regimen is a proper subject for the speculation of a physician. (*e*) He inveighs, with many powerful reasons, against the practice of an absolute inanition, in acute distempers. He recommends the free use of barley water, or ptisan, from the beginning of the disease, after the intestines are emptied by black hellebore *μελανι ιλλιβερω* or purple sea spurge (*f*) *πειλιω* mixing with the hellebore wild carrot *δαυκιν* or hart wort *σισιλι* or cummin, or anise, or some of the fragrant herbs; but with the spurge the juice of silphium *επειν σιλφιου* for though here be a mixture of simples, they are of a like quality, and produce one uniform effect.

If the beginning of a fever is attended with pain after the evacuation, he recommends oxymeal, warm, if it be winter, but cold in summer, or if the thirst be considerable, hydromel much diluted with water. (*g*) Ptisan (or barley) water, he conceives to be preferable to all other liquors in acute diseases, on account of its innocence, lubricity, and light nutritive qualities. The manner of administering the cremor of the ptisan, (*h*) is to be regulated by the patient's former manner of living, and urgency of the symptoms: the greater the discharge from the lungs, the more freely may the ptisan be used. There is no necessity of keeping the vessels empty, except on the days that a purge, or clyster, is administered. But I know some physicians act quite contrary to what they ought. (*i*) For their method is, after they have exhausted their patient, in the beginning of the disease, by an abstinence of two, three, or even more days; then allow them sorbile aliment, and liquors, upon this principle, perhaps, that it seems reasonable to compensate, for one great change in the body, by introducing another as great, and contrary. The ptisan should be continued two days after the crisis, particularly where there is an appearance on the fifth, seventh, or ninth day, always having regard to an equal number of days. Ptisan should be drank, when

(*r*) De ration vict. in acut.

(*t*) Their fatal effects.

(*x*) He remarks the ignorance of mankind in general, of the abilities of physicians.

(*y*) Danger of suddenly altering the habit, by an over emptiness. (*z*) Giving food in the height of inflammation, equally dangerous.

(*a*) Ignorant men may pass for able physicians by arts.

(*b*) Knowledge in the art acquired by study only.

(*c*) Some prejudices censured.

(*d*) The contrariety of opinions, he compares to augury.

(*e*) He is much against an universal emptiness of the vessels. (*f*) Evacuation by purges.

(*g*) Ptisan was understood the barley and water all together, the juice, or cremor was the strained liquor, what we now call barley water.

(*h*) Manner of giving the ptisan.

(*i*) Some prejudices of other physicians censured.

when there is perceived heat in the feet; and it should not be drank during the operation of the cathartic. (*k*) But when that ceases, it may be taken in less quantity than usual, and to be gradually increased. He recommends fomentations to the side, of hot water put into a bladder, or leather vessel; (*l*) or millets made hot, sewed in a bag, and applied in the same manner. If the patient should not receive benefit from the foregoing remedies, profuse bleeding, till the blood appears florid, or livid, to be taken from the middle vein of the arm.

He illustrates and endeavours to confirm, the propriety of administering the ptisan, by observing, that there is great danger in changing our usual diet, or manner of living in any respect. He observes, that those accustomed to three meals, will be disordered if they omit them; and the same happens to those, who eat but one meal, if they indulge themselves with a greater number, or more wine than usual. Now, as changes in diet, produce such effects, he concludes, that it is equally hazardous, suddenly to empty the vessels; or to pursue those prejudices already mentioned, in not allowing patients any thing to such a particular day. All these things should be governed by nature; (*m*) and agreeable to its variety in different patients. For, he says, sudden and extraordinary changes in things which relate to nature and habits, are the principal causes of diseases.

Relative to what has been here explained, much might be said in regard to the stomach, and things of the like kind. As that we bear with ease what we are accustomed to, whether meats, or drinks, though bad in their nature. (*n*) And, on the contrary, are incommoded with the best of food, to which we have not been used. The effects also of eating much flesh, contrary to custom, or of garlick, or (*o*) silphium, or its juice, or cabbage, or any other of that kind, which are endued with some remarkable virtue, might be noticed; but it is no wonder, that these should more than other things disturb, and incommode the stomach; especially, if we have observed, what disturbances, or intumescences, inflations, and gripings, are excited only by maza, (*p*) in a stomach never accustomed to it. What a sudden repletion, is caused by hot bread, by reason of its drying quality, and slow digestion? Also what various effects are produced by the finest bread, as well as the coarser sort, when eaten contrary to custom; and by maza, when drier, moister, or more viscous than ordinary? What are the effects of new polenta (*q*) on those who are not used to it; and how it operates when stale, with such as are accustomed to eat new? What are the consequences of wine and water, being drank contrary to custom, on a sudden, exchanged one for another; or of the sudden abandoning our customary drinking, our wine pure, or diluted with water, for the contrary? For one will be sure to produce a redundance of humidities in the stomach, and flatulencies in the lower intestines, and the other a palpitation of the heart, heaviness of the head, and thirst. The changing of wines will produce the same effects.

He observes; that physicians are not very sagacious in distinguishing the cause of weakness; whether it arise from the violence of the disease, or emptiness of the vessels. And says, ignorant persons, by the use of common reason, discover the cause of debility when arising from inanition, and frequently to the disgrace of the physician, cure the sick, by only recommending some innocent nutritive diet. He illustrates the foregoing observations by many reasonable arguments, which seem to be the effect of a close observation on nature.

If therefore a sudden alteration be made from exercise, and labour, to indolence, and inactivity; the stomach must be suffered to rest in proportion from the fatigue of digestion; otherwise for want of this precaution, the body will not fail of injury, either by an universal heaviness, or some other disorder.

SOME GENERAL OBSERVATIONS OF HIPPOCRATES, ON FEVERS, &c.

IF a fit of cold shivering attacks a feverish person, (*r*) he being weak, and the fever not intermitting it is a mortal sign.

Those fevers are with difficulty determined, in (*s*) which, at the sixth day, extreme cold fits happen. A cold shaking fit

k

coming

(*k*) The ptisan to be given in less quantity, and gradually increased after the operation of a purge.

(*l*) Fomentation to the side.

(*m*) Follows nature and the habits of patients.

(*n*) A just and indubitable truth on diet.

(*o*) Silphium an herb whereof comes benzoïn. Plin. XVIII. 19.

(*p*) A thing made of water and oil, or as others say of milk and flower like to flummery.

(*q*) Barley and flour dried at the fire, and fried after it has laid and soaked one night in water polenta a farina hordei dictat, es quod torretur. Plin. XXII. 25. A country food ubi fient nequam homines, qui polentam pransant. Plaut. asin. XI. 18.

(*r*) Coac. prænot. i. 15. Aph. 46. sect. IV.

(*s*) Epid. XL. 20. Aph. 29. Sect. IV. Coac. i. 23.

coming upon one who has a burning fever, dissolves it; (*t*) and rigors of the nerves succeeding convulsions removes them. (*u*)

Those fevers which have cold fits every day, (*x*) are daily dissolved; and tremblings, or convulsions succeeding sleep, are very bad signs. (*y*) Tremblings in fevers are frequently removed by a delirium. (*z*)

SWEATS.

SWEATS, if they begin upon the third, fifth, seventh, ninth, eleventh, fourteenth, seventeenth, twenty-first, twenty-seventh, thirtieth, or thirty-fourth days, are beneficial; (*a*) for those sweats determine the disease. (*b*) But when sweats happen otherwise, it is an indication of a troublesome and lingering disease.

It is an argument of much moisture; (*c*) and a fever is prolonged, if sweats happen, which do not remove the feverish heat.

Cold sweats, in acute fevers, signify death; but in more mild diseases the continuance of the distemper. (*d*) After a sweat a shivering is bad.

Vehement and sudden sweats, on critical days, are dangerous; (*e*) and so are such as the forehead sends out like drops, and spunging water, and likewise those that are cold, and in great plenty; for sweats of this kind, cannot be sent forth without violence, and excessive labour, nor till after a long time.

He observes, if a yellowness appear all over the body on the seventh, ninth, eleventh, or fourteenth day, (*f*) it is good, unless the right hypochondrium be hard, for then it is bad. (*g*) But if a yellowness appears before the seventh day, it is bad, (*h*) unless the humours are carried off by the intestines.

A tough and viscous moisture hangs about the teeth of those who have very fierce and vehement fevers. (*i*) Fevers, unless they leave persons on odd days, are apt to return. (*k*)

BREATH.

THE breath not keeping its due course in fevers is bad; for it signifies a convulsion.

URINE.

THE urines in fevers are advantageous that are thick, and curdled, and little in quantity; (*l*) especially if they be such as have a sediment at the first, or not long after they are evacuated. Those who have their urine foul, like that of cattle, are, or will be troubled with the head ach.

If a crisis happen upon the seventh day, then the urine has a small red cloud in it upon the fourth day. (*m*)

Urines that are pellucid and white, are bad; but these generally appear in phrenetic persons. (*n*)

DIET, &c.

PEOPLE of an extreme fulness of body, are in a state of danger, for they cannot continue in the same state, nor change into a better: it remains, therefore, that they must decline into a worse. Wherefore an over full habit of body, should be speedily removed, to the end that it may take a beginning to new nourishment. Neither are we to evacuate, the vessels to an extremity,

(*t*) Predicat. XII. 9. 16. Coac. I. 118. Aph. 58. Sect. IV.

(*z*) Judicat. XI. 16. Aph. 63. Sect. IV.

(*z*) Judicat. XI. 10. Coac. I. 185. Aph. 26. Sect. VI.

(*b*) Critical days.

(*c*) Aph. 56. Sect. IV. Judicat. VIII. 6. Coac. IV. 36. 11 Morb. XXXV. 12. 1. Prædicat. VII. 8.

(*d*) Judicat. VI. 9. 10. Prænot. V. 45. 1 Prædict. VII. 14. 15.

(*f*) Judicat. III. 5, 18, 20. IV. 11. Coac. I. 173. 1 Epid. II. 120. 1. Morb. VI. 2.

(*g*) Judicat. III. 5. 18, 20.

(*i*) Aph. 53. Sect. IV.

(*l*) Aph. 69. Sect. XIV. Coac. Præn. V. 80. 81.

(*n*) Aph. 72. Sect. IV. 1. Prædicat. I. 5, 11. Coac. V. 25. 26.

(*u*) Loc. in hom. XLVIII. 6. Judicat. XII. 10. Coac. I. 231. III. 80, 84.

(*y*) Aph. 67. Sect. IV.

(*a*) Judicat. I. 2. IV. 13. Prænot. V. 2. 3. Aph. 36. Sect. IV.

(*e*) Judicat. VI. 9. Prænot. V. 4, 5. 1. Prædict. V. 7.

(*h*) Morb. VII. 2. Vict. amt. LIV. 3, 4.

(*k*) Odd days. Aph. 61. Sect. IV. Humor. III. 91. 1. Epid. III. 40.

(*m*) Aph. 71. Sect. IV. Judicat. VI. 2. IX. 8. Coac. I. 213. V. 5.

extremity, for that is dangerous, but only in such a manner as nature is able to bear. (*o*) So extreme evacuations are dangerous, as likewise an extreme repletion.

In lingering diseases, a slender diet is always dangerous; (*p*) and in acute diseases likewise, where it is not convenient. And again, diet reduced to extreme slenderness, is as full of danger, as extreme repletion. (*q*)

The sick may offend in a slender diet, and thereby grow worse; for every error, in this case, is more dangerous, than in a more plentiful diet. For the same reason, a very slender and too precise a diet, (*r*) is somewhat dangerous to sound and healthful bodies; (*s*) because they endure the errors of it with more difficulty; and therefore, a thin and exquisite sparing diet, (*t*) is more dangerous than that which is somewhat plentiful.

When the disease is very sharp or acute, and is immediately attended with dangerous symptoms, we must use a most exquisitely tender diet; but when it is not so, (*v*) we may use a fuller diet; and as the disease declines, we may gradually and proportionably increase the diet. When the force of the disease is the greatest, (*u*) the most sparing diet must be observed: but the patient should be considered, whether he has strength to bear the prescribed diet: (*x*) for even in the height of the disease, if the diet be not sufficient, the patient will grow faint, and sink under the distemper.

In diseases which come instantly to their height, (*y*) we must instantly administer slender diet; but in those that have not yet come to their height, we may allow a fuller diet at first, to preserve the patient's strength, and afterwards gradually diminish it. In paroxysms, or sharp fits of intermitting diseases, we must take away meat; for to allow it then, would be injurious. (*z*)

The same abstinence is to be observed, in fits that are heightened in their periodical returns.

Old men easily endure fasting, those who are middle aged, not so well; (*a*) young men worse again than them, and children worst of all; especially those that are of a more lively spirit.

Those bodies that grow, (*b*) have much more natural heat, therefore they require great store of food, or else the body consumes. But old men have little heat in them, therefore they require but little food. And this is the reason that old men have not very acute fevers; (*c*) because their bodies are cold. The belly is naturally hottest in winter, and the spring, and most addicted to rest; consequently, in those seasons, a greater proportion of food is to be allowed; (*d*) because the inward heat is stronger, which is the reason that a more plentiful food is necessary.

This difference may be seen in such as are old; and in such as are lusty, and well grown bodies.

Moist diet is good for all who are inclinable to fevers, but especially for children, (*e*) and others who are accustomed to such diet.

We ought to consider, to whom it may be convenient to feed once or twice in the day, more and less, by little and little. We must attribute something, also, to custom, (*f*) season, country, and age. In the summer, and autumn, (*g*) sick people can hardly digest any meat at all; but more easily in spring; and easiest of all, in the winter. (*h*) No food ought to be given, or forced upon such as have fits returning periodically. But food ought to be rather diminished, (*i*) before manifest tokens appear, to form a proper judgment of a disease.

In his book, *De Dieta*, he says, that the flesh of dogs is heating, drying, and of a corroborating (*k*) nature, but does not easily pass through the intestines, whereas that of whelps is of a moistening, lubricating quality, and is easily discharged that way. In his book *De Morbo Sacro*, he informs us, that epileptic patients were forbid the use of dogs flesh. In his book

(*o*) Octimest III. 26. Aph. 3. Sect. I.

(*q*) Extremes to be avoided.

(*t*) A spare diet more dangerous than a full one

(*u*) Vict. in acut. XVII. 11. XX. 1. ad. 6. Aph. 8. Sect. I.

(*y*) Diseases which come instantly to a crisis. Vict. XX. 8. 9. Aph. 10. Sect. I.

(*z*) Natur. human. XVIII. 30. 31. Human. III. 82. Hoc. in hom. XXXIX. Affect. XLII. 3. Aph. 11. Sect. I.

(*a*) Aph. 13. Sect. I.

(*c*) Reason why the aged have not very acute fevers.

(*e*) Moist diet for Children. Insomn. XV. 15, 16, 17. Aph. 16. Sect. I.

(*g*) Seasons of the year.

(*i*) Humor. III. 82. Aph. 19. Sect. I.

(*p*) A slender diet in lingering diseases dangerous. Precept XI. 4. Aph. 4. Sect. I.

(*r*) Too precise diet dangerous.

(*s*) Aph. 5. Sect. I.

(*v*) 1 Epid. III. 29, 33. 2 Epid. I. 24. Aph. 7. Sect. I.

(*x*) Vict. in XIX. 8. 9. Aph. 9. Sect. I.

(*b*) 1 Diet. XXXIII. 5, 6, 7, 20. Nat. hum. XXIV. 7. Aph. 14. Sect. I.

(*d*) Humor. V. 4. Aer. Aq. Loc. II. 2. Aph. 15. Sect. I.

(*h*) Humor. VIII. 24. Aph. 18. Sect. I.

(*k*) Dogs, or the flesh of puppies as diet.

(*f*) Aph. 17. Sect. I. Diet considered according to custom.

book *De Superfetatione*, he recommends boiled puppies to be eaten by women, to promote conception. In *Lib. de Internis Affectionibus*, he directs the same to be used as food, by dropsical patients, and in an hepatitis, after the disease is brought to a crisis. It may be worthy of observation, that puppies were considered rather as a delicacy in China, Asia, and Africa; and Pliny says, (*l*) the Romans used them as other aliments.

DELIRIUM, CONVULSIONS, AND COMATOSE SYMPTOMS.

A CONVULSION and delirium occasioned by too much watching, is bad. (*m*)

Convulsions, and vehement pains about the bowels, in acute fevers, are bad. (*n*) A difficulty of breathing, and delirium in continual fevers, are mortal. (*o*)

If those that are in health be suddenly taken with the head-ach, and thereupon become presently dumb, and snore, (*p*) they die within seven days, unless a fever come upon them. We ought likewise to observe, what of the eyes appear in sleep; (*q*) for if any of the white appear, the eye-lids not being close shut, unless it proceed from a flux of the belly, or a purging potion, it is a bad sign, and very pernicious.

Deliriums attended with laughter, are more safe; (*r*) but those that come by too much study, are more dangerous.

In the continual fever, if either the eye-brow, or nose, be distorted; (*s*) if the sick see not, or hear not, if any of these symptoms appear, death is approaching.

He likewise draws conclusions from expectoration and the fæces, (*t*) and makes several observations, of slow fevers producing pains and swellings in the joints. (*x*)

INTERMITTENTS.

HE observes, that quartan agues are, for the most part, of short duration, in summer; (*x*) but the autumnal, long; and especially those commencing near the winter.

Those intermittent fevers, are hard to be removed, (*y*) when the paroxysm returns the next day, at the same time it left the patient the day before.

The fourth day is the index of the seventh; the eighth the beginning of the week following. (*z*) But the eleventh day is to be considered; for that is the fourth day or another seventh. (*a*) And again, the seventeenth is to be considered, being the fourth from the fourteenth, and the seventh from the eleventh.

In the beginning of diseases, if there should be a cause for removing any thing, move it; (*b*) but when they are advanced, it is much better to leave them alone.

Those fevers which happen every day, are daily dissolved; (*c*) but with great difficulty cured.

In intermitting fevers, if a lip, nose, eye, or eye-brow be distorted; or if the sick cannot hear; if these symptoms appear, then is death approaching.

Hippocrates, in his method of curing intermitting fevers, or quartan agues, (*d*) first purged downward; and if the disorder continued, he bathed them in warm water; and on coming out of the bath, gave his patients the seeds of henbane, and mandrake, the quantity of one grain of millet seed each, lasserpitium and trefoil, each the quantity of three beans steeped in wine. If a fever arose, from the fatigue of a journey, to the robust, and afterwards proved intermittent; he ordered garlic and honey, lentil broth, in which was honey and vinegar. After the sick had taken this mess, he made them vomit; and after having bathed them in a hot bath, when cool, they drank ciceon water, and in the evening, light diet, as much as their stomachs would bear. Afterward, he ordered them to be covered with an abundance of clothes, and by that

(*l*) *Lib.* 23.

(*m*) *Aph.* 18. *Sect.* VII.

(*n*) *Aph.* 66. *Sect.* IV. *Coac.* II. 207.

(*o*) *Aph.* 50. *Sect.* IV. *Judicat.* VIII. 17. *Prænot.* IV. 20. XVI. 9.

(*p*) *Judicat.* XII. 4. *Coac.* II. 6. III. 120. *Aph.* 51. *Sect.* VI.

(*q*) *Prænot.* III. 1. *Prædict.* XI. 2. *Coac.* II. 12.

(*r*) *Coac.* I. 141. *Aph.* 53. *Sect.* VI.

(*s*) *Aph.* 4. *Sect.* IV. *Prænot.* I. 10.

(*t*) *Aph.* 31. *Sect.* IV.

(*u*) *Humor.* III. 98. IV. *Epid.* XVIII. 16. 17.

(*x*) *Natur. hom.* XXIX. 5, 6, 7. 1 *Epid.* III. 17. *Aph.* 23. *Sect.* II.

(*y*) *Humor.* III. 91. *Aph.* 30. *Sect.* IV.

(*z*) *Critical days.*

(*a*) *Aph.* 24. *Sect.* II.

(*b*) *Loc. in hom.* XXXVIII. 9, 10, 11, *Aph.* 29. *Sect.* II.

(*c*) *Humor.* III. 91. *Judicat.* XI. 16. *Aph.* 63. *Sect.* IV.

(*d*) *De Morb.* lib. II.

that means excited sweat. They then drank a potion made with the rods of white hellebore, of the length of three fingers, one dram of trefoil juice, of lasserpitium the weight of two beans, with pure wine. If the patients were inclined to vomit, he vomited them; if not, a vomit was not given till the head was purged.

In all paroxysms, or sharp fits of intermittent diseases, we must take away meat; (*e*) for to give it then would be hurtful. The same abstinence is to be observed, in fits that are heightened in their periodical returns. What relates to the paroxysms and constitutions of diseases themselves, or the alteration of the return of the fits, whether they return every day, or after some longer interval of time. The same are likewise seen by other succeeding effects. For instance, in a pleurisy, if the corrupted matter, avoided by spitting, appear presently at the beginning, it declares the disease will be but short; but if it be longer before it appear, it declares a long continuance of it. The urine likewise, the excrements of the belly, and sweats when they appear, declare whether the disease will prove easy, or difficult; short, or long.

HECTIC FEVER.

IN his Treatise De Internis Affectionibus, he describes the hectic fever in the following manner.

A gentle rigor begins to sieze the patient, the whole breast is pained as far as the back: sometimes, also, the patient is afflicted with an acute cough, and a discharge of a large quantity of thin and saline saliva. These symptoms happen in the beginning of the disease; but in the progress of the disorder, the whole body, except the legs, is extenuated; for these, and the feet become tumid, the nails are incurvated, but the arms become weak and slender. The fæces are covered with a kind of down; the patient breathes as though he whistled through a reed; and is, through the whole of the disease, afflicted with a violent thirst, and great weakness. When the patient comes to be in this condition, he generally dies in a year's time; notwithstanding all possible care and means, however taken, to restore and recover him. In the same book, he recommends asses milk boiled, (*f*) in order to purify it, to be taken: the patient is also to drink unboiled cows milk, mixed with a third part of hydromel, and some origanum, for forty five days. In the thirty-fourth book of his Treatise De Internis Affectionibus, he orders, that if the patient be strong, he should, for thirty days, be employed in cutting wood, use sufficient exercise, (*g*) or walk by day, setting apart the night for repose and rest.

THE CAUSES OF HEALTH AND DISEASES.

AMONGST the causes of health and disease, the most extensive and general are, according to Hippocrates, the air and aliments; (*h*) both which he examines with the utmost attention: he has written several books on aliment, and distinguishes, with great judgment, the good from the bad; what is proper, and what improper, to persons in different ranks of life. This knowledge he particularly excelled in; as his whole practice was much governed by regulating the diet.

He paid great attention, to the difference of the seasons, and climates; the irregularity of the winds, and seasons; the rising and setting of the stars; (*i*) the times influenced by certain constellations, such as the dog star Arcturus, and the Pleiades. He also considered the solstices, and equinoxes; (*k*) because he believed, that all these produced great changes in diseases; but he does not explain how these changes are produced. When any of the humors are separated from the rest, it necessarily follows, that the part from which it came, must be disordered; (*l*) and the part to which it flows in too large a quantity, must endure pain and torment. (*m*) If, says he, a disease must remain in the part, where it began, when a noble part suffers, the whole body must be proportionably afflicted.

The differences of diseases depend on the following things. Aliments, the air, heat, the blood, the phlegm, the bile, and all the humors: (*n*) as also on the flesh, the fat, the veins, the arteries, the nerves, the muscles, the membranes, the bones, the brain, the spinal marrow, the mouth, the tongue, the throat, the œsophagus, the stomach, the intestines, the diaphragm, the belly, the liver, the spleen, the kidneys, the bladder, the matrix, the skin.

(*e*) Natur. Human. XVIII. 30, 31. Humor. III. 82. Loc. in hom. XXXIX. Affection. XLII. 3. Vict. in Acut. X. 2. Aph. 2. Sect. 1.

(*f*) Recommenda asses milk.

(*g*) Exercise

(*h*) His attention to air and diet.

(*i*) Consults the Stars.

(*k*) Equinoxes.

(*l*) De natur. hom.

(*m*) Removal of the humors a cause of disease.

(*n*) Lib. De. Alimento.

He divided diseases into endemic, and epidemic. (*o*) Those which are familiar and common to certain places, he called endemic. Such as ~~raged~~ sometimes in one place sometimes in another, and with which many were equally seized, during a certain space of time, he called epidemic disorders: such as the plague, the most terrible, not only of this, but of all other classes of diseases.

He made a distinction between those disorders which are hereditary, and those which are produced by accident.

He looked upon some diseases, as mild and benign, and others obstinate and malignant. (*p*) The former class was easily and frequently cured, the latter created much trouble to the physician; often baffled his skill, and put an end to the patient's life, in opposition to all medicines.

He considered the changes of diseases, under the four following heads. (*q*) The beginning, augmentation, height, and decline. These changes, according to him, are produced by nature herself, who, as it were, sits in judgment, (*r*) and either acquits, or condemns the patient, by a favorable or unfavorable crisis. He meant, by nature, a principle which governs and preides in the animal œconomy. The manner in which nature acts, upon this occasion, in order to destroy her enemy, is by reducing the humors that occasion the disorder of the whole body, to their natural state; with regard to their quality and quantity, their mixture and motion, the places they possess, and every other particular in which they may be faulty.

Among the several means employed by nature for this purpose, Hippocrates laid the greatest stress on what he called the most perfect concoction of the humors. (*s*) This is nature's first design; it is by this concoction, she renders herself mistress, and brings things to a favourable termination. The humors being reduced to this state, whatever is superfluous or hurtful, is spontaneously discharged, or at least *eliminated* by proper medicines. (*t*) When what is superfluous is evacuated; which happens either by a discharge of blood, a flux of the belly, vomit, sweat, a discharge of urine, tumors, abscesses, the itch, eruptions, pustules, or spots in the skin; nature easily reduces other things to the same condition, in which she found them, before the attack of the disorder.

The first thing Hippocrates considered, in acute diseases, was the visage of the patient. (*u*) It was, according to him, a good sign, when the patient had the countenance of a healthy person; and accordingly as it deviated from this state, there was a proportionable danger. He gives us the following description of a dying person.

When, says he, the patient has a sharp nose, sunk eyes, hollow temples, cold and retracted ears, (*x*) the skin of the forehead hard, tense and dry, and a livid and leaden colour; we may be sure death is not at a great distance: unless the patient has been exhausted by long watching, by a flux, or long fasting. This has been called, by physicians, the *Facies Hippocratica*. Dull eyes, says he, also presage death, or of great loss of strength.

When persons labouring under ardent fevers, (*y*) are always feeling for something with their hands, and putting them to their eyes, as it were to take something away that passes before them; when they move their hands over the bed-cloaths, as it were to seek for something, or to pick the flocks of wool out of them; all these are signs of a delirium and death.

He drew very few, or no conclusions from the pulse; (*z*) but, according to Galen, he was the first, who observed the beating of the arteries.

He says, the preservation of health, principally depends upon eating without satiety; and using suitable exercise; for it is impossible for a person to continue in health, if he eats without labour; (*a*) because eating and exercise, mutually assist each other. (*b*) Exercise consumes the superfluities of the aliment received into the body; and aliment again replenishes the body, and supplies the deficiencies of what is worn away, and consumed by exercise. He strongly recommends moderation with respect to meat, drink, sleep, exercise, and venereal enjoyments.

With

(*o*) Divides diseases into endemic and epidemic.

(*r*) Natur.

(*u*) His judgment from the countenance.

(*y*) Signs.

(*a*) Admirable observations on diet, exercise and temperance.

(*p*) Some diseases mild, others malignant.

(*t*) Nature terminates disease by various means.

(*z*) The ancients had freer use of the ears than the moderns.

(*b*) De nat. vic. in. morb. acut.

(*q*) Changes of diseases.

(*s*) Concoction of the humors.

(*x*) Oginus of Velis, or Elis wrote a treatise on the pulse, whether he lived before or after Hippocrates is not well-known.

With respect to chronical distempers, the method of cure practised by Hippocrates, *(c)* consisted principally in regulating the diet, directing proper exercises, prescribing baths, unctions, frictions, and very few medicines.

In diseases of the acute kind, he was convinced, by experience, that nature alone, bore a great share, *(d)* and was very powerful, in conducting the disease through its different stages. In his sixth book, of his Epidemics, he shews the absurdity of Herodicus, who recommended exercise in acute disorders.

He conceived, that contraries were the remedies to their opposites. *(e)* Evacuation cures the diseases which arise from repletion; and repletion those which arise from evacuation. Thus heat destroys cold, and cold heat. Medicine, says he, is no more than an addition of what is wanting; *(f)* and a subtraction, and retrenchment of what is superfluous. Sometimes it is necessary to dilate, sometimes to contract. *(g)*

We must pay a great attention to that which affords relief, *(h)* and that which does injury, that which the patient easily bears, and that which he cannot support. A rule worthy of the great mind that conceived it!

We must do nothing rashly; we must sometimes remain at rest, or without attempting any thing. *(i)* By this means, if we do no good to the patient, we do no harm.

BLEEDING.

HIPPOCRATES recommended bleeding with a large orifice in all acute inflammatory diseases, pains in the head, peripneumony, pleurisy, inflammatory sore throat, oppression of the breast, suppression of urine, the tympanum, and dropsy. *(k)*

The pain in the head is cured by opening the vena ranina. *(l)*

When fluxes of humours descend from the shoulders, to the elbow, they are removed by opening a vein. *(m)* It has been supposed, he here means the Rheumatism.

Bleeding cures the suppression of urine; but for this purpose the inward veins must be opened. *(n)*

If bleeding or purging be requisite, the spring is the most convenient season for either. *(o)*

He recommends bleeding for the tympany and dropsy, *(p)* for a disease, he called the overgrown spleen, and opening the veins behind the ears, was the scythian practice to cure the sciatica. He imagined this caused impotency.

For diseases above the liver, he bled in the arm; if below, in the ankle. For a jaundice, under the tongue. *(q)*

In a consumption he likewise bled; and relates a case of a young man, who eat heartily and yet wasted; *(r)* after trying various purgatives, and vomits, without success, he directed the veins of each arm to be opened, alternately, *(s)* till the patient had scarce any blood left in his body; by this means he was perfectly cured.

He avoids bleeding, when a disorder is near a crisis, or tends to supuration.

PURGING.

THOSE who are in a good state of health, are injured by purging medicines. *(t)* In summer it is most convenient to purge the upper parts; *(u)* and in the winter the lower; but in the dog-days, purging is improper, and troublesome. *(x)*

Lean persons, and such as vomit with ease, must be purged upwards; *(y)* but this should be directed with great caution, in the winter.

Those who do not vomit easily, *(z)* and are in a good habit of body, ought, if necessary to purge downwards, if it be in summer. Consumptive people *(a)* must not be purged with a vomit. *(b)* Melancholy people must be strongly purged downwards; *(c)* and in like manner all must observe, the contrary way of purging other habits. In acute diseases, if the matter

(c) Chronic disorders.

(d) Acute diseases.

(e) Contrary remedies.

(f) Addition and Subtraction.

(g) Necessary to dilate or contract. *(h)* An admirable precept.

(i) An excellent observation.

(k) Acute diseases.

(l) Pain in the head loc. in hom. XLIX. 10. 11. Prædict. XXXVI. 5.

(m) 2. Morb. LIX. 22. Pain or humors in the elbow.

(n) Suppression of urine. Aph. 36. Sect. VI.

(o) Purging in spring and autumn. Aph. 47. Sect. VI. Aph. 53. Sect. VII

(p) De affect. In a dropsy.

(q) Places where he bled,

(r) Bleeds repeatedly in a consumption.

(s) Epid lib. 5. sub. principio. *(t)* Aph. 36. 37. Sect. II.

(u) Proper season 5. Epidem XXV. 16.

(v) Purgant, V. 8. Aer. aq. loc. XXX. 2. 5. 8. Aph. 5. Sect. IV.

(y) 2. Morb. XIII. 12. Aph. 6. Sect. IV.

(z) Morb. XII. 35 Aph. 7. Sect. IV.

(a) Not proper to vomit consumptive people. Loc in hom. XXXV. 4. Intern. affect. IV. 26. XIII. 36. Aph. 3. Sect. IV.

(b) Hippocrates called vomiting purging upwards.

(c) Aer. aq. loc. XI. 2. Aph. 9. Sect. IV.

matter be very turgid, (*d*) we must purge on the first day the disease appears; for, in such cases, delays are frequently dangerous. Those things which are concocted, and digested, we must move, or purge; (*e*) but those that are indigested neither must we purge, in the beginning of acute diseases, unless the vessels are turgid. (*f*) In acute diseases, and in their beginning, (*g*) a purging medicine is seldom to be used; (*h*) neither must it be given, without the greatest judgment, and circumspection. Those things that are or have been justly determined by nature, ought not to be moved, (*i*) or altered, either by purging or irritating medicines, but should be let alone. (*k*) But, whatever ought to be evacuated, it should be drawn to that part where nature inclines, (*l*) through such passages and parts, as are most proper for their conveyance and expulsion. (*m*)

If those things be discharged and purged which should be, it is good, (*n*) and the patient may easily bear it; (*o*) but if the contrary be evacuated, it is painfully endured. Things evacuated and purged, are not to be estimated by their multitude and quantity; (*p*) but by their fitness to be discharged. They must be such as the patient can easily support. Though, if necessary, we must evacuate, till the patient faints, if he can bear it. (*q*)

Women, in a state of pregnancy, may be purged, (*r*) if the humours are turgid in the fourth month to the seventh, (*s*) but less in the latter months. But if the fœtus be more or less advanced, we must carefully avoid it. (*t*) Those who do not thirst while they purge, by taking a purging potion, must not cease purging till they do thirst. A tormenting pain in the bowels, without a fever, a heaviness of the knees, and pain of the loins, signify that purging downwards is necessary.

The gentle purges, used by Hippocrates, were, a decoction of the herb mercury, with an equal quantity of ptisan, and a small portion of honey, given at intervals. Sometimes cabbage and its juice, leaves of eider. (*u*) With a view of gently procuring stools, he likewise recommends a decoction of beet with honey, and of cabbage, with salt. But, he more frequently mentions asses milk for this purpose; and sometimes in so large a quantity as sixteen hemine, which are more than eight pints. Nor does he omit milk of cows, goats, mares; also clysters, and suppositories, of various compositions.

Drastic purges were black and white hellebore, (*x*) peplium, colocynthis, grana cnidia, cneorum, elaterium, scammony, and thapsia.

He observes, that those who are not easily purged upwards, (*y*) must, before the taking of hellebore, be well prepared with a moistening and plentiful diet, and rest. (*z*)

Hellebore being taken, the body ought rather to be moved, (*a*) than allowed to sleep, or rest. For sailing on the sea, gives us a clear instance, and demonstration, (*b*) that our bodies are stimulated by motion; and if hellebore be given to work more forcibly, move and stir the body, but when you would check it, procure sleep, and do not move. (*c*) Hellebore is very dangerous to those who have a healthful body, (*d*) for it causes convulsions, and a convulsion caused by Hellebore proves mortal. (*e*)

Those who have pains above the diaphragm, require purging by vomit; (*f*) but if the pains be below the diaphragm, it signifies that purging downwards is necessary. (*g*)

VOMITING

(*d*) 5. Epid. XXV. 16. 17. Aph. 10. Sect. IV.

(*f*) Purging in acute diseases.

(*g*) Humour. III. 97.

(*i*) Things determined by nature, ought not to be frustrated by purging or irritating remedies.

(*k*) Humor. III. 83. nat. hum. XIX. 8. 11. Epidem. I. 17.

(*m*) 8. Epid. XXXII. 4. Loc. in hom. XXXIII. 13. Aph. 21. Sect. I.

(*o*) Humor. IV. 49. 6. Epid. IV. 30.

(*q*) Humor. III. 86. 87. Aph. 23. Sect. I.

(*s*) Purging during pregnancy.

(*u*) Laxatives.

(*x*) Drastic purges.

(*z*) 11. Dieta XXXVI. 18. Morb. mulier. XXV. 13. 14.

(*b*) Verat. us. 1. 2. VI. Epid. V. 45. Aph. 14. Sect. IV.

(*d*) Hellebore dangerous to the healthful. Aph. 16. Sect. IV.

(*f*) Verat. us. I. 10. 11.

(*e*) Humor. III. 84. 5. Epidem. XXV. 12. 7. Epid. XXXII. 1. Aph. 22. Sect. I.

(*h*) Purgant. IV. 1. Aph. 24. Sect. I.

(*l*) We are to be guided entirely by nature, and assist her efforts.

(*n*) Excellent remark.

(*p*) Evacuation to be guided by the patient's feelings.

(*r*) Morb. mulier. XLII. 8. Aph. 1. Sect. IV.

(*t*) Verat. us. I. 6. Aph. 19. Sect. IV.

(*y*) Caution.

(*a*) Motion in purging.

(*c*) Verat. us. 1. 4. Superfat. XX. 1. 6. Epid. V. 45. Aph. 15. Sect. IV.

(*e*) Coac. IV. 24. Aph. 1. Sect. V.

(*g*) Aph. 18. Sect. IV.

VOMITING.

HIPPOCRATES held that consumptive people should not be vomited, (*h*) nor those who are troubled with a lientery, or slipperiness of the intestines.

But, he says, that a spontaneous vomiting removes a diarrhoea, which has continued a long time. (*i*)

A consumption succeeds a vomiting of blood, with a throwing up of corrupted matter. (*k*)

Evacuation upward is absolutely necessary to one who has no fever, yet has a loss of appetite, gnawing at the stomach's entrance, (*l*) a dizziness, with a dimness of sight, and bitterness of the mouth. Those who have a pain above the diaphragm require an evacuation upwards. (*m*)

Vomits are likewise recommended by Hippocrates, as an excellent preservative of health, and as a preventive of diseases. (*n*) For this purpose, he recommends a decoction of hyssop, with a little salt and vinegar; a decoction of lentils, a little salt and vinegar; honey, water, and vinegar, and such like remedies, to provoke a gentle vomiting. Those who were strong and healthful, were to use their vomits fasting; lean persons, and those who were delicate, and weakly after dinner or supper.

THE APPLICATION OF THE PRINCIPLE REMEDIES IN THE MATERIA MEDICA, OF HIPPOCRATES, TO VARIOUS DISEASES.

BARLEY WATER, HYDROMEL, AND OXYMEL.—In acute diseases, and in epidemic fevers.

CASTOR AND MYRRH.—For the diseases of women, obstructions, and hysteric affections.

ACETUM.—For sore throats, ardent fevers, vomitings, phrenzy, peripneumony, pleurisy, inflammations, and viscidities.

GARLICK.—For cold phlegm, and inflammations of the lungs.

ALLUM.—To cure hemorrhages, check uterine discharges, and strengthen the uterus, &c.

SPICES.—To promote the menses, and cure phlegmatic diseases.

FRESH OX GALL.—As a luxative to kill worms, for purging suppositaries, and uterine pessaries.

CANTHARIDES.—In dropsies, and to promote the urine, and menses.

DIET OF ONIONS.—For the jaundice, and to promote conception.

LONG ABSTINENCE FROM FOOD.—In dropsies, jaundice, diarrhoeas, gouty, or rheumatic pains, asthmas, and disorders of the lungs, and spleen.

CLYSTERS.—For pains and overfulness in the head, dry, hot, and windy cholics, pains of the womb, abdomen, pleurisy, fevers, pains of the loins, &c.

CUPPING.—For pains in the head and eyes, bruises, peripneumony, pains of the hip, and other parts.

ELATERIUM.—To purge bile, expel the fœtus, or purge in cancers, ulcers, jaundice, sore throat, &c.

FRICTIONS.—With oil, to strengthen weak joints, and relax stiff ones.

COLD BATH.—For faintings and hysterical fits, to restrain the menses, prevent miscarriages, rheumatic pains.

TO BE AVOIDED.—In diseases of the lungs, as asthmas, coughs, consumptions, &c. diseases of the liver, and tabes dorsalis.

JUNIPER BERRIES.—As a powerful diuretic, to provoke the discharge of urine.

ASSES MILK.—In excessive fluxes from the bowels or womb, for slow fevers, consumptions, and diseases of the lungs.

LINSEED.—In wounds and ulcers, and outwardly in emollient anodyne fomentations.

SOUR APPLES.—To be made into drink for fevers.

MECONIUM OR POPPIES.—For excessive fluxes, and pains in the uterus.

HONEY.—For fevers and inflammations as a resolvent. As a pectoral in coughs, and a laxative in clysters.

MINT.—A stomachic and cordial for vomiting, jaundice, and weak stomachs.

MYRRH.—For most disorders of the stomach, and for obstructions of the menses, and to cleanse ulcerations in the mouth and gums.

m

NITRÆ

(*h*) Improper to vomit consumptive people.

(*k*) Prædict. XIV. 1. 3. 1. Morb. XI. 69. XIX, 4. ad. XX.

(*m*) Verat. us. I. 10. 14.

(*i*) 11 Diet. XXXI. 15. Loc. in hom. XLV. 8. Conc. III. 7. Morb. VI. 10. VII. 3.

(*l*) Affect. XIV. 12. 11. Morb. mul. XXIV. 2. Aph. 17. Sect. IV.

(*n*) Gentle vomiting recommended.

NITRE FROM EGYPT MORE LIXIVIOUS THAN OURS OF A RED COLOUR. **DIASCORIDES.**—For sore throats, pleurisies, gouty and rheumatic pains, to purge phlegm from the bowels, water in an anasarca, for the schirrus womb, and indurations in general.

ORIGANUM OR THYME.—For cold phlegm, dropsies, jaundice, and all sluggish indolent diseases.

EGGS.—Their whites to be given in fevers, not ardent in the drinks, and their yolks for coughs in children, excessive uterine fluxes, and all weaknesses, or relaxation.

POPPY JUICE.—For hysteric pains, and convulsive disorders, hectic fevers, diarrhœa, and dysentery.

TAR AND PITCH.—Inwardly for ulcers, to expel water from the womb.

PEPPER.—Outwardly for the tooth ach, and for convulsions, or cramps.

CERUS OF LEAD.—For disorders of the eyes, skin, and sharp ulcerations.

PENNY ROYAL.—For fevers and hysterical diseases, and the diseases of women in general.

GALBANUM.—Recommended as an expectorant and promoter of uterine discharges.

REZIN OF TURPENTINE.—For inward ulcers, and excessive fluxes, and uterine diseases.

ROSE LEAVES.—For a diarrhœa, diabetes, and relaxation of the uterus, fluor albus, &c.

ELDER BERRIES.—To purge in dropsies and uterine diseases.

SCAMMONY ROOT AND JUICE.—To purge in the sciatica, nephritic complaints, and chronic diseases.

SQUILLS.—To purge in uterine complaints, and to be taken in consumptive cases.

TAPPING.—For a dropsy and empyema.

WHEY DRINK.—For the cure of ulcerations, consumptions, fever, and the gout.

ASSA FETIDA.—For hysterics, peripneumony, pleurisy, jaundice, and a very large dose to purge bile.

SULPHUR.—For ulcers, diseases of the lungs, and cutaneous disorders.

FRANKINCENSE.—For ulcerations, puerile asthmas, stomachic, and uterine complaints.

It does not appear, that Hippocrates gave powerful narcotics, to procure sleep; (*o*) though in some few passages of his book of the disorders of women he speaks of the juice of poppy, as conducive to the cure of what we now call hysterics. (*p*) He likewise takes notice of mandrake, but cautions against giving it in quantities, sufficient to cause madness; and he mentions much the same of henbane.

As to baths, suffumigations, fomentations, incisions, and gargarisms, (*q*) he seems to have been perfectly well acquainted with their efficacy, and the proper seasons and manner of using them. (*r*) He lays a particular stress upon ointments, but no where mentions plaisters. Instead of these he frequently recommended cataplasms, in cases, where, even we, perhaps, might find them preferable to plaisters.

When bleeding, and the use of purgatives, which were his general means, for diminishing the superfluity of blood, or humours, were not sufficient, he then had recourse to diuretics. This he seems to insinuate in his work *De Ratione Vict. in Acutis*. All diseases terminate, or are cured by evacuations, made either by the mouth, belly, the bladder, or some other outlet; but sweat is common to all diseases, and equally terminates all. For these purposes, he sometimes ordered a bath, at other times sweet wine, garlic, onions, leeks, cucumbers, melon, citruls, cysticus, both sorts of apium, fennel, maidenhair, and night shade, as well as all acid substances. These several remedies, he directed in various chronical disorders, after purgation, when he believed the blood to be still loaded with ichor. In some cases he excited a diaphoresis, but does not inform us how he produced it.

As every plant attracts from the earth, first of all the juice that is agreeable to its nature, (*s*) and afterwards juices that are different, just so far in a similar manner does a medicine act which ought to attract the bile; but if it be too strong, (*t*) or its operation of too long continuance, meeting with no more bile, it then purges phlegm; (*u*) and after phlegm the black bile, or melancholy; and last of all the blood. Indeed, he seems to think, as if, all things were performed in the human body by attraction.

BOTANY.

(*o*) Did not use narcotics.

(*p*) Poppy juice mandrake and henbane.

(*q*) Understood the use of baths, fomentations, incisions, &c.

(*r*) Ointments likewise and cataplasms, but never mentions plaisters.

(*s*) Accounts for the action of purges, by attraction.

(*t*) De nat. homine.

(*u*) This is not true from our purgatives.

BOTANY.

HIPPOCRATES has not left us any description of either plants or roots. (*x*) He mentions, in his works, about two hundred and thirty four herbs; but their description he left to Cratevas, whom he stiled the prince of botanists. Some fragments still remain, in the imperial library, which are considered as the productions of Cratevas. These, however, have been thought spurious, by some learned men. Dioscorides insinuates, that he gave but a very inaccurate and indifferent description, of roots and herbs.

APOPLEXIES, CONVULSIONS, &c.

APOPLEXIES happen, generally, (*y*) between the age of forty and sixty. Convulsions, (*z*) according to his opinion, were occasioned, either by repletion, or evacuation. Hiccoughing likewise, arises from the same causes; (*a*) and a convulsion, or rigor, after a violent heat, is bad. He considered, a convulsion occasioned by a wound of the head, and likewise, (*b*) from a drastic purging potion, to be fatal.

In convulsions, Hippocrates endeavoured to make the patient sneeze. In his book *De Locis Homin.* is ordered a fire to be made, on both sides of the patients bed; and mandrake root in a very small quantity; (*c*) and bags were applied very hot, to the tendons behind; but he does not specify what tendons. Internally was given, some pepper and honey mixed together.

DROPSY.

THOSE who have griping pains in the belly, (*d*) and violent pain about the naval, which cannot be removed by purging remedies, or any other means, are very likely to be afflicted with a dropsy. (*e*) After a leuco-phlegmatia, likewise comes a dropsy. A cough coming to those who have a dropsy, is bad; (*f*) and ulcers appearing in those who have a dropsy, are exceedingly difficult to cure. (*g*) He observes, that if the water of one who has a dropsy flows from the veins into the intestines, the disease is removed. (*h*) A diarrhoea, he likewise says, cures a dropsy.

The danger of discharging the water suddenly, (*i*) he seems well apprized of. If corruption, (*k*) or water, mixed together, flow out all at once, from those that are opened for the cure of the empyema, or dropsy, the patients will certainly die.

If a dropsical patient is afflicted with a difficulty of breathing, (*o*) and this should happen in the spring, if the person be young and robust, a proper quantity of blood must be taken from the arm.

A person labouring under a dropsy, ought to fatigue himself by exercise to sweat; (*m*) to eat bread; to drink little; and that of white wine; to sleep moderately; and to use purgatives; by which means the water and phlegm are evacuated.

There are two sorts of dropsies, one called anasarca, which is not to be avoided when coming; the other arising from wind, which is not to be cured but by great good fortune, and requires abundance of exercise; hard labor; and fermentations; very temperate diet; using things dry and sharp. His purges, in this disorder, were hellebore, elaterium, &c. He mentions the dropsy of the liver and spleen, and recommends hellebor for this last. As a diuretic, he used cantharides inwardly.

COUGHS,

(*x*) He hath left us no Work on Botany. (*y*) Aph. 57. Sect. VI.

(*a*) Aph. 13. Sect. VII.

(*b*) Aph. II. Sect. V. Cap. vul. XXV. 5. Aph. 24. Sect. VII.

(*z*) Convulsions caused by repletion or evacuation, Aph. 39. Sect. VI.

(*d*) Coac. II. 279. III. 286. Aph. 8. Sect. VI.

(*c*) Mandrake root given in convulsions.

(*f*) Cough bad 11 Prædict. XI. 1, 16. 11 Epid. V. 28. Aph. 8. Sect. VI.

(*e*) 1 Morb. 28. Affect. XX. 13. XXIII. 3. Intera. Affect. XXIV. 1.

(*h*) Flat. XVIII. 8, 9. Indicat. XI. 20. Coac. III. 285, 289. 1 Morb. VI. 7. 11 Morb. LXIX. 11, 12.

(*i*) Danger of suddenly evacuating the water by operation.

(*k*) Coac. III. 91, 92. 11 Morb. XLV. 24. 11 Morb. XXVII. 1, 8, 14. Intern. Affect. IV. 30. X. 20. XXV. 30. XXVII. 5. 6 Epid. VIII. 62.

(*l*) Bleeding when proper in Dropsies, De diæta in acutis.

(*m*) Cure Lib. IV. Epid.

COUGHS, CONSUMPTIONS, AND OTHER DISEASES OF THE THORAX.

TO young people, happen spitting of blood; (*o*) consumptions; acute fevers; the falling sickness; and other disorders but these of the lungs in particular. (*p*)

Those who have passed their youth, are subject to asthmas, (*q*) pleurisies, inflammations of the lungs, lethargies, phrenzies, burning fevers, &c. (*r*) and a consumption most commonly happens, between the age of eighteen, and thirty-five. (*s*) Those who cough up frothy blood, bring it from the lungs. (*t*) After vomiting blood follows a consumption and a throwing up of corrupted matter. (*u*)

Those things that dispose a man naturally to a consumption are all violent. (*x*) But that succeeds very well, which throws a patient into a sickness, (*y*) at a time when the very season itself is a remedy, to a particular sickness; as the summer to a burning fever, and the winter to a dropsy, (*z*)

For that which arises from nature always prevails, though low spirited persons are more terrified by it. (*a*) In consumptive persons, if, what they cough up, on being thrown into the fire it smells very fœtid, (*b*) and at the same time, if there should be a falling off of the hair, the disorder will prove fatal; (*c*) and if a diarrhœa happens to consumptive persons, who have their hair falling off, it is mortal. (*d*)

Spitting of corrupt matter, after spitting of blood, is bad; (*e*) for after spitting of corruption, follows a consumption, and diarrhœa; and when the discharge upwards, or the expectoration ceases, the patient dies. (*f*)

Those who have a pleurisy, unless the matter is evacuated upwards, within fourteen days, will have their disease terminate in an abscess. (*g*)

Those who have got an abscess, (*h*) or imposthume, by a pleurisy, if the matter is evacuated upwards in forty days, after the bursting of the abscess, they will be cured; otherwise they will fall into a consumption.

After a pleurisy, an inflammation of the lungs is bad; (*i*) and a phrenzy succeeding an inflammation of the lungs is very unfavourable. In the peripneumony, he ordered an electuary of pine apples, galbanum, and attic honey and ptisan. (*k*)

In the consumption, Hippocrates purged with the berries of thymelœa or spurge, and afterward recommended asses milk, whey, or milk of cows, goats, mares, and a little salt was added to make the milk prove gently laxative. He likewise burnt the patients in the back and breast, and several other parts, and kept the ulcers open for some time. He gave the squils likewise, but would not permit vomits to be taken in a consumption. As diet he recommended goats flesh, pork, and to promote expectoration, fat meats, in order to discharge the purulent matter. Besides these he ordered moderate exercise, air, and walking. The general methods of treating the peripneumonies pleurisy, and other acute diseases, have been already treated of.

OF THE DIARRHŒA, DYSENTERY, AND REMARKS OF THE APPEARANCE OF THE FÆCES.

In evacuations, by the intestines, (*l*) changes of the excrements are good; unless they change for the worse. If a diarrhœa happen to those, who, (*m*) before have had their hair falling off, by a consumption, it is a mortal sign. (*n*) And an immediate

(*o*) Coac. III. 260. Aph. 29. Sect. III.

(*q*) Coac. III. 395. Aph. 30. Sect. III. After youth what diseases happen.

(*r*) Consumptions between 18 and 35.

(*t*) Coac. III. 216, 250. 11 Morb. LI. 4. Aph. 13. Sect. V.

(*x*) 1 Morb. XX. 1. Aph. 8. Sect. VIII.

(*z*) Aph. 8. Sect. VIII.

(*b*) Coac. III. 213, 252. 11 Morb. XLVI. 16. ad. 20. LV. 20. ad. 23.

(*d*) 11. Morb. XLVI. 12. Coac. III. 144, 145. Aph. 12. Sect. V.

(*f*) Nat. hum. XXIII. 1, 11. Prædict. XIV. 1, 3. Gland. X. 2. 3. 4. Aph. 16. Sect. VII.

(*g*) Loc. in hom. XXV. 10. Coac. III. 141, 171, 209, 215. VII. Epid. XLVII. 16, 17. 1.

(*h*) Morb. X. 15, 17, 20. Aph. 15. Sect. V.

(*k*) Electuary.

(*m*) 11. Morb. XLV. 12. Coac. III. 144, 145. Aph. 12. Sect. V.

(*p*) Diseases happening to young people.

(*s*) Coac. III. 260. Aph. 9. Sect. V.

(*u*) 11 Prædic. XIV. 3. 1 Morb. X. 69. XIX. 4. ad. XX.

(*y*) Dic. Judicat. I. 11. ad. 15. VI. Epid. VIII. 45. Affect. VII. 3, 4.

(*a*) Observations on what is expectorated.

(*c*) Diarrhœa in consumption, mortal.

(*e*) When expectoration ceases the patient dies.

(*i*) Coac. III. 172. Affect. IX. 2. Aph. 12. Sect.

(*l*) 11 Epid. 3. Aph. 14. Sect. III.

(*n*) Aph. 41. Sect. VII.

immoderate diarrhœa, producing an hiccupping in elderly persons, is very unfavourable. (o) From a diarrhœa frequently follows a dysentery, and a dysentery, if it arise from black choler, is mortal; (p) as are likewise, small pieces of flesh, ejected by a person labouring under a dysentery. (q)

In long continued dysenteries, or loosnesses, a depraved appetite is bad; (r) but if accompanied with a fever, it is much worse; and splenetic patients who are afflicted with a dysentery, die of the dropsy, or lenteria. (s)

After a dysentery, a delirium or convulsion is bad; and after a tedious and lingering disease, a flux of the belly is extremely dangerous. (t)

Hippocrates, lib. πρὸ παθῶν says, that a dysentery is attended with pain and gripes in all parts of the belly, (u) and excretions of bile, phlegm, and at last blood. In another place, he tells us, that this disease arises, from the bile and phlegm settling in the veins of the belly. The blood is disordered, and deposits its corrupted part; the intestine also, is affected, and is abraded and exulcerated. The disease is painful and mortal; and if the patient be of a very robust constitution, there is some little room to expect a cure. But when there is a colliquation, and total exulceration of the belly, there are no hopes of life.

Again, lib. πρὸ διαίτης when the body is heated, he says, there is an acrimonious purgation, with an abrasion, and exulceration of the intestines, and bloody stools, the disease is called a dysentery, and is very severe and dangerous.

He recommended bleeding, in the dysentery. (x) Meal boiled in milk, or milk porridge, was more useful than goats whey, which he gave first. He relates an instance of a person being cured by boiled asses milk; and in another place, the rubia tenctorium in fat broth. Solid millet, boiled in oil, he likewise recommended.

When the upper parts of the gullet are sore; (y) or a breaking out of small tumours does arise in the body, we ought to inspect the excrement; for if this is choleric, the body is in a viscid state; but if they are like the excrements of sound persons, (z) the body may be nourished without danger. (a) Black excrements, like black blood, proceeding of their own accord, either with a fever, or without a fever, are worst of all; and so much the worse, by as much the bad colours are more in quantity and worse. But if they are caused by purging medicines, they are far better, and that in proportion as there are more colours. If black choler issue forth either upwards or downwards, (b) at the beginning of any disease, it is a mortal sign. A dysentery is very bad, which succeeds the evacuation of unmixed excrements downwards; (c) and those that avoid frothy excrements by stool, have a defluxion of the head. (d) He affirms that the stools became of a thicker consistence, when a disease was about to be determined. In his first part of his epidemics, he tells us, many had their bellies disturbed, but without any considerable uneasiness, and in such a manner as to create them no great trouble. Afterwards, he says, some were seized on the sixth day, with the jaundice; (e) but these were in some measure relieved by an increased discharge of the urine and excrements. (f) This appears like what is now called *yellow fever*.

With respect to dysenteries, he afterwards uses these words. But such patients as were far advanced in years, were either seized with the jaundice, disturbances of the abdomen, or a dysentery, which was the case of Bion, who lay sick at the house of Silenus, but many others, whose diseases were determined by a crisis, were seized with a dysentery, such as Xenophanes and Cretias.

With respect to those who recovered in the pestilential constitution, he uses the following words. But in this pestilential state, such as escaped, owed their safety to these four circumstances; either there was a plentiful discharge of blood from the nose, or a copious evacuation of urine, in which there was a large quantity of laudable sediment, or turbid and bilious excrements, were evacuated in the beginning of the disorder, or the patients were seized by a dysentery. (g) Those stools that are aqueous, or white, or green, or highly red, or frothy, are all bad.

n

ON

(o) Dysentery follows a diarrhœa.

(p) Coac. I. 100, 111, 292. 5 Epid. X. 2. Aph. 24. Sect. IV.

(q) Aph. 26. Sect. IV.

(r) 6 Epid. VIII. 1 Coac. VI. 100. Aph. 3. Sect. VI.

(s) Coac. III. 245. 1 Morb. III. 27. Affect. XXI. 23. XXVIII. 1. Aph. 43. Sect. VI.

(t) Coac. III. 57. Aph. 9. Sect. VII. Aph. 5. Sect. VIII.

(u) Cause of the dysentery.

(x) De ratione victu in acutis.

(y) 4 Epid. 12 Aph. 15 Sect. II.

(z) Prænot. X. 6.

(a) Coac. III. 36. VII. 22. ad. 26. Aph. 21. Sect. IV.

(b) Coac. I. 100. Aph. 22. Sect. IV.

(c) Aph. 23. Sect. VII.

(d) Morb. Sacro. VII. 28. Coac. V. 13, 14. Aph. 30. Sect. VII.

(e) The jaundice on the sixth day.

(f) Resolved by a copious evacuation of urine and feces.

(g) Prænot. stools aqueous, white, green, and frothy.

ON EPIDEMIC DISEASES.

IN his first book of his Epidemics, is observed, they frequently discharged stools, which were bilious, (*h*) small in quantity, sincere and acrid; and afterwards, he informs us, (*i*) that in the summer and autumn, lenteries, dysenteries, tenesmi, and fluxes raged; and that the stools discharged, were bilious, thin, acrimonious, frequent, crude; and in some patients aqueous.

In the same book, is remarked, that all those patients had disturbances in their abdomen, and stools of the worst kind. A little after, he says, that the diseases with which they were afflicted were dysenteries, tenesmi, lenteries, and fluxes. Of this we have an instance in the daughter of Eryanax, with respect to whom Hippocrates in his third Book of his Epidemics, says, that in the twelfth day, bilious excrements were discharged, small in quantity; sincere, thin, acrid, and frequent. In the third Book of the Epidemics, those who laboured under acute or chronical diseases, were taken off, principally, by stools of a bad kind.

In the Books of Epidemics, are many histories, and very accurate observations on the excrements; (*k*) from which he drew favourable, or unfavourable, prognostics. (*l*) He has given us forty-two cases, out of which number, twenty-five died; of those which escaped, no one recovered his health without some intervening evacuation. The evacuations, mentioned by Hippocrates are seven, and are as follows:

By an eruption of blood. (*m*)

By sweat. (*n*)

By vomiting. (*o*)

By an abscess. (*p*)

By spitting. (*q*)

By urine. (*r*)

By a looseness. (*s*)

In his treatment of fevers, he very rarely mentions remedies; (*t*) he chiefly depended on nature for solving the disease. Though in some cases he prescribes a clyster, a suppository, washing of the head; applied fomentations, and sometimes opened a vein. It should be remembered, he knew nothing of antimony, bark, or mineral acids.

In his first Epid. stat. 3, he tells us, that in the case of a burning fever, those who had a good and plentiful discharge of blood by the nose, generally recovered by that means. Nor do I know any, says he, who in this epidemical constitution, died after a just hemorrhage. But Philiscus, Epaminon and Silenus, from whose noses fell a small quantity of blood by drops, on the fourth and fifth day, all died.

Afterwards, he says, some there are, on whom the jaundice appeared on the sixth day; but they were relieved by some evacuation either by urine, or stool, or a copious hemorrhage from the nose. Thus it happened to Heraclides, who lay sick at the house of Aristocydes, and had a plentiful discharge of blood from the nostrils, and evacuations by stool and urine.

JAUNDICE.

HIPPOCRATES, in his Treatise De Ratione Victu in Acutis, classes those who labour under the jaundice, as improper subjects for drastic purging. (*u*) For, says he, the physician who treats them with purgatives, will expose them to danger, without doing any manner of service. In the fifth section of his Book de Affect, when he gives the cure of a jaundice, he makes mention of purgatives in the following words. The external part of the body is to be softened by warm baths; but the intestines and bladder are to be lubricated; for this disorder happens, when the bile, thrown into a preternatural concoction, is lodged and deposited immediately under the skin. If the most ignorant physician is but acquainted with this circumstance, he will not readily prove unsuccessful in the cure of the disease; for by the slightest and most inconsiderable circumstances, diseases are long protracted, and rendered far more violent than they would have otherwise been. All aliments, potions, sorbitions, or medicines, calculated for alleviation of pain, may be safely used in this disorder, provided they are given with due caution and judgment. But such medicines as purge bile, or phlegm, are dangerous, and the physician prescribing them, may be justly chargeable with ignorance and bad management.

In

(*h*) Stools bilious.

(*k*) Many observations on the feces in his Epidemics.

(*m*) Lib. 1. obs. 7. book 3. Sect. II. c. 7, 11, 12.

(*o*) B. 1. c. 13.

(*r*) B. 1. c. 6. B. 3. c. 1, 5. Sect. II.

(*t*) He rarely prescribes medicines in acute distempers.

(*i*) Autumn and summer, disorders of the intestines raged.

(*l*) Twenty-five out of forty-two, died in the epidemics.

(*n*) As book I. c. 3, 6, 7, 13, 14. book 3. c. 3. Sect. II. c. 6, 7, 8, 10, 12.

(*p*) B. 3. c. 1.

(*q*) B. 3. c. 1 Sect. II. c. 8.

(*s*) B. 1. c. 10. B. 3. c. 3. Sect. II. c. 9.

(*u*) Purgatives improper.

In his Book *De Internis Affectionibus*, he orders four cantharides, without heads or feet, to be taken in a quarter of a pint of white wine, and a little honey; and he says, if the liver become hard in those who have the yellow jaundice, it is a very bad sign. (*x*)

ANGINA OR SORE THROAT.

A QUINSY going off, and falling upon the lungs, (*y*) kills the patient within seven days, but if he escapes, there will come an imposthume of the lungs. For the cure of the sore throat, he opened the veins of the arm, and under the tongue, and breasts. He prescribed gargles, lambatives, which were to be used hot; and he likewise ordered fumigations. He advised shaving the head, and applying a cerate, and over that wool, to the neck. In great danger, he pierced the wind-pipe, (*z*) and put a reed or pipe into it. The drink recommended was water, and hydromel; but by no means cold, or cremor of ptisan. (*a*) When the danger is judged from the crisis to be over. (*b*) After the disease abated, he purged with elaterium, to prevent a relapse.

MADNESS.

HIPPOCRATES, in his Book *De Morbo Sacro*, informs us, that it is by means of the brain, (*c*) that we reason, see, hear, and distinguish, between good and evil. By its means also, we become mad. (*d*)

In his Book *De Flatibus*, he says, that the blood contributes so greatly to prudence, (*e*) that this is changed, and other notions and sentiments, possess the mind, if the motion of the blood be disturbed, and irregular. If the condition of the blood be good, prudence takes place, but when the former is changed, the latter fails with it. He observes, that madness is sometimes terminated by the hemorrhoids, as it is likewise occasioned by a suppression of the natural discharges.

They, in whom tumors, with ulcers appear, are neither taken with convulsions, (*f*) nor driven into rage or madness. But these, on a sudden, vanishing, since it must be done on the back part of the body, there are caused distensions of the nerves, and convulsions; but if on the forepart, then happens raging madness, or a sharp pain of the ribs, or a suppuration of humours, or a dysentery, if the tumours were red. In his Book *De Insania*, after, says he, the brain is suddenly heated by the effervescence of the blood, in the veins, (*g*) the patients have frightful dreams, the face and eyes become red, and the mind meditates mischief; but when the blood is again dispersed to the veins, these symptoms cease.

For the cure of madness, he orders bleeding, drinking water with a portion of white hellebore, (*h*) and a proper regimen; and in his Book *De Diæta*, he thinks purging with white hellebore highly beneficial in melancholic, timid, and dejected patients. In his Book *De Veratro*, he informs us, that before the use of white hellebore, (*i*) the body is to be moistened, with copious aliments and rest. And in lib. 6. *Epid.* he orders the body to be prepared for its exhibition, by baths, and aliments. For the same purpose, he ordered asses milk to be drank, both before and after the use of drastic purgatives.

EPILEPSY.

THE epilepsy is produced when various kinds of obstructions happen in the veins (*k*) and so intercept the motion of the blood, that in some parts it stands still, enters others more slowly, and others more quickly, (*l*) and this undue unequal conveyance of the blood, of course affects the whole body. They who are afflicted with the epilepsy, (*m*) before they arrive at the age of fourteen, may be freed from it; but they who are affected with it at the age of twenty-five, are usually troubled with it till death. (*n*) Few patients, after their twenty first year, are seized with an epilepsy, (*o*) unless that misfortune should

(*x*) *Aph.* 42. Sect. VI. *Coac.* XI. 223. ad. 229.

(*z*) *Bronchotomy*, *Morb.* lib. 3.

(*c*) These notions seem contradicted in other parts of his works, and have been the subject of dispute, among many of the learned.

(*d*) Brain the cause of madness.

(*f*) 11 *Epid.* III. 129. *Aph.* 65. Sect. V.

(*i*) The body to be first prepared.

(*l*) Unequal distribution of the blood causes the epilepsy. (*m*) 5. *Epid.* 96. *Aph.* 7. Sect. V.

(*n*) If it happens before the age of fourteen, curable; after five and twenty not.

(*y*) *Prænot.* XXII. 15. *Coac.* III. 100, 101, 105, 106. *Aph.* 10. Sect. V.

(*a*) *De ratione victu in acutis.*

(*b*) Disease.

(*e*) An excellent observation on the blood.

(*g*) Description.

(*k*) *Lib. de flatibus.*

(*h*) Bleeding and hellebore.

(*o*) *De Morbo Sacro.*

should happen to be hereditary. (*p*) Change of diet and place, and especially growing older, free children from the epilepsy. In epileptic patients, urine unusually thin, and crude, if their be no repletion, signifies an approaching fit, (*q*) and so much the more if it be accompanied with a pain or tension of the æromium, neck, or back, or stupor of the body, or troublesome dreams.

Hippocrates recommended cauteries in this disease, fætid substances, and sometimes bleeding.

ILIAC PASSION.

IN the third Book De Morbis, Hippocrates accounts for this disorder, in the following manner. (*r*) The intestines are dried, and by the heat of the inflammation so bloated up, that neither flatulences nor fæces can be expelled. But the belly is hard, and the patients sometimes vomit, first a mucus, then a bilious matter, and lastly excrements.

A convulsion or delirium, after the iliac passion, is very unfavourable; (*s*) and this disorder succeeding, a strangury proves fatal, within seven days, unless plenty of urine be discharged upon a supervening fever. (*t*)

In his Book De Morbis, he says, if a physician was ever beneficial to a patient, (*u*) in the cure of a disease, he must necessarily have employed his skill at a *proper season*, and certainly in this disorder this notion is strictly true. In his third Book De Morbis, he gives a very accurate description of this disease; and for the cure, he orders a long suppository, prepared of honey, (*x*) and the anterior part to be covered with ox gall, and to be introduced twice or thrice into the anus, by which means the indurated fæces about the intestinum rectum may be softened, and brought away. (*y*) After this he recommends a clyster to be injected. If these methods prove ineffectual, a *smith's bellows*, is to be introduced up the anus, and by this means such a quantity of air injected, (*z*) as is sufficient to distend the abdomen, and remove the contraction of the intestines. Then removing the bellows, he directs a clyster to be administered, (*a*) which consists not of hot ingredients, but of such as resolve, and colliquate, the fæces. Afterwards stopping up the anus with a piece of *sponge*, in order to prevent the discharge of the clyster, let the patient sit in warm water. (*b*) He adds, if this injection is restrained, and afterwards discharged, (*c*) the patient will be restored to health. He further says, the stomach should be freed from all sordes, and a proper quantity of blood taken from the head, (*d*) and those parts of the arm where the joints of the elbow are, that by this means, the heat of the superior belly may cease. Then all the parts above the diaphragm, except the heart, are to be cooled, whereas the inferior parts are to be kept hot; (*e*) the patient is to be placed in a *bath* of warm water, and the abdomen carefully anointed with oil. (*f*)

CANCERS.

RESTRAINED menses, are conveyed to the breasts, (*g*) and delude women with a specious appearance of pregnancy. And he afterwards adds, and in her breasts hard tubercles arise, some of which are large, and others small. These tumors never come to suppuration, but always become harder, till at last occult cancers are produced. (*h*) Occult cancers ought not to be cured, for they that are attempted to be cured die soon, whereas those who leave the disorder to nature live longer. Irritating practice augments the disease. See my Treatise on Cancers.

GALEN in explaining Hippocrates on this subject, says, they who cut, or cauterize cancers in the palate, or in the anus, or on the breasts of women, can *never* bring the ulcers to a cicatrix; but by the violent pain of the cure, waste the patients till they die; who without a cure would have lived longer, and endured less pain. CELSUS says the same.

Hippocrates,

(*p*) Change of place, 11 Prædict. 1, 2, 3. Morb. sacro XIII. 6 Epid. VI. 36.

(*r*) Cause and account of the disease.

(*t*) Judicat. XII. 2. Coac. III. 314. V. 75. 87. Aph. 45. Sect. V.

(*x*) Suppository.

(*y*) Clyster.

(*a*) Laxative clyster not heating.

(*b*) Warm bath.

(*d*) Bleeding

(*e*) A bath.

(*g*) De Morb. mulier. lib. 2. cap. XX.

h) 11. Prædict. XVIII. 5, 9, XXI. 5, 11, Morb. XXIII. 25. Aph. 38. Sect. VI.

(*q*) Coac. prænot.

(*s*) Coac. III. 303. Aph. 10. Sect. VII.

(*u*) Necessity of a physician being called in the beginning.

(*z*) Inflating the intestines with air.

(*c*) Retention of the clysters.

(*f*) Anoint with oil.

Hippocrates, however, mentions an instance of a carcinoma of the face being cured by applying an actual cautery to the part. (*h*) He says, in lib. 5, Epid. she had a carcinoma in her breast, and by carcinoma, the ancients, in general, mean an occult cancer. (*i*) In his Book De Morb. Mulier, he reckoned among the symptoms of a cancer, the following. The patients have their whole bodies extenuated, their nostrils are dry and contracted, they breathe short, and their sense of smelling is entirely lost. They have, indeed, no pain in their ears, but sometimes callous tubercles are formed in them.

DISEASES OF THE KIDNEYS, BLADDER, STONE, &c.

AN ulcer in the kidneys, or bladder, is discovered by the patients discharging through the urethra, (*k*) blood or ulcerated matter. But if blood issue freely, a vein is ruptured in the kidneys. (*l*) A sandy sediment appearing in the urine, signifies a stone in the bladder; and any one discharging blood, or curdled matter through the urethra, (*m*) or, if the urine should issue by drops, accompanied with a pain in the lower belly, and the perinæum, he is diseased in those parts about the bladder.

A strangury and difficulty of discharging the urine, (*n*) is cured by bleeding, or a draught of wine, but the inward veins must be opened; (*o*) and those who have a tubercle in the urinary passage, are cured when it is brought to suppuration. (*p*)

In lib. Prænot, when speaking concerning the fatal event of diseases of the bladder, he says, indurations and pains of the bladder, are pernicious and dreadful in the utmost degree, especially such as attend a continual fever: for the pains themselves, being the effects of convulsion, are enough to destroy the patient; and the belly, at this time makes no excretions, but of a hard substance, and that forced solution is attended with a discharge of purulent matter, depositing a white and thin sediment. But, if after such an evacuation, the pain be not mitigated, nor the bladder mollified, it is to be feared the patient will die in the first periods of the distemper. He recommends in his Book De Intern. Affect. when a pain has seized the kidneys, to bathe in a large quantity of hot water, and apply tepid fomentations, especially to the part afflicted. In his Epidem. lib. the fifth, he relates that the servant of Dyseris, in Larissa, whilst young, felt extreme pain in coition, but at other times was very easy. She was never pregnant. When she was about sixty she was seized with excessive pains like those of labour, in the afternoon having eaten the same day in the morning, a large quantity of becks, she was attacked with more pain than usual. Upon examination she felt something rough at the orifice of the womb, as large as the spondyl of a distaff, which was a rough stone, after this she fainted, and it was taken away by another woman. She continued well ever after.

GOUT.

GOUTY diseases, are mostly provoked in spring, and autumn; (*q*) and they cease within forty days after the inflammation is assuaged. (*r*)

Eunuchs are neither troubled with the gout, nor baldness; (*s*) and a woman is not afflicted with the gout unless her menses fail her. (*t*) A boy is not troubled with the gout till he has used venery. (*u*)

The general methods of treating the gout, were abstinence, frictions, and purging.

CRITICAL OBSERVATIONS ON THE MEDICAL PRACTICE OF HIPPOCRATES.

FROM a candid examination of the medical practice of Hippocrates, it appears, that the most accurate observations were made on the change of symptoms in acute diseases. The doctrine of signs, whether a patient shall recover or expire; (*x*) what evacuations were salutary, or unfavourable; when it is necessary to assist by art, and when more eligible to leave the disease to be determined by evacuation, he has left the most excellent precepts. For, what method could be more rational, than to

(*h*) Lib. 7. Epid.

(*i*) Lib. 2. cap. 20.

(*k*) Intern. Affect. XV. 4, 5. Nat. hum. XXVI. 4. Prænot. XIX. 11. Aph. 77. Sect. IV.

(*l*) Intern. Affect. XVI. 4. Aph. 78. Sect. IV.

(*m*) Aph. 80. Sect. IV.

(*o*) 11 Epid. VI. 39. Aph. 48. Sect. VII.

(*p*) Aph. 57. Sect. VII.

(*r*) Aph. 55. Sect. VI.

(*s*) Aph. 28. Sect. VI.

(*t*) Aph. 29. Sect. VI. 5 Epid. XXXIII. 4. 6 Epid. VIII. 98. 1 Morb. mul. XIII. 6, 114

(*n*) Strangury removed by bleeding, &c.

(*q*) Judicat. VI. 3. Aph. 49. Sect. VI.

(*x*) Particularly skilful in the doctrine of signs.

(*u*) Coac. III. 395. Aph. 30. Sect. VI.

to submit the cure of acute diseases to the constitutional efforts; to assist when necessary, and promote the excretions pointed out for the expulsion of the morbid symptoms? These fatal distempers were equally destructive in those ages, as at present; and a physician highly merits commendation, (*y*) who discovers new methods for their cure. The moderns indulging their hypothetical refinements, have disputed with great vehemence, theory, has succeeded theory, (*z*) for several ages, experiments have been multiplied, and invention nearly exhausted to explain the secret causes and cure of acute fevers; yet they remained difficult; nor was any mode of cure superior to the ancients established, until the use of antimony, lately was established. In acute diseases the regimen prescribed is excellent; the habit, the safest guide, is consulted, (*a*) the patient's feelings, and the accustomed diet; from these a plan is formed for the administration of remedies and aliment, in the various progressions of the distemper.

Apprised of the dangerous consequences of suddenly emptying the vessels, (*b*) and departing immediately from the customary diet, he would suffer no alteration, but with great caution, and by the most gradual means. (*c*) And certainly nothing more clearly proves the prejudices and ignorance of physicians, than when they presume to prescribe to all patients in a dictatorial manner, one particular aliment. (*d*)

The opinions in general are diametrically opposite on diet; (*e*) this most probably arises from a circumscribed principle; for without considering the variety in nature, and that contrary diet agrees or disagrees with different persons, (*f*) they generally recommend what is found, by experience, to suit their own inclinations or constitutions; and thus their own feelings are made a standard for the patient. (*g*) Hippocrates uninfluenced by any such narrow prepossessions, regarded the natural propensities and antipathies only: such was the judgment, such the conduct of this ancient father of medicine; and these examples are well worthy of imitation. (*h*) He freely censured the physicians of the age, (*i*) because they were more solicitous to gratify a false ambition in starting novelties, and acting in opposition to each other, than by uniting their endeavours for the welfare of society, or improving the art. Nor does he omit mentioning those pretenders in the profession, (*k*) who obtruded themselves on the public as skilful artists, with no other attainment than the knowing a few technical terms, and the preparation of medicines.

Others he treats as conceited and ignorant, who imposed on the patients, (*l*) by artfully affecting importance, and giving to the merest trifles an air of consequence; as not allowing strained barley water, for which singular conduct they could produce no rational explanation. The prejudiced physicians, who prohibited the use of either solids or liquids for the first seven days in acute fevers, he inveighed against bitterly, considering them the pests of society, the destroyers of mankind.

These he remarked, by dishonoring physic through dangerous prejudices, and an unacquaintance with nature, brought the art itself into disrepute.

The administration of hydromel or oxymel are excellent in acute disorders, (*m*) repeated bleedings, when the symptoms were inflammatory, were likewise judicious; but purging with hellebore was too violent; (*n*) it was however his misfortune to be unacquainted with mild luxatives. (*o*) The applying fomentations in the pleurisy, and peripneumony; the watching attentively for the means pointed out by nature, in violent fevers, for expelling the morbid affection; (*p*) calling forth the assistance of art, either for promoting the critical evacuations, or supporting the weak, sinking patient, are examples of the most reasonable modes of treatment, and are superior in some respects to many advanced by the moderns. (*q*)

The

(*y*) Improvers of the art, worthy of commendation.

(*z*) The moderns, notwithstanding many hypothesis, have not improved the cure of acute diseases.

(*a*) Consulting nature alone, an admirable practice for his time.

(*b*) No sudden changes allowed.

(*c*) Physicians ignorant who prescribe to all patients one plan of diet or cure. (*d*) Variety of opinions on diet.

(*e*) The cause.

(*f*) Physicians prescribing from their own feelings, instead of examining the variety in nature.

(*g*) Hippocrates not influenced by such narrow prepossessions.

(*h*) His example worthy of imitation.

(*i*) Physicians freely censured, for opposing each other, instead of improving the art.

(*k*) Ignorant practitioners censured

(*l*) Of those who impose on their patients, by assuming great importance, on trifling occasions.

(*m*) Hydromel oxymel and bleeding proper in acute disorders.

(*n*) Purging with hellebore too violent.

(*o*) Fomentations proper in the pleurisy and peripneumony.

(*p*) Assisting the critical evacuations pointed out by nature a good practice.

(*q*) And superior in some respects, to modern methods.

The rules for diet, the observations on the effects of exercise, or indolence, the manner of administering what remedies were then discovered for acute complaints, excepting rough purges, are all delivered with great penetration and judgment, and well worthy of attention.

The prognostics from cold shivering, from tremblings, convulsions, and sweats, are partly true, partly not. For a cold rigor seizing a patient in a fever, is not always mortal, in many instances it only indicates the formation of an abscess, which happening in the external adipose membrane, terminates favourably in the restoration of the patient's health. A chilliness after convulsions is very common, and is perceived in general, immediately on the recovery from a fit; convulsions and tremblings, after sleep in violent fevers are unfavourable signs.

It is an erroneous doctrine that sweats appearing on particular days are beneficial; the notions likewise of critical days are absolutely untrue. For the crisis of all acute distempers, will ever depend on the strength, and particular habit of the patient. Some naturally resist diseases, whilst others fall victims to them, or at least, they are prolonged. It happened, notwithstanding, Hippocrates possessed an uncommon sagacity, yet he was prejudiced in favour of the pythagorean numbers; this led him into some singular errors, and amongst these may be ranked the opinions of odd or particular days being unlucky or prosperous.

It might be urged in his vindication, that the moderns cannot determine with precision on this point, because the methods of treatment are quite different. In acute distempers medicines were rarely given by the ancients, but active and powerful drugs are prescribed in abundance by the moderns. They depended chiefly on nature; we produce extraordinary changes by art: therefore under these opposite circumstances, the crises must be widely different. But in fact, in another part of the work, it is candidly acknowledged, that the critical days do not constantly agree with the general doctrines; besides, the difference of climate, air, seasons of the year, and many other incidents, all conspire to change the appearance and conclusion of acute and other disorders.

Cold sweats frequently signify the approach of death, in acute affections, especially, if the countenance and lips be palid, the pulse scarce perceptible, and the patient should be exceedingly sunk, either from profuse evacuations, or the commencement of a mortification. The yellow appearance of the body is very unfavourable, in acute epidemic fevers, particularly in the warm climates, unless the bile be discharged through the intestines, for it is commonly the forerunner of putridity. The opinion that fevers would return, unless they left patients on odd days, is highly erroneous, and may be ascribed, without injustice, to the philosophical prejudices of Pythagoras.

The various prognostics deduced from the breathing in fevers, seem very accurate; as are several conclusions from the appearance of the urine; and the diet recommended either for the sick, or healthy; when the Greek customs, and manner of living are considered, appear extremely sensible.

This excellent author considers a slender diet, in lingering diseases exceedingly dangerous; and this is certainly true, for here nature requires nourishment, to assist in supporting the calamities of anxiety and pain. The extreme low diet recommended by some, fonder of novelty than truth, in the gout, cancer, scrophula, and similar complaints, has so weakened and reduced patients accustomed to free diet, that more danger has arisen from the prejudices of physicians, than those deplorable diseases.

A precise diet is highly disapproved of, and with reason; for, what situation can be more truly miserable, than those who continually employ their thoughts, in a minute examination of diet, perspiration, and the other evacuations? These people counteract all the wise intentions of nature; every inconsiderable alteration, produces misery; a gloominess hangs on their countenance; they are self-tormentors, living in a state between existence, and non-existence.

On deliriums, convulsions, and comotose symptoms, he speaks justly; and the prognostic from the appearance of the eyes, when sleeping, are in general, exact copies from nature. The intermittent fever, being of short duration, in summer, and of long continuance in the autumn, and in winter, has been confirmed by the writers of every age. The methods of cure were, however, defective, and the modern treatment was unsuccessful, till fortune discovered the peruvian bark; and chemistry afforded the vitriolic acid; for by these two remedies, there is nearly a certainty of curing this distemper; which according to ancient authors, proved destructive to numbers. This may be esteemed as a principal improvement of the moderns, and a valuable acquisition to the art.

The description of the hectic fever, and its fatal catastrophe, resembles exactly what may be now perceived in that lingering distemper;

distemper; and the difficulty of curing hectic patients is nearly similar to that of the ancients. Few recover, if the disorder be far advanced; for, the night sweats, the fever, the cough, the diarrhœa, alternately siezing the afflicted, and the whole body gradually wasting by such accumulated misery, death at last finally closes the direful scene.

The opinions concerning the causes of diseases, are in some degree true, to attribute to the air the cause at particular seasons of the year was undoubtedly true; experience in all ages, and in all countries has confirmed the same; but when the predominance of any of the four humours, as the blood, phlegm, choler, or melancholy, is introduced as the immediate cause, such a doctrine was only a mere ancient opinion, and has never been demonstrated, though a subject of dispute for several ages. For these humours not existing in the human body, in the proportions the ancients conceived, as anatomical demonstration clearly proves; this opinion, though universally received formerly, is consequently refuted.

The aliment has a considerable share in producing distempers, and that the winds effect considerable changes in the human system, is an undubitable fact. As a proof, let us appeal to the experience of mankind in general, for who has not been sensible of the different effects of a southerly or north east wind? The effects of intense heat, extreme cold, very dry, or moist weather, were circumstances particularly attended to; and conclusions were deduced from experience, whether a prevailing distemper would be short, or of long continuance in a city.

The division of distempers into endemic, and epidemic, have continued ever since; and the distinctions between hereditary, or accidental diseases, mild, or malignant, were certainly judicious.

The arrangement of diseases, according to their natural stages, under four general heads, was rational; as the commencement, augmentation, height, and decline, these have been the general divisions in all succeeding ages. The considering nature as the sole judge and decider of diseases, and either acquitting or condemning a patient, by a fortunate or unfortunate crisis, was perfectly agreeable to the ancient simplicity of practice; for successful will be the utmost efforts of the physician, to cure a disorder, unless nature joins in the salutary work. Whoever, therefore, attempts by too great a presumption in the powers of the art, to expel a disease by violence, or on mistaken principles, will seldom have success, and not unfrequently commit irreparable mischief: *sed est modus in rebus*.

The notions of air, fire, earth, and water, being the elementary constituent principles of bodies; may be assigned to the prevailing philosophy of the time; but these philosophical prejudices, had no influence in his practice; nor was he induced to try hazardous experiments, like some of the moderns, on many precarious principles, for which wise conduct he justly merits the highest encomiums.

The opinion that the moon and stars, had considerable influence on human bodies, may be without injustice, considered a superstition; but, the noticing the effects of the solstices, and equinoxes, as producing particular indispositions, is not unworthy attention. He did not assume a foreknowledge of future events, from the contemplation of the stars, like some modern astrological impostors; no, he principally regarded what diseases were most predominant at particular seasons, and gave the most sensible directions for guarding against their baneful influence.

The knowledge of physiognomy, from which were formed many sensible conclusions, was the result of exquisite penetration and judgment; by experience he arrived to an uncommon degree of certainty in his presages of life and death. Though this acquirement is much neglected by the moderns, who have made a point of substituting art for nature, yet few indications are more certain than the countenance, to discover peculiar constitutions, or the events of diseases. How excellent is the description of a dying person? The face is represented with such exactness, that we have exhibited to view, all the mortal symptoms, at once collected in the countenance; this admirable portraiture has been justly admired in all ages, and obtained the appellation of the *facies hippocratica*. The actions of the hands, as seemingly catching at something, picking the bed cloaths, are unfavourable symptoms; the doctrine of the pulses was not clearly understood, but the accurate attention to all the other circumstances amply compensated for this defect. In chronic disorders, the diet was principally attended to and regulated, very little medicine was administered, exercise, frictions, and baths were recommended; and what plan more judicious has even now been discovered? The ideas of contrary indications, addition, and subtraction, the attending to what the patient more easily, and what excited irritation, or uneasiness; and the never admitting the repetition of a medicine, but as it agreed was productive of relief, are exceeding good practical doctrines. Bleeding is recommended, in most of the disorders for which it is now prescribed, except in the dropsy; what success attended this evacuation in that disorder, he hath left us no testimony; but it was certainly improper even to robust persons. Bleeding is not necessary, either in spring, or autumn,

autumn, nor at any other time, unless some disorder requires it. In a state of health it is unreasonable either to bleed, or to take medicine, upon the principal of preserving health, for such practices are most likely to produce diseases. Hippocrates said, that purges are injurious to persons enjoying sound health, and during the dog days, both purging and vomiting are too violent for the purposes of preserving health; especially on the reflection that vomits were ordered twice in the month; and the administration of hellebore, he himself acknowledges, sometimes produced convulsions and death.

There are many remedies and diseases, mentioned in the works of Hippocrates, which the moderns have not discovered, or imperfectly understood. There may be seen, however, many medicines in the *materia medica*, that daily receive the approbation of the moderns, for the very purposes they were anciently prescribed.

Barley water, hydromel, and oxymel, were the chief remedies in acute distempers. Barley water has continued its reputation as an innocent diluter to this very time, and has been universally used in all ages. Oxymel is good in the peripneumony, and pleurisy; nor have the moderns discovered any drink superior to vinegar and water, for the cure of acute fevers. Castor, and myrrh, are still prescribed for their original intentions. Garlic and squills are proper for all affections of the lungs; nor is there in the whole modern *materia medica*, any thing superior to the latter, for promoting expectoration. Allum is now used with success as an astringent and bracer, and spices are proper for the purposes Hippocrates recommended them. Fresh ox gall is a useful laxative to destroy worms, and for other uses. Cantharides are now given as a diuretic, but the manner the ancients gave them was hazardous; nor are they calculated for internal use, though they have lately been esteemed by some bold practitioners. Long abstinence from food, in some respects, is proper, in others, perhaps, it was a prejudiced practice. In dropsies, the diarrhæa, and asthmas, it was more judicious, than in the jaundice. The use of clysters was well understood, and cupping was performed in similar cases, we now advise it. Elaterium as a purge, was exceeding rough, and by far too violent for cancers, ulcers, or sore throat. Frictions, and the cold bath were applied judiciously; the last may be useful for relaxations, faintings, and to restrain the menses; though for this last mentioned purpose it is rather an hazardous practice; but perhaps, it was less so in Greece, than in these colder climates. It is extremely dangerous to attempt cold bathing, in diseases of the lungs, asthmas, and consumptions; this Hippocrates was apprised of, and therefore forbid it. Juniper berries is now an approved diuretic; and asses milk is given for the same intentions, it was anciently advised. The juice of sour apples is not improper in fevers; and meconium, it now is in common use. Origanum, or thyme, is much esteemed in the present practice; nor was it likely to answer all the intentions for which it was prescribed. Eggs are now taken with advantage, in coughs, and might have been generally useful for the cases in which they were directed. Tar, pitch, pepper, cerus of lead, and pennyroyal, galbanum, rosin of turpentine, rose leaves, and elder berries, have been advised in all ages for similar affections. Scammony, tapping, whey drink, assafœtida, sulphur, and frankincense, have been approved remedies in all ages. Botany was not cultivated in the time of Hippocrates, it seems he considered it of much greater importance to comprehend the administration of remedies, than to waste time in examining the nice distinctions of the different genera of plants; and certainly the performance of one great cure, is worth all the speculations on these subjects, that ever appeared in the world, except as a curious part of natural history.

The using sternutatories in convulsions was not in some cases improper; but mandrake root, given internally, was a dangerous practice. The application of hot bags to the tendons, is not clearly understood; and pepper mixed with honey seems a singular remedy for internal uses.

In the dropsy, the practice of abstinence was not injudicious, before the symptoms were considerable, and the cough is certainly an unfavourable circumstance. The manner of discharging the water gradually, when paracentesis was performed, perfectly corresponds with the opinions of all succeeding physicians. Bleeding in the dropsy was improper, but exercise to produce perspiration, abstinence from fluids, and purgatives are highly proper at the commencement of this sluggish distemper. It however frequently happens, that even when the dropsy is in a recent state, the patients being most commonly of a corpulent habit, are possessed with such a listlessness to action, such a fatal indolence, that they are rarely roused from inactivity, to attempt the recovery by exercise. The cantharides given internally must have been extremely precarious; and though smart purgatives have their utility, both the hellebore and elaterium are too drastic, and more especially if the complaint has been of long continuance. See my Treatise on Dropsies.

The opinions delivered on diseases of the lungs are accurate, as are the prognostics from the appearance of what is expectorated; and the plan proposed for the cure of consumptions, is in most respects similar to modern practice, the ad-

ministration of spurge only excepted, this being far too violent for such an irritable distemper. Air, and moderate exercise, are of the utmost importance in these complaints, nor should they ever be omitted; for in many instances, a change of air alone, will cure this lingering disorder, when all other attempts prove ineffectual.

The observations on the diarrhæa, dysentery, and the conclusions from the appearance of the fæces in epidemic, and other diseases, are all worthy of attention. The remedies for the diarrhæa, and dysentery, are tolerably judicious. Hippocrates bled in the dysentery, the moderns prescribe the same; he recommended meal boiled in milk as food, the same is frequently recommended at this present time.

In the jaundice, drastic purging was objected to; and physicians for such violent practices, were censured as ignorant; but the modern methods of treating the jaundice are quite superior to the ancient.

By very slight and inconsiderable circumstances, diseases are frequently prolonged; a physician, therefore cannot be too cautious, lest either by an omission, or attempting, through an implicit confidence in the art, more than medicine can effect, he may considerably augment a disease. It is a safe practice to do no injury, when the limited powers of the art prevent us from effecting good; and such a principle cannot be too strongly inculcated, nor too frequently remembered by students, in a science we could wish was less uncertain.

If the liver became schirrus in the jaundice, it was thought dangerous; but affections of the liver are more prevalent in warm climates, than the colder countries, and in the East Indies a very successful method has been adopted for the cure of this complaint. The abscess of this part, in this country, is very dangerous, and frequently proves fatal.

The Hippocratic description of madness is tolerably accurate, the notion of the blood's state, producing different sentiments in mankind, is nearly true. What a difference may be perceived, between the man whose heart circulates a blood apparently pale, and one of a florid complexion? One shall be crafty and designing; the other, open, sincere, and generous; one shall be vindictive, timorous, and effeminate; whilst the other shall be brave and of a masculine habit. A man of discernment, may, in general, distinguish between sincerity, and insincerity, and indeed without pursuing human vices, guard against the vicious. It was the character given to Hippocrates by Macrobius, that he could neither deceive, nor be deceived; and assuredly no character is more absolutely necessary in a physician.

The opinion that the healing, or drying up an ulcer, would produce a phrenzy, pleurisy, or convulsions, is a prejudice revived by the moderns, (r) and universally adopted. This doctrine has been clearly demonstrated to be false, by the success of my new discovered method of curing old ulcers of the legs without rest. Hellebore was a remedy prescribed in madness; and, as the letters from the Abderites are inserted in the former part of this work, the two following may be not unworthy of attention. The first is from DEMOCRITUS, to HIPPOCRATES, and is as follows.

You came to us Hippocrates, to give hellebore to a madman, at the instigation of a prejudiced people, who think study madness. I was at that time employed in writing concerning the fabric of the world, the poles, and the stars of the firmament. When you understood the nature of these things, how excellently they were framed, and how far from madness I was, you commended my employment, and censured them as foolish and insane. All those things that pass through the air by images, are seen in the world, and succeed one another, my mind making a scrutiny into these, hath clearly discovered their nature, and brought it to light; witness the books I have written. You ought not, therefore, Hippocrates, to converse with such men, whose minds are wavering, and inconstant. For, if, as my countrymen had desired, you had given me hellebore, considering me mad, you had, from a perfect sensible state, made me mad indeed; the guilt whereof would have been attributed to your art. For hellebore given to sound persons, clouds their understandings; but to the insane it is productive of good. I believe that if you had not found me writing, but lying down, or walking, revolving things in my mind, sometimes laughing, and not attending to such friends as visited me, but entirely absorbed in study, and contemplation, you would have inferred from what you beheld, that I was mad. A physician, therefore, must not judge of the affections, or passions, by the sight only, but by the actions themselves, and observe, whether they are in their beginning, in the middle, or decline, and to consider the difference of time, and age, before he undertakes to cure the body, for, by all these the disease will be discovered.

To

To which HIPPOCRATES returned this answer.

In the art of physic, those things which happen successful, for the most part are not commended by men, (s) but they commonly ascribe it to the gods, if any thing happen amiss, so that the patient dies; they then let the gods alone, and accuse the physician. And indeed, I perceive, that I receive more blame, than credit, by my art. For though now very old, I have not yet arrived at the height of medicine; neither did Æsculapius himself, who invented it, as appears in that he in many instances, dissents from those who have written on the subject. Your letter to us condemns the administration of hellebore. I was, indeed, Democritus, sent for to cure a madman; neither at that time could I guess in what condition you were; but when I had conversed with you, I discovered you to be far removed from madness, and worthy of all respect. I acknowledged you to be the most excellent interpreter of nature, and the world, and judged those who sent for me to be mad, and to have occasion for physic. But since this accident hath created an acquaintance between us, you will not do amiss in writing oftener, and in communicating your works to me. I have sent you a treatise concerning hellebore. Farewell.

From the foregoing epistles, Cornelius Celsus, (t) concluded that Hippocrates was a disciple to Democritus; but some of the modern critics have doubted their authenticity, as likewise those mentioned in the third book. As a disputation on this subject would leave the case undetermined,¹ it is submitted to every learned reader to form his own judgment on the matter. The ingenuous and modest confession, however, that he was not perfect in the art, though arrived at a great age, may be no useless lesson to suppress the assumed arrogance of some physicians, who, without any, or but little application, consider themselves qualified to practice the art, without ever reflecting on its uncertainty, or their own insufficiency.

The practice in case of madness was similar, in general, to the present mode; as it consisted in bleeding, purging, and a low diet.

The opinion of Hippocrates concerning the cause of the epilepsy, as arising from an unequal distribution of the blood, when we add the modern opinions concerning the nerves, is not very improbable. The ancient method of treating the epilepsy, is similar to the modern, as bleeding, fœtid substances, and cauteries.

The iliac passion, is described tolerably just, and the methods of cure very rational. In such desperate disorders, where often a mortification suddenly succeeds the inflammation, a physician cannot be called too soon; and the methods recommended by Hippocrates, may be not only necessary, but all other which art can suggest; and above all things, plentiful bleedings in the beginning, if the patient can bear it, should never be omitted.

In cancers the opinions were very just, and have been confirmed by the testimony of every age; for all irritating practice whatever, is highly injurious, and cannot be too much discouraged. See my Treatise on Cancers.

The methods pursued in disorders of the urinary passages, and the apprehensions from the dangerous consequences succeeding an inflamed bladder are sensible. But the notions in some respects concerning the gout, seem rather superstitious; as its never happening to eunuchs, or to women, unless from a suppression of the menses; for experience proves this not to be true.

The methods of treating the gout, were similar to the present practice; and the moderns know as little how to cure it, notwithstanding the many treatises on the subject, as the ancients.

ON THE DISEASES OF WOMEN AND CHILDREN, WITH THE MIDWIFERY OF HIPPOCRATES.

HIPPOCRATES, is no less accurate in his observations on the diseases of women, than all the other branches of medicine. In his Treatise De Virgin, is asserted, that young women at the age of puberty, are afflicted with a species of delirium, in which they think they see certain dæmons, about the first appearance of the menses; though free from such disorders before, for after the blood is accumulated in the uterus, as if it was ready to be discharged, if the mouth of the uterus be not open, and

(s) Epistol Hippoc. col.

(t) It is supposed that Celsus lived about three hundred and fifty years after Hippocrates.

and the blood is at the same time increased by the aliments, and growth of the body; then the blood, not finding a free passage, in consequence of its large quantity, recoils to the heart and diaphragm. When these are filled, the patient becomes foolish, then torpid, and lastly, delirious. In his *De Morb. Mulierum* is inserted, the following description of the fluor albus. (*u*) The matter discharged resembles the white urine of an ass. White swellings appear on the patient's face; the parts below her eyes swell; her eyes are disordered, and appear as if she were dropsical; the colour of her skin is whitish, and the lower part of the abdomen tumid; on her legs appear tumours, so soft and lax, as to retain the impressions of the finger. She perceives a biting pain of the stomach, (*x*) and seems to feel an acid water lodged in it, when she is either fasting, or happens to vomit. When she goes up a steep place, she is seized with a shortness of breathing, (*y*) her legs are cold, knees feeble, and her uterus preternaturally opened, and falling down, with a sense of weight, to its mouth. But it is difficult to cure those who labour under this degree of the disorder. (*z*) In his book *De Sterilitate*, he says, that women who have their uterus too moist, or slippery, cannot conceive; (*a*) because the uterus suffers the seminal matter to fall out of it, and a convulsion and syncope happening to a woman, troubled with an immoderate discharge of the fluor albus is very bad. (*b*)

ON THE MENSES, &c.

In the first book *De Morbis Mulierum*, Hippocrates affirms that two heminae are discharged, of menstrual blood, at each evacuation. He attributed most of the diseases of women to the situation of the uterus. (*c*) And he observes, that in some few women, the menstrual blood retained in the uterus, for two months, regurgitates to the lungs, and produces all the symptoms of a consumption. (*d*) Both the overflowing of the menstrual discharge, and its suppression, produce diseases. (*e*) The monthly evacuations of females, if they be discoloured, and do not proceed in the usual manner and time, purging is necessary. (*f*) A woman who vomits blood is cured, if her menses issue forth; (*g*) and a nasal hemorrhage is useful to women, in whom there is any deficiency of the menstrual evacuations. (*h*) To check the menstrual discharge, when it flows in too great a quantity, great cupping glasses should be applied to the breasts; (*i*) but to produce the discharge of the menses, when they are suppressed, a fumigation of aromatics is useful; (*k*) and this would often prove serviceable in other disorders. In women who are waterish and pale, the menses continue longer than three days. (*l*) Those women who are fair, and white, have such abundance of humours, that they issue many ways; (*m*) contrary to those of a brown and swarthy complexion, who are commonly of a more dry constitution. (*n*) A story is related of one Phaetusa, who, when her husband was banished, was so overcome with sorrow, that before the natural time of the menses quitting her, a suppression happened, her body became masculine and hairy, she had a beard, and her voice grew stronger. (*o*) The same he records to have happened to Namisia, the wife of Corgippus, in Thaso. The menstrual discharge frets the earth like vinegar, (*p*) and corrodes the body of the woman, on whatever part it drops, and excoriates the parts of generation. (*q*) In the months the same things are performed, by certain and right reason, that are done in days; (*r*) for, every month, healthful women have their menses, as if the month had a peculiar power and effect on their bodies.

REMEDIES

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| (<i>u</i>) Fluor albus description. | (<i>x</i>) Pain in the stomach, &c. | (<i>y</i>) Difficulty of breathing. |
| (<i>z</i>) Difficult of cure. | (<i>a</i>) Fluor albus prevents conception. | (<i>b</i>) <i>Morb. mul.</i> XIV. 79. <i>Aph.</i> 56, <i>Sect.</i> V. |
| (<i>c</i>) <i>De locis homine.</i> | (<i>d</i>) Retention of the menses. | |
| (<i>e</i>) <i>Nat. mul.</i> XIV. 5. 1. <i>Morb. mul.</i> I. 2. <i>Morb. mul.</i> III. 5. 6. <i>Natur. puer.</i> VI. 14. XIII. 1. <i>Virg. morb.</i> II. 5. <i>Aph.</i> 57. <i>Sect.</i> V. | | |
| (<i>f</i>) <i>Verat.</i> I. II. 60. <i>Nat. mul.</i> X. 3. <i>Aph.</i> 36. <i>Sect.</i> V. | | |
| (<i>g</i>) Uterine discharge, cures vomiting blood. 1. <i>Morb.</i> IV. <i>Aph.</i> 32. <i>Sect.</i> V. | | |
| (<i>h</i>) <i>Virg. morb.</i> III. 2. 1. <i>Epid.</i> III. 138. <i>Aph.</i> 33. <i>Sect.</i> V. | | |
| (<i>i</i>) Cupping glass to the breasts, in uterine hemorrhage. 2. <i>Epid.</i> VI. 53. 2. <i>Morb. mul.</i> I. 5. 11. 17. <i>Aph.</i> 5. <i>Sect.</i> VI. | | |
| (<i>k</i>) Suppressed menses. <i>Aph.</i> 28. <i>Sect.</i> V. | (<i>l</i>) VI. <i>Epid.</i> 1. | (<i>m</i>) Complexions of females considered. |
| (<i>n</i>) <i>Lib. Epid.</i> 17. | (<i>o</i>) A female became masculine, by suppressed menses. | |
| (<i>p</i>) <i>Morb. mul.</i> lib. 1. | (<i>q</i>) Ill quality of the menses not very just. | (<i>r</i>) <i>De septimestri partu.</i> |

REMEDIES FOR SUPPRESSED MENSES.

HE recommended purges and vomits, and afterward the use of sharp irritating pessaries; perfumes, fomentations, and hot baths, twice in the day. Internally, orethmus, or samphire, boiled in wine, made of the tree called tæda, the herb mercury, and chiches. If those were too weak, five cantharides, without heads, wings, or feet; water caltrops, anthemus, smallage seeds, and fifteen dried eggs, infused in wine. (s) Leaves of ranunculus, infused in wine, dittany of crete, hogs fennel, ranex, peony root, seeds of white violets, the juice of coleworts, of lasserpitium to the quantity of a vetch, and cress seeds; these last infused in wine, or bitches milk.

IN AN IMMODERATE UTERINE HEMORRHAGE.

ABSTAIN from all heating things, and bathing; (t) from all duretics, or laxatives; make the bed highest at the feet. Astringent pessaries were likewise used. The belly and lower parts to be covered with sponge, or cloths dipped in cold water, (u) or drink a composition of parsley seeds, or seeds of hedge mustard, dried at the fire; peplum, or poppy seeds, sifted, with flour, nettle seeds, moss of the wild olive, gauls, rue, marjorum, pennyroyal, barley-meal, wheat flour, goats milk, and cheese, made into a kind of cyceon. (x) When the hemorrhage was stopped, purges and vomits were used, and restraining fomentations to the lower parts. Afterwards cows milk, boiled, or as it comes from the cow; the seeds of crisium, parched, and drank with wine; perfume, consisting of vinegar, sulphur, opelt, and myrrh. In another place he reckons hemlock amongst the inward medicines. Take as much hemlock as you can with three fingers, and drink it with water. Injections he likewise directed, for the matrix, in case of ulcers, and for some other disorders, of the same ingredients as the fomentations, cataplasms, &c. As for diet, he ordered nourishing fish, boiled with onions, and coriander seeds, in sweet oily pickle; swines flesh, lamb, or mutton, rather boiled than roasted; to drink small white wine, with a little honey; but not to use hot bathing, and he absolutely forbade bleeding.

HYSTERIC AFFECTIONS.

HYSTERIC complaints are sometimes occasioned by the suppression of the lochia, after delivery. (y) If hysteric fits happen to virgins, matrimony is a proper remedy. (z) Women, easily seized with (a) hysteric disorders, are subject to convulsions. (b) During the fits, wine was directed to be poured down their mouths; and under their noses were burnt fætid things, as wool, pitch, castor, brimstone, leather, horns, and feathers, and the snuff of a lamp, just extinguished, with intention to recover them from the fainting fits, to make them sweat, and restore the matrix. (c) He ordered the belly to be swathed; at the same time pressing the matrix downwards. Pessaries of oil, wool, and various powders, were used; as castor, myrrh, peucedanum pitch, milanhuim, and sometimes even the bruprestis, (d) and cantharides; mixing all these with ointments and wool. When they recovered from the fit, he used a purge, and afterwards a diet of asses milk. The use of pessaries was very common amongst the ancients, to relax, lenify, to draw, to irritate, to cleanse, to dry the matrix. They used various things, united with fat of different animals, and wool; using sometimes nitre, scammony, tithmale, garlick, cummin, cantharides. (e) Sometimes astringents, as the rind and flower of pomegranates, sumach, and sometimes aromatics. To provoke or check the menses, for relaxations, and superfluities, ulcerations, inflammations, dropsy, fluor albus, and sterility; to promote abortions, dead children, and secundines; and for promoting the discharge of the lochia after the delivery of the fœtus. (f)

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OF

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| (s) Cantharides internally. | (t) Lib. de homine. | (u) De morb. mulier. |
| (z) Cyceon, said to be a mixture about the consistence of pap, composed of wine, honey, fine flour and water, and cheese. Another sort, without wine, honey, or cheese, consisting only of flour and water, was used by the lower class of people. | | |
| (y) De morb. mulier. | (z) De virgin. morb. | |
| (a) The ancients concluded that all these complaints arose from the womb. | | (b) Coac. 349. and 554. |
| (c) Hippocrates, we presume, mistook the inflation of the intestines, for the matrix. | | (d) A sort of fly, resembling cantharides. |
| (e) Various ingredients in pessaries. | (f) Used for various purposes. | |

OF THE SIGNS OF CONCEPTION, BARRENNESS, &c.

IF a woman does not conceive, (*g*) and you wish to discover whether she be fruitful, or whether she shall conceive at all, let her be wrapped about with cloaths, and make a fumigation under her; and if the smell be perceived to pass through her nostrils and mouth, you may conclude that it is not her fault that she becomes not pregnant. (*h*) If a woman's menses be suppressed, and she have neither shivering cold nor fever come upon her, and if she loath her meat, you may conclude she has conceived. (*i*) A woman, during pregnancy, is all over of greenish, palid colour, because her pure blood is daily drawn from her, and descends to the nourishment of the fœtus. (*k*) Those women who have their womb cold and dense, do not conceive, nor those who have it over moist, for the semen in them is extinguished; (*l*) neither they who have over dry, or hot wombs, for the semen corrupts for want of nourishment. (*m*) But they are most fertile who are of a moderate temperature. Women who are preternaturally fat and gross, do not conceive; because the orifice of their womb is compressed by the epiploon, neither will they ever be pregnant, till they become less corpulent. (*n*) If you would know whether a woman has conceived or not, give her honey and water, mixed together, when she goes to sleep, and if she have twistings and gripings in the belly, she has conceived, otherwise she has not. (*o*) If a woman be pregnant with a male, she is better coloured than if she has conceived of a female; (*p*) and if a woman that neither is, nor ever was with child, has milk in her breasts, her monthly evacuations are lessened. (*q*) When blood is gathered together in women's breasts, it signifies madness. (*r*) Women conceived, have the orifice of the uterus close contracted. (*s*) Males generally lie more on the right side, females on the left side of the matrix. (*t*) Plenty of milk, issuing from the breasts of women who are pregnant, argues a weak child; (*u*) but if the breasts be solid and hard, it signifies a stronger child. (*x*) If the orifice of the womb be hard, and solid, it must of consequence be closely shut. (*y*)

ABORTION.

IF the menstrual discharge continues, at the usual time, in a woman who is pregnant, it is impossible that the infant should be well. (*z*) Women who have conceived, and are very thin, contrary to nature, suffer abortion till they grow fatter. (*a*) But those women who are moderately corpulent, and who suffer abortion the second, or third month, without any manifest cause, have the aceta bula, or glands of the uterus, filled with mucosities, and slime; which, therefore, cannot contain the fœtus, by reason of its gravity, but are broken off. (*b*) If the breasts of a woman, pregnant, become slender, she is in danger of abortion. (*c*) If one breast grows slender, she will suffer abortion with one of her children, and if it be the right that grows slender, she will miscarry of a male child; if the left, of a female. (*d*) If pregnant women fall into a fever, or become very lean, without any manifest cause, they have hard or dangerous labours; or are in danger of abortion. (*e*) In women pregnant, bleeding causes abortion; and that the sooner, the nearer the child is to its full time. (*f*) A great purging, in pregnant women, is dangerous; for it may cause a miscarriage. (*g*)

In

(*g*) Nat. mul. VII. 9. 1.(*h*) Morb. mul. CVII. 1. 11 Morb. mul. XI. 20. Steril. VI. 3. Superf. IX. 3. X. 9, 11. Aph. 59. Sect. V. To discover whether a woman will conceive, very absurd.(*i*) Morb. mul. XCIX. 2. Steril. VI. 9, 10. Aph. 61. Sect. V. Signs of conception.(*k*) Do. morb. mul. lib. 1.(*l*) Who are most fruitful.(*m*) 1 Morb. mul. XXVI. 27. XXXIV. 1. XXXIII. 5. Aph. 62. Sect. V.(*n*) Aer. aq. loc. IX. 12. Prædict. XXXIII. 2. Natur. mul. XIX. 4, 5. Steril. X. 7. XV. 11. Superf. XVIII. 1. Aph. 46. Sect. 6. Very fat women unfruitful.(*o*) An absurd experiment, to discover whether a woman has conceived. Steril. VI. 6. Aph. 41. Sect. V.(*p*) Steril. VII. 1. Aph. 42. Sect. V. Complexion considered, but not true.(*q*) 11 Prædict. XXXV. 5. Aph. 39. Sect. V.(*r*) 11 Epid. VI. 62. Aph. 40. Sect. V.(*s*) Octimest. IV. 5. Superf. II. 1. XIX. 1.(*t*) 11 Epid. VI. 32. Prædict. XXXIV. 10. Superf. XIII. 11, 12. Aph. 48. Sect. V.(*u*) Conclusion from the milk issuing from the breasts during pregnancy.(*x*) 11 Epid. VI. 53. Aph. 52. Sect. V.(*y*) Natur. mul. XIX. 9. XXXI. 10. 1 Morb. mul. XXIV. 2, 1. XVIII. 5, 11. Morb. mul. XVIII. 24. XXIII. 11. Aph. 54. Sect. V.(*z*) Natur. puer. V. 3. 1 Morb. mul. XL. 2, 5. XLIV. 4. Aph. 60. Sect. V.(*a*) Nat. mul. XIX. 1, 3. 11 Morb. mul. LXII. 20. Steril. XXII. 1, 3. Aph. 44. Sect. V.(*b*) Nat. mul. XXVII. 1. 1 Morb. mul. LXXXIV. 1, &c.(*c*) 11. Epid. 1. 42. Aph. 37. Sect. V.(*d*) Aph. 38. Sect. V.(*e*) Coac. III. 108. Aph. 55. Sect. V.(*f*) Not true. Aph. 31. Sect. V.(*g*) Purging dangerous, 11. Prædict. XXX. 14. Morb. mul. XXXVII. Aph. 34. Sect. V.

In the book *De Morbis Mulierum*, five cantharides are ordered to be put into the pudenda of women, mixed with frankincense, myrrh, honey, oil of roses, or Egyptian oil, to try their fecundity. A little after, in the same book, he orders five cantharides, without their heads and feet, to be taken in mild wine, for expelling the secundines; (*h*) but for the expulsion of the fœtus, ten grains of Ethiopic cummin and castor, and myrrh, together with a little cantharides, in some wine.

METHOD OF DELIVERY.

IN this part, it may be necessary to give some idea of the practice of midwifery. This branch was, at that time, in the hands of women; and men were very rarely applied to, unless cases were very dangerous. From this we may naturally suppose, that the method of delivery was exceedingly simple; and the labour was, in general, submitted to nature. Indeed, from what can be gathered on this subject, from Hippocrates, it appears, that the expulsion of the fœtus was considered as the performance of nature; but when nature could not perform this necessary duty, they then had recourse to other methods.

In the first book of the *Diseases of Women*, difficult labours are treated on. If a woman, at her full time, be seized with the pains of labour, and, after patiently waiting a considerable time, if the infant should not be delivered, he lies across, or presents with his feet. For when the head presents, the case is favourable; whereas, if any other part presents, a difficult labour follows. An olive, in a narrow mouthed jar, cannot be so easily extracted by the middle, as when one end presents. (*i*) The birth will be difficult, when the feet present; in which case, either mother or child most generally perish; nor is the birth without difficulty, when the fœtus is dead, apoplectic, or double. He directs us how to treat women after delivery, and in difficult labours. In lingering labours, and a good presentation, sternutatories are to be administered. Sneezing happening to a woman that is troubled with hysteric fits, or who is in hard labour, is good. (*k*) The patient was directed to keep her mouth and nose shut during their administration. The placenta is to be extracted immediately after the fœtus is delivered. (*l*) In all presentations, except where the head presents, we must push up whatever part presents, and bring down the head. If the fœtus be even dead, this ought to be the practice; and if the fœtus cannot be delivered, because its body is swelled, we are to separate it, and take it away by pieces. If the head presents, it is to be opened with a knife, and the bones of the skull being broken, are to be extracted with a pair of forceps, lest they should hurt the woman, or by an instrument, called umbryculus, firmly fixed on the clavicles, by which means it may be extracted gently. After the head is delivered in this manner, if the child should stop at the shoulders, the arms are to be divided at the articulation; and they being brought away, the rest of the body soon follows with ease. But if it will not yet give way, the whole breast must be divided, and great care taken that the intestines be not wounded, lest they and their contents falling out, the operation should be retarded. Then the ribs being broken, and the scapulæ extracted, the rest of the fœtus will easily follow, unless the abdomen be swelled; in which case, the belly must be punctured, and at the exit of the flatus, the child will be brought along. If part of the child be already delivered, and the rest will not follow, nor can that which is out be returned, the operator is to take away as much as he can of it, and pushing up the remainder, turn the head downwards; but previous to this operation, he should pare his nails, and use a crooked knife; the point and back of which must be covered with the forefinger, at its introduction, lest it should hurt the uterus, which accident might prove fatal to the woman. (*m*)

When the child's head appears without the os uteri, and the rest of the body does not follow, (*n*) the fœtus being dead, wet the fingers with water, and introducing them between the os uteri and its head, put one finger into the mouth, and laying hold of it bring it along. When the body is delivered, and the head remains behind, in those cases where the child comes by the feet, the operator is to dip both his hands into water, and introducing them between the os uteri, and the head of the child, grasp the head with his fingers, and extract it. If the head be in the vagina, it may be delivered in the same manner. When the child remains dead in the uterus, and cannot be delivered, either by the force of medicines or nature; introduce the hand anointed with some unctuous cerate, and dividing the parts with an unguis fixed on the great finger, bring the fœtus along as before. In his first Book of the *Diseases of Women*, he gives directions for excluding the secundines, provided they be not expelled in the natural way. If the secundines come not away immediately after the birth, the woman labours under a pain

(*h*) Cantharides, to expel the secundines. (*i*) Illustration.

(*k*) 11 Morb. mul. XCH. 1, &c. Prænot. XIII. 11. Coac. III. 175. Aph. 35. Sect. V.

(*m*) He knew well the danger of wounding the uterus.

(*l*) Placenta to be immediately delivered.

(*n*) Lib. de superfætatione.

a pain in her belly, and side, attended with rigour, and a fever; which sometimes vanish when they are discharged. Though for the most part, the placenta putrifies if left, and comes away the sixth or seventh day; and sometimes later. In this case the patient is to hold her breath internally, she is to take mugwort, dittany of crete, flowers of white violets, leaves of agnus castus, with garlic boiled or roasted, small onions, castor, spikenard, rue, and black wine. Sneezing medicines being administered, (*o*) and both the nose and mouth, presently kept shut expel the secundine, or after birth. If the secundines come not away with ease, the child must be left hanging to them, (*p*) and the woman seated on a high stool, that the fœtus by its weight may pull them along, and lest that might be too suddenly effected, (*q*) the child may be laid on wool newly plucked; or on two bladders, filled with water, and covered with wool, which being punctured as the water is evacuated, they will subside, and the child sinking gradually, will gently draw the secundines away; but should the funis be broke, proper weights must be tied to it, to answer the same purpose, which are the easiest, and least hurtful methods of extracting the placenta.

If the woman has had a difficult labour, and could not be delivered, without the help of machines, the child is generally weak; and therefore the naval string ought not to be divided, (*r*) until the child should have either urined or sneezed, or cried aloud; and in the mean time, it must be kept very near the mother, for though the child does not seem to breathe at first, nor give any other signs of life, the naval string, by remaining uncut, may be in a little time inflated, and the life of the infant saved.

When an inflammation of the womb happens, comes the disease of the right gut, called tenesmus, (*s*) which is an inclination to discharge the fæces, without performing it; and also a strangury, because the inflammation presses both parts, so that neither the urine, nor excrement can be retained.

An inflammation in the uterus of a pregnant woman is mortal. (*t*) If the uterus, in that part which rests upon the hip bone, be suppurated, the cure must be wrought by lint or wool, dipped in convenient medicines. (*u*) A strangury succeeds an inflammation of the intestinum rectum, or an inflammation of the uterus, (*x*) or suppurated kidneys; but a hiccough succeeds the inflammation of the liver.

Now concerning ages. To little children, and new born babes, happen those diseases; (*y*) ulcers of the mouth, vomitings, cough, watchings, tremblings, inflammations about the navel, and moistness behind the ears. When they breed teeth, there happen itchings, and pricking of the gums, (*z*) fevers, convulsions, fluxes of the belly, especially when they bring forth their dog teeth. These things happen chiefly to those who are very gross, fat, and costive in their habits. But when they are somewhat older, they are subject to inflammations of the glands of the ears, dislocations of the vertebra of the neck, (*a*) asthmas, the stone, round worms, and others thin and small, called ascarides, long warts, continual erection of the penis, stranguries, glandular tumors, about the neck, and other kinds of tubercula; but especially those above mentioned.

Many of the forementioned diseases, are also incident to those who have attained riper years; (*b*) but especially diurnal fevers, and nasal hemorrhages. Most diseases of children come to a crisis within forty days, some within seven months, some within seven years, (*c*) others when they come to years of maturity. But those which shall continue longer, and neither be resolved when they come to the age of fifteen, or sixteen, in male children, and in female children, when their menstrea begin to appear, do continue so while they live.

CRITICAL OBSERVATIONS ON THE DISEASES OF WOMEN, CHILDREN, AND MIDWIFERY, OF HIPPOCRATES.

VARIOUS are the indispositions arising from a suppression of the menses; but, if an appearance of dæmons, or rather a disturbed imagination, similar to a delirium, happened in Greece; in these northern parts such symptoms seldom occur.

The

(*o*) 1 Morb. mul. LXXVI. 6, 7. 11 Morb. XLIII. 67. Coac. III. 175. Prænot. XIII. 11. 11 Epid. V. 42.

(*p*) De superfætatione.

(*q*) A curious, though complex method of delivering the placenta.

(*r*) Navel string not to be cut.

(*s*) Lib. I. De morb. mul.

(*t*) 1 Morb. mul. III. 9, 11. 11 Morb. mul. LVIII. 22, 29. Natur. mul. XII. 17. Aph. 43. Sect. V.

(*u*) Nat. mul. VI. 5. VIII. 5. 1 Morb. mul. XCI. 32. 11 Morb. mul. XXIX. 5. Aph. 47. Sect. V.

(*x*) Defist. III. 1. IV. 1 Aph. 58. Sect. V.

(*y*) Aph. 24. Sect. III.

(*z*) Aph. 25. Sect. III.

(*a*) Aph. 26. Sect. III.

(*b*) Aph. 27. Sect. III.

(*c*) Aph. 28. Sect. III.

The fluor albus is described in a lively, sensible, and natural manner; its treatment is rational, though the methods were confined, more through a deficiency of remedies, than a judgment in their administration.

The consequences of a retention, or overflowing of the menses, are delivered with accuracy; and the management of both, is reasonable and judicious; when vomits and the use of cantharides are excepted. The menstrual evacuation fretting the earth, or corroding the body of the female, does not correspond with truth; and the combination of such a variety of uncouth, unpleasant remedies, is not agreeable to the simplicity observable in the treatment of other diseases.

Suppositories, with cantharides, must have produced painful and distressing excoriations; and if the cantharides came in contact with the os uteri, they might do irreparable injury, by laying the foundation of a very fatal distemper.

In the immoderate uterine hemorrhage, covering the abdomen with sponge, after being immersed in cold water, was a sensible practice in Greece; though highly exceptionable, and perhaps dangerous in this country. Pessaries are useless; and vomits and purges after the profuse uterine hemorrhage ceased, were too irritating and violent, but nutritious, and gelatinous diets, were highly proper.

Hysteric affections are frequently owing to suppressed menses, though they may likewise appear from various causes; their treatment, during the paroxysm, is exactly agreeable to the modern doctrines; when pouring wine down the œsophagus be excepted. The inflation of the stomach and intestines, was mistakingly called a distension of the uterus; and this unreasonable opinion, may be ascribed to an imperfect knowledge in anatomy; for those who knew the magnitude and situation of the uterus, in an unimpregnated state, are well apprised of the impossibility of its being distended suddenly, or even enlarged gradually, except by pregnancy, or the schirrus, which last rarely happens.

The pessaries in general, and particularly those containing a portion of cantharides, are highly improper; those applied to draw, irritate, or relax the uterus, were exceedingly absurd. The os tincæ being always closed in the healthful and unimpregnated state, could not admit of such medicaments, as every anatomist well understands. Though, to speak truth, this ancient author cannot deserve censure for his unacquaintance with nice anatomical distinctions; the moderns, with all their refinements, are more blameable in this particular. It is a fact, easily demonstrable, and must be universally acknowledged by all candid judges, that the os uteri will not admit any substance, exceeding in magnitude a hogs bristle, or a small probe, so contracted is its aperture; and yet, all the modern writers, and even the present race of practitioners, constantly prescribe injections for the uterus. What a striking instance is this, of the credulity, indolence, and dangerous ignorance of physicians, esteemed learned? They are justly chargeable with credulity and indolence, because, the positive impracticability of injecting the uterus, seems not known: with an ignorance dangerous to society, because the least violence to the part, proves destructive, most commonly to the woman.

The methods to discover whether a female shall conceive, are exceedingly superstitious, and seem more like the whimsical notions of some antiquated matron, than the ancient founder of medicine. The trial, by fumigation, is ridiculously absurd; though some sagacious commentators, through a bigotted zeal to the author, with a splendid show of reasoning, have endeavoured to account for such phænomena. The signs that discover pregnancy, as the loathing of meat, and the suppression of the menses; the opinion of an overmoist womb, or the fluor albus, being causes of sterility, or abortion; and that women of a moderate temperament are most fertile, are truths that daily experience confirms.

The experiment to discover whether a woman hath conceived, by giving a mixture of honey and water, is as ridiculous as the story of the fumigation; though this has been admitted, and learnedly accounted for by some learned commentators. The different colour of the countenances of the pregnant women, as determining whether a male or female child be conceived; the notion that females are conceived, and lay on the left, but males on the right side, (*d*) are all erroneous; it is, however, true, that the os uteri is closely shut after conception. It may not be improper to remark, that even though common observation falsifies, in general, the preceding doctrines, yet they have been received as true, by the females in most countries.

The opinions concerning abortion are partly true; though there be frequent instances in which the menses appear at their usual periods, during a state of pregnancy, either from a repletion, or an adhesion of the placenta, on, or near the internal part of the os uteri; and yet the child has been healthful, and full grown.

(d) Perhaps this arose from an opinion that women had two entrances to the uterus, like mares, or rabbits.

The doctrines of the flaccidity of the breasts, and the prognostics, whether the mother shall miscarry of a male, or female, in cases of abortion, are idle and superstitious. The applying cantharides, to discover the fecundity of a woman is cruel and absurd.

These prejudices of Hippocrates, which, in some measure, still prevail, may be attributed more to the want of proper information from the females, who probably in Greece, were rather delicate and reserved on these occasions, than an intention to mislead mankind. Besides, the obstetric art, has but very lately been studied by men of learning; and it is by this means only, that these prejudices could be discovered, and refuted.

In the art of midwifery, no practice could be superior to the ancient in the natural labour; for the expulsion of the fœtus is entirely left to the efforts of nature; and certainly in most cases, nature alone performs the whole necessary work. When a preternatural presentation happened; by what means the presenting part was removed, and the head produced in the natural way, is not easily comprehended. At this time, such an operation is absolutely impracticable; and yet, the moderns have a clearer conception of the form of the pelvis, the decent of the fœtus, and the manner of assisting in preternatural labours, than the ancients. There is no other manner of accounting for this singular practice, than, on a presumption that the female pelvis must have been more capacious amongst the Greeks, than our modern females; who probably injure their natural shape by tight lacing, according to any prevailing fashion.

The feet presenting commonly proved fatal to the mother and child, according to Hippocrates; whereas no presentation of the preternatural kind, is acknowledged more simple by the moderns, and none so easily delivered. However, if the feet of the infant were forced back, in order to reduce the labour, agreeably to the ancient doctrines, when the uterus was in a state of contraction, to a natural presentation; the utmost efforts, most probably, would be frustrated, and the life of the mother, or child, be hazarded. The infant, from the violence offered to its body; the mother from the injury received by the uterus. The methods for the delivery of the dead child, are exceedingly dangerous; and as it is next to impossible, to perform such an operation without considerable injury to the uterus, it generally proved fatal. Great danger was apprehended from the laceration of the uterus; and experience has confirmed, in all ages, that wounds, or ulcers in the uterus, are most commonly mortal.

The directing the placenta to be delivered immediately after the child, is an excellent and successful method; for its retention has frequently proved destructive. Notwithstanding all authors, both ancient and modern, have vehemently remonstrated against leaving the after burden, though they have all united, as with one voice, and confirmed its dangerous tendency, by the experience of every age; yet some eminent, and highly distinguished practitioners, in this metropolis, formed a project of leaving it after the delivery of the child; and this has proved injurious to many women. Melancholy were the instances of females, expiring by putrid magignant fevers, diarrhæa's, deliriums, and even raving madness: thus, were affectionate mothers torn from their helpless offspring; thus were infants deprived of the tender mother's care; such were the direful consequences of altering an ancient and successful practice, on mere conjectures, and introducing one fatal to the community. This memorable example should induce physicians, to be cautious how they engage in ill concerted, and dangerous novelties; novelties, productive of irreparable injuries. For, what atonement can be made, when either through prejudice, inconsiderateness, or ignorance, a human victim is sacrificed at the shrine of error? (e)

On the subject of midwifery little more can be said, except that many ancient practices to be found in the works of Hippocrates, are still retained by the women in most parts of the world; such as provoking sneezing, to expel the secundines; not cutting the funis, till the child breaths, after a difficult labour. The observation of an inflamed uterus, producing a tenesmus, and strangury, and the fatal catastrophe of patients in such dangerous distempers, have been acknowledged exact by all succeeding writers.

The remarks on the diseases of children are nearly true, and their description discovers a long diligent, and unwearied application; when the pythagorean prejudices, of seven months, and seven years, being allotted for the changes of diseases are excepted.

ON

(e) The method was recommended by the late Doctor Hervey, in a pamphlet, dedicated to that excellent anatomist, Doctor William Hunter, physician extraordinary to the queen, who patronized the author, and recommended the doctrine of leaving the after burden, in his public lectures to his students; by which means the practice became universal, and some women lost their lives. The method, however, is not neglected, or universally condemned. A few of the principal advocates, whom pride will not permit to acknowledge an error, persist in the practice. While I practiced midwifery, I always attempted the delivery of the placenta immediately, and succeeded, except where the adhesion was very firm, in which case, I waited until it could be separated without danger: for I never used violence.

ON THE SURGERY OF HIPPOCRATES.

THE anatomy of Hippocrates has been already treated of; this was confined and imperfect. His surgery now claims our attention; and as an excellence in this art depends on anatomical accuracy, on a thorough acquaintance of the exact situation of the large vessels, nerves, tendons, and of all the parts subject to operation, it is not surprising that the ancient surgery was defective in many respects. Surgery, at this time, however, not being a distinct art, was, probably, practised by most physicians; yet, if we believe the oath to be genuine, which Hippocrates administered to his scholars, lithotomy is an operation prohibited; for they swear to consign the performance to those who made it their sole business. In the treatment of dislocations, fractures, tumors, and several other branches of surgery, he has been very particular, and has left us many pertinent and sensible observations. We shall, therefore, arrange these in their due order, and endeavour to give an explicit recital of his modes of practice in this useful branch of medicine.

OF ABSCESSSES, WOUNDS, &c.

WHEN medicines will not cure a disease, incision must take place, if incision should fail, we must have recourse to cauterizing; (*f*) but if that will not succeed, we may judge the case incurable. If a tumor appear on the neck of a patient afflicted with the quinsy, it is very favourable; (*g*) for it demonstrates, that the disorder is thrown off outwardly. Soft tumors are good, but indurated swellings are very bad. (*h*)

When an abscess suppurated, it was opened either by incision, or the actual cautery. (*i*) Persons, in whom abscesses are suppurated, on being burnt or cut, if pure matter of a white colour issues, this appearance is good, and they recover. (*k*) But if bloody, very fetid, or filthy matter is discharged, they commonly die. In an abscess of the liver, (*l*) those who are cauterized for this disorder, are in a safe situation, if pure white matter be discharged; (*m*) because the suppurated matter is then included in a tunica; but if the matter be discoloured, resembling the dregs of oil, then is the disorder fatal.

ULCERS.

HIPPOCRATES observes, that ulcers in dropsical persons are very difficult of cure; (*n*) and if ulcers continue a year, or longer, (*o*) they will of necessity affect the bone, and cause deep hollow scars. Ulcers every where, smooth, and foul, are of a malignant nature. (*p*) And an eruption of blood proceeding from a strong pulsation in ulcers is bad. (*q*)

The application to inveterate ulcers, was something similar, to the unguentum, *Ægyptiacum*; and internally, purges were prescribed. (*r*) An ulcer suddenly vanishing, produces a raging madness; a sharp pain under the ribs, distension of the nevers, (*s*) and sometimes convulsions; those, in whom ulcers, or tumours appear, are neither driven into rage, nor madness. Hence arose the opinion, that it is dangerous to cure, or dry up old ulcers. (*t*)

Cold is hurtful to ulcers, obdurates the skin, and causes blackness, feverish rigours, convulsions, and distensions of the nerves. (*u*) But sometimes, in a distension, or rigour of the nerves, without an ulcer, to young and fleshy bodies, in the middle of summer, a pouring on of cold water, recalls the heat; (*x*) which heat dissolves the distemper.

Heat, causing suppuration, does not afford us the greatest sign of security, in every ulcer. (*y*) It softens, and extenuates the skin: it eases pain, mitigates rigour, convulsions, and distensions of the nerves, takes away heaviness of the head, is very profitable to broken bones, especially if they be bare, but much more to those who have ulcers in their heads. It is good for such

(*f*) Aph. 6. Sect. VIII. Art. XIII. 12. ad. 18.

(*h*) 11 Epid. III. 128. Aph. 67. Sect. V. Hard tumors bad.

(*k*) Prænot VII. 6. XIX. 4. 11 Morb. XI. 5, 34, 35. Coac. III. 217, 269. Aph. 44. Sect. VII.

(*l*) Abscess of the liver.

(*m*) Aph. 45. Sect. VII.

(*g*) Aph. 37. Sect. VI. Critical tumor favourable.

(*i*) Prognostic from the colour of the matter.

(*n*) A true observation.

(*o*) De fract. XXX. 2. Ulcer. V. 4. Aph. 45. Sect. VI.

(*p*) 11 Epid. VIII. 2. Aph. 4. Sect. VI.

(*q*) Aph. 21. Sect. VII.

(*r*) Ill consequences of ulcers suddenly healing.

(*s*) 11 Epid. III. 129. Aph. 63. Sect. VI. (*t*) Origin of the notion of the danger of healing ulcers.

(*u*) De fract. XXXVII. 6. De articul. LXXIV. 10. Aph. 20. Sect. V.

(*x*) Cold water. 3 Morb. XIV. 17. Aph. 21. Sect. V.

(*y*) De ulcer. V. 1. Aph. 22. Sect. V.

such parts as are chilled, and ulcerated by cold, also for corroding ulcers in the fundament, privy parts, womb, and bladder. To all these, heat is acceptable, and promotes a crisis; (z) but cold is an enemy, and destructive. But cold is profitable, where there is or will be a flux of blood; not that it should be applied to the very place, but thereabouts, to prevent its afflux. If there be any inflammations, or burnings tending to a red, and bloody colour, caused by a new flux of blood, then apply cold things to them, for it induces a blackness upon inveterate sores. (a) It helps any erysipelas, which is not ulcerated, and hurts it when it is ulcerated.

Abundance of cold water, thrown on those who have tumors in their joints, without ulcers, also gout, and convulsions, (b) mitigates and extenuates them, and removes pain. (c) For a moderate stupefaction, or numbness, has the power of removing pain.

OF WOUNDS, &c.

HIPPOCRATES, in his Treatise De Ulceribus, which is allowed to be genuine, forbids a recent wound to be washed with any thing but wine, unless it happened in the joints. To wounds, attended with swelling, a cataplasm is advised, not to the wound itself, but the surrounding parts, rest and ease. (d) The diet is also to be moderate, and if the wound be not in the abdomen, (e) it is to be suffered to bleed freely, which empties the vessels. If a wound be not thoroughly cleansed, it will neither heal spontaneously, nor even when the lips are brought in contact. Oils, or unctuous remedies, are not proper for recent wounds. In many wounds which threaten a suppuration, purging is useful. (f) In oedematous swellings, in the adipose membrane of the feet, small incisions are necessary; (g) and in a varix the vessels should be punctured in different places, that the blood may flow in small quantities, from the little orifices. In the Book De Officina Medica, he gives a very ample account of the surgical apparatus; this he performs with much accuracy, and judgment; indeed, with some little addition, it would appear more like a modern production, than that of so ancient an author. Any bone, cartilage, or nerve, cut asunder, will neither be regenerated with new parts, nor augmented, (h) nor will they unite again. (i) A bone cut to its cavity, causes a delirium. A bone cut off, the thin part of the eye-lid divided, or the præputium, do not unite again. (k)

A wound in the bladder, brain, heart, diaphragm, the small intestines, (l) stomach or liver, is mortal. He observes, that if no swelling appear in large wounds, it is an ill sign. (m)

OF WOUNDS OF THE HEAD.

In the book De Capit. Vulneribus, it is affirmed, that he who is wounded in the head, is in the most hopeful state, when he does not become feverish, has no eruption of blood, or inflammation, succeeding the injury, no pain is felt; but if any of these symptoms appear, they are most favourable, when they do so in the beginning, and remain only for a short time: (n) whereas, fevers seizing patients, wounded in the head, on the fourth, seventh, or twelfth day, generally prove mortal. (o) If the hairs be cut by the weapon, and are fixed in the wound, we may then assert the bone is injured; for while the wounding instrument, though sufficiently sharp, (p) only penetrates the soft integuments of the cranium, the hairs follow the impression made by the weapon, without being cut. But when the hairs are struck against the hard bone, they can no longer yield to the edge of the instrument, but must of course be cut.

A wound of the head is not to be moistened with any thing, not even with wine, or at least with very little; neither does such a wound require cataplasms nor liniments. (q) In recounting of those wounds of the head that require incision, he mentions those that have not length and breadth, sufficient to discover whether the bone has been injured by the weapon. (r) When

(z) Effects of heat and cold in ulcers.

(c) Aph. 25. Sect. V.

(e) The wound to be suffered to bleed.

(g) Incisions in oedematous swellings.

(k) Coac. III. 374. ad. 382. 11 Prædict. 1 Morb. III. 52, 53. VII. 21. Aph. 19. Sect. VI.

(l) 11 Prædict. XIX. 2 Aph. 18. Sect. VI.

(n) Favourable symptoms.

(q) De vul. cap. Sect. XVII.

(a) Aph. 23. Sect. V.

(d) Rest and moderate diet.

(f) Purging when necessary.

(h) Aph. 28. Sect. VII.

(i) Aph. 24. Sect. VII.

(m) Prognostic of wounds. 11 Epid. III. 12. XXIII. 1. Aph 66.

(o) Fatal.

(p) De vulner. capit.

(r) De capit. vulneribus Sect. XVIII. What wounds require enlarging.

(b) Humid. us. X. 14, 15.

When wounds have a kind of oblique cavity, that cavity must be cut broad. (s) When wounds are orbicular, and very hollow, they must be cut with a double incision, longitudinally, so that the wound may be rendered longitudinal. (t) When the bone is divested of its integuments, we ought carefully to consider, whether the bone be split or contused, if it be not apparent to the sight, or whether the contusion or fissure, or both, bear any resemblance to the shape of the instrument with which they were made; if the bone should be in any of these states, it is to be perforated, with a small perforator, and blood extracted from it. It is only to be remembered, that the bones, in young persons, are thinner than those in adults. The whole bones of the head, except a small portion of the lowest, and uppermost, are like a sponge, and contain a large quantity of moist fleshy substance, which when pressed with the fingers, discharge blood. (u) There are, besides, in these bones, small veins full of blood.

In the beginning of the Book De Capit. Vulneribus, is remarked, that mens heads are not universally alike in shape, (x) nor their sutures situated in the same places. (y) Celsus, in the fourth chapter of his eighth book, highly applauds Hippocrates, for his candour in acknowledging that he mistook a fissure, for one of the sutures.

When it is doubtful, whether the cranium be fractured or not, (z) the patient is to take stalks of asphodil, or fennel, between his jaws, (a) and chew them; and at the same time, we must observe, whether in any part of the cranium, a noise is perceived, which will be the part fractured.

But in process of time, fractures are discovered partly on the seventh, and partly on the fourteenth day, (b) and partly by the other circumstances; for a separation of the flesh from the bone happens, the bone becomes livid, the pain is increased, ichor is discharged; and these symptoms very difficultly admit of a cure.

After recounting various means, by which the cranium becomes injured; follows, when for instance, the bone is hurt, on the side opposite to that on which the blow was received; there is no cure for this disorder, (c) because we cannot discover in what part of the head the injury is situated.

In his Coacæ Prenotiones, he tells us, that those who are wounded in the temples, (d) are seized with convulsions, on the side opposite to that on which the wound was inflicted. In the seventeenth section, of the Treatise on Wounds of the Head, the same doctrine is confirmed, by advising surgeons not to make incisions rashly in the region of the temples; because, such incisions produce subsequent convulsions, on the side opposite to that which the wound was received. (e) If there be a wound on the left side of the head, the right side of the body will be seized with convulsions; but if the wound be on the left side of the head, the left will be convulsed.

In the third section of the Book De Morbo Sacro, it is said, the brain of man, as well as of all other animals, is double, (f) and divided in the middle by a slender membrane. For this reason, the head does not ach always in one part; but sometimes on one side, and at other times, on the other.

When the cranium is laid bare, after making the incision through the integuments, (g) the wound is to be filled with lint, in order to enlarge it with as little trouble as possible; but, during the use of this lint, (h) the application of a cataplasm of fine flour, boiled in vinegar to a proper consistence, is advised, in order to prevent too great an inflammation. The examination of the parts ought to be postponed till next day, (i) after laying the bone bare; though after an enumeration of dangerous symptoms. In the Book De Capit. Vulneribus, it is inserted, if you are sure that the patient labours under a fever, or any other urgent symptom, (k) the operation is by no means to be delayed; but, the bone is either to be cut with a saw, or rasped with the ruginé, to the very membrane. A ferrated and hollow terebra something like the trepan, was used by Hippocrates, and this instrument was sometimes used to perforate the ribs, (l) to discharge the dropsy in the breast; though others say this was done by the simple terebra.

The head may be safely cut in any part, except in the temples, (m) and that space which lies above them, near the vein that

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that

(s) Manner of dilating.

(x) Heads not alike.

(a) Another method to discover the fracture.

(d) Coac. prenót.

(g) De capit. vulneribus.

(i) To postpone the examination, till the next day.

(m) De cap. vulner. Sect. XIX.

(t) De cap. vul. Sect. XX.

(y) Sutures not always the same.

(b) Coac. prænot.

(e) Convulsions on the contrary side.

(h) The cranium laid bare to discover the fracture.

(k) Unless the symptoms be urgent.

(u) The diploe is observed.

(z) Coac. prenót.

(c) Contra fissure.

(f) De morb. Sacro.

(l) De internis affectionibus.

that passes through the temples, these parts ought not to be cut, because by that means the patient is seized with convulsions. He pronounces the fever attending wounds of the head, (*n*) to be a sign, that the cranium is corrupted, and that the cure of the patient has been neglected. He has observed, that the bones of children, are more thin and soft, (*o*) because they abound more in blood, &c. Hence by the same, or a slighter blow, the bone of a child will become more, and sooner purulent, than the bone of an adult. An account is given of a girl of twelve years of age, (*p*) whose cranium was contused, and fractured; but the trepan being injudiciously applied, she died on the fourteenth day. Her left hand was seized with convulsions, though the wound was inflicted on the right side of her head.

Those bones which are violently altered from their natural state, (*q*) and depressed inwardly by a fracture, or entirely cut off, are less dangerous, if the membrane, *dura mater*, remains entire. (*r*) Bones affected on the inside, with more and wider fissures, are less dangerous, and are more easily extracted, for none of these require section, nor must we try to remove them by any violent or dangerous means, before they make out their way by loosening spontaneously.

In the same book, after advising no rash, or dangerous attempts to be used, for extracting the fractured bones, but leaving them to be thrown off by nature, this is done by the growing of the flesh under them, which grows out of the *diploe*, and the sound part of the bone, if only its external part be corrupted.

In *De Locis in Homine*, it is said, if the bone of the cranium, be both fractured, and contused, it is not so dangerous, as if it be cracked, and the fissures proceed inwardly; for this case is very dangerous. The saw is to be used in order to prevent the sanies from flowing through the fissure of the bone, upon the *dura mater*, or membrane, and so putrifying the same. A fracture of the cranium, or a large piece of it cut away, (*s*) or the bone divided by many and large cracks, are none of the most dangerous cases. Profound sleep, vertigo, and dimness of sight, are dangerous symptoms. (*t*) If the bone be fractured, split, or contused, &c. and if scraping and cutting have been neglected, upon a supposition, that it did not require them as being sound, a fever will generally seize the patient before the fourteenth day, in the winter; but in the summer, after the seventh day; (*u*) a little ichor will be discharged from it, and the inflamed part will become mortified. When this happens, the ulcer becomes discoloured, glutinous, like salted fish, of a brownish colour, and sublined; and, when the bone begins to be corrupted, becomes black, smooth, and towards the margin pale, and whitish; but, when it becomes purulent, pustules appear on the tongue, and the patient growing delirious dies. Those who have their brains wounded, are, for the most part, seized with a fever, vomiting of bile, and an apoplexy; and their conditions, in consequence of these symptoms, are very desperate. (*x*)

When the brain is corrupted, some die in three, others in seven days, if they pass these days, they recover. (*y*) They who have a *sphacelus* of the brain, die within three days; but if they outlive the time, they shall recover their health. (*z*) We should be very cautious in our prognostics on wounds, or blows on the head; for from very slight appearances at first, fatal effects follow.

In the second book of his *Epidemics*, he gives the following relation. A beautiful young damsel, of twenty-eight years of age, the daughter of Nereus, was, in sport, struck on the *sinciput*, with the flat hand of a young woman, her companion. Upon which she was seized with a vertigo, accompanied with a dimness of sight, and her respiration ceased. When she was brought home, she was seized with a fever, a pain in the head, and her face became red. On the seventh day, above an ounce of *fætid pus* was discharged from her right ear, upon which she seemed to be better, and had her symptoms relieved, but died on the ninth day.

When the bone has been pared with a rasp, if it be necessary to cut the skull open, do not suffer three days to pass before it is performed. (*a*) Those who suffer a violent concussion of the brain, must needs presently become dumb. (*b*)

ON

(*n*) *De cap. vulner. Sect. XXXI.*

(*q*) *De cap. vul.*

(*t*) *De cap. vul. Dangerous symptoms.*

(*x*) *Aph. 50. Sect. VI. 6 Coac. III. 271, 383, 384. 11 Prædict. XXII. 12, 16. XXIII. 5. ad. 11.*

(*z*) *Aph. 2. Sect. 7.*

(*b*) *Concussion of the brain. Coac. III. 370. 1 Morb. III. 34. Aph. 52. Sect. VII.*

(*o*) *De capit. vulner. Sect. XXIX.*

(*r*) *Various prognostics.*

(*u*) *De capit. vulner.*

(*a*) *De capit. vulneribus.*

(*p*) *Lib. V. Epid.*

(*s*) *De capit. vulneribus.*

(*y*) *Coac. prænotion.*

ON FRACTURES.

IN fractures, Hippocrates, used first extension, and having brought the broken parts of the bone in apposition, he replaced them. He then applied proper bandages, according to the nature of the fracture, compresses, and splints. For the union of the broken cubitus, he allowed thirty days; and in the first ten, he recommended spare diet, and at that time, he removed the bandages, and rolled the member up again; ten days after, he repeated this, and used no plaisters; but his compresses were slightly covered with a cerate. We ought to despise those whimsical and curious bandages, (c) which please the eye of the spectator, without answering the intention for which they are applied; for, they are not only troublesome and idle, but frequently hurtful, and prejudicial. It is obvious, the sick, seek rather for relief from their pains, than a conceited, and superfluous elegance, in their dressings. In the book *De Officina Medici*, are given many excellent rules, for the application of bandages. A fracture, with laceration of the tendons, or nerves; if the bones be not reduced to their natural situation, the surgeon is thought ignorant; (d) and if they be, the reduction of fractures, with lacerated nevers, or tendons tends more to the destruction, than to the recovery of the patient. Hence, Hippocrates, at the latter end of his treatise on fractures, in which, he recounts the many bad consequences of fractures, and luxations, (e) lays it down as a maxim, that more is to be dreaded from the contusion, than the fracture itself. For those disorders are slighter, in which the bones are fractured, than those in which they are not fractured, if at the same time considerable veins, and nerves are contused. For these disorders endanger the patient's life, more than the former, if they be accompanied with a continual fever. Flesh of a livid colour, in diseased bones, is very unfavourable. (f)

The manner in which the bones are united, in fractures, he delivers in the following manner: Since the bones cannot, in consequence of their natural dryness, grow together like flesh, a callus, growing about the lips of the fracture, becomes the means of their union. But the origin of the callus, is the superfluous nourishment of the fractured bone; and when the patient does not use a proper regimen, or is plethoric, this superfluous nourishment is too copious, and, discharging itself, renders all the bandages wet, just as when blood is discharged. Hence he seems to insinuate, that the callus is not formed of what is properly called the substance of the bone; but that it is only a species of gluten, which, interposing itself between the extremities of the fractured bone, makes them cohere; for, as glue is to unite pieces of wood, such is a callus to fractured bones.

Hippocrates forbids the extension of the member, for the reduction of a fracture, if the injured parts were in a state of inflammation, or tension. (g)

The following directions for splints, are inserted in his book *De Officina Medici*. Let the length of the splints, breadth, thickness, and number, be thus: For length, let them be equal to the ligature; their breadth must be three or four inches; their thickness must be three or four fold, double their number, that they may circumscribe the part, and there must not be more or less. The ancients, amongst whom Hippocrates was the chief, made these splints of the back of the woody shrub, fennel gigant, or else of the boughs of it, divided in the middle; whence they came to be called *ferulæ*. In the foregoing book, he inserts what ought to be the good qualities of the *ferulæ*. It is necessary that they be smooth and equal, and crooked about the ends, and on both sides of the ligature a little shorter; but thickest of all where the fracture is situated. Though the bone of the thigh is extended by force, it cannot be held so by any hands; but when the first extension slackens, it will run out of its place again; (h) for, in this part, the thick and strong flesh resists binding; (i) and bandage can scarce keep the broken bone, when reduced in its proper place.

Whilst the part is held stretched forth, by assistants, a roller is to be passed three times round, on the part afflicted, toward the right hand; (k) then bring it upwards until it comes to a good part of the limb, with four or five more windings about it. (l) The second roller, which must be twice as long as the former, is to be rolled round the limb, the contrary way to the former; for the first is rolled towards the right hand, upwards, but this must be towards the left hand downwards: namely, once about the fracture, then again three or four times, or oftener, below the fracture, unto some convenient part of the

(c) Whimsical bandages useless to the patient, who only wishes for ease.

(e) *De fracturis*.

(h) Bones of the thighs difficultly secured.

(k) Hippocrates's directions for applying the bandages.

(f) *Aph. 2. Sect. 7.*

(i) *De fracturis*.

(d) *De fracturis*.

(g) Not to be reduced when inflamed.

(l) *De fract. fext. 23, 27, 32, 41.*

the member. The remainder of the band, which the surgeon holds in his left hand, must be wound about, upwards, until it come to the end of the first band. Then the pledgets, dipped into some convenient liquor, are to be applied, lengthways, to the limb, so as to extend both above and below the fracture, and between these longitudinal pledgets there should be, at least, two fingers breadth distance from each other. These are to be rolled on with a double headed roller, winding one part upwards and the other downwards; and afterwards returning them, till they meet on the part fractured. On the seventh day, after all fear of inflammation is past, ferulæ are to be applied with pledgets, nearly the length of the limb, and fixed on with three ligatures, at equal distances.

ON LUXATIONS.

HIPPOCRATES has been particularly attentive to the treatment of dislocations; and used various means for their reduction. For the reducing the os-humeri, he had recourse to the ambe, a sling, and the ladder. For the reduction of the lower extremities, he placed the patients on a table, or form; and, securing them, made extension, by means of strong ligatures, or by the hands of strong men.

In the Treatise De Fracturis, it is remarked, that in the reduction of luxations one constitution is widely different from another; (*m*) since, in some, the task is easy, and in others highly difficult. (*n*) The ligaments are also widely different; for, in some they are lax, in others dense. But there are many of so moist, and succulent a habit of body, that they can at pleasure luxate, and reduce their articulations. Luxations do not easily happen in corpulent patients; but when they do happen, they are with difficulty reduced: whereas, the contrary holds true, in persons of lean habits. He likewise says, that the parts of the body destined for any particular purpose, are moderately used, and exercised in that for which they were designed; (*o*) they continue sound, and are increased in strength; but if they be not used, they become morbid, decrease in size, and, as it were, become old. (*p*) This happens principally to the nerves, tendons, or joints, unless they are daily used.

The general rule for reducing luxations, is, to perform it with the utmost expedition, and immediately after the disaster happens. (*q*) For, says our author, the reduction is then most easily made, and the patient subjected to the least pain, if the dislocation be reduced before the joint becomes tumid. The most dangerous luxations are to be reduced on the same, or next day; (*r*) but not on the third and fourth, as they are then in a state of inflammation, and swelling. When, therefore, they are not reduced, within ten days, they are generally retained in their dislocated state. (*s*) It is improper to reduce any luxated bone, when a fever is present, and especially that of the cubit; for a fever is a sign and concomitant, of a violent inflammation, accompanying the luxation. In a tetanus, and espithotonus, (*t*) a luxation of the jaw-bone is mortal; (*u*) for such a luxation cannot be reduced, by reason of the tetanus; and, unless it be speedily reduced, the life of the patient is in the most imminent danger.

In the Treatise De Articulis, he absolutely despairs of the reduction of such fracture, wherein the bones about the ankles are totally luxated, whether to the external or internal part, when attended with a wound; (*x*) for, if they be reduced, such violent convulsions succeed, as to destroy the patient in a few days. In this case few survive the seventh day; and the only hope of the patient's safety, consists in not reducing the bones, when thus luxated, though, at the same time, an unseemly lameness continues during the whole remainder of the patient's life. When the bones of the arm are luxated with a wound, the danger is equal, and luxations of this kind are, of all others, the most dangerous, when they happen to the large bones. Hence, if the os femur be luxated at the knee, and produces a wound, the reduction of it will sooner prove mortal than in any other case; and, though it be not reduced, yet it is far more dangerous than other luxations. (*y*) When the bones of the toes and fingers are luxated, so as to produce a wound, an attempt to reduce them is directed, though with the utmost caution. (*z*) In these cases, the reduced bones generally are easily luxated again; for which reason, the reduction

(*m*) De fracturis.

(*p*) Utility of exercise daily.

(*s*) Improper to attempt the reduction, if inflammation or fever attends.

(*u*) A luxation of the jaw-bone, when mortal. (*x*) The ill consequences of a dislocated ankle, when attended with a wound and laceration.

(*y*) The luxation of the femoris, at the knee, with a wound, most dangerous.

(*z*) Luxation of the toes or fingers, with a wound.

(*n*) Difference of articulation; some lax, others dense. (*o*) De articulis.

(*q*) De articulis.

(*r*) De articulis.

(*t*) Espithotonus and tetanus. Coacæ prenot.

reduction ought not to be attempted, except with a view to hinder the surgeon from being branded with want of skill, from the multitude. A luxated finger, when not attended with a wound, is cured in fourteen days. Great danger is to be expected, if the bones of the cubit be luxated with a wound, about the corpus, so as to stick out of the wound, and if convulsions should succeed the reduction of the luxation, the reduced part ought to be immediately forced out of its cavity, and bathed with some proper liquor. (a) In order to ascertain, and to satisfy ourselves when a luxation is reduced properly, we should compare the affected member with its corresponding sound one, and not by looking at the articulation of another person; since the joints of some are more prominent than those of others; (b) for many persons, whether through intense pain, or any other cause, have their joints of a different figure from those of sound persons, though they be not really luxated.

OF THE LUXATION OF THE HUMERUS.

HIPPOCRATES describes a method of reducing the humerus, in the following manner: (c)

A piece of wood, of a cubit long, or somewhat shorter, like the handle of a spade, must be bound on both sides with a cord, and hanged up; (d) but the patient, placed upon some high stool, must so lean upon it with his hand, that the handle may be so placed under the axilla, that he can hardly sit down, but may remain almost hanged up. Then a firm bolster, or many, being laid under and above it, at that height which may answer to the arm, placed at a right angle, it were better to hang by a broad and soft strap of leather, or a broad band tied about it, some heavy weight that may gently stretch it; or else some other strong man may forcibly draw the arm downwards, at the binding of the elbow. But the physician, standing, and placing one foot on a higher place, must attempt the cure, and, with the palms of his hands, set the bone, which indeed will be easily done; for this way of extending is commendable, if the artist use it properly. The use of the ambe is so well known, that it would be superfluous here to describe it.

They whose shoulders often slip out, may, for the most part, reduce it themselves; for, thrusting under the armpits, the knuckles of the fingers of the other hand, they thrust the joint upwards, and they draw the bunched part of the arm to the breast.

Those who have the humerus reduced, without any inflammation of the surrounding parts, can immediately use their arm, without any pain, and think no future caution is necessary for them. (e) But it is the duty of the physician to put them on their guard; since, in this case, the member is, again, more easily luxated than where there is an inflammation.

If the extension be properly made, the head of the bone is so raised, as to correspond to its natural cavity; and when it is thus raised, any impulse, or direction, is sufficient to convey it into that cavity; (f) but, if the extension be defective, the reduction will be proportionably more difficult. The cure of this luxation, must be by a cerate, compresses, and the application of bandages. (g) Soft wool, wrapped up, must also be put under the axilla, in order to fill up its cavity, and support the joint. For, by this means, the head of the os humeri will be hindered from slipping from its cavity, into that of the axilla.

The luxation sometimes arises from the relaxation of the ligaments; and Hippocrates had recourse, in this case, to the actual cautery. As he saw many disabled by such luxations of the humerus, and knew of none who had a proper method of curing them. The whole plan of cure consists in cauterizing the skin and membrana adiposa, in that part to which the head of the bone slipped; that by means of the cicatrices of the healed ulcers, the integuments may be so corrugated, and hardened, as not to be easily extended afterwards; by which means, the head of the bone will be kept from slipping that way. The lax skin (after elevating the arm) and membrana adiposa, is to be so raised with the fingers, that the integuments may be separated as much as possible, from the glands, nerves, and large blood vessels: then a hot iron, not too thick, or large, but oblong, is to be passed through the skin, thus raised, as quickly as possible; for which purpose, the iron is to be so hot as to appear pellucid. Whilst the skin is yet elevated, a small spatula is to be passed through the perforation, and the skin to be let go. Then, in the middle, between the two perforations, a small red-hot iron is to be passed through the integuments, till it reach the subjacent spatula; by this means, three different parts may be cauterized, without any danger of injuring the

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parts

(a) De articulis.

(d) Reduction of the humerus.

(g) Compress and bandage.

(b) To discover when a limb is properly reduced.

(e) Caution.

(c) De fractur. Sect. VI.

(f) De articulis.

parts lying under the integuments. In the cure, the eschar will be separated, and the integuments are again united. But in consequence of the loss of substance, produced by the cauterly, it is obvious the cicatrices will be corrugated and hard. For this reason, through the whole course of the cure, the arm should be lifted no higher than the cure of the ulcers rendered necessary; since, by this means, the integuments not being distended, the margins of the ulcers will grow more firmly to each other. After the ulcers are cured, the arm is, for a long time, to be tied to the side, with a view to render the cicatrices more firm, and to contract the space into which the head of the humerus used to fall down.

Hippocrates advises, neither to retain the bandage too long, nor keep the arm entirely without motion; for, by the inspissation of its mucilage, the joint would become rigid and immoveable. (*h*)

ON THE DISLOCATION OF THE ARM, AT THE ELBOW.

WHEN the elbow is slipped, either to the outward or inward part, the distension must be so ordered, that the arm may be placed at a right angle with the shoulder. It is necessary to lift up the armpit, with a band put under it, and to lay the arm upon something, and about the joint to hang some weighty matter, or to press it downwards, with the assistance of the hands. While the joint is hanged up, it is necessary it should be thrust hard with the foreparts of the palms of the hands. When it slips forth on the hinder side, it must be suddenly extended, and, with the forepart of the palms of the hands, be forced into its place again, which also must be observed in reducing other bones. When it slips forth into the forepart, laying a linen cloth upon it, wrapped up in form of a ball, it is necessary, at once, to bind and reduce it. If it slip into the other, or hinder part, when it is reduced, both of these also must be done.

Another way of reducing the elbow joint is, to put a swathe or band, wound up together, or a linen cloth, folded hard, yet not very great, laid across that part where the bending of the arm is; then to bend the arm suddenly, and as much as possibly you can, to bring the hand to the head of the shoulder; for this way is very sufficient for those who have slipped it forwards or backwards.

LUXATION OF THE CLAVICLE.

HIPPOCRATES says, it will be conveniently reduced, if a man be laid on his back; laying a pillow between his shoulders, near the back-bone, or else a bolster, or some such thing, that by this means the whole breast may bend. This he expressed by the word *ωυφφνδης*. Wherefore, the patient lying in this posture, the physician, with one wound, shall thrust back the top of the shoulder, which is removed to the side, toward the outward part; for so the parts of the neck-bone drawn away, will much retire among themselves, the bended posture of the breast conducting very much thereunto; and, with the other hand, he shall reduce, and bring together the parts of the neck-bone that were dislocated. The shoulder is to be thrust up near the side; sometimes it suffices to be joined afterwards.

OF THE DISLOCATION OF THE FEMORIS.

HIPPOCRATES, in his Treatise De Articulis, has laid down this conclusion. About the coxæ, there is great difference whether the head of the os femoris be luxated towards the internal, or external parts; there is also a difference, though a less considerable one, when it is luxated at the knee. When speaking of the reduction of the os femoris, luxated to the interior parts, the apparatus is so ordered, that when the extension is made, an assistant is to move the bone from side to side, till it return to its natural situation. In his book De Articulis, luxation of the os femoris, towards the exterior parts, is mentioned. When the flesh, into which the head of the articulated bone is slipped, becomes callous and tough, the pain ceases for a time, and, when such patients are free from pain, they can, if they have an inclination, walk without a staff, and support their bodies on the affected leg.

If the os humeri, luxated at the cubit, to the exterior parts, is not immediately reduced, violent inflammations ensue; but if it is luxated to the posterior parts, it excites an intense pain, and violent continual fevers, accompanied with an evacuation of unmixed bile, which in a few days proves mortal.

In

(*h*) The bandage is not to be on too long, nor the joint kept without motion.

In his Treatise De Articulis, he mentions the cause of an extenuation. Nor, in like manner are the bones lengthened, but rather rendered shorter, especially the os femoris. The whole leg, also, losing its flesh and muscles, becomes extenuated, and small, partly because the bone is moved from its natural situation; and partly because it cannot perform the offices it could, in a natural state. For exercise strengthens that which is weak, and resolves some part of that which hinders the increase of the membrane in length. Those patients are most injured, who have this articulation luxated, in the uterus. Those who sustain the next injury, are such as have it luxated in their infancy, and youth; adult, and robust persons, sustain the least damage, by such misfortune. In the same work it is mentioned, that this extenuation is principally observable in the parts most contiguous to the luxated articulation, which may be seen by the shoulders of those who have been luxated before birth, or, at least, before they have arrived at their full growth. In such persons the os humeri is shorter, and the cubit sometimes less, than in sound persons. They can do most things with the affected arm, as well as the sound one. The flesh of the thigh and leg, is diminished, when the head of the os femoris articulated with the coxæ, slips towards the internal parts; because the patients cannot use that leg. Hence, the extenuation, succeeding an unreduced luxation, is not always to be ascribed to a compression of the large vessels, but often depends on the defect of muscular motion in the part affected.

ON THE GANGLION.

HIPPOCRATES De Articulis, says, it is customary to open τὰ γὰγγλια ἀνία those ganglions, tumors, or tubercles, which contain a loose muscous flesh, expecting to find a humour in them, but they are deceived; though without any bad consequence to the patient.

ON THE EMPYEMA.

AFTER many judicious observations on the disorder, (i) it is said, if the patient bear the disorder easily, he will live; if not, he will die, fourteen days after the operation.

If pus be generated, from saliva left in the lungs, the patient is molested with a dry cough, (k) a fever attacks him, with a shivering, he labours under an orthopnæa, with a short and thick respiration, (l) his voice becomes of a deeper tone, and a high colour, with a heat overspreads his face. In process of time, the disease shews itself by more evident signs. If the pus, cannot be evacuated, there is an eruption of it, from the lungs in the thorax; after which the patient seems to be well, the pus being translated, from a narrower into a larger capacity; and the office of respiration being entirely discharged by the lungs. However, in process of time, the thorax is filled with pus, and the cough and the fever, and all the other painful, and troublesome symptoms return, with more violence; and the disease manifests itself in all its forms. In this case, it will be convenient, to let the patient alone till fifteen days after the eruption, that the pus may have time again to mature: since, by its translation into a larger place, and its refrigeration, by its attracting to itself the humidity of the thorax, it must, of necessity, be no more than half putrified, or digested. If, in the time before mentioned, expectoration begin spontaneously, it is well, if not, we are to assist the patient, in some of the said fifteen days with medicines, and potions, in order to his refreshment, and to recruit his strength, before his body be too much enfeebled, and cause a defluxion. If there be no discharge by expectoration; and there be plain indications, that the stress or tendency of the pus is towards the sides, make no scruple to use the knife, or cautery. (m) If there be no signs of this nature, or yet any expectoration, let the patient after bathing in plenty of hot water, fasting, and without the least drinking, be firmly seated in a chair, and ordering an attendant to lay fast hold of his shoulders, shake him well yourself, clapping your ear to his ribs that you may discover the part, whence the indications are to be taken. And here it is to be wished, that the place affected might lay towards the left side, because burning or cutting are most fatal on the right; for the stronger the parts are, on the right side, the more violent are the diseases in those parts. If there be no fluctuation, because of the thickness of the humour, and consequently no noise to be heard in the breast, but the patient fetches his breath short, his feet swell, and he is molested with a cough, you may assure yourself that the thorax is full of pus. Dip, therefore, a thin linen cloth in a warm infusion of eretrian earth, finely tritured, and lay it all over the thorax; (n) and in that part, where you find the cloth first dried, make the section, or apply the cautery in such manner

(i) De morbis.

(k) De morb. lib. IV.

(l) Symptoms.

(m) Knife, or cautery

(n) Another method to discover the matter in the thorax, but quite uncertain.

manner as to approach very near the diaphragm; but without touching it. You may, if you think fit, anoint the part with the eretrian earth, and make the same observation as in the linen cloth. Many use the unction, with the other method, lest the parts, which are first anointed, should be dried. After the operation, by burning, or incision, introduce a tent made of tow, and evacuate the pus, by little, and little. (o) When you have determined on cutting, or burning, it will be very proper to make a mark on the skin; within which limits you are to confine the limits of your knife, or cautery. Avoid carrying them too high, or too low. All food that is disposed to excite coughing, is to be avoided, lest it should cause a revulsion of the pus into the lungs, which would be bad for the patient; but the pus is to be suffered to dry as soon as possible, in order to its discharge by the incision. At the end of twelve days evacuate the rest of the pus, and stopping the orifice with a linen tent, draw out the pus twice in the day, prescribing also a diet, proper for drying the inner region of the thorax.

And this is the method of examining and curing an empyema, whether proceeding from a wound, peripneumony, or violent catarrh, occasioning a pressure of the lungs against the side.

With regard to the time for performing the operation for the empyema, (p) Hippocrates, orders us to avoid the winter, and summer solstices, because in those seasons, there is the greatest and most sudden changes in the air. (q) We must at a convenient time, open those whose thorax is hydropical; we must presently cauterize with hot irons, those who are in consumptions. (r) The knife, or cautery, is ordered to be applied in the lower part of the thorax, between the fifth, and sixth rib, reckoning from above. The incision was performed with a sharp knife. For cauterizing a long iron instrument, and not very thick, that after the cauterizing the hole may be made larger than the thickness of the instrument was. The side was also perforated with a hollow piercer, made something like a screw or nail piercer. Where the matter was supposed thick, an incision was made choice of; but when the matter was thin, and watery, or where there is a dropsy of the thorax, then burning or perforation was thought preferable. It was laid down as a rule, that the matter is to be permitted to flow in a small quantity at a time, according to the strength of the patient: for the sudden evacuation of all the collected matter, would produce faintings, and destroy the patient. (s) It was observed if the probe returned of a black colour, on examining the pus, it was very dangerous.

BRONCHOTOMY.

WHEN an inflammation of the throat, threatened the suffocation of the patient, Hippocrates pierced the windpipe, and put a reed, or pipe, into it. (t)

ON THE FISTULA IN ANO.

THE diseases of the anus are largely treated of, (u) and after the enumeration of the causes from whence they proceed, the fistula is said to be discoverable, by making search with a stalk of fresh garlic, in the direction of the sinus. When it is discovered, a five folded thread, or hair, is to be passed through the orifice of the fistula, and to be gradually drawn closer, that the sinus may be opened. Several medicines are prescribed, as necessary for the cure of this disorder; but no mention is made of the method by cutting. (x) Though the sphincter ani, it is said, may be cut away safely, (y) and without injuring its functions, if only one eighth part of it be left untouched.

The actual cautery was for the cure of the hemorrhoids. (z) This disorder happening to melancholy, and nephritic persons, is good, and hemorrhoids that have long continued to flow, (a) must not be healed up quite, but one vein must be kept open, or else there is danger that a dropsy, or consumption, will succeed. (b)

DISORDERS OF THE EYES.

IN inflammations of the eyes, our author recommended, copious bleedings, bathing in hot water, purgings, (c) and to drink

(o) The pus to be evacuated gradually.

(r) Lib. II. De morb.

(u) De fistulis.

(z) Hæmor. XI. 1. Indicat. X. 9. Aph. 11. Sect. VI.

(b) Humor. XI. 3. VI. Epid. XXXI. 1. VI. Epid. III. 65. Aph. 12. Sect. VI. Opinion of the hemorrhoids being stopped.

(c) Aph. 31. Sect. VI. 11. Epid. VI. 26.

(p) Time of performing the operation.

(s) The colour of the probe.

(x) Cutting for the fistula in ano not known.

(a) Dangerous to stop the bleeding of the piles.

(q) Lib. VI. Epid. Sect. VII.

(t) Lib. III. De morb.

(y) De hemorrhoid.

drink strong wine. (*d*) In an ophthalmia, a supervening looseness is good. (*e*) If bleeding, and purging, do not remove the ophthalmia, (*f*) the inferior parts are to be strongly cauterized, or the humour lessened, (*g*) by some very drastic purgative, taking particular care not to excite vomiting. (*h*) And if the eyes become inflamed suddenly, we must not anoint them with any thing. (*i*) Hippocrates, likewise scarified the eyes with a sort of prickly thistle, called atractylis. (*k*) In the relaxation, and tumour of the eyelids, termed Phalangosis, and Ptoxis, Hippocrates, advised the cutting of the relaxed part of the skin, by a scalpel; (*l*) and then to secure the wound by a ligature with a needle of thread. (*m*)

SCIATICA.

IN sciatic persons, when the hipbone, says our author, falls out of its place, and is restored again, it creates a mucous matter. (*n*) And those who have their hip bone come out upon a long continued pain of the sciatica, shall have the thigh bone wasted, unless they be cauterized for it. (*o*)

CRITICAL OBSERVATIONS ON THE SURGERY OF HIPPOCRATES.

THE practice of surgery to be observed in Hippocrates, which bears no comparison in point of merit to his other works, we next proceed to examine. On abscesses, our author's remarks are, in general, judicious; he leaves the formation and pointing of the matter chiefly to nature; and at the proper season, opens the part, either by the actual cautery, or incision. The latter method we approve of, but the former we consider exceedingly cruel. But as surgery has received the most considerable improvements, since the time of our author; and as this branch has arrived at a much higher degree of perfection, than any of the other departments of medicine, we shall, in the course of this work, be very particular as to the principal improvements; and endeavour to do justice to the many excellent men, who have contributed to cultivate this noble art. We now shall briefly point out the merits and defects of our author's surgery. For in some parts, he was very conversant, as may be seen, by his observations and practice. He most excelled in the treatment of fractures, dislocations, and wounds of the head; for on these subjects he has left us many pertinent and accurate remarks. On ulcers his opinions are tolerably just, as their being irritated by cold, but the rough purging he recommends, we by no means approve of; for, notwithstanding purges are universally given by the moderns in such distempers, it is a violent and unsuccessful practice; and there are some of the prejudices we wish to eradicate, having already communicated a mild practice, that generally proves successful. Our author's practice in wounds is rational; and we declare, that in most wounds, however large, if their should be no contusion, or injury of the bone, little else is necessary, than to bring the parts as nearly in contact, as possible, applying only compress, and bandage, binding the wound up in its blood; which, if the patient be in a good habit, is the best balsam. This is the most simple, and natural cure of incised wounds, and seldom fails of success, if judiciously managed by practitioners, who have more the welfare of their patients at heart, than their own private emolument. His notions of wounds of the noble parts, and the viscera proving mortal, are in general true, when we except the intestines; for, by gastroraphy the cure of wounded intestines has been effected frequently; and when mortifications have happened, many instances have occurred in which there has formed, as it were, an artificial anus, and the patients recovered. Amongst many defects in the ancient surgery, we must remark, that our author was ignorant of amputation; therefore, in dislocations of the ankle, wherein the tendons and cartilages were lacerated, he understood no method of cure; for in such cases in general, to amputate the limb is the only probable means of saving the patient's life. On wounds and fractures of the cranium, he has been very elaborate: his conclusions from the symptoms being favourable, or unfavourable; his methods of discovering fractures, depressions, or fissures, his treatment on these occasions; and the success attending his endeavours to recover his patients, under such circumstances, are upon the whole, very judicious. His advising surgeons to be cautious in their prognostics in these cases, has been recommended by all practical writers since his time. His considering profound sleep, vertigo, and dimness of sight, amongst the mortal signs, was just, and his notions of a concussion of the brain, incisions of the temples being hazardous; his prognostics

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(*d*) Strong wine in inflamed eyes.(*g*) Cauteries to the extremities.(*i*) External ointments to the eyes forbid.(*m*) Lib. de vict. acut. LXVI.(*e*) Indicat. XII. 9. Aph. 17. Sect. VI.(*h*) Vomits improper.(*k*) Scarified the eyes. Lib. de vis.(*n*) Aph. 59. Sect. VI.(*f*) De locis homine.(*l*) Cut for the relaxed eyelid.(*o*) De gland. X. Aph. 60. Sect. V.

nostics on the discoloration of the fleshy parts surrounding the fracture, are all worthy of the attention of practitioners. In the doctrine of fractures, what more is necessary, than the practice of our author. To bring the disunited parts into apposition, and after reducing them as nearly as possible, to their original form, to retain them with proper bandage. As to the management of particular dislocations, and fractures, we pass them over; for the general treatment was conformable to that we have already mentioned. But his cauterizing the parts about the axilla as represented, we consider a very cruel practice, as likewise most other cases in which the actual cautery was used. We do not, however, mean to reflect on our author for this last mentioned practice, as it would be uncandid, if not highly ungenerous. We should, on this occasion, recollect, he knew not the course of the arteries, and nerves, nor the utility of the ligature, in case of an hemorrhage; he, therefore, was obliged to be more cautious of the knife, than we, who have arrived at a high perfection in anatomical knowledge. His reflexions on those who were scrupulously nice in the application of their bandages, making a vain parade and ostentatious shew of their profession, are the effusions of a good mind, shocked at the abuses of illiterate practitioners, who depended more on a display of external formalities, than in real abilities in the art. But we cannot help observing, that such arts, have prevailed in all ages, and have proved an excellent cover for the defects of the mind.

Our author's method of reducing dislocations, are, in some respects, rather violent; but on the whole, his practice in other respects, is similar to the moderns. He used the ambe, in the reduction of the humerus; we sometimes use the same instrument. We are rather inclined, from observation, in practice to consider this a violent method; for these dislocations, in general, are easily reduced by gentle extension, and attempting a rotatory motion of the arm. By this means, the bone slips into its cavity, with very little force; unless there have been too much violence used already. His methods of rolling fractures or dislocations is little inferior to any of the moderns; and his observations on the accidents and various symptoms that attend violent luxations, or fractures, are judicious, and correspond, in many respects, with most succeeding writers.

His observations on the empyema, and his methods of treatment, are agreeable, in most instances, to the practice of the moderns. His operation, however, must have been rather more precarious, as he did not understand the course of the intercostal arteries, in his incision, as they are covered by the ribs, not much danger ensued; but when he applied the actual cautery, or perforated the ribs by the terebra, we should be inclined to think that a dangerous hemorrhage must have ensued. Besides, we make choice of the upper part of the rib, and make our incision in that part, so as nearly to touch it; by which method, we have nothing to apprehend, as the arteries run in a furrow in the lower part of each rib. In general we may remark, that this operation is less successful in this northern country, than in the warmer climates; we should, therefore, be very circumspect in our promises, whenever we perform it. As to Hippocrates's method of discovering the proper place to operate on, by applying the eretrian earth, is very absurd and erroneous; but his admitting the matter to flow gently after the operation, and by gradual means, is exceedingly sensible, and judicious. His place of operation is within one rib of the part we now operate upon, when he did not depend on his experiment of the eretrian earth.

Bronchotomy, he recommended for the purposes we now perform it.

His general method of treating the fistula in ano, is similar in many respects to that of the moderns, when we except the actual cautery; and this cruel practice was retained till the fifteenth century, and long after by many. His notions that the hemorrhoids should not be healed, but suffered to discharge the superfluous blood, is a doctrine that has received approbation in all ages.

Our author knew little concerning either the anatomy, or disorders of the eye; but his general methods of treating the inflammation, when we except, drinking wine, is similar to the practice of all succeeding writers. When he recommends us, not to use external applications, he is superior to the moderns; and we have clearly proved that many have been blinded by such inconsiderate attempts to cure the diseases of this delicate and nervous organ. Our author's disapprobation of vomits, in inflammations of the eyes, is excellent practice; but the scarrification of the eyes, however successful, it might have been in Greece; or as lately practised at Paris, we have known it in this country to produce dangerous effects: and, instead of relieving the patient, do manifest injury. But in different countries the practice of physic should be various, or it cannot be successful; and therefore, we should not hastily condemn, as insignificant, or bad, any plan of cure, because it does not prove equally useful in one country, as it does in another. For a physician should well understand the practice of every age and nation,

ON HIPPOCRATES, HIS MORAL SENTIMENTS, CHARACTER, &c.

THUS having delivered the Hippocratic methods of treating diseases, it may be naturally expected that we say something concerning the author himself. Ancient history informs us, that he was lineally descended from the god of physic, the Greek Æsculapius. But the fabulous part of the Greek, and other ancient histories, are so exceedingly dubitable, as we can only refer to the fragments of authors, whose original works did scarce reach the age even of our venerable father of medicine, we beg permission to decline entering into discussions concerning our author's pedigree. For, leaving such, and many other like curious enquiries, for the amusement and contemplation of others, we only propose reciting such anecdotes of our author, as appear most agreeable to truth.

Hippocrates, was said to be contemporary with Socrates; and those excellent historians, whose works will be ever read with pleasure, Heroditus, and Thucydides. He studied eloquence under Gorgias, the Leontine; and for the sciences, he being naturally fond of study, and of a noble family was most probably a disciple to the greatest preceptors of his age. In one part, he says, after understanding the *sciences of medicine*, it is expedient to travel, and visit foreign cities, and countries, if he would be something more than a physician in name, and support the reputation of his profession by his actions, as well as his words. (*p*) And what can more effectually conduce to a general knowledge in medicine, than exact certainty in the diet, customs, diseases, and methods of cure, in different parts of the world? It enlarges the mind, removes the narrow prejudices of medical education; and exhibits, to a mind capable of instruction, a comprehensive view of nature, and the art. For, as this excellent author remarked, ignorance, when proceeding from a want of experience, is but a sad stock for those who are in possession of it, and an unfortunate incumbrance by day and night. He travelled into Macedonia, Thrace, and Thessaly, and indeed all through Greece; curing not only particular persons, but whole provinces. He visited Larissa, Cranon, Aenus, Oeniades, Pheræ, Elis, Perinthus, Thasus, and Olynthus. In the tour of these countries, he made the principal observations contained in his Book of Epidemic Diseases. Ambassadors were sent from the Illyrians, to intreat him to remove a pestilence which ravaged through the whole country. He was readily disposed to assist this people; but first informing himself of the winds at that time predominant in Illyria, of the heat of the season, and of every circumstance preceeding the contagion; he was sensible no remedy would cure the distemper, and therefore declined the journey. But foreseeing that the pestilence, would soon make its appearance in Thessaly and Greece, by the same winds, he immediately dispatched his two sons, Thessalus, and Draco, with his son-in-law Polybus, and several of his pupils, to different places with necessary instructions, and went himself to the assistance of the Thessalians, from whence he passed to the Dorians, and thence to Phocis, visting Delphos, where he offered up prayers and sacrifices, and passing through all Bæotia, made his appearance at Athens, using his utmost endeavours to relieve the afflicted of all ranks, without any reward, except the internal satisfaction arising to a great and generous mind, from the consciousness of a voluntary service to the community. Untainted with that most unhappy of vices, an insatiate love of wealth, and not depending on the art for a support, he liberally assisted, and never refused his advice, and comfort to the poor and friendless. He observed, that a physician should not be ashamed to receive information from the meanest people, of remedies confirmed by experience: for it was by this means, he imagined, the art obtained improvement; and being collected together formed one entire body. It was his opinion, that, to arrive at any considerable knowledge in physic, the following conditions were necessarily requisite. A natural aptness, means of instruction, study, and application *from youth*, a docile and sagacious wit, diligence, and a long observation. If ever a man was superlatively blessed with extraordinary powers of mind, means, and a thirst after medical knowledge, it was Hippocrates, who possessed, in an eminent degree, all that sagacity and penetration, which constitutes the true physician. (*q*)

He says, that a physician should visit his patients frequently; but ought never to warrant the success of a medicine, for the ablest physicians are deceived by the similarity of cases; (*r*) and obscure and doubtful diseases are judged of, more by conjecture than art. (*s*) Those who blame physicians for the death of their patients, have as much reason to blame the sick person; but why should we not impute death to the incurableness of the disease? (*t*) Not that physicians are never in fault: those who are least so, ought to be most esteemed; but it is difficult to find one so judicious as is requisite. (*u*)

Some

(*p*) Lex. (*q*) At the St. Mary-le-bone Infirmary, it has been fully proved, how excellent is early instruction, in the different branches of the art.

(*r*) Lib. Epid.

(*s*) Epid. lib. VI.

(*t*) De arti.

(*u*) De prisca medicina.

Some employ themselves in decrying and speaking disrespectfully of others in the profession; making a vain ostentatious shew of their learning. It is much better to discover things useful to society. What has just been advanced, conveys a perfect idea of his sentiments on medicine. How striking and unprejudiced are his opinions? how exactly true have they been found in all ages? Considering the age in which he lived, he had little superstition. It is true, in his book of dreams, which have been attributed by some to Herodicus, he talks of sacrifices and ceremonies, which ought to be performed to some certain Deities, according to the nature of the dreams which are dreamt; but in another part, after ridiculing the boasters, magicians, and other impostors, he says, it is the Deity that purifies us, and washes us from our greatest sins and most enormous crimes. It is the divinity that protects us; and it is only in the temples, which are the habitations of the Gods, that we ought to seek, to purify ourselves of what is unclean. He rallies the women of his time, who were troubled with obstructions, for offering to Diana rich garments. (x) He does not hesitate to say, that the priests who advised these weak women thus, abused them wretchedly.

His sentiments of the manners of a physician, are worthy of attention. He says, he ought to dress decently, to be grave in his manners, moderate in his actions, chaste and modest in the conversation he is obliged to have with women; no idler, ready to answer every body with candour, sober, patient, always ready to do his duty, without disturbing himself; and he thought it requisite, for the credit of the physician, that he should have a *healthful look*, and a good complexion; for men are apt to suspect him who has not his own health, to be scarce instrumental to procure another's.

It has been said, that he relieved others of the plague, so well described by Thucydides, an eye witness, and after him Lucretius. Fires in the cities were the common cure for the plague, amongst the Greeks. He was sent for to Perdicuas, king of Macedonia, who was thought to be ill of a consumption; but Hippocrates, it is said, discovered his disease to be the love of Phyla, his father's mistress. Artaxerxes offered him vast sums, and entire cities, to induce Hippocrates to come into his country, and remove a pestilence, that made terrible devastation in his armies and provinces; and ordered him an hundred talents as an advance. To the governor of the Hellespont, he returned this answer. Write to your master, that I am rich enough, and that I cannot with honour accept his offers, nor go and cure Barbarians, who are enemies to the Greeks. (y) What a distinguishing mark is this of the greatness of his character? When Alcibiades was sent by the Athenians into Sicily, Hippocrates sent his son Thessalus to accompany him and his army, as physician, and defrayed the expence of his voyage. The ill success of that expedition did not prevent the Athenians from presenting Thessalus with a crown of gold, at his return, after three years service. No citizen gave stronger proofs of patriotism than Hippocrates; for, it is said, that when the Athenians made preparations to carry their arms into the island of Coos, he immediately went to implore the protection of the Thessalians, and the neighbouring states; and sent his son Thessalus to Athens, to endeavour to allay the tempest that threatened his country. Both father and son met with success; for Macedonia, Thessaly, and Peloponessus, were all up in arms, and ready to march to the assistance of Coos; and the Athenians, out of fear or gratitude, hearkened to the remonstrances of Thessalus.

But what he is justly entitled to admiration for, by practitioners in medicine, is, his generous acknowledgment of his mistakes, and ill success. A remarkable instance we find recorded in the fifth book of his Epidemics. For being called to Anthonomus, who had received a wound in his head, he unfortunately mistook the wound for one of the sutures, and neglected trepanning him. Some days after, the patient being seized with a great pain in his side, and convulsions in both arms, he was sensible of his error, and tried the trepan, but in vain; for it being the fifteenth day, and the summer season, the patient died the next day.

This candid declaration of his ignorance, being the cause of a patient's death, must be admired in all ages; but how few follow his steps in this particular, how eager we are for publishing our success, and how silently we draw a veil over our blunders. This great author desired of the gods, in recompence of his labour, neither riches, nor pleasure; but a long life in perfect health, success in his art, and to render himself famous to posterity. This desire of his, is declared in his oath; and it was accomplished in its full extent; for he lived one hundred and nine years, in soundness of mind and body. He succeeded so well in his art, that he has ever been regarded as the founder of it. He is to physicians, what *Homer* and *Demosthenes* are to poets and orators. He received, during his life, such great honours, as were never bestowed to any mortal.

(x) Lib. de his quæ ad virginium spectant.

(y) Epistol. Hippo. Col.

mortal. The Argians erected a statue of gold to his honour, and the Athenians decreed a crown of the same metal; passed an act, that himself and descendants should be maintained in the Prytaneum; and they initiated him into the great mysteries, an honour rarely conferred on strangers, and never before on any but Hercules; and he has left behind him, in his works, an immortal reputation; for he has been always considered the original interpreter of nature; and it is highly probable he will ever preserve his glory, which above two thousand years have not yet robbed him of. And though, even now, some designing professors make a point of obscuring the brightness of his fame, by unmeaning sneers, and dark insinuations; yet we are of opinion, that our ancient author will revive, and receive additional lustre, when the works of such men perish, and are lost in that oblivion they justly merit. This excellent man died in Thessaly, in the second year of the hundred and seventieth olympiad, three hundred and forty-nine years before the birth of Christ, and was buried between Larissa and Gortona.

CRITICAL OBSERVATIONS ON DOCTRINES OF THE PHILOSOPHERS, AND THE STATE OF PHYSIC, FROM THE DEATH OF HIPPOCRATES TILL THE TOTAL SUBVERSION OF THE GREEK EMPIRE.

IN every age there appears an insatiable thirst after knowledge; and those men are highly laudable who endeavour, with industry, to explain the hidden secrets of nature; but there is a wide difference between the attempt, and the real acquisition of learning. It has unfortunately happened, amongst the ancient philosophers, to mistake the contemplation of nature, for a penetration into her most secret actions. Where enquiries fell short, and judgment was at a stand, an unbridled imagination was substituted, and thus conjecture was built on conjecture, hypothesis on hypothesis, and the more apparently mysterious and false were the doctrines; so have they ever been received with the greater avidity.

The opinion of Plato, concerning the different souls, with their situation in the human body, is a lively instance of the arrogance and presumption of this philosopher; and yet he was universally esteemed, and obtained, in all ages, the appellation of the Divine Plato. His great reputation principally arose from discoursing on the soul; not because he explained himself clearly on this sublime subject, for all his reasonings are exceedingly futile, absurd, and, in a great measure, absolutely false. Then who can forbear smiling, when Plato is called, the Divine Plato? As well might an ignorant artificer be called a great architect, physician, or mathematician; because he discourses very idly and superficially on architecture, physic, or mathematics. It is a great reflection on human nature, and mankind in general, that the most incoherent doctrines have been universally received, without examination, in every age. What a variety of opinions have been delivered, on the constituent principles of bodies, and yet few have been demonstrated; nor has any one failed of meeting with advocates, who have exerted themselves to the utmost, in support of the several doctrines advanced. This has ever been a fatal curiosity in the mind of man, which can never be satisfied; plain, simple truths, are neglected, and yet, so confined is human comprehension, that the least deviation from truth, is liable to lead us into a labyrinth of eternal error. Whatever are the opinions in philosophy, if the points be merely speculative, a variety of conjectures are unimportant to society in general; but when fallacious doctrines are introduced into the medical art (an art that should be only practical) it then becomes a serious matter, for the salvation or destruction of human beings, in sickness, depend on the justness of its laws. But men rather wish to appear learned than to be really so; and the majority of a profession will ever assent to the fashionable and prevailing doctrines, however repugnant to common sense. To understand prevailing doctrines, requires little labour or industry, or strong mental powers; but to detect their fallacy, and publicly expose their evil tendency, is a work of infinite application. Men have been diverted from such honest purposes, from fearing the clamour raised on these occasions; and indeed it requires no small share of intrepidity and resolution, to stem the torrent of falsehood, at a time when a servile compliance is the sure road to wealth and honour. It is but lately that the Aristotlean doctrines have been refuted. This can only be accounted for from that prevailing spirit in men; for the learned have ever united with great spirit in

suppressing the truth, but have frequently been languid in their examination into the merits of the different proposals for the reformation of the most striking errors.

As for Plato, he neither knew the anatomy of the human body, nor the nature of diseases. The notion of respiration, the asserting that liquids passed through the trachea to the lungs, the duty of the heart, the opinion of the triangles, and, in short, all the things advanced by Plato on these subjects, are highly ridiculous, and full of absurdity.

The profound learning of Aristotle has been echoed in every age and country; and from this it might be naturally inferred that his merit was singular, his sagacity extraordinary, and learning universal; for he has boldly written on most subjects; and with truth, it may be asserted, he excelled in poetry, logic, and rhetoric. The natural history of Aristotle was a standard work for several ages, though, it is full of defects and falshoods; and his other works equally exceptionable, have formerly been admired and taught in the schools. A convincing proof of the extreme indolence, negligence, and ignorance of philosophical professors, who were often the last in promoting improvements. History informs us, that the works of this philosopher, lay in a chest, and were buried in the earth, for near an hundred and thirty years. (a) For Aristotle left his writings to Theophrastus, one of his most illustrious disciples; (b) he transferred them to Neleus of Scepsis, (c) a city in the neighbourhood of Pergamus, in Asia. His heirs, who were ignorant persons, kept them shut up, till the kings of Pergamus began industriously to collect all sorts of books for their library; and then they buried them in a vault under ground. Some of the family, after living in extreme poverty dug them up, and sold them to Apellicon, a rich Athenian. Sylla, in the course of his conquests had seized the library of Apellicon, and sent them to Rome. Apellicon had already endeavoured to supply the chasms, and other defects of the work produced by time; for the originals were worm-eaten, and obliterated in many places. Now, these defects being supplied by conjecture, it is not probable that we have the original work of Aristotle. A famous grammarian, then at Rome, named Tyrannian, obtained permission of Sylla's library keeper, to copy them; this copy was communicated to Andronicus, the Rhodian, who afterwards imparted it to the public. The world is obliged to him for the works of that philosopher. It is not extraordinary, that the works of Aristotle gained such an ascendancy over the minds of the Romans, who at that time were just immersed from a state of ferocity, and ignorance of politeness, to a taste for the polite arts; and at such a time every thing is admired, which has but the appearance of deep erudition. And an author of such distinguished reputation as Aristotle, was received with uncommon marks of favour and veneration. At this time the Romans began likewise to have a favourable opinion of Greek literature; oratory was studied with uncommon assiduity. Eloquence, and the art of persuasion, were arts that the Greeks excelled all other nations; and a spirit of emulation excited the most ambitious men, in the Roman republic, to attain this necessary accomplishment, so useful in a popular state. The world never saw a greater master in rhetoric than Aristotle; and it is natural to suppose, as he was found so superior to all other writers on this subject, that credit should be given him for an equal excellence in the other branches of science. Thus was his reputation established, not by a minute examination into his merit, as a philosopher, which part was little read, and less understood; but from the admirable precepts on logic, poetics, &c. so universally studied, and admired, by the principal orators, and statesmen of every age.

The philosophical principles of Aristotle have been amply refuted by the distinguished men of the last and present age; it would, therefore, be dishonourable to vanquish the vanquished. But his notions in anatomy ought to be censured; for they have had extraordinary influence amongst medical writers, for several centuries; and though they are now universally condemned, and acknowledged to be false, yet they may be with propriety introduced; as a memorable example of the inconsiderate credulity of medical practitioners. For it was sufficient, in a medical controversy, to produce the opinion of Aristotle, or Plato, these were chiefs who terminated the most violent disputes, and reduced the refractory to obedience. It was not a question, whether Plato, or Aristotle spoke truth, no, mankind were educated in a slavish obedience to their authority; and their extent of learning estimated in proportion as their minds were capable of understanding, and believing in the Platonic, and Aristotelian discourses of the schools.

The notions of the blood not coming from any part to the heart; the brain being supposed a cold lump of water, and earth, and refrigerating the heat of the heart, and destitute of veins and blood, are all exceedingly erroneous, and must have been written at random. The same may be said, of what he hath advanced on the spleen, liver, and kidneys, lungs, respiration,

(a) Plut. in Syl. p. 468.

(b) Strabon. I. 13. p. 609.

(c) Laert. in Theoph.

tion, for of all these things he was extremely ignorant. Aristotle, however, does not so much deserve censure for not understanding these things, but for his vanity and presumption, in pretending to communicate a knowledge to others, of what he himself was totally ignorant; and meddling with sciences, in which he was quite unacquainted. But soon after the death of Aristotle, that great conqueror, Alexander, of Macedon, whose inordinate ambition, and successful wars, rendered him master of the world, expiring, ended his restless career soon after his triumphant entry into Babylon. This produced a great revolution in the Greek empire, which before was under the denomination of that aspiring commander. The whole of his conquests were soon divided, after his death, into four kingdoms; Egypt, Syria, Macedonia, Thrace, and Bithynia. (d) The whole manner of the Greeks had been changing from a love of liberty, and the most honourable sentiments, to a state of corruption, and dependance; for a considerable time before Philip formed his plan for the subjection of all Greece. These vices which have ever been the destruction of every state, increased proportionably as the Greeks became rich and luxurious, their liberal sentiments, their love of liberty, which so eminently distinguished them above all other nations, gradually degenerated into the most extravagant prostitution, and baseness; and, from the time of Alexander, till their total destruction, by the Romans, we read of nothing but shocking murders, mutual distrusts, rapine, and every species of cruelty, that can disgrace human nature. During such scenes it was not probable that sciences flourished; and accordingly we have little remaining of the learning of those ages. There is, seemingly, a limitation to human pursuits; and there are periods in history, in which the different branches of learning are in their highest perfection: from which time, succeeds a gradual decline. The highest perfection of the Greek literature, was just before, and during the life of Alexander. A profusion of wealth succeeding a great extent of territory, men became idle, having no incentive to action; the rich employed their whole time in the invention of new modes of indulgence, and surfit themselves in voluptuousness and dissipation. This has a sensible effect on learning, for men who should be otherwise deeply learned, in whatever they profess, discover a shorter way to wealth and honour, than by laborious study; they substitute the appearance for the reality; and mankind reduced by intemperance and luxury, to a state of enervation, do not so much as suspect the impostor, and, are totally incapable of distinguishing real merit, from its shadow. These were the principal causes of the decline of learning, and the destruction of the Greek empire.

The discoveries that were made by Herophilus, and Erasistratus, were in the beginning of the decline of the Greek empire. They were the first, and the only physicians, who had liberty to dissect human bodies; and the effects of their industry are very evident, from what has been already transcribed from Galen. But, as in the ensuing part of this performance, there will be occasion to mention the improvements of these anatomists, and the manner in which the art of physic, was gradually transferred by the Greeks to the Romans; we decline for the present enlarging on these subjects.

In the preceding books, the happy effects arising from the industry of the immortal Hippocrates, have been amply considered, and may justly excite our admiration; for the art of medicine, which before his time, abounded in error, and superstition, was reduced, by his sagacity alone, into a regular form and order. Indeed, to such a degree of perfection was it raised, that little more was necessary, than an accurate skill in anatomy, and a few effectual remedies to render it complete. In such a state did this ancient, leave the science; and it might have been naturally expected, that his immediate successors, would have finished what was so wisely begun, and supplied his defects. But it seems a certain fatality has ever attended the medical art; for, at different periods, when every prospect must have raised the highest expectations of perfecting it, some unforeseen event, or some aspiring and subtle genius has appeared, who has shocked its very foundation, by diverting the attention to useless studies, and thereby frustrated all hopes of effecting so desirable a purpose. It was by observation and experience alone, that our ancient author, arrived to such an uncommon degree of skill in the salutary art. But after his death, experience, and patient observation, were relinquished, and subtleties, and deep mysterious reasonings on inexplicable things were introduced. Physicians, instead of ardently engaging in the cure of diseases, entered into endless disputes about pre-eminence; conjectures were multiplied, and truth forsaken, wranglings, and discord succeeded, those mild diffusions of universal benevolence, which so strongly marked the character of the great father of medicine. The dawnings of science began to break forth during the life of our author; and soon after his decease an uncommon number of men, called philosophers, appeared. It would be tedious here, even to mention the names of the different sects. It appears, that it was sufficient, in that age, to have some singular humour or manners; to look or dress grave; and pretend to a new discovered road to

(d) About three hundred years before Christ.

to happiness, to attain the appellation of a philosopher. For the chief end of philosophy, according to their notions, was to be happy, and every one modestly considered his own method of attaining it the best, though their ways are as various as the roads to the metropolis. As to the different opinions, we pass them over in silence, and only notice those that have affected the art of medicine. For they have obtruded their doctrines into our art, without knowing any thing of the art itself. After Hippocrates, it soon happened that two sectaries in physic opposed each other; the one it seems enlisted under the banners of that celebrated philosopher, Aristotle, and assumed the appellation of methodists; the others in appearance, were followers of Pyrrho, the first founder of the Sceptics, and called themselves empirics. Now, though it will clearly appear, that physic has no relation whatever with the opinions of philosophers; yet, it has been the *rock* physicians have split on in all ages; for they have endeavoured to introduce, the most absurd and useless speculations, into an art, that is only practical; and, in general, dependant on the evidence of the senses. We do not intend delivering all the opinions of the philosophers concerning the most abstruse hidden works of nature; for this would be an endless attempt; but as Aristotle has been admired and quoted, on all occasions, by physicians, to confirm the most absurd doctrines, it becomes an indispensable duty, in this work, to give some idea of his, and other principal doctrines; but first it will be necessary to say something of difference between the dogmatists and Sceptics.

The difference then, between the dogmatic philosophers and sceptics, seems to be this; the first suppose they well understand many things in nature, which the latter consider incomprehensible. One believes his speculations and opinions worthy of reception, and supports his pretension by the most subtle arguments; the other, disbelieving every thing not manifest, suspends his entire belief, on a principle that the secrets of nature are not within the sphere of human comprehension. The sceptics defend their incredulity of the dogmatic assertions of philosophers, because no two agree together on one subject. For instance, the various notions of material principles. Pherecides, the Syrian, asserted the earth to be the principles of all things; Thales, the Milesian, water; Anaximander, his disciple, infinite; Anaximenes, and Diogenes Appollionates, air; Hippasus, the Metapontine, fire; Xenophanes, the Colophonian, earth and water; Euripides, the Chian, fire and air; Hippo, of Rhegium, fire and water; Onomacritus, in his Orphics, fire, water, and earth: not to speak of matter void of quality, which some have prodigiously fancied, but not understood. The followers of Aristotle, the Peripatetics, a circular moving body, consisting of fire, air, water, and earth; Democritus and Epicurus, atoms. Anaxagoras, the Clazomenian, Homoiomerics; Diodorus Cronus, least and indivisible bodies; Heraclides, of Pontus, and Æsclepiades, of Bythnia, uncompounded bulks, or little bodies; the Pythagoreans, numbers; the Mathematicians, the terms of bodies; Strato, the naturalist, qualities. Such, or yet greater, being the controversy among philosophers, about the principles of matter, we must either assent to all their opinions of the elementary principles, or to some. Now, if we cannot assent to all these opinions of the elements, nor to some of them, we must suspend our judgment. These are the notions of the Sceptics; and they farther say, that perceiving in all controversies concerning the elements, they are held either to be bodies, and incorporeal, we conceive it sufficient to prove, that both bodies, and incorporeals, are incomprehensible. A body (some of them say) they think doeth or suffereth; but, according to this notion, it is incomprehensible. For not being able to say, whether there be a cause, we cannot say whether there be an agent; for the agent suffers from the cause. Thus both the cause and the agent, being incomprehensible, a body also must be incomprehensible. Many ingenious arguments are produced by the Sceptics, to prove the impossibility of comprehending the received opinions on various subjects, as delivered by the dogmatists; strongly inculcating a modest suspension of our opinion on intricate and disputable points. (e)

But a contrary conduct to this, strongly characterises the other philosophers; for these, with a boldness and authority, which have ever produced irreparable injury to society, think nothing, however intricate, above the reach of their capacities. When the evidence of the senses, or demonstration, failed, (f) then a loose is given to the imagination, and the soul for a while leaving the body, as some of them pretended, took its airy flight, and contemplated the mysteries of nature; and left, as a legacy to after ages, their visionary dreams, called by some, philosophy. Others, less adventurous, and living in ages more refined, and consequently more liable to detection, have traversed over all the wide extensive empires of learning, and, on a principle that they have excelled in some few branches of science, have, by a prostitution of logic, and by mere artifice, so imposed on the community, that their defects or falsehoods, for ages, have never been suspected, much less refuted. What

ignorance

(e) Many similar hypotheses and disputes continue to this day.

(f) As Socrates.

ignorance and credulity first gave sanction to, without strict enquiry, increased in strength, by time, and gained such an ascendancy over the minds of men, that nothing but an implicit faith in the most erroneous opinions, entitled any one to the appellation of learned; and, in proportion as he believed, so was he accordingly considered a great philosopher. But lest we should be thought rather severe, we now produce proofs in vindication of our censures.

But according to the historical order, we should say something concerning the immediate successors of Hippocrates. Thessalus and Draco were his sons, and Polybus, who was his son in law, have been mentioned as excellent physicians. To each have been attributed some of the writings of Hippocrates; but as we know little concerning them, except that his eldest son lived in the court of Archelaus, king of Macedonia. There are other disciples and scholars of Hippocrates; as Prodicus, Dixippus, and Appolonius, and Ctesias, his kinsman, who are said to have been practitioners; but as none of their productions have reached our time, we pass them over, and produce the philosophical prejudices so injurious to the art, and first of Plato.

Plato wrote several things relative to the theory of medicine. (*g*) He having supposed two universal principles of things, (*h*) God and matter. The first form that he supposed matter to take, was triangular; and that from these triangles, the four sensible elements were afterwards produced; the fire, air, water, and earth, of which all bodies appeared to him to be compounded.

As for the human body, he was of opinion, that its first formation commenced from the spinal marrow; this was afterward covered with bone, and these bones with flesh. (*i*) Upon this presumption, he held, that links, which united the soul with the body, were in the marrow, which he called the seat of the mortal soul. (*k*) The rational soul he lodged in the brain, which he said was a continuation of the marrow, and considered it as a soil purposely prepared to receive the divine semen. (*l*) As for that part of the soul on which depended generosity, valour, and anger, he placed it near the head, between the diaphragm and the neck; (*m*) that is to say, in the breast, or in the heart; in which he followed Pythagoras. He held that the lungs encompassed the heart, to refresh it, and to calm the violent motions of the soul, which was lodged there, as well by the refreshment it received from the air, in respiration, as from the liquor we drink; (*n*) which he supposed to fall, in part, on the lungs. This made one of the ancients to observe, that Plato gave posterity occasion to laugh, by meddling with that which was not his business. (*o*)

This philosopher imagined another sort of soul, which desired not only meat and drink, and all that was necessary for the body, but which was the principle of all appetites or desires in general. (*p*) This soul was situated between the diaphragm and navel. It was quartered in the lowest part, and farthest from the head, that it might not, by its agitations and commotions, disturb the reasonable soul, (*q*) which is the best part of us, in its meditations and thoughts for the common good. (*r*) These troubles and disturbances of the inferior soul, were excited by phantasms, or images, presented to it by the liver. The liver having been polished and made shining, that it might reflect the images which were communicated to it, to produce trouble, tranquillity, or pleasure, in the inferior soul, according as the liver itself is troubled by the bitterness of the bile; or sedate and calm, through the predomination of sweet juices, opposed to the bile. (*s*)

Besides what has been already said of the heart, and of the soul lodged there, Plato held the following notions concerning it. The heart, says he, which is at the time the source of the veins, and of the blood, which whirls rapidly in all the parts of the body, is set as a centinel, or serjeant, (*t*) that when the choler is inflamed at the command of reason, upon the account of some injustice committed, (*u*) either without or within, by the desire or passions, presently all that is sensible in the body, disposes itself, by opening all its pores to hear its menaces, and obey its commands. (*x*)

The opinion of this philosopher, concerning the manner of respiration, is no less peculiar. He believed that there was no vacuum in the world; but that the air that escaped out of the lungs and mouth in respiration, meeting that which surrounds the body without, pushes it so, that it forces it to enter through the pores of the skin and flesh, and to insinuate itself into the

y

most

(*g*) The following is chiefly taken from Alcinous's Platonic philosophy.

(*h*) Θεός καὶ ὕλη

(*i*) Formation of the human body erroneous

(*k*) The soul absurd.

(*l*) Marrow a soil for divine semen

(*m*) The sentimental soul.

(*n*) Lungs receive liquids false.

(*o*) A. Gell. lib. 17. cap. 11. Maerob. lib. 17 cap. 15. (*p*) Another soul.

(*q*) Its situation and use.

(*r*) Common good ingeniously considered.

(*s*) The inferior soul reflecting images on the liver, in an extraordinary manner.

(*t*) The heart a serjeant.

(*u*) Its duty.

(*x*) All the pores have the command of the passions.

most remote parts of the body, till it fills the place which the other left; (y) after which, making the same way out again, by the pores, it forces that without to enter by the mouth, into the lungs, in inspiration. We see by this, that Plato confounded transpiration with respiration; pretending, that both one and the other, were performed together, as it were, by two semicircles. (z) As for the flesh, he thought it compounded of water, fire, and earth, and a certain sort of sharp leaven, biting and salt.

These are some of Plato's thoughts of a human body, in its natural state. As for the causes of its destruction, which are diseases, old age, and death; he supposed, in the first place, which are about ours, dissolved and melt it continually; after which, every substance which gets loose and exhales, returns to the principle from whence it was drawn. He supposes, in the second place, that the blood, which is, according to him, a fluid matter, formed of the aliments, by a peculiar artifice of nature, which cuts and reduces them into small pieces, by means of fire, that rises in our stomach after the air or breath. (a) He supposed that this blood, whose redness was an evident token of the impression of this fire, served to nourish the flesh, and generally the whole body, and to fill up the vacant spaces of it as it were, by a sort of watering, or general inundation.

This being supposed, he maintained, that while we were young, this blood, abounding in all parts, not only supplied what was dissipated, or diminished, of the flesh, which, as was said, was perpetual; but after having filled up what was wanting, it furnished matter of increase to the mass of the body. From hence it is, that in our youth we grow and become larger; but when we are advanced in years, more of the substance of our body is spent than the blood can supply or restore; therefore we diminish by degrees. Those principles of which our bodies consist, which Plato calls triangles, which in our youth were stronger than those of which the aliments were compounded, reducing them easily to a substance like themselves, become disunited and relaxed, by having so long endured the shock of other triangles. This causes old age, which is followed by death, especially where the triangles, whereof the spinal marrow consists, are dissolved and disunited; so that the bands by which the soul was fastened to it, are entirely broken, and let it loose. (b)

As for diseases that attack us in all ages, and precipitate the usual time of death, he supposed that our bodies, being composed of the four elements before named, the disorders of these elements were the chief causes of them. (c) These disorders consisted in the excess, or deficiency, of any of these elements, when they did not preserve the proportion of their first mixture, or when they changed place, leaving their own place for another.

To explain himself more particularly, he adds, that the fire exceeding, produced continual or burning fevers; that if the air overbalanced, it gave rise to quotidian, intermitting fevers; if the water, tertian fevers; and, if earth, quartans. (d) The earth being the heaviest of all the elements, must have quadruple the time to move itself in, that the fire has, and the rest of the elements in proportion. (e)

Plato did not confine himself to these generals only; but proceeded to the particular explication of the changes that befall our bodies in relation to the blood, and humours, which are the immediate causes of distempers. (f) While the blood, says he, maintains its natural state, it serves to nourish the body, and to preserve health. But, when the flesh begins to corrupt, or to melt, and dissolve the humour, which comes from it, entering into the veins, carries this corruption along with it, and changing the blood in several manners, turns it from red to yellow, and bitter, or sour, or salt; so that, that which was pure blood, becomes part bile, and phlegm, or serosities. What we call bile, says Plato, is particularly produced from the dissolution of the old flesh. It is an humour that assumes divers forms; and is very changeable, both as to colour, and taste; but it is chiefly distinguished into two sorts; the yellow bile, which is bitter; and the black bile that is sour, and irritating. As for the phlegm, and serosities, or water, Plato seems to confound them, or to make but one sort of humour of them. The phlegm, according to him, is produced from the new flesh, and the serosities, or waters, which are designed by the particular names of sweat or tears, are only the phlegm, melted or dissolved.

In another place he seems to confound the phlegm, and serosities, with the bile, when he says, that what we call sour phlegm, is the same thing with the serosity of the black bile. But in the explication of the effects of these humours, he restrains

(y) The air going through the pores of the skin.

(z) Respiration and perspiration confounded together

(a) Περὶ αὐτῶν φέρονται, καὶ πνεύματι ζωνιπνεύμενον.

(b) A curious opinion of the triangles.

(c) Causes of diseases attributed to the excess or deficiency of the elements.

(d) The fire exceeding, produces burning fevers; air, quotidian intermittents; water, tertions; earth, quartans.

(e) Explained curiously.

(f) Particular explication.

strains himself to the two principal, which are the bile, and the phlegm ; and he acknowledges, that these two juices, by their mixture with the blood, are the causes of all disorders.

When the bile evaporates outwards, or discharges itself upon the skin, it causes divers sorts of humours, attended with inflammation, which the Greeks called phlegmons ; but when it is confined within, it produces all sorts of burning diseases. (*g*) The bile is especially hurtful, when it is mixed with the blood ; it breaks the orders of the fibres, which are, according to him, small threads scattered through the blood, (*h*) that it might be neither too clear, nor too thick, to the end, that on the one side it should not evaporate, and on the other, might always move easily in the veins. This bile continuing its havoc, after having broken the fibres of the blood, pierces to the spinal marrow, and destroys the links of the soul, before spoken of ; unless the body, that is to say, all the flesh, melting or dissolving, breaks its force. When this happens, the bile being overcome, and obliged to depart the body, throws itself through the veins, upon the lower belly, and stomach, (*i*) from whence it is discharged by stool, and vomiting, like those who fly out of the town in an uproar, and cause in their passage diarrhœas and dysenteries, and other discharges, which prove often healthful.

The sweet, or insipid phlegm, occasions tumors, and some impurities of the skin ; and when it mixes with some little bladders of the air, it is then called white phlegm. (*k*) If this phlegm should mix with the black bile, and penetrate into the receptacles of the brain, it causes the epilepsy.

The sour, or salt phlegm, is the cause of all diseases, comprehended under the name of cartarrh's ; and brings disorders, and pain, on what part soever it falls.

The matrix, says he, is an animal, which longs impatiently to conceive ; (*l*) and if it be long disappointed of bearing fruit, it is enraged, and runs up and down the whole body, and stopping the passages of the air, it takes away respiration, and causes great uneasiness, and an infinite number of diseases.

ARISTOTLE.

THIS philosopher, who was preceptor to Alexander the Great, and lived in the sun shine of court favour, had greater opportunities of acquiring natural knowledge, than perhaps any other, either before his time, or after. He received from his prince the enormous sum of eight hundred talents, to pursue these studies, (*m*) with the assistance of men in different parts of the world, who were, by the royal order, directed to give him every necessary information, of either the natural curiosities or peculiarities of the different animals that each country produced.

With regard to his history of animals, it has been clearly proved, that he delivered the greatest falsehoods ; (*n*) and what relates to the human body, as advanced by this great philosopher, as he was called, is in general erroneous, and in many instances highly superstitious, and irrational.

The principles of natural bodies, says Aristotle, are not one, as Parmenides, (*o*) and Melissus held ; nor Homoiomeria's, as Anaxagoras ; nor atoms, as Leucippus and Democritus ; nor sensible elements, as Thales, Anaximander, Anaximenes, Empedocles ; nor numbers, nor figures, as the Pythagorians ; nor ideas, as Plato.

There are three principles of natural bodies ; two contrary, privation, and form ; (*p*) and one common subject of both, matter. The constitutive principles, are matter and form ; of privation, bodies consist not, but accidentally, as it is competent to matter. Things are made of that which is ens potentially, materia prima, not of that which is ens actually ; nor of that which is non ens potentially, which is pure nothing. (*q*) Matter is neither generated nor corrupted. (*r*) It is the first entire subject of every thing, whereof it is framed primarily in itself, and not by accident ; and into which it at last resolveth. To treat of form in general, is proper to metaphysics. But, as it would be tedious, and rather foreign to our subject, to give in this work more than is necessary, concerning the Aristotelian philosophy, it may be improper to mention any thing more of opinions, which have been so fully refuted by the moderns ; and, therefore, we are to consider his notions in general concerning the animal body.

He

(*g*) Πυρίκαυτα νοσήματα.

(*i*) The bile discharged by vomiting and purging.

(*m*) Pliny. lib. VIII. 26.

(*p*) Cap. 7.

(*h*) The injury of the bile to the blood, decomposing its fibres.

(*k*) A sort of dropsy, in Hippocrates.

(*n*) By Borrichius.

(*q*) Cap. 8.

(*l*) Uterus singular notion.

(*o*) Physic. lib. cap. III. 4.

(*r*) Cap. 9.

He esteemed the heart to be the origin and source of the veins and blood. (s) The blood, says he, goes from the heart into the veins; but it comes not from any part into the heart.

The brain was, in his opinion, a heap of water, and earth. The office of which cold lump, he said, was to refrigerate, and moderate the heat of the heart. (t) He likewise says, that the brain, and spinal marrow, have not *sensum tactus*, (u) the sense of feeling. The reason why the brain was formed to refrigerate the heart, (x) was, first, because it was without blood and veins; and again, because the brain of man, is of all animals the largest, for that his heart is the hottest.

The spleen, he says, is necessary, though not absolutely so, though it sometimes attracts the excrement from the stomach, and forms it into its own nourishment.

He mentions the jejunum, the colon, cæcum, and rectum; so that the intestines were better distinguished by him, than in the time of Hippocrates.

The liver, according to him, was an assistant in digesting the meat in the stomach, and intestines. The kidneys are only for conveniency; their office is to imbibe part of the excrement, which goes to the bladder of animals, in whom this excrement is in too great abundance. (y)

He held that conception was performed by the mixture of the semen of a man, with the menstrual blood in the matrix, (z) allowing no share to the semen of the female; which he thought only an excrement of the matrix.

The use of the lungs, and manner of respiration, according to Aristotle, were these. The heart being inflated by too much heat, obliged the lungs and breast to swell and move, and by consequence to receive the air, which, insinuating itself into the heart, refreshed it in its entrance, and returning, carried off the thick hot vapors exhaling from it, and served at the same time, to form the voice; the air being necessarily obliged to enter into the lungs as they rise, for fear of a void, which is a thing nature abhors.

Aristotle confounded the veins, arteries, and nerves; and neither Plato, nor himself, called any part an artery, except the *asperia arteria*. Tendons, and nerves, or ligaments, are likewise indistinctly mentioned.

As to the various conjectures of the philosophers concerning the senses, as seeing, hearing, tasting, smelling, and feeling, we shall pass them over, only remarking, that they are all erroneous, and in general different from each other.

Soon after Aristotle, appeared HEROPHILUS, and ERASISTRATUS, who lived in the times of Ptolomy Sotor, and Ptolomy Lagus. These are said, to be the first who dissected human bodies, in order to contemplate the parts, and their uses. (a) It is reported, that these two physicians dissected men alive. The principal parts of their anatomy is to be found in the works of Galen. And it is imagined, they were the first who dissected and distinguished the nerves, of which, he said, there were three sorts. Nerves that are the immediate organs of sensation, and ministers of the will, arising from the brain in branches, and were a part of the medulla spinalis. The second proceeded from some of the bones, and terminated at others of them. The third, arose from some of the muscles, and terminated at others of them. By this it appears, that Herophilus gave the name of nerves to those parts, which were afterwards called ligaments, and tendons. He gave the name of optic pores, to the nerves of the eye. He imagined the reasonable soul was lodged in the ventricles of the brain. But one of his principal discoveries, was, his finding certain veins in the mesentery, which according to him, were destined to nourish the intestines, which do not, like the other veins, go to the *venæ portæ*, but terminate in certain glandular bodies. Erasistratus likewise discovered something of the same nature, which are now called the lacteal vessels. And as he learnt anatomy, not by reading books, he invented new names, giving names to parts that before had none.

He called the first intestine, or that which is next the stomach, *Δωδεκαδάκτυλον*, because it is twelve inches in length.

It was Herophilus who first called two tunics of the eye, the tunica retina; and the tunica arachnoides; he also called that membrane that lines the ventricles of the brain, the membrane choroides, because he saw it resembled the chorion, which covers the fœtus in the matrix.

He gave the name of *glandulæ parastatæ*, to those glands which are situated at the root of the penis.

He stiled these *parastatæ glandulose*, to distinguish them from other *parastatæ*, which he called *varicose*, and which he placed at the extremity of those vessels, which convey the semen from the testes; or rather as it is thought to prepare it.

The

(s) De partib. animal. lib. 3.

(u) Histor. animal. lib. 3. cap. 7.

(y) De part. anim. lib. 3. cap. 7.

(t) De part. anim. lib. 2. cap. 7. De sommo. and vigilia. cap. 5.

(x) De partib. animal. lib. 2. cap. 7.

(z) De gener. anim. lib. 1. 1 cap. 10.

(a) Celsus proof.

The authority of Herophilus was so great in anatomy, that almost all the names he assigned to the different parts are still preserved.

The principal discoveries of Erasistratus, was his finding out certain white vessels in the mesentery of sucking kids, which he believed to be arteries. (b) He added, that these vessels seemed at first to be full of air, and afterwards chyle.

Erasistratus, and Herophilus, were the first who knew the true and genuine use of the brain, and nerves; or, at least, the uses ascribed to them by all succeeding anatomists. (c) We examined, says Erasistratus, what the nature of the human brain was, and we found it divided into two parts, as it is in all other animals. It had a ventricle, or cavity, of a longitudinal form. These ventricles had a communication with one another, and terminated in a common opening, according to the contiguity of their parts, reaching afterwards to the cerebellum, where there was also a small cavity; but each part was separated from the other, and shut up in its proper membranes; and the cerebellum, in particular, was wrapped up by itself, as well as the brain; which by its various windings, and turnings, resembled the intestinum jejunum. The cerebellum was, in like manner, folded and twisted different ways, so that it was easy to know, by seeing it, that, as in the legs of swift running animals, such as the hart, hare, and some others, we observe tendons and muscles, well calculated for that purpose; so in man, who has a larger share of understanding than other animals, this great variety and multiplicity of foldings in the human brain, was undoubtedly designed for some particular end. Besides, we observed, continues Erasistratus, all the apophyses, or productions of the nerves, which come from the brain; so that, to say all at once, the brain is visibly the principle of every thing that passes in the body; for the sense of smelling proceeds from the nostrils, being pierced, in order to have a communication with the nerves. The sense of hearing is also produced by the like communication of the nerves with the ears. The tongue, and the eyes receive also the productions of the nerves of the brain.

Here we see, by the confession of Erasistratus himself, that he had dissected men. (d) He had also very accurately described in Galen's opinion, the membranes that are formed at the orifices of the heart; and he maintained with Aristotle, that the veins and arteries drew their origin from it. There are, says he, certain membranes inserted in the orifices of the vessels of the heart, of which the heart makes use, either for the reception, or expulsion of such substances as either enter into it, or come out of it. Some, adds Galen, have been so rash as to deny that there were such membranes, and have considered them as fictions of Erasistratus, or a kind of hypothesis invented to support his own system.

But these membranes are so well known by anatomists, that none but novices in the art, are ignorant of them. There are, continues Galen, three of these membranes at the vena cava, which resemble the points of arrows; whence some of the disciples of Erasistratus, have called them *Τριγλῶκινες*, tricuspides. There are also at the orifice of the arteria venosa, for so I call the artery which, rising from the left ventricle, dispenses itself in the lungs, membranes of a like form, but of different names, for that orifice has only two membranes. The other two orifices, I mean that of the vena arteriosa, and that of the arteria magna, have also each of them three membranes, resembling the sigma of the Greeks, which resembled our C.

Here Galen, ceasing himself to speak, again introduces Erasistratus, saying, that these two last orifices are equally disposed to convey any thing from the heart; that through the former the blood flows to the lungs, and through the latter the spirits, in order to be distributed through the whole body. (e) Thus it happens, continues Erasistratus, that these membranes, alternately perform opposite offices to the heart.

Those that are adherent to the vessels by which substances are carried into the heart, bend inwards, that they may yield to the impetuosity of such things as are carried towards them, and lying in the very cavities of the heart, may open its entry for the introduction of such substances as are attracted to it. For we have no reason to imagine, that such substances enter the heart of their own accord, as if it were an inanimate receptacle; but the heart, by its diastole or dilatation, draws them to it, as the blacksmith's bellows does the air; and in this manner the heart is filled. The membranes of those vessels, on the other hand, which serves to convey things from the heart, are quite differently disposed and situated; so that, yielding easily to the substances coming from the heart, they open their orifices, and allow nothing to return which is once forced out, just as the membranes of the vessels, that serve to introduce things into the heart, shut the orifices of these vessels, upon the heart, contracting itself, and allow nothing to be carried out, which is once thrown in.

2

He

(b) Galen an sanguis sit natura in arteriis, cap. 5. it administrat. anat. lib. 7. cap. ult.

(c) Galen.

(d) De Hippocrat. et Platon. Decret. lib. 1. cap. 10. and lib. 6. cap. VI.

(e) Here some part of the text seems to be wanting.

He affirmed, as did Praxagoras before him, (*f*) that in a natural state, the arteries contained no blood; and, that they, as well as the left ventricle of the heart, were only filled with air. It was easy to give him the testimony of his own eyes for this error; but he had recourse to this subterfuge. As soon, said he, as we open the left ventricle of the heart, that air, or spirit, is evaporated before we can observe it; and the ventricle is instantly filled with blood; and he asserted the same of the arteries. (*g*)

Galen says, that Erasistratus maintained, that the great vein was the reservoir of the blood; and the great artery that of the spirits. (*h*) He added, that after these reservoirs had divided themselves into many branches, they became smaller, and their number greater; and that, as there is no place in all the body, where any of these branches terminate, that has not a smaller branch, which receives what was brought to it by the larger; so it happens, that before these vessels arrive at the surface of the body, they divide themselves into branches, so small and minute, that the blood they contain cannot pass through them; so that, adds our author, though the mouths of the arteries, and veins, be very near each other, yet the blood keeps itself within its proper bounds, without entering the vessels in which the spirits flow; and in this case, the animal remains in its natural state. But, when any violent cause happens, to disturb this œconomy, the blood forces itself into the arteries, and proves the source of disorders. Among the causes now mentioned, too great a quantity of blood is the principal; for, in that case, the coats of veins are dilated more than ordinarily, and their extremities, which were formerly shut up, are opened; whence follows a transfusion of blood, from the veins into the arteries; and this blood, by its irruption, opposing the course and motion of the spirits, which come from the heart. If this opposition be direct, and immediate, or if the blood stops in a principal part, this causes a fever; but if the spirit should happen to drive it backwards, so that it does not pass the extremity of the artery, in that case, an inflammation of the part is only produced.

As to the inflammation and fever, which happen in wounds, they are also occasioned by the sudden evacuation of spirits, which is the consequence of cutting the artery, and forces the blood continually into the place of the spirits, least there should be a vacuum.

Erasistratus used this comparison to support his system. As the sea, says he, which remains in a calm, when she is not ruffled by winds, swells in an extraordinary manner, and overflows its shores, when the wind blows hard; so the blood moving in the body, departs from its ordinary canals, and enters into the reservoirs of the spirits, where it afterwards becomes warm, and puts all the body, as it were, on a fire.

With regard to respiration, he maintained, that it was only useful to animals, by filling their arteries with air; which is the consequence of his former hypothesis; and he imagined it was performed in this manner. When the thorax, or breast, dilates itself, the lungs are also dilated, and filled with air. (*i*) This air passes to the very extremities of the asperia arteria; and from them, to those of the smooth arteries of the lungs, from which the heart draws it, when it dilates itself, to carry it afterwards through all the parts of the body, by means of the great artery. When it was objected to him, that the heart moved in its ordinary manner, when a person retains his breath, he answered, that, upon that occasion, the heart drew air from the great artery. To this it was replied, that the membranes which adhere to the orifice of this artery, will not so much as allow it to return from it to the heart. But he thought to extricate himself, by saying, that though this was the case in a natural state, yet it did not follow, that it must be so during the time a person retains his breath, which is a state of violence, and consequently cannot last very long.

Erasistratus also entertained a very singular opinion, with regard to the manner in which the aliments are prepared in the stomach. He thought, that the stomach contracts itself, that it may more closely embrace the food, and break its texture; that trituration corresponding, according to him, to the concoction of which Hippocrates speaks. And with regard to the chyle, that is the juice of the aliments, extracted in the stomach, he maintained, that passing from the stomach to the liver, it arrived at a certain place, (*k*) where the branches of the vena cava, and the extremities of the vessels, which are connected with the reservoirs of the bile, equally terminate; so that the parts of the bile insinuate themselves into the orifices of these two kinds of vessels, according as these orifices are disposed to receive them; that is, every thing of a bilious quality in the chyle,

(*f*) Galen. an sanguis sit natura in arteries.

(*h*) De venesectione. advers. Erasistrat.

(*k*) Galen. de facult. natur. lib. 11, cap. IX.

(*g*) Ibid. & Platon. Deut. lib. 1. cap. VI. & de venesectione. advers. Erasistrat. cap. III.

(*i*) Galen. de usu respirat. cap. I.

chyle, passes into the canals connected with the reservoir of the bile, and the pure blood passes into the vena cava, and taking another course, is separated from the bile. (l) Galen makes Erasistratus say, that the veins are divided in the liver, for the separation of the bile.

Erasistratus owned, that the urine was separated in the kidneys; but he did not acknowledge, with Hippocrates, that it was done by attraction; for he entirely rejected this sort of attraction, though he, in no place, explains himself with regard to the manner in which the separation is made. Some of his first followers believed, as Galen informs us, that the parts above the kidneys received only pure blood; that what is aqueous, or charged with serosities, tends downward by its own weight; and that after this blood is separated from the aqueous, and useless part, it is carried to the parts above the kidneys to nourish them.

It is necessary to observe, that Erasistratus rectified Plato, on the use of the arteria trachea, through which Plato imagined the drink was carried, in order to water the lungs. This opinion was common to Plato, with Philistion, and Hippocrates, and the most eminent physicians of that age. (m)

Herophilus, and Erasistratus, were the only persons, who among their cotemporaries, had the advantage of being allowed to dissect a competent number of the bodies of condemned criminals, by the special concessions of two kings; both of them courageous and learned; both of them formed to magnanimity under their master, Alexander the Great, and who, after his decease, became the founders of two flourishing kingdoms; the one, Ptolemy, of Egypt, who kept near him Herophilus; the other Seleucus, of Syria, who with a most ample salary, as Appian informs us, retained, to his immortal honour, Erasistratus at his court. (n)

OBSERVATIONS.

THE protection of princes is absolutely necessary for the improvement and cultivation of science. Alexander the Great, for his liberal attention to the erudite Aristotle, and favours to the arts; and the Ptolemies for their solicitude in encouraging learning, have immortalised themselves. Whoever royalty favours, the magnates imitate, in all courts, and an attention to science becomes the order of the day.

Those are the wisest princes who promote the cause of literature; those the weakest, who suffer learning and learned men to perish. Where the arts flourish, a government is likely to obtain permanency; but where ingenious men and literature, are neglected, it may rouse a dangerous spirit, subversive of empire. The same arts, which render a reign glorious, may, under oppression, create dissatisfaction, tumult, and rebellion; it therefore becomes an indispensable duty in princes and nobles, to shower their favours on the really ingenious, who are better enabled to promote royal interest, than the servile flattering sycophants, who often receive approbation, when they deserve punishment. Alexander said, by means of my parents I came into the world, but Aristotle has made me a MAN. The intellectuals of the great Stagyrte, however defective in human anatomy, was a prodigy in science and critical learning; his poetics, logics, and other works, demonstrate sublimity of genius, and industry unparalled.

ON ÆSCLEPIADES, AND OTHER EMINENT PHYSICIANS.

LET us now take a view of the practice of medicine amongst the Romans; for these people, from an inconsiderable origin, became the greatest nation on earth. Their increase of wealth, power, and territory, was gradual, and for several ages from the building of Rome, they were continually engaged in war. Effeminency and luxury had not prevailed; the art of medicine was found unnecessary, and there were few or no physicians amongst them. But as they extended their territory, wealth flowing from all quarters, luxury, extravagance, and supineness, succeeded their natural frugality, simple diet, and athletic exercises.

(l) De usu part. lib. IV. cap. 13.

(m) See Aulus gellius, Plutarch and Macrobius;

(n) Wars of Syria, vol. II.

exercises. As the sciences were cultivated, the manners of the whole people changed; diseases were common, and, of course, physicians received encouragement.

It is said, that Arcagathus, the son of Lysanias, the Pelloponessian, was the first physician who arrived at Rome, under the consulship of Marcus Aurelius, and Marcus Livius, in the year of the city 535. (a) It is said, he had the freedom of the city bestowed on him; and that the public had, at their own expence, purchased a shop for him, in the street Aceilius, that he might exercise his profession with greater advantage. At first they gave him the surname of Vulnerarius, or the healer of wounds; and his arrival was very agreeable to the people: but that soon after, his practice of burning and cutting, appearing cruel, they exchanged his former surname, for that more infamous one of executioner; from which time they conceived an implacable aversion to physic, and all its professors.

To this authority of Pliny, has been opposed that of Dionysius, of Halicarnassus, who, in his tenth book, says, the plague beginning to appear in Rome, in the year of the city 301, and happening to rage more violently than any other plague with which they had been afflicted in the memory of man, it carried off almost all the slaves, and half the citizens, the physicians not being able to attend, and take care of such a large number of patients. According to this, it has been imagined, that, contrary to what Pliny had advanced, there were physicians two hundred years before the period mentioned by Pliny. To reconcile these two authors, it is supposed that Pliny here means Greek, or foreign physicians. But he says, afterward, in order to be convinced of the aversion the Romans, in those days, had to physic, we need only hear the sentiments of Marcus Cato upon that point, who lived seventy years after Arcagathus, and who was a man, as we may say, who had the honour of a triumph decreed in his favour, and the dignity of the censorship; which office he bore, and are the least striking parts of his character, since so many other circumstances concurred in his person, to render him venerable and awful. The following are his words, taken from a letter to his son. I will tell you, my son Marcus, at a proper opportunity, what notion I entertain of these Greeks, and what I think most valuable in Athens. It is not improper to study their learning and sciences cursorily, but it is by no means necessary to make ones self a compleat master of them. I shall say no more at present of that wicked, arrogant race; but persuade yourself of this, as much as if an oracle had spoken it, that as soon as this nation has communicated her learning to us, she will spoil and corrupt Rome; and this dire event will be more easily effected, if she continue to send her physicians to us. They have sworn among themselves, to kill all the barbarians, by means of their art, and still they exact a fee for their pains, from the patients to whom they are called, that they may gain their confidence more effectually, and consequently have it in their power to destroy them, with less danger of suspicion. They have such a degree of insolence, as to call, not only other nations, but us, barbarians; nay, they carry their arrogance farther, and stile us ὄπριον, rude, and strangers to politeness. In a word, my son, remember that I have discharged you from having any thing to do with physicians.

It is plain, from the language of Cato, that in his restriction, he only meant foreign physicians. And Pliny says, must we then believe that Cato condemned a thing so useful and beneficial as physic? Assuredly not; since he himself vouchsafes to inform us, by the use of what medicines he and his wife had arrived at such an advanced age; and that he had written a book, in which he lays down the method of his practice, with regard to his son, his slaves, and even his cattle, when they were indisposed.

The Romans, then, were not without some practitioners in medicine; but, in all probability, before the arrival of Arcagathus, they only used that natural physic, which we may suppose to be practised by the infant world.

Cato must have had faith in some superstitions, as will appear by the following curious formula, of words to be pronounced for the cure of a dislocation; but because there is no possibility of translating it, we shall deliver them in the manner of the author.

Luxum si quod est, hae cautione sanum fiet. Harundinem prende tibi viridem, p. 4. aut. 5 longam. Mediam diffinde, et duo homines teneant ad Coccendices. Incipe Cantare in alio. S. F. Motas vata Darics Dardaries, Astataries Dissunapitur, usque dum coeant. Ferrum insuper jactato. Ubi coierint, & altera alteram tetigerit; id manu prende, & dextra sinistra præcide. Ad luxum aut Fracturam alliga, sanum fiet, & tamen quotidie cantato in alio, S. F. vel Luxato, vel hoc modo, huat, hamat, huat, ista, Pista,

(a) Pliny, lib. 29. cap. 1.

Pista, sista, domiabo, damnaustra, & luxato. Vel hac modo, haut, haut, haut, ista, sis tar sis ardannabon dunnaustra. Cato de re rustic. cap. 160.

Pliny also informs us, that Cato, in his practice, made a great deal of use of cabbage, in which he observes, the whole *materia medica* of the Romans chiefly consisted, for six hundred years.

Cicero informs us, that poetry was not introduced among the Romans till very late; (*p*) and, that even philosophy, had been in great disrepute till his days. Suetonius also affirms, that grammar was not at all in use among the first Romans, much less was it esteemed and valued (*q*) because the people of those days were as yet savage and unpolite, and so thoroughly addicted to the business of war, that none applied themselves very much to the liberal arts.

The next considerable physician to be mentioned is Asclepiades, who flourished at Rome, and was cotemporary with Mithridates, king of Pontus. The ancient writers, in whom the mention of him is to be found, so far as is come to our knowledge, are, in number, twenty-seven, eleven of whom were Greeks, and sixteen Latins. Of the eleven Greek writers, there are five physicians, Cassius, Erotianus, Galen, Oribasius, Ætius; three philosophers, Plutarch, Sextus, and Stobæus; two geographers, Strabo and Stephanus; and one divine, Eusebius. Of the sixteen Latin, there were five physicians, Celsus, Seribonius, Cælius Aurelianus, Marcellus, Theodorus; three philosophers, Cicero, Seneca, Chalcidius; six miscellaneous, Pliny, Apuleius, Censorinus, Macrobius, Martian, and Cassiodorus; two divines, the supposed Clement, and Tertullian.

In some of the testimonials of the above-mentioned writers, there are moreover to be found quotations concerning him from ten other writers, nine Greek, and one Latin, whose works, at least those that speak of him, are lost. Five of them were physicians, Athenæus Attalensis, founder of the order of the spiritualist, or the pneumatic sect, who would all diseases arise, from a spirit suffering, but what this spirit is, or meant, no one hath yet discovered. Menodotus Empiricus, Autrodorus, Moschion, and Soranus; two were philosophers, Antiochus, preceptor to Cicero, and Athenodorus, to Augustus; two historians, Varro, and Herennius Philo; and one divine, Dionisius, bishop of Alexandria.

Of the aforesaid twenty-seven writers, actually now extant, there are only four, who have written any thing at large concerning him.

Celsus, who was a great admirer of Asclepiades; he often quotes him with approbation; and, if sometimes he may not agree with him in opinion, he gives the reason of his dissent with the most decent respect.

The next author who writes much of Asclepiades, is Pliny, who for his entertainment compiled a great book of natural history, containing a prodigious medley of natural, moral, and historical particulars, extracted, according to his own account, from above two thousand books, the originals of which are almost all lost; a circumstance that renders him the more valuable to us. But many allegations of Pliny, or as they appear in his book, being examined by men of letters and judgment, are not to be found very exact, so that he is not to be quoted or resorted to without great caution.

It is particularly observable in him, that he meddled much with physic, which he had never practised, or could have any grounds in it, since he himself declares that the medical art was the one of the Greeks arts that had not yet been exercised by the Roman gravity. (*r*) He then pretends to discover the mysteries of it, by producing some recipes from the Greek books; and by this means aims at rendering the professors of that nation useless; against whom he seizes every occasion, to manifest a very illiberal envy, and a desire of lessening, as much as possible, their authority. This is what he has particularly attempted, as to Asclepiades, who was dead many years before; unless, indeed, it may be believed, that what he says, being rarely original, (*s*) he may have copied some writer cotemporary to that great man; and what is not uncommon, an envious and malignant detractor from his merit. We are, however, obliged to Pliny for many particulars, which, without him, might probably have remained unknown.

The third author who makes mention of Asclepiades, and that for the most part with disapprobation, is Cælius Aurelianus, of the town of Sicca, in Africa, of whom we have a treatise of physic, in a rough and barbarous Latin; in which he professes himself little more than a translator of Soranus, who flourished in the beginning of the second century. He is, however, estimable for his quotation of authors, whose works are lost; as to what appears of his own stock, it is not of much value. To judge by his stile, he would appear to be of the fifth century, but by certain sentences and quotations, most people are inclined

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clined

(*p*) Tascular. quest. lib. 1.

(*q*) De illust. Grammaticis.

(*r*) Lib. XXIX. cap. 1.

(*s*) What Pliny has written concerning Asclepiades, may have been copied from some malignant detractor.

clined to consider more ancient. The fourth is Galen, who lived towards the end of the second century, whose character is well known, as well as the liberty he unfortunately allowed himself, of often wrongfully criticising all the most illustrious physicians, since the time of Hippocrates; so that his greatest merit consists in the fragments of the ancients, whom he quotes, for the most part, in order to refute them. This honour he frequently does to Asclepiades, whom, in other respects, he allows to have been most ingenious, most learned, and eloquent, to the highest degree; but an adversary to his peripatetic system of theory.

Besides these testimonials of authors, and of common fame, there is still remaining a beautiful *antique busto*, intire, and exhibited to the public view; (*t*) in that magnificent collection in the museum of the capital of Rome, bare headed, his hair short, without a beard, and with a cloak, or pallium, such as the Greek sages wore, and with Greek letters on the face of the square antique basis, expressing his name. This busto was discovered in the beginning of this century, under ground, within the walls of Rome, near the Porta Capena, where, not improbably, it might have anciently served for a decoration of some portico, some library, some school, or public building, in that principle quarter of the city.

From the authority of these documents only, it remains for us to trace out the conduct and opinions of this celebrated physician, by collecting together the scattered accounts, and by deducing from thence the most probable conjectures. We must, in the first place, ascertain, with all the exactness in our power, the time in which he flourished.

The ancient writers, who, generally speaking, were much less accurate in their chronological disquisitions than we are, furnish us only such imperfect lights, as rather fix our doubts, than remove them. (*u*) Pliny says, he lived in the time of Pompey, which may be seen repeated by almost all the moderns who have mentioned him.

But the authority of Cicero, rather induces us to believe that Asclepiades was somewhat more ancient, and that he belonged to the times preceding those of Pompey; because in his dialogue on the orator, he makes Lucius Crassus speak of him as one already dead. (*x*) Now this dialogue, though it was written by Cicero, when he was fifty-two years of age, that is, in the six hundredth and twenty-eighth year of the foundation of Rome, was* feigned to have been spoken in the consulship of Phillipus, that is, in the six hundredth and thirty-third year, when Cicero was about thirteen years of age, so that he not being present at it, he makes it recited to him afterwards by Cotta, who was one of the interlocutors in it; and who died in the six hundredth and eightieth year of the foundation of Rome.

In this dialogue then, Cicero does not appear to speak in his own proper person. He puts what he had to say in the mouth of Lucius Licinius Crassus, at whose country seat he lays the scene of the conversation. As to this Crassus, who was a senator celebrated for his great eloquence, as well as his political knowledge, and who was at that time forty years old, and died a few months after, Cicero makes him say many things alluding to the circumstances of the times; and among other men of merit, he makes him mention Asclepiades, as having been his physician and friend, as well as other worthy and noble personages of the dialogue, among whom was Quintus Mutius Scevola, who must, at that time, have been far advanced in years, and was a most celebrated civilian; and Marcus Antonius, a great orator, who died four years after, and was grandfather to the famous Mark Anthony the triumvir. So that it is not credible, that if Asclepiades had been then alive, or had lived any time after, Cicero would have committed so superfluous an anachronism, he, who was not used to take such liberties as Plato often did in his dialogues; as if in his disregard for chronological exactness, he had meant them the more to resemble dramatic compositions.

While Cicero, on the other hand, on more occasions than one, declares himself a scrupulous observer of the laws of probability and propriety, to which he also kept up in the other parts of the same dialogue: so that, to those personages of the dialogue, and not to Cicero himself, should we attribute the personal knowledge, or acquaintance of Asclepiades. Cicero must have been too young, and yet almost all the moderns, who have mentioned Asclepiades, have failed of making this due distinction.

And as Pompey was by some months younger than Cicero, the expression of Pliny placing Asclepiades in the time of Pompey, cannot be otherwise solved than by understanding it, of the first fifteen years of his life.

But this not appearing to be the natural sense of that phrase, it may be more reasonably suspected, that this is one of the usual

(*t*) Blass. Caryophil. diss. miscell. Rom. 1718. p. 331. and Io. Bottarimus. Capitolin. tom. 1. Iav. 3. Rom. 1741 and 1750.

(*u*) Lib. XXVI. cap. 8.

(*x*) De oratore. I. 62.

usual chronological inaccuracies of Pliny; and that perhaps, he supposed Asclepiades to have lived in the time of Pompey, because he had seen some of his medical writings or consultations, sent to Mithridates, whose total overthrow and extinction, had been the most renowned exploit or achievement of that magnanimous Roman. Even those very writings of Asclepiades, addressed to Mithridates, and those invitations to him from that king, by means of his ambassadors, at Rome, which he would not accept, as Pliny himself intimates, furnish another reason to conclude, that, that physician must have been sufficiently advanced in reputation, (*y*) and well established in Rome, and even famous over the whole world, many years before Pompey's time; since it is not likely that there should have been that intercourse through his ambassadors, unless before the alienation of Mithridates, from his friendship with Rome, and before he had declared himself their open and atrocious enemy, which, according to history, must have been about the year of Rome, 660.

But leaving every learned reader to his own opinion on this subject, we will speak of the author himself and his particular doctrines.

With regard to his philosophical notions we may see that they were different from those of Epicurus and Democritus; (*z*) though all these acknowledged atoms: for the atoms of Asclepiades were divisible; whereas those of Democritus and Epicurus were supposed incapable of being divided. But Galen says, that Asclepiades adhering to the sentiments of Democritus and Epicurus, with regard to the principles of bodies, (*a*) had only changed the former names of things, calling atoms molecules, and a vacuum pores. And in another part, he says, (*b*) whether the bodies of animals are composed of molecules and pores as Asclepiades believed, or of small indissoluble particles, as Epicurus imagined, &c.

Asclepiades is said to have written a book on aliments, another on respiration on the pulse; (*c*) and it has been supposed that he wrote on the nature of the soul, and on various diseases; but only fragments of this author have reached our time. Asclepiades gained his great reputation from the mildness of his practice: for he enveighed strongly against vomits, and all cruel practices; such as thrusting a steel instrument down the throat to clear the passage in the angina. (*d*) Purging he was likewise averse to, and remonstrated vehemently against it. Till the days of Asclepiades antiquity stood it well out. In vain did Herophilus advance his refined speculations; neither he, nor any of the like character were followed universally, and considerable remains of ancient physic supported themselves with all the authority they had ever acquired. But the second Æsculapius, having reduced all the learning of a physician to the knowledge, or investigation of the causes of diseases; physic, which was at first an art founded on experience, became conjectural and entirely changed its appearance.

Pliny says, his mild gentle methods were the cause of his obtaining a strong party in his favour. The chief methods were, abstinence from food, from wine on certain occasions, frictions, walking, and gestation. As people perceived they could easily submit themselves to these, they judged the physic of Asclepiades so much the better for being easily practised. Pliny likewise insinuates that he had some artful stratagems peculiar to himself; such as promising the people wine, and actually giving it on many occasions; and likewise allowing them to drink cold water to refresh themselves.

But whatever was the fate of his writings and doctrines, it is plain that great praise has been given him by the greatest part of those who have mentioned him.

No one denies him the honour of being one of the few principal institutors of the medical part. And on that supposition, and in that light, he is spoken of even by those who shew themselves the least favourable, such as Aurelianus and Galen.

But some more distinctly and expressly, as Apuleius, (*e*) for example, have called him the prince, or head of all other physicians, Hippocrates excepted; and by Antiochus, the philosopher, he was said to be second to no one in physic, (*f*) and deep skilled in philosophy. By Celsus he was held to be a great author, (*g*) and proper to be followed in many things. (*h*) By Scribonius, he was reckoned an excellent author: (*i*) by Marcellus, a most able physician, and memorable for his doctrines; (*k*) by Strabo extremely learned, by Cassiodorus; (*l*) eloquent by Cicero; (*m*) sagacious and wonderfully persuasive by Pliny; (*n*) and an exact, polite, and powerful reasoner, by Galen. (*o*)

From

(y) Pliny, lib. VII. cap. 37.

(z) Celsus Aurelianus Auctor. lib. I. c. 14.

(a) De Theriac. ad Pison. cap. 11.

(b) De Hippocrat. and Platon. decret. lib. V. cap. 3.

(c) Galen de Element. lib. II. vol. I. p. 56. v. 36, 35.

(d) Pliny, lib. XXVI. cap. 3.

(e) Florid. p. 162.

(f) Sext. Empiric. lib. VII. p. 112.

(g) Lib. IV. cap. 4. De faucium exul. ceratione.

(h) Epist. 3.

(i) Cap. IV.

(k) Lib. XII. p. 566.

(l) Vol. II. p. 509.

(m) De orat. I. 62.

(n) Lib. XXVI. cap. 3. Sect. VII.

(o) Vol. I. p. 335. 11. p. 458. v. p. 345. &c.

From the extinction of the ancient literature, which happened about the sixth and seventh century, of the Maistian æra, when the greatest part of the Greek and Latin books were lost; it was until the sixteenth century that the fame of Asclepiades lay dormant, in the obscurity of silence.

Asclepiades treated of the faculties which are called natural; that is to say, of nutrition, and generation. In another work, divided into several volumes, which he called preparatory, he wrote also considerations upon the doctrine of Erasistratus, which were then most currently received.

From these books, of which there are to be found many small fragments in Aurelian and Galen; it may seem that Asclepiades had amply explained all that contributes to compose the institutes of physic, and that he renders the first, and what is called the scientific part, complete. But he moreover, in those works, laid the foundations of the second part, or branch, more profound, more abstruse, and more interesting; which consists in the knowing intimately the nature and essence of diseases. Upon this subject he was more extensive, having written a book of definitions, a commentary upon some of the short, and obscure works of Hippocrates; a treatise on periodical fevers, and three on febrile disorders, either inflammatory, or quick, commonly called acute. He wrote some books, also mentioned by Aurelian, upon the plague, comprehending under that name, not only dangerous and mortal distempers, but slighter ones produced by some extraordinary occasion, but common to the inhabitants of any particular place. (*p*)

He treated besides of some slow, or chronical disorders, such as the gout, and the dropsy. He also wrote upon hemorrhages, and on the alopecia, that disorder in which the hair comes off, through the universally bad state of the humours. Galen quotes a long and valuable fragment from him upon this distemper. It is to be observed that Plutarch, on the authority of the philosopher Athenodorus, assures us that it was in the time of Asclepiades that the hydrophobia, and the elephantiasis, made their first appearance in the world. There is also to be found in Cassius, and Galen, the quotation of a book of his upon ulcers, which perhaps was a commentary upon the one of Hippocrates under that title.

Pliny, (*q*) Sextus, (*r*) Aurelian, (*s*) and Apuleius, (*t*) seem to have agreed in referring to a famous treatise on the method of giving wine in distempers; and Aurelian quotes one upon clysters, from which, some have imagined that Celsus has taken his sentiments, which are now esteemed as the most rational practice.

He likewise wrote on the means of preserving health, and of prolonging life; upon which there is mentioned by Celsus, (*u*) and Aurelian, (*x*) a celebrated work of his, addressed to Gemini, in which he condemned the purgative and emetic medicines; and the too complex, and artificial exercises of the gymnastic schools, maintaining that the best remedy for plentitude, or a plethora, was abstinence; while he commended a discreet freedom, and variety in life. Hence it is, that we have reason to imagine, Celsus took his most judicious and excellent first chapter on physic; and Plutarch, in his discourse against drugs, which abounds in salutary precepts. Upon this subject, it is probable, that those books were written, which he sent to Mithridates, and which Pliny mentions to have been in current reading in his time. (*y*)

It is said by Galen that he introduced into physic, the opinion that the human body suffers a continual alteration, by the particles that perspire from it; so that it can never be pronounced absolutely the same two instants together. This philosophical idea of the perpetual immutation of the human body, has given rise to several curious arguments among the civilians.

The disciples and followers of Asclepiades, must probably, have been many, since the most celebrated physicians, who flourished for three or four generations after, are said to have been of his school.

Thus, Alexander Philalethes, who, as Strabo says, was, in his time, at the head of the Herophileans Asia, (*z*) and is quoted by Galen and Aurelian, as an author in high esteem; (*a*) we find by Theodorus, Priscian to have been a disciple of Asclepiades. Philonides, a physician of Durazzo, quoted by Scribonius, by Dioscorides and Galen, we find commended by Herennius Philo, and Stephanus, as an author of forty five books, and as a scholar of Asclepiades, much esteemed in that city,

(*p*) Aulietor. XI. cap. 39. p. 136. numb. 231.

(*r*) VII. p. 308. adv. logicos. No. 91.

(*t*) 4 Florida. p. 362. v. 13.

(*s*) Acutorum. I. c. 15. p. 44. et Chronie. II. cap. 8. p. 386.

(*z*) XII. 980.

(*q*) Lib. XIV. cap. sect. 9. and XXIII. cap. sect. 22.

(*s*) 3 Acutorum. lib. 1. cap. 15. p. 58. et lib. 11. c. 29. p. 144.

(*u*) I. c. 3. sect. de his. quæ exten. corp. p. 24.

(*y*) Lib. XXV. cap. 11. sect. III. p. 375.

(*a*) IV. 315. B. Edit. ald.

city, which was then very populous and free, bordering near upon Italy, where Cicero passed the greatest part of the time of his short exile, being kindly received there.

The same Philo mentions, in the same place, two other scholars of Asclepiades, of whom one was Titus Aufidius, who is also quoted as such by Aurelian; and the other, more illustrious, was Nicon, the Agreentine, quoted by Celsus, and praised by Cicero, in one of his letters to Trebatius, for the gentleness of his medical method, of whom he mentions, with pleasure, to have read a book of his own veracity, which he had but just before seen. (b)

In that same letter of Cicero, there is also mention made of Bessus, as a friend and physician to himself, as well as Trebatius. Now it should seem, that this was Tullius Bassus, who, Dioscorides says, was of the school of Asclepiades, and had wrote upon plants. (c) Pliny intimates, that he wrote in Greek, (d) and Aurelian quotes a book of his on the hydrophobia, and calls him withal a friend of Niger. (e)

But that disciple of Asclepiades, who obtained the greatest celebrity, was Themison, of Laodicea, in Syria, of whom we have accounts in Celsus, Seneca, Aurelian, and Galen. They say, that after the death of his preceptor, he changed his system, and instituted a new sect, abandoned the research of the more abstruse, or hidden causes; and confining himself to observe, in the evident circumstances of distempers, the peculiarities common to many; so that he reduced them to certain few and summary kinds, giving to this his manner of examining, and noting the manifest, and essential resemblances, the name of method; from whence those who followed him were called methodists.

And such was the credit and facility of his doctrine, (f) that, as Seneca observes, he became the third archimandrite, or head of a physical sect, after Hippocrates, and Asclepiades, inheriting the great reputation of his master, in Rome, where he probably might live to see the beginning of the new government of it, under the Cæsars. And certain it is, that Augustus had, very early, for his physician, another follower of Asclepiades. This was Marcus Artorius, who had also the surname of Asclepiades. Galen mentions among the Asclepiades, Gallus, Metrodorus, Moschion, and some others, and, in general, says, that in his time, the sect still remained in some degree of reputation. (g)

The first persons that became eminent after Hippocrates and his sons, are, Diocles, Carystius, then Praxagoras, and Chrysippus, mentioned by Celsus.

After the time of these, there follows another epoch, and we must return to Egypt, where the study of medicine was then in the greatest pursuit, particularly at Alexandria; so that it was sufficient to establish the reputation of a physician, to have studied at Alexandria. It was in this place, that Herophilus, and Erasistratus, most celebrated men, professed medicine and anatomy. Celsus, tells us the following anecdote of them. "*Etiam nocentes homines a regibus ex carcere acceptos vivos inciderint, considerarintque, etiamnum spiritu remanente, ea, quæ natura ante clausisset, eorumque posituram, colorem, figuram, magnitudinem, ordinem, duritiem, molliem, levorem, contactum; processus deinde singulorum et recessus, sive quid inseritur alteri, sive quid partem alterius se recipit.*" Præfat VII. And Tertullian seems to have believed it, when he says, lib. de anima, cap. X. "*Herophilus ille medicus an lanius, qui Sexcentos exsecuit, ut naturam scrutaretur; qui hominem odit, ut nosset, nescio an omnia interna ejus liquido explorarit, ipsa morte mutante quæ vixerant, et morte non Simplici, sed inter artificia exsectionis.*"

But this report seems exaggerated, and is doubted by many. This, however, is certain, that Herophilus was a great anatomist, for he first saw the lymphatics, divided the nerves into three kinds, described the sinuses of the cerebrum tubæ of animals, and vesiculæ seminales; he also gave a name to the duodenum, to venous arteries, arterial veins, the retina and arachnoid membrane of the eye, the calamus scriptorius, torculer, and many other parts. The testimony of Galen may be added, who says, "*Herophilus reliquam medicinam perfecte callebat: sed in anatomica doctrina ad summum apicem pervenerat: hujusque tam præclaræ eruditionis partem non in bestiis, ut plerique alii, sed in ipsorum hominum corporibus sibi acquisiverat.*"

This same Herophilus either first brought into notice the pulse, or at least, illustrated it; and also dared to blame Hippocrates, because he had neglected it, or not sufficiently cultivated a knowledge of it. Hence, Pliny says of him, lib. IX. cap. XXXVII. "*Arteriarum pulsus in cacumine membrorum maximè evidens, index fere morborum, in modulos certos, legesque*

b b

" metrics,

(b) Epist. fam. 20. written in the year of Rome, 709.

(c) Lib. III. p. 233.

(d) Dioscorid. præf.

(e) Epist. 95.

(f) Lib. I.

(g) Vol. I. p. 94.

" *metricas per ætates stabilis aut citatus aut tardus, descriptus ab Herophilo, medicinæ vate miranda arte nimiam propter subtilitatem desertus.*"

And in another place, lib. XXV. cap. I. " *Omnes scholas damnavit Herophilus in musicos pedes venarum pulsu descripto, per ætatum gradus.*"

Herophilus was a native of Chalcedon, and had many celebrated pupils, who followed his doctrines. All his writings are lost; and the tenets and merit of this great man would have remained unknown to us, if Galen had not mentioned them. Praxagoras was his preceptor.

Erasistratus was also a Greek, but authors are not agreed about the exact place of his birth.

Macrobius says, he was the principal pupil of Chrysippus. He practised anatomy with great reputation, and saw the lacteals in the mesentery, as well as Herophilus. He was particularly versed in investigations of the brain and nerves; he had obtained a knowledge of the ventricles of the brain, origin of the nerves, and their distribution, as appears from a fragment of the work left by Galen: he also knew the origin of sanguiferous vessels to be from the heart, and the valves, both of the ventricles of the heart, and of the arteries, which were named, by him or his pupils, Tricuspid and Sigmoid, valves. Galen has likewise preserved a memorial of the use of these valves, from a treatise written by Erasistratus on fevers.

But he believed that spirit, or air only, was contained in the left auricle of the heart and aorta, which plainly proves the report of his having dissected men alive, to be incorrect, for he must then, have necessarily seen blood in the arteries. He thought that the air taken by the lungs, was carried to the left side of the heart, and thence flowed into the arteries; and that when blood found a passage into those vessels, destined to convey air, it caused inflammation; he was also acquainted with the Asynchronos of the heart, and motion of the arteries; and affirmed that concoction was performed by attrition. But as Herophilus looked for the cause of all diseases in a *morbo fluidorum*; so, on the contrary, Erasistratus considered all diseases to arise from a *morbo solidorum*, and attributed to plethora, great influence in producing complaints. He was too timid in bleeding and purging; but substituted exercise, frictions, baths, and abstinence; he had a great confidence in external cataplasms, fomentations, and ligatures on the joints. We are not in possession of the books of Erasistratus, but Galen has preserved some fragments. An account of the disciples of Erasistratus and Herophilus, may be seen in writers on medical history.

It is proper to observe, that in those times, according to Celsus, medicine was divided into three parts; the dietetic, which entirely consisted in the regulation of diet; surgical, which was effected by the hands and instruments; and pharmaceutical, which comprehended the treatment by medicine.

After Herophilus and Erasistratus, another sect began to flourish, which was self nominated empirical, the chief of which were, Serapio, of Alexandria; Philino, of Cos, whom Apollonius, Glaucias, Heraclides, of Tarentum, and many others followed, although some consider Acron, of Agrigentum, to be princeps empiricorum.

The introduction of medicine amongst the Romans, was about this time; they were very long in adopting the art, even when it was in great perfection in other countries.

If we may credit Pliny, there were no physicians at Rome, for almost six hundred years, from the building of the city, though medicine had been used before that time; he says, libro. XXIX. cap. I. " *Primum e medicis venisse Romam Peloponesso Archagathum Lysaniæ filium, L. Emilio et M. Livio Coss: anno urbis 585 eique jus Quiritium datum, et tabernam in compito Acilto emptam ob id publicè. Vulnerarium tradunt fuisse vocatum, mireque gratum adventum ejus initio, max a sævitia secandi urendique transiisse nomen in carnificem, et in tædium artem omnesque medicos.*"

Pliny then mentions Cato's hatred to Greek physicians, and relates the words in which Cato cautions his son to beware of them. The history of Archagathus cannot be denied, yet it is necessary to remember, that Pliny took every opportunity of abusing physicians; hence from a preconceived antipathy, he might have exaggerated the report that Rome existed six hundred years without them, as the contrary can be easily shewn. For in the year of the city, 321, on account of a pestilence, a temple was dedicated to Apollo, for the health of the public; and in the year 460, Æsculapius was carried from Epidaurus to Rome; and it is probable, that before the arrival of Archagathus, there were some physicians amongst the Romans, from the observation of Dionysius, of Halicarnassus, who mentions a destructive plague that raged at Rome, in the year, 282, and says, " *Quod contra medicamenta aliaque morborum lavamina contumax fuerit.*" And he speaks more particularly of that which raged in 301, and depopulated the city, and tells us that there was not a sufficiency of medical assistance to take the care of such

such a multitude of sick, nor attendants and friends to render their kind offices, by which many houses were obliged to be deserted. It appears then, that there were physicians at Rome, above two hundred years before the time of Archagathus; and Pliny must be understood to mean foreign, or Greek physicians; from these observations being misunderstood, arose the report, which some moderns have also propagated, that all physicians were expelled from Rome by the advice and authority of M. Porcius Cato; but this cannot be shewn from any ancient author, not even by Archagathus; and if it had been mentioned, it is certain, that Cato could have had no influence in the affair, since he was only fifteen years old when Archagathus came to Rome, who doubtless did not remain long, on account of his ill success. Some go still farther, and wish to explain, from this passage, in Pliny, that the physicians at Rome were vulgar people, servants, and men of a low situation in life; and that no real citizen practised medicine before the time of the Cæsars.

Middleton has used all his ingenuity to establish this opinion; but, on the other hand, many learned men, both in Germany and England, have come forward and shewn, from incontestible documents, that Middleton injudiciously confounded surgeons with physicians, who were free men and of higher rank, than the professors of the liberal arts; and although some physicians, from other nations, taken in war were captives, it does not follow, that all the physicians at Rome were slaves; it must, however, be confessed that medicine made a slower progress amongst the Romans, than in other nations.

Asclepiades, of Bithynia, came to Rome almost an hundred years after Archagathus; he was not descended from Æsculapius; he practised medicine with great repute by adopting a method, quite contrary from that of his predecessor; and we find by Celsus, that he promised to cure diseases pleasantly, with safety and dispatch; hence he completely changed the medicine of the ancients, and forbid all violent remedies, particularly emetics and purgatives; he used mild medicines, and prescribed abstinence from wine, and fasting, to the sick; he also recommended friction, walking, and exercises: sometimes he was more indulgent and permitted the use of wine, and frequently gave a draught of cold water, which considerably increased his reputation; and it appears that Asclepiades was in great esteem, as he was called by Apuleius, princeps medicorum, and inferior to none, except Hippocrates, and Lextus Empiricus; besides he was the physician and friend of Cicero, and was celebrated for his oratory, as well as physic.

At this time, there were other physicians at Rome, cotemporary with Asclepiades, and in some repute, as mentioned by Cicero.

Amongst the disciples of Asclepiades, who were numerous, the first most deserving notice is Themison, who, after being advanced in years, and wishing to render medicine more easy of comprehension, founded a new sect called methodists. He divided all diseases into three classes only, viz. tense, lax, and moderate: as if from these general principles, a knowledge of all diseases could be obtained. He had many followers from the faculty with which the medical science of this sect was acquired; and Thessalus carried it still farther, by asserting that the whole of physic might be learned in six months. All these men were pursuing a method widely different from the learning of Hippocrates, and indulged their own fancies.

But Celsus was the first of the Romans, who chiefly revived the doctrines of Hippocrates, and translated them elegantly into his own language, so that some have called him the Latin Hippocrates; he has not, however, exactly followed all his expressions; possibly from the Greek sentences not being easily rendered by Latin phraseology.

He is said to have lived under Augustus and Tiberius; he wrote eight books *de medicinâ*, in most elegant stile. Surgery is likewise interspersed in his works, and he always advances his own sentiments on the subject, which are sometimes opposed to others. He described so accurately lithotomy, with the situation and apparatus, that Professor Rau, the most celebrated lithotomist, when questioned about his successful method of operating, by which scarcely five in one hundred perished, recommended an attentive perusal of Celsus. He was a physician, but did not attend every one, some have, therefore, doubted whether he practised physic; yet it is probable that he administered the art to his friends, and a few acquaintances; his skill in medicine is evident from the frequent interposition of his judgment, in the different opinions and controversies of physicians in affairs of the greatest moment. There are various editions of his works, the best and most recent was lately published by Krause, at Leipsic, 1765, large octavo.

This was the state of medicine amongst the Romans, whilst it was cultivated at Alexandria, in Egypt, with the greatest attention by the disciples and followers of Herophilus and Erasistratus, whither Galen went to study medicine. But before we mention him, it will be proper to say a few words of Aretæus Cappadox.

He practised medicine in Cappadocia, although the exact time in which he lived cannot be defined. Some contend that he lived

lived before the Cæsars, because he wrote in the Ionic dialect, which afterwards began to fall into disrepute: but Le Clerc justly denies it; for Aretæus mentions the antidote against the bite of vipers, invented by Andromachus, physician to Nero, and the theriaca of Mithridates, by which it follows that he lived after Mithridates, and could not have been anterior to Andromachus.

Being acquainted with the dogmas of ancient physicians, he also assisted the art by his own labours, and was the first that reduced medicine into a system, by collecting every thing that had been written separately on diseases by Hippocrates, and other celebrated physicians, and compressing them into one volume; he has given us better and more correct histories of diseases, and more perfect cures than the physicians before his time; he was the first that used cantharides externally to raise a blister; he established the utility of bleeding, and regulated the quantity of blood necessary to be taken; pointed out the most convenient places to open a vein, and, in certain cases, recommended arteristomy. He wrote four books on the signs of acute and chronic diseases; and four books likewise on their cure. Boerhaave published the best edition of his works at Leyden, 1735, in folio, with the commentaries of Petit and other learned men.

The order of history brings us to Galen, omitting the authors of less note, after Celsus and Aretæus.

He was born at Pergamus, a city of Asia minor, in the one hundred and thirtieth, or one hundred and thirty-first year of Christ, in the reign of the Emperor Hadrian: his father's name was Nicó, under whom and other learned men, he learned philosophy, and the polite arts; he first studied in the schools of the Stoics, then of the Academics, Peripatetics, and Epicureans. Afterwards, when he was about seventeen years of age, by the advice of his father, he began to study medicine, and had various preceptors. When a young man, being desirous of farther information, he travelled to Alexandria, in Egypt, where the study of medicine was then in great repute; he remained there two years, and returned to Pergamus, not only skilled in physic, but also in surgery; and, after remaining four years, he left his own country, and went to Rome, in his thirty-second year. He soon found the physicians of this place his adversaries, but easily gained a superiority over them, both by his learning and success in practice. After having resided five years, a plague raged at Rome, and he returned to his own country; but he was soon solicited to return by the emperors, M. Aurelius, and Lucius Verus. He returned to Rome, and Lucius Verus, in the mean time, having died, he attached himself to Aurelius, whose sons Commodus and Sextus, and even the Emperors, he cured at different times in fevers.

Suidas says, he died in his seventieth year, and it appears, from his own writings, that he lived under the emperors Antoninus, M. Aurelius, Lucius Verus, Commodus, and Severus. He travelled over Syria, Cyprus, and Cicilia; he made a voyage to the Island of Lemno, out of curiosity, to see the Lemnian earth; and into Palestine to find Opobalsam.

He was certainly a man of the greatest genius, and considerable experience; he could tell by the pulse, at the first attack of a fever, whether it would be a tertian, or quartan, &c. and how long it would last. He predicted the time that the complaint of a certain patient, who was about to be blooded, would terminate in a crisis of hemorrhage from the nose; and posterity are much indebted to him for elucidating the writings of Hippocrates; and no person, indeed, has followed the sense of those works better than Galen. He was a bold and successful surgeon, for he relieved a man labouring under an abscess in the mediastinum, by perforating the sternum, which was a most dangerous operation, and he must have had a most accurate knowledge of the disease and part affected. His books *de usu partium*, shew that he was a most excellent anatomist; in these we find many facts relating to anatomy, and physiology, some of which have been, by modern authors, copied and published as new discoveries. All his works have been edited with those of Hippocrates, by Renatus Charterius, which is the best edition.

He corrupted medicine with the tenets of the peripetetic philosophy, by introducing his comments on the four elements, from which he explained every thing, and seems to have been highly prepossessed in favour of the number four.

He believed that these four elements formed all bodies, earth, air, fire, and water; that every thing was different from the various proportion of these constituent elements: he also made four cardinal qualities, which he attributed to simple elements, as well as compounds; for example, he called fire, hot and dry by nature; air, hot and moist; water, cold and moist; earth, cold and dry.

Then, from these principles, he concluded, that there existed in the human body four primary humours:

I. Yellow bile, partaking of the quality of fire, being hot and dry.

II. Blood, which resembles air, hot and moist.

III. Phlegm,

III. Phlegm, possessing the properties of water, cold and moist.

IV. Black bile, (atrabilis) like earth, cold and dry.

He also argued that various temperaments, or constitutions were produced by the different admixtures of these qualities, and disorders generated by a predominance of one or other of them, or from being too much rarified; he again subdivided the four qualities into four degrees, thus: the first degree of heat was natural to man; the second degree produced fever; the third occasioned inflammation; the fourth gangrene, and sphacelus. He went still farther, and divided medicines, not only according to these qualities, but even their four degrees, for example; if a disorder was esteemed to be cold in the second degree, it was judged necessary to administer a remedy *hot* in the second degree, &c. which is still the Asiatic practice. (h)

But these speculations did not so much prevent the increase of medicine, as the ignorance and indolence of after ages; who, struck with the authority and eloquence of Galen, all acquiesced in his dogmas, and never thought of improving medicine, which they considered so perfect, that it had arrived at the *ne plus ultra*, therefore no important addition was made to the stock of knowledge in physiology, anatomy, and the materia medica, for almost fourteen centuries.

Galen is, therefore, not to be censured so much for his labours to perfect dogmatic medicine, for he also cultivated the materia medica, and botany; he likewise taught the method of removing many diseases by diet only, and of curing obstinate maladies by copious bleedings, and cauteries. He encompassed the whole science of medicine in all its extensive branches, and, in his writings, treats diffusively on anatomy, physiology, pathology, semiotica, hygiene, therapeutics, and surgery, so completely, that Haller says, no man is to be compared with him in these things, nor any person since his time laboured with so much assiduity and ardour.

Van Helmont's attack on Galen, calling him a plagiarist, is void of probability, for he readily gives you the sentiments of other men, and rescues from obscurity, fragments of their works, which are not to be found elsewhere. It is to him we are obliged for many historical facts and improvements, not to be found in any other writer.

After the time of Galen, there are but five celebrated physicians, whose works have come down to us; these are Cælius Aurelianus, the methodist. Oribasius, (i) Ætius, Alexander Trallianus, who has described diseases with singular accuracy, and Paulus Ægineta, the most diffusive on surgery of ancient authors.

For thirteen centuries after Galen's time, medicine not only remained destitute of improvement, but shared the fate of all other sciences, by being corrupted and neglected.

For in the fifth century of the Christian æra, the Vandals, Visigoths, and afterwards the Ostrogoths, people inhabiting the north, poured down in immense numbers on the southern and best cultivated part of Europe, desolating all before them, and destroying the most valuable libraries, as well as populous and flourishing cities.

In the seventh century, the Saracens began to spread destruction on all sides; Egypt was reduced by the Turks, and Alexandria, the seat of medicine, with its valuable and very extensive library, containing seven hundred thousand volumes, taken and destroyed. All the papers and books were used by these barbarians for heating their warm baths, of which there were four thousand in that city, and so great was the collection, that it answered the purpose for six months continually. Such was the fate of this library, which, in the time of Julius Cæsar, lost four hundred thousand books by fire.

In the eighth century Spain was conquered by the African Saracens.

At this time, those writings of the Greeks, that had escaped the general destruction, and were scattered in various parts, began to be taken notice of by the Arabians, particularly the dogmas and precepts of Galen in medicine, which were translated and explained in Arabic; and students in medicine were obliged to apply to them alone for knowledge.

They had public medical schools at Toledo and Corduba, in Spain, whither foreigners and others were obliged to resort. Their principal physicians were Rhases, Avenzoar, Avicenna, Averrhoes, and Mesue, a christian. Their widely spread reputation induced strangers to visit Spain to acquire medical information.

Van Helmont justly censures them in these words, "*Europei desperantes velut tota animi vis sibi effocta esset, barbaris in-ventis stare, et peregrina excoluisse duxerunt satis. Illorum autem commenta in novas in dies centurias redegis- se nedom non ingenerosum putarunt, sed honori duxerunt sapere ex Commentario duntaxat.*"

c c

For,

(h) As may be seen in the *materia medica* of the modern Eastern nations.

(i) Oribasius has given almost the complete anatomy of Galen; and it will appear to all judges that it is not so imperfect as many have supposed, especially the myology, neurology, &c.

For, in fact, the Arabians injured medicine, by incorrectly translating Greek authors into their own language, corrupting the real sense of words, and making every thing subservient to the tenets of the Peripatetic philosophy.

They totally neglected anatomy, as their laws prohibited them from touching dead human bodies, and implicitly followed Galen and Aristotle, whose authority was so great, that in disputations, whoever quoted their sentiments was sure of being an easy conqueror. The Arabians, however, merit our thanks for having increased the *materia medica*, by the addition of several simple remedies, particularly the mild laxatives, as manna, senna, rhubarb, cassia, tamarinds, and myrobalans; for the Greeks were only acquainted with drastic purges. They also first used sugar instead of honey in syrups, conserves, and confections, and brought into use some new aromatics. They were the first people that described the measles, and prepared distilled waters, although, in other respects, ignorant in chemistry; they likewise first introduced the vanity of mixing gold and silver in their compounds: See Friend's History of Medicine.

At last, after such manifold calamities, a dawn of hope for the restoration of medicine appeared, when the Spaniards having gradually recovered their country, began to have a more free communication with the Italians on literary and scientific subjects; for although there was a school founded by the Emperor Charles, at Salernum, in the eleventh century, the Arabian authors still continued to be studied.

But in the beginning of the thirteenth century, the first translation of Galen into Latin appeared, and in the fifteenth, when Greece was conquered by the Turks, the learned were obliged to take refuge in Italy and France, by which the ancient doctrine of Hippocrates, little known at that time in Europe, began to be revived, and amongst the early advocates were Fernelius, Duretus, Ballonius. A new discovery of still greater importance soon followed, which was the invention of printing, about the middle of the fifteenth century. Greek authors began to be universally published, and the Arabian yoke at last shook off.

The works of the Grammarians were first attended to, and by their assistance, Hippocratic medicine, particularly in France, began to flourish.

The chemists next became conspicuous, who, influenced by the vain expectation of finding the philosopher's stone, and a universal medicine, made many useful discoveries, and although they never attained their objects, yet they greatly increased the experimental part of medicine and the *materia medica*.

Basil Valentine, about 1400, was the first who applied chemistry to medicine. About a century after him lived *Theophrastus Paracelsus*, who had the greatest aversion to the Galenists and Arabians, he revived the doctrines of Basil Valentine, and claimed the merits without doing sufficient justice to the inventor; and maintained, that all bodies consisted of salt, sulphur, and mercury. Although the greatest empiric in the world, he was a successful practitioner, chiefly by the bold administration of opium, mercury, and turpeth, (mineral) whose effects were very little known to the physicians of his time: for opium was considered by the Galenists a poison, *cold* in the fourth degree, and such as extinguished the vigour of natural heat.

In the beginning of the seventeenth century lived Van Helmont, who differed from the practice of his time, and was considered a *quack*, yet he is extremely praiseworthy, for having exploded, with great ardour, the Aristotelian and Galenical quibbles, and roused the *schools* from their torpidity: he clearly shewed the vanity of founding medicine on reasoning alone, without experiments. By him Hippocratic medicine began universally to sink into less repute, and the chemists rapidly increased; so that chemistry, instead of being subservient to medicine, almost gained the ascendancy.

Francis de la Boe Sylvius followed, who first introduced chemistry into the academy, at Leyden; and it is doubtful whether these innovations assisted or impeded medicine.

Roger Bacon, who held the medium between Basil Valentine and Paracelsus, was author of a masculine chemistry; and Robert Boyle, may be reckoned amongst the chemists; he was posterior to Van Helmont.

But anatomy also, which had been neglected by the Arabians, was revived; and Mundinus, an Italian physician, at Bononia, wrote a book on anatomy, about the year 1315, which was in so much esteem, that a law was passed in Italy, to prevent professors from teaching any other author in their lectures. His anatomy was very confined, but certainly better than none. After an interval of almost two centuries, James Berengarius Carpensius, an eminent anatomist and surgeon lived, who in 1521, published commentaries on Mundinus, at Bononia, and also a book of his own on anatomy; he was the first who gave anatomical plates engraved on wood; and he was the first, except Paracelsus, who used mercury in the cure of the lues venerea.

venerea. But it was said that he opened two Spaniards alive, whom he could not cure. Very probably this story arose only from the publication of his curious and learned book on anatomy, an unusual production in those days.

The most eminent anatomists, among many others, who succeeded Berengarius, in the sixteenth century, were Vesalius, Eustachius, Gabriel Fallopius.

At length the immortal Harvey, an Englishman, physician to the king of Great Britain, James I. after dispelling the clouds of ancient physic, threw a new light on anatomical and physiological matters, by proving from experiments on living animals, and demonstrating by his writings, the circulation of the blood; that is, its continual flowing from the heart through the arteries, to every part of the body, and its return by the veins into the heart from which it flowed. Harvey published this grand and most useful invention, in 1628, at Frankfort, in quarto, afterwards in many other places revised and enlarged. Yet there were physioians, infatuated with the prejudices of antiquity, who *opposed* the most clear and decisive proofs, and preferred erring with the ancients, to embracing the truth with Harvey: and when they were obliged to give their assent to the rigid mathematical accuracy of Harvey's demonstrations, they omitted nothing that could derogate from the glory of his invention. Some asserted that it was known to Cæsalpinus, Realdos Columbus, others as firmly maintained that it was mentioned by Cervetus, who was burnt at Geneva, in 1553, for his book *De Trinitatis Erroribus*. It cannot, however, be denied, but that a few physicians before Harvey, had some idea of the smaller circulation of blood through the lungs; but they were totally unacquainted with the greater circulation, through the branches of the aorta, and over the whole body, and never gave a clear demonstration of the other, consequently Harvey merits the honour of the invention.

Others even went still farther back, and contended that the circulation was known to Hippocrates, because he compared the human body to a circle, which has neither beginning nor end: but his words are to be literally understood to mean only the reciprocal actions or functions of the various parts of an human body: for every individual part acts in common with the whole machine, and vice versa; hence that wonderful reciprocity which is compared to a circle by Hippocrates; besides, it is well known, the ancients believed the arteries to contain air, wherefore it must appear evident, that all enquiry amongst the ancients to find the same sentiments as adopted by Harvey, are totally vague and unsatisfactory.

How powerful and conclusive the experiments of Harvey were, may be known from his bringing over even public adversaries to his own doctrines, after they had instituted the same trials; it is also worthy of remark, that Vopiscus Fortunatus Plempius, professor in the academy at Louvain, candidly confesses his error in these words. *Fund. med. lib. II. cap. 7.* "*Nuper in Anglia novam peperit de motu cordis opinionem, quam evulgavit Gulielmus Harvaus edito ea de re peculiari libello. Primum mihi inventum hoc non placuit, quod et voco et scripto publice testatus sum; sed dum postea ei refutando et explodendo vehementius incumbo, refutor et ipse et explodor: adeo sunt rationes ejus non persuadentes sed cogentes.*"

It is necessary to observe, that in consequence of this discovery, a new epoch of medicine was formed; so that all physicians anterior to Harvey, ranked with the ancients, but all, posterior to him, are classed amongst the moderns.

By the name of sect we understand that knowledge, by which any thing doubtful, though probable, is admitted as truth: it follows, therefore, that whatever is certain, and clearly defined, does not belong to a *sect*: thus, the former Galenical doctrines of faculties and four cardinal qualities were a *sect*. The hypothesis of the chemists, chimeras of Des Cartes, and other specious opinions, without proof, were a *sect*.

Those very flighty luxuriant fancies, cannot avoid forming transitory opinions, as often as they indulge in mere speculations, unconfirmed by experiment, or successful practice.

No person yet studied medicine without following some sect; however, it may be clear of every one of them, if we take only those things that are demonstrable, passing by all doubts and obscurities; which can be effected better at present than formerly, since so many anatomical, botanical, chemical, physical, and mechanical experiments have been instituted, and medicine so much improved, by such a number of repeated practical observations, that whoever compares the ancients with us, in these particulars, will soon find the great superiority of the moderns.

Maupertuis, therefore, certainly spoke very unjustly, when he said that medicine had scarcely received one improvement during the space of almost two thousand years; and the Leipsic commentators justly accuse him of audacity and ignorance.

And, if we rightly consider anatomical experiments, nothing can be more useful, nor any thing more necessary, both to attain a knowledge of the healthy state of the human body, and to explain the cause of disease: by this only are discovered the size, situation, form, connection, order, and structure, of the internal parts of the body, without which it would be impossible

possible to understand the functions of those parts. These anatomical demonstrations shew the effects of disease, its situation, and often elucidate the causes of disease and death; hence arises the extreme utility of anatomy, in physiology, and pathology. Who would have believed that the œsophagus could have been ruptured by vomiting, and the food thrown into the cavity of the thorax, had it not been for anatomy?

Who would have expected a rupture of the heart or its auricles, unless such appearance had been found in anatomical researches? All medicine is vain without the knowledge of dissections *post mortem*. (k)

Who would have considered it possible that the spleen, could have descended into the pelvis, the stomach burst by fermentation of food, that a fœtus could be formed in the ovarium, and even be nourished in the abdomen, to the full time of gestation, and other facts of the same kind, if the attentive investigation of anatomists had not demonstrated these things?

How much are we indebted to *Ruyseh*, for proving, by his injections, that many parts of the body, considered by the ancients destitute of vessels, are extremely vascular? Who would have known any thing of the lacteals, lymphatics, their course and structure, the irritability of the heart and muscles, and the peristaltic motion of the intestines, if anatomy had been neglected? Anatomical experience is so certain that no person can be easily deceived, if an experiment be made with necessary caution; and although contradictory circumstances are sometimes found in authors, we conclude that all of them did not attend to the same particulars and correctness; or being biassed by prejudice, receive only what is consonant to their own doctrines, or even pervert the fair result; hence arise so many dissensions and controversies, which are easily settled by considering the disposition of parts, and consulting the order of nature; for every experiment is decisive in itself, yet the reasoning on it may be fallacious. Thus, when the ancients found the arteries of a dead human body empty, they believed that air only had been contained in them. The experiment was not deceptive, but the reasoning, and they could have easily convinced themselves of the truth, had they opened the arteries of living animals, and seen the blood jetting out with impetus, and thence concluded, that those vessels in an healthy state were not filled with air, but blood; the utmost caution, therefore, is necessary in drawing conclusions from experiment.

BOTANY.

THIS science, little known to the ancients, has been so much advanced in our time, by the unanimous labour of many celebrated men, that all plants can be distinguished by certain and infallible marks, imprinted on them by nature. So long as the botanist confine himself to those distinguishable characteristics, and class every plant, possessing similar appearances, under the same genus, he will be right, and free from error; but if he transgress those bounds, and indulge his fancy, by expecting that herbs of similar external form, are endued with the same medical qualities, he will be most egregiously deceived, since poisonous and harmless plants, and those of very opposite properties, are ranged under the same class.

CHEMISTRY.

CHEMICAL experiments have rendered great assistance to medicine, for by these means, not only the latent powers of different bodies, and other properties not obvious to the senses, have been brought to light; but the most efficacious medicines have been invented, which were unknown to the ancients, and pharmacy in general, very much augmented.

We are chiefly indebted to chemistry for having discovered that the most subtle poisons, and inactive or salutary bodies, are produced according to various admixtures of principles. No physician, therefore, can be ignorant of chemistry without committing the most dangerous errors in his prescriptions, for mistakes easily happen if we depart from experience, and give loose to the effusions of fancy. It should not be attributed as a fault to chemistry, but to the chemists; that many hypotheses and useless observations have been introduced into medicine.

MECHANICS AND NATURAL PHILOSOPHY.

THESE have very much conduced to the increase of medicine, nor can a physician be destitute of such information, which are certain, and universally admitted truths.

The

(k) For my own part, I have embraced every opportunity through life, to investigate the real causes, and effects of diseases by these means, and have collected hundreds of facts; great numbers of which may be seen, written in Latin, in the rational practice, with much inductive reasoning, &c. &c. which certainly is beyond all idle speculation, &c.

The actions of the human body cannot be well explained, without an accurate knowledge of experimental philosophy; for if any person be ignorant of the nature and properties of air, he will never understand how respiration is performed in the lungs of living beings; nor can he understand the action of arteries, unless he be acquainted with the laws of elastic bodies; he will not be able to explain the phenomena of sight, without exactly comprehending the properties of luminous matter: nor arrive at a knowledge how hearing is experienced, if he be not well versed in the doctrines of sound. Our body is a true hydraulic machine, in which the various humours flow by an uninterrupted motion, with great celerity in a circular direction; therefore the laws of hydrostatics, hydraulics, and every thing relative to mechanics, are necessary to be known by every physician; but it must be confessed, that the mathematical sect have been frequently led into errors and very often deceived in their speculations, by applying general mechanical laws to the human body, without sufficiently considering the particular properties of bodies. The passage of coagulable viscid blood through elastic, flexible arteries, is very different from the flowing of limpid incompressible water, through rigid metallic tubes, the resistance of which in respect of the contained fluid is inconsiderable, therefore, conclusions from such principles are fallacious.

Besides the mechanical physicians have erred, by believing that all the phenomena of nature, could be resolved by the laws of mechanics; hence, to explain the action of purging or vomiting, they imagined the medicine composed of certain pointed particles, possessing a power of reversing the stomach; and others of a contrary figure to excite purging.

The Cartesian physicians, were most attached to these humourous fictions, which, in their works, are carried to a length truly ridiculous. Some of the members of the French academy, as Homberg, Lemery, Geoffroy, in accounting for chymical and physical phenomena, have increased this subject with many things from their own imagination, tiring the reader with their intolerable farrago of particles; great philosophers, had they known when to have held their tongues! Mechanical laws have certainly, much influence in nature, but it is ridiculous to endeavour to explain all the phenomena of natural things by mechanics; as though various bodies were not liable to different laws! As if the Creator, instead of his own, followed the ideas of his minute creatures! Who will ever clearly explain to us the solution, attraction, repulsion, gravity, and elasticity, of bodies, by mechanical laws? Who, on mechanical principles, will demonstrate the circulation of the blood, the continued systole, and diastole of the heart, when perpetual motion is not attained from mechanics? Who will derive the phenomena of sensibility and irritability from mechanics, when no machine, except the body of a living animal can shew signs of sensibility, or irritability. Let us, therefore, make use of physical, chemical, and mechanical inventions in physic; but let us use them in such a manner as to confess they are limited, and that nature is not reducible to any one particular doctrine.

From all these circumstances it appears, that this *most ancient art consisted, at first, only in a faithful collection of observations, and afterwards, it was thought necessary to investigate the causes of experiment, by discussing the reason of those causes.* We saw in the history of medicine, that, in early times, it was inculcated empirically, that is, from attentive observation of salubrious and destructive things, that analogy was afterwards added, that ultimately, men began to reason on causes; particularly after philosophers had rendered the study of medicine familiar. Hence, Celsus was very right in saying, that medicine arose from observation only. "*Subinde aliorum salute, aliorum interitu, perniciose discernentem a salutaribus. Re-*" "*pertis deinde medicinæ remediis, homines de rationibus eorum disserere capisse nec post rationem, medicinam esse inventam; sed*" "*post inventam medicinam rationem esse quæsitam.*" Præfat. p. 9, 10.

It is certainly obvious that the first part of medicine, called *emperica*, was always alike, not fallacious, for experience under similar circumstances is always equal, and does not deceive; and this is the reason why the practical writings of Hippocrates, and other ancient authors, containing observations only, must remain unshaken. For the same phenomena that took place, many centuries ago, in pleurisy, phrenitis, &c. are observed to be the same at present, in persons labouring under these diseases. It is likewise equally certain that contemplative medicine, in later days, was liable to be fallacious, and led to errors, particularly if the physician assume for *facts*, such things as were never *demonstrated*; or if he draw such conclusions by reasoning from experiments as were not deducible from them. As if any one, after proving by experiment, that every animal is suffocated by being deprived of air, should wish to infer that air is the cause of respiration; for he then forms a conclusion that is by no means proved by the experiment; but if he should infer that air is necessary to respiration, he is right, and only affirms what is in the experiment. Hence, *experience* itself is certain, but *reasoning* liable to error. But it does not thence follow, that medicine is to be deprived of the use of reasoning, on the contrary, it is of the greatest importance. For reasoning does not mislead us, if drawn from unbiassed experience; if it be proved again by other experiments, for medicine,

indeed, would not have been much promoted, if men had entirely confined themselves to experience, without reasoning, and the common adage, that a *good theorist* is generally a *bad practitioner*, is destitute of truth; but a mere speculator may be the worst of practitioners. The speculations of daring inexperience is the bane of all practical science.

But a man is often esteemed to be a good theorist, who is not so, but makes use of complex words, almost unintelligible, and frames whimsical and unfounded hypotheses, using reasons destitute of all experience, or draws his conclusions from inadequate, or partial experiments. I do not deny, that such a person is a bad practitioner, he is a pseudo-theorist, projector of hypothesis, and a speculator on nature. A true theorist is one who knows the true causes of the effects observable in patients, for he, who understands the cause of the disease, can easily cure it, if a cure be practicable, and distinguish, whether it be a curable, or incurable complaint. This is best understood by those who enquire into morbid causes by dissection *post mortem*.

The great Van Swieten was of opinion, that a physician who *knows* a disease to be incurable, is as great, as one who understands how to remove a *curable* malady; and it is very certain that many diseases are more successfully relieved by us, than by the ancients, only from our improved knowledge of their causes: for the cure is often very different and various, according to the diversity of cause of complaints, as in vomiting, cephalalgia, vertigo, and many others; and also that a great number of diseases, are at present, managed with difficulty, from their causes not being comprehended; epidemics, for example, in which we are obliged to act empirically, and form indications only from those things which are found to be advantageous, or prejudicial. In epilepsy and mania, we try various remedies of uncertain event, and as we are not acquainted with the true causes of these diseases, no certain method of cure, therefore, has been invented, for Celsus justly observes, "*Cujus rei non est certa notitia, ejus opinio certum reperire remedium non potest.*" From which it may be considered a truth, that good theory founded on established experiments, is not only useful, but absolutely necessary for a physician, who is to be called into practice.

THE PRINCIPLES AND DEPARTMENTS OF MEDICINE.

THIS science has received many useless and fallacious things, from the means mentioned in the last chapter, and in order to banish them from physic, it should be considered, that the whole extent of the art is directed to avoid pain, debility, death, also to preserve present health, and to restore it when lost, therefore every thing that is necessary for a physician to know and perform, should serve to effect these purposes.

For the objects of our art are the life, health, disease, and death of man, the causes from which they arise, the means by which they are regulated.

Medicine, therefore, is a knowledge of those things, by the effect of which, when applied, healthy life is preserved, and restored, when diseased, to its former state of salubrity. The necessity, utility, and importance of which pursuit, must appear obvious. The art has always been honoured with the highest distinctions.

Only two sure paths are admitted, by which certain knowledge is acquired, for example: I. An accurate observation of those appearances that are manifest to the external senses, in a healthy, diseased, or expiring human body; and in the dead subject, whether these arise from things that take place in man himself, or from those things which act upon him by external causes, by chance, or the influence of remedies.

II. A sedulous examination of those circumstances that occur in man, and are not cognizable to the senses, or those which are given with some determinate intention. But these can only be obtained by correct reasoning on experiments, in which every occurrence is to be carefully considered, and examined in all its properties; afterwards attentively compared together, to discover the relative aptness or diversity; and lastly, every thing is to be admitted, without prejudice, that is clearly found to be contained in them, and these will not be found less correct than the former observations.

But in order to discover necessary facts from given circumstances, certain principles are required, by the knowledge and application of which, a demonstration is effected, which is required to be distinct, clear, and certain, acquired by mechanical and philosophical experiments, for by these means, not only general, but also particular properties of bodies are detected, and the art illustrated.

But since there are other things in man, that cannot be understood by those principles, and consequently not explained to demonstration, another method is to be pursued with them, if we wish to avoid error: this will be perceived, and easily admitted, by any person who considers the preceding and following things.

Nor can all human actions be explained by these demonstrative principles, but those only, which arise from the mere structure of the body, as the vital and natural, but not the animal functions; for these are neither dependant on the body or mind only, but proceed from an intimate connexion of both. Since, therefore, these actions are not totally corporeal, they cannot be explained, much less demonstrated by principles peculiar to corporeal bodies only. Some philosophers have existed, who, according to the system of EPICURUS, and LUCRETIVS, derived the actions of the human body entirely from corporeal affections; and others, on the contrary, denied the existence of bodies, and endeavoured to deduce all phenomena from a spiritual principle only. Those of the former sect were called *materialists*, and those of the latter *idealists*; both were hypothetical enthusiasts. The mischiefs arising from narrow medical systems are incalculable, and they all merit extinction.

THE FIRST CHRONOLOGICAL TABLE, FROM THE BEGINNING OF THE WORLD, DOWN TO HIPPOCRATES OF COS, IN THE YEAR OF THE CREATION, 4554.

A FABULOUS AND INDEFINITE TIME.

THE Egyptians, Chinese, and Indians, carry back the origin of their religion and medicine to very remote antiquity, they reckon many thousand years beyond the creation of the world, but in this Table we have entirely followed the authority of Dionysius Petavius.

Years before Christ.	Year of the World.	Olympiad.	Building of Rome.	
3984				The world was created.
3983	1			The year of the creation.
				Medicine and various arts are invented.
3054	930			Adam, the first man, and first physician, dies.
2942	1042			Seth, dies.
2329	1655			The flood.
				The posterity of Cham, people Egypt, and there practice medicine.
1769	2215			Joseph the patriarch, comes into Egypt.
1575	2409			About this time, Job is believed to have died.
1531	2453			The Israelites, are led by Moses out of Egypt.
1263	2721			The expedition of the Argonauts, before which lived Melampus, and Chiron Centaurus; but Hercules, Æsculapius, Medea, Circe, were present.
1247	2737			The worship of Æsculapius, and Hercules, begins.
1004	2980			Solomon, king of the Jews.
916	3068			Asa, king of Judea.
776	3208			The first Olympiad.
754	3230	VI. 3		Rome is built.
753	3231	VI. 4	1	The first year from the building of Rome.
690	3294	XXII. 3	64	The blindness of Tobias is cured.
616	3368	XLI. 1	138	Necphesus reigns in Egypt.
525	3459	LXIII. 4	229	The Persians occupy Egypt.
522	3462	LXIV. 3	232	Democedes becomes eminent at Crotona.
505	3479	LXVIII. 4	249	Cinnabar is discovered.
500	3484	LXX. 254		Pythagorus dies.
				Alcmaeon and Empedocles, who cultivated anatomy, are in repute.
471	3513	LXXXVII. 283		Iccus, of Tarentine.
460	3524	LXXX. 295		Hippocrates is born.
				Heraclitus and Democritus.
433	3551	LXXXVI. 3	321	The Romans, afflicted by the plague, make a vow to build a temple for Apollo.
430	3554	LXXXVII. 3	314	The beginning of the Peloponnesian war; at which time Hippocrates, of Cos, was in great esteem. This war lasted twenty-seven years!
				Plato Prodicus lived at the same time.

THE SECOND CHRONOLOGICAL TABLE, FROM THE BEGINNING OF THE PELEPONESIAN WAR, AT WHICH TIME HIPPOCRATES WAS IN REPUTE, TO THE DEATH OF JUSTINIAN.

Years before Christ.	Year of the World.	Olympiad.	Build- ing of Rome.	
430	3554	LXXXVII.	3	314 The first year of the Peleponesian war, at the beginning of which flourished Hippocrates, amongst the greatest men of Greece, who enlightened that most fortunate age by immortal ornaments. A most terrible plague raged at Athens, in the second year of this war, so accurately described by Thucydides. Philistion Siculus, Ariston, Phaon Nicomachus, father of Aristotle, Menecrates, of Syracuse, Herodicus, or Prodicus, lived.
422	3562	LXXXIX.	3	332 Eudoxus Cnidius, and Meton, both physicians, or eminent for mathematical studies, lived. Plato, the philosopher.
404	3580	XCIV.		350 Democritus dies.
400	3584	XCV.		354 Socrates takes hemlock.
357	3627	CV.	4	397 Hippocrates dies.
356	3628	CVI.		398 Alexander the Great is born.
348	3636	CVIII.		406 Dexippus, Petron, Diocles Carystius, and Praxagoras, of Cos, are in repute. Plato dies.
343	3641	CVIII.		411 The tyranny of Dionysius, of Syracuse, is overturned.
342	3642	CIX.	3	412 Aristotle is assigned preceptor to Alexander.
336	3648	CXI.	4	418 Alexander the Great begins to reign. Philotimus, Plistonius, Eudemus, Mnesitheus, Dieuches, Numenius, Chrysippus Cnidius, Medius, Aristogenes.
331	3653	CXII.	2	423 The beginning of Alexander in Egypt. — Callisthenes, Olynthius, Philip Acarnan, Critodemus, of Cos, Glaucias, Alexippus, Pausanias.
324	3660	CXIV.		430 Alexander the Great dies. — Ptolemæus Lagus, takes the government of Egypt, renders Alexandria flourishing in commerce and the arts, makes it the seat of medical science.
322	3662	CXIV.	3	432 Herophilus, of Chalcedon, and Erasistratus, flourish about this time. Great men! Aristotle dies in Chalcedon. Theophrastus Eresius, takes the professorship of Aristotle. Thrasyas Mantinensis, and Alexiades, flourish.
294	3690	CXXI.	3	460 Erasistratus remains at the court of Seleucus.
291	3693	CXXII.	2	463 Æsculapius is brought to Rome from Epidaurus.
286	3698	CXXIII.	3	468 Serapis is carried to Alexandria.
285	3699		4	469 Ptolemæus Philadelphus, begins to reign. The pupils of Herophilus, Mantias, Callimachus. Bacchius, Zenon, flourish. Likewise the pupils of Erasistratus, Strato, Apollonius, Apollophanes Seleuciensis. Also Philinus, of Cos, pupil of Herophilus, and founder of the empirical sect; but after him, came Serapion, of Alexandria, to whom some attribute the origin of empirical medicine; the latter was educated under Erasistratus.
271	3713	CXXVII.	2	483 Epicurus dies. Cleophrantus seems to have now lived. The celebrated surgeons Evenor, Nileus Nolpis, Nymphodorus, existed; perhaps, also, both Apollonii and Ammonius, the lithotomist. At this period Heraclides, of Tarentum, the most celebrated of empirics, seems to have lived.
234	3750	CXXXVI.	3	520 Cato, the censor, is born, who was a great enemy to Grecian medicine, and every thing relative to the Greeks.
219	3765	CXL.	2	535 Archagathus arrives at Rome, the first surgeon.
218	3766		3	536 Andreas, the physician, is assassinated.
190	3794	CXLVII.	3	564 The Romans undertake a war against Antiochus, and interfere with the affairs of Asia.
167	3817	CLIII.	2	587 Macedonia is reduced to a Roman province, and Greece liberated from dependence

Years before Christ.	Year of the World.	Olympiad.	Build- ing of Rome.	
154	3830	CLVI.	3 600	pendance. A frequent intercourse between the Greeks and Romans follows.
149	3835	CLVII.	4 605	The six centuries are completed, during which Rome is said to have been without physicians.
133	3851	CLXI.	4 621	Cato dies, aged 85.
				Attalus, the last king of the Pergameni dies.
				About this time, lived Nicander Colophonius, Asclepiades Prusiensis, from Bithynia, goes to Rome, and is founder of a new sect, called Democritico-Epicurean.
63	3921	CLXXIX.	2 691	Mithridates, when conquered, is condemned to death by his son. Pompey came into possession of all the kings effects, and orders his observations on Alexipharmic medicines to be translated into Latin, by his attendant Lenæus.
48	3936	CLXXXIII.	706	Pompey is conquered and killed.
46	3938		3 708	C. Julius Cæsar bestows the freedom of the city of Rome on all professors of medicine, and of the liberal arts, to induce them to reside there, and as an instigation for others to learn.
44	3940	CLXXXIV.	710	Cæsar is assassinated by conspirators.
31	3953	CLXXXVII.	2 723	Antonium and Cleopatra die, after being conquered, and having taken refuge in Egypt.
				M. Artorius, physician to Augustus, perishes by shipwreck, after the engagement of Actium.
				Dioscorides Phacas.
22	3962	CLXXXIX.	731	Augustus is cured of a dangerous disease, by his physician Antonius Musa, to whom, and to all succeeding physicians, permission is granted to wear a gold ring, therefore, they were of the equestrian class.
				Euphorbus, physician to Juba.
				Themison, begins the methodical sect.
				Philenides Catinensis.
Post Christum natum.				
1	3984	CXCV.	754	The year after the birth of Christ
				Cassius.
				Æmilius Macer.
14	3997	CXCVIII.	2 767	A. Cornelius Celsus is in repute, who, certainly, was the most excellent.
				Augustus dies. Tiberius succeeds to the Roman empire.
				Eudemus.
				Pacchius of Antioch.
37	4020	CCIV.	4 790	Apuleius Celsus. (a)
				Tiberius dies.
41	4024	CCV.	794	Calpetanus, Arruntius, Æbutius, Rubrius.
				Caius Cæsar, is killed.
				Vectius Valens, Q. Sertius and his brother.
				Scribonius Largus.
54	4037	CCVIII.	2 807	Claudius dies: Nero succeeds.
				Andromachus, father and son, physicians.
				Democritus.
				Asclepiades, junior.
				Charicles, Menecrates, Erotianus.
				Thessalus Trallianus, restores the methodical sect.
				Crinas, of Marseilles, Iatro-mathematicus.

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Charmis,

(a) In a temple dedicated to Isis and Bacchus, dug out of the ruins, where the town of Pompeium formerly existed, was covered by an eruption of Mount Vesuvius, and lately discovered. In my travels I saw the following inscription in the hall of this temple—Cornelia Celsa: and near this place there now exists the house of a surgeon, where many surgical instruments were found, and deposited in the palace of the King of Naples, at Portici. Perhaps this was formerly the residence of the celebrated Cornelius Celsus, or Apuleius Celsus, who lived near the time of that memorable devastation.

Years before Christ.	Year of the World.	Olympiad.	Build- ing of Rome.	
68	4051	CCXI.	4	821
78	4061	CCXIV.	2	831
80	4063		4	833
89	4072	CCXVII.		842
96	4079	CCXVIII.	4	849
98	4081	CCXIX.	1	851
117	4001	CCXXIV.	2	871
138	4121	CCXXIX.	2	891

Charmis, of Marseilles, author of phychrolusia.
Nero kills himself.
Vespasian dies. Titus succeeds.
Athenæus Attaliensis, author of the pneumatic sect.
C. Plinius, the second dies.
Dioscorides Anazarbensis.
Arius.
Apollonius.
Domitian dies.
Trajan begins to reign.
Agathinus.
Herodotus.
Archigenes, Rufus Ephesius, Plutarch.
Hadrian begins to reign.
Soranus Ephesius, dissolves the methodical sect.
Cælius Aurelianus Siccensis seems to have lived about this time; we have three books of this author, *De Tardis Passionibus*, and three *De Celeris Morbis*.
Hermogenes was physician to Hadrian, who, labouring under a disease of water under the skin, and tired of life, was told by Hermogenes, that if a certain part of the body under the breast was smeared with poison, and a wound inflicted, he would die in less pain.
Hadrian dies. Antoninus Augustus Pius, succeeds.
Sextus, a physician of the empirical sect, was eminent under T. Aurelius Antoninus Pius, three of whose books on the hypotheses, or the Pyrrhonics, and ten against the mathematical sect, are extant. It has been suspected that this person was the same as Sextus Chæroneusis, nephew of Plutarch, who was preceptor to M. Antoninus, the philosopher, as mentioned by Capitolinus in his life. But he was a disciple of Heroditus Philadelphus, a follower of the Pyrrhonian sect.

Year of Christ.	
180	That illustrious luminary Claudius Galenus, of Pergamus, flourished under the reigns of M. Aurelio Antoninas, the philosopher, and his son Commodus, Didius Julianus, Clodius Albinus, and lastly Severus.
193	Under Antoninus lived Julian, of Alexandria, who wrote forty-eight books, against the aporisms of Hippocrates, also a book <i>De Methodo</i> , dedicated to Philo, likewise <i>περί ψυχικῶν καὶ σωματικῶν ᾰσθενειῶν</i> .
196	Serenus Sammonicus, whose poem on medicine and remedies of diseases, is extant, lived in the times of the Emperor Severus, and his son Caracalla, by whom he was killed at supper.
211	Philagrius Lycius, is said to have lived under the reign of M. Aurelius Probus, he was a physician, at Epirota, disciple of Naumachius. Sextus Africanus, besides the chronology mentioned by Eusebius, left eleven books, entitled <i>Κεῖν</i> . In them he treats of medical, chemical, physical, and agricultural affairs. These books were dedicated to Alexander, son of Manimea.
235	Theodore Priscian, or as he is called in other books, Octavian Horatianus, is said to have lived under Maximianus Herculius.
304	In the time of the Emperors Constantius, and Julian, Zeno Cyprius existed.
364	Philostorgius, a physician, lived in the reigns of Julian, Valens, and Valentinian. His sons, Philagrius, and Posidonius, were likewise celebrated physicians. Oribasius, of Pergamus, was a disciple of the above mentioned Zeno, who gave Galen's anatomy, &c. Magnus Antiochenus, and Ionicus Sardianus, disciples of Zeno, were likewise eminent men in the reigns of Julian and Valens.

Year
of
Christ

- Ætius Amideus, lived during and after the times of Julian and Valentinian; a little posterior to Oribasius; he contracted the writings of the earlier physicians, particularly Galen, into eighteen books.
- 367 Octavius Horation, who left two books on the cure of diseases, one on disorders of women, and one of experiments, lived under Gratian.
- 392 In the reign of Theodosius, lived Marcellus Burdigalensis, who wrote on empirical medicine, and philosophy.
- 518 In the time of Justinianus Magnus, lived the celebrated Alexander Trallianus, son of Dioscorus, the physician; he wrote the therapeutics of every part of the body.

Synesius

The inroads of the Goths and Vandals.

IN THE SIXTH CENTURY.

Stephen Trallianus the father, and Alexander the son, in the time of Justinian.

Procopius, an historian and physician, (Cænobia) the physicians of Alexandria.

IN THE SEVENTH CENTURY.

Paulus Ægineta, an Accoucheur.

Theophilus.

Stephanus, an Athenian, the last of the ancient Greek writers. (Deocularus.)

Geber, an Arabian.

IN THE EIGHTH CENTURY.

The emigrations of different nations. The Lombards, Saracens. The burning of the library at Alexandria. The school at Antioch.

The Arabians.

Schola Salertina, instituted by Charlemagne? Academies at Paris, and other places.

Wintarus, a German.

Clerical physicians.

IN THE NINTH CENTURY.

Jewish physicians, Arabians, Mésue.

Serapion. Hamech.

The universities of Oxford and Cambridge.

Walafridus, Strabo, and Abbott.

IN THE TENTH CENTURY.

Abukeker Rhazes, (on the small pox.)

The academy instituted at Seville, by Arabian, or Saracen princes.

The Monks, and Arabians.

The Huns, in Germany.

IN THE ELEVENTH CENTURY.

Eben Sina, or Avicenna—Haly Abbas.

Artephius, a chemist?

Constantine, an African, comes to Salernum.

Albericus, an Englishman.

Hugo, a French physician.

The Crusades, or military expeditions to Judea, or the Holy Land. Wild effusions of enthusiasm!

IN THE TWELFTH CENTURY.

Moses Ben Maimou.

Avenzoar — Averroes.

The University of Montpellier.

The Monks are forbid to practice medicine in the council of Rheims, physicians permitted to marry.

IN THE THIRTEENTH CENTURY.

Several Universities are instituted.

The separation of surgery from physic, at the council of Lateran, in 1215.

Ægidius, a Monk, wrote a poem on the pulse.

Actuarius — Pope Nicholas.

Albertus Magnus, Bishop of Ratisbon.

Michael Scotus. Thomas Aquinas.

Raymond Lully. Roger Bacon.

Henry de Frankenstin, a philosopher.

IN THE FOURTEENTH CENTURY.

Several Universities are established, particularly in Germany.

Guido de Cauliaco, of Paris.

Paul of Neuremberg, professor at Vienna.

IN THE FIFTEENTH CENTURY.

The invention of printing, in 1440.

Duretus, Simon Januensis, Matthias Sylvaticus.

Alexander Benedictus, Cuspinianus.

Barthal Montagnana, professor at Bononia.

Basilus Valentinus.

Joannes de Baireuth, Schedel Wienmann.

Several Portugese, Spaniards, Frenchmen, Englishmen, and Germans.

Hitherto the medicine of Hippocrates, Aristotle, and Galen, was in repute.

IN THE SIXTEENTH CENTURY.

Chemical medicine.

Theophrastus Paracelsus, 1528.

Van Helmont, Cornelius Agrippa, Guinterius, Fernellius, Vesalius, Fracastorius, Cornarus.

Conrad Gesner.

IN THE SEVENTEENTH CENTURY.

Tachenius, Sylvius.

Sennertus, philosophy, chemistry, anatomy, mechanics, natural history, and botany, are better cultivated.

The Cartesian system of philosophy and medicine.

Fludd, Wirdig, Dolæus.

Bartholini, Prosper Alpinus, William Harvey, 1628, discovered the circulation of the blood.

Sauctorius, Sydenham, Beccher.

An academy of sciences is instituted in Paris and London, which are now the chief depots of natural curiosities.

IN THE EIGHTEENTH CENTURY.

The mechanical and organic systems of medicine.

The philosophy of Leibnitz and Wolfius.

Mathematical physicians.

Irritability.

New experiments.

An increase of dogmatic, theoretic, and practical medicine.

The following great men, as well as many others, have enlightened this age. Hoffman, Stahl, Boerhaave, Wedelius Morgani, Van Swieten, Haller, Linnæus, Cullen Plenck. Posterity will decide the merits of many existing physicians, and professors in various parts of the world.

A SYNOPTIC TABLE OF MEDICINE.

I. General preparatory information, relative to the study of physic.

1. The study of ancient and modern languages, as Greek, Latin, French, English, Italian, &c.
2. Literary history, particularly of medicine.
3. General philosophy, particularly logic.
4. Mathematics, in a limited degree.
5. Natural philosophy, as demonstrated by experiments.

II. Particular sciences, indispensably necessary in the medical art.

1. Natural history, botany, zoologia, mineralogy.
2. The anatomy of the human body in a state of health and disease, with comparative anatomy.
3. General chemistry, particularly that part which is applicable to physic.
4. The materia medica, or a knowledge of medicines, which includes pharmacy, or the preparation of remedies, and the method of compounding them for administration.

III. Theoretic

II. Theoretic medicine.

1. Physiology, or a consideration of an healthy body.

- (a) In universal action, which comprehend the whole body.
- (b) In particular actions, performed by certain organs.
- (c) In semiotics of a body in health, which explains the general and particular signs of health.
- (d) In dietics which gives rules for the preservation of health, &c.

2. Pathology, or the consideration of a body diseased.

- (a) Nosology, which points out the difference of diseases.
- (b) Ætiology, which investigates the cause of disease.
- (c) Symptomatology, which treats on the symptoms or effects of disease.
- (d) Semiotic pathology, which explains the signs of disease.

3. Therapia, which consists of the method of curing by indication, it is

- (a) Vital, or conservative,
- (b) Prophylactic, or preservative,
- (c) Therapeutic, or curative,
- (d) Symptomatic, or palliative.

IV. Practical medicine.

1. Clinical, which treats on the cure of internal complaints.

2. Surgical, which is relative to external diseases, and chiefly by management with the hand.

3. Judicial, or the consideration of diseases in a legal point of view.

4. Casual, or consultations, which includes the consideration of uncommon diseases, and difficult questions that occur in practice.

A Short Admonition to Students in the different Branches of Medicine.

YOUNG GENTLEMEN,

FOR your liberal profession, in this free country, entitles you to that appellation, honour, and rank in life. It is your duty to support your own and professional dignity with noble sentiments, probity, and humanity. Let all your actions be graced with those exalted virtues, that were earnestly recommended by the great ARISTOTLE, who concentrated in his own capacious mind, all the wisdom and refined ethics, or morality of preceding Greek philosophers. They consisted in *prudence, mansuetude*, or great affability and mildness of manners, *fortitude, temperance, continence, justice, liberality, and magnanimity*.* These were the laudable virtues, that the most accomplished, and learned of the Greeks, the noble Stagyrte, and sagacious preceptor of ALEXANDER the Great, ardently inculcated, and what that first of Roman orators, the penetrating CICERO, imitated in his excellent didactic work, *De officiis*.

Those rules and examples for upright conduct in life, would not disgrace the mild precepts of Christianity; they appertain to the nobleman, gentleman, scholar, and all the liberal professions; without which accomplishments a learned education is ill bestowed. If any work excel in inspiring the human mind with the most elevated moral sentiments, and all those excellent qualities, which every man of honour, and gentleman should possess, the important graces of civil and polite life; it is Tully's offices. Read, reflect, and imitate; for the great orator and philosopher, ennobles the mind, and censures all low groveling, selfish, ideas, duplicity, and deception. Cunning, however refined, however cautiously exercised, never led any man honourably through life. If virtue sometimes may be its own reward, vice, sooner or later, never fails to torment and produce its fears, punishment, and disgrace. Never suffer any mean notions to pervade your minds. Endeavour to obtain, by science and strict moral rectitude, a fair reputation; bid defiance to envy and calumny, or the vile railings of turpitude; for they, as its shade, pursue intrinsic merit, in every condition of life. If you excel in your profession, you must be punished, by hateful detraction, and well might that penetrator into human characters, Dr. Swift, say, "you may know
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* In his work entitled ΑΡΙΣΤΟΤΕΛΕΟΥΣ ΠΕΡΙ ΑΡΕΤΩΝ, καὶ ΚΑΚΙΩΝ, and the same, or similar, work of ΠΛΕΤΩΝ, edited by Edwardus Fawconer, Colleg. Merton. apud Oxon, published by Fletcher and Rivington, in Greek and Latin.

“ when a great genius appears, by all the dunces being in league against him ! Ignorance and mediocrity hate science and distinguished approbation ; artifice and dissimulation, dread candour, sincerity, and good sense !

The justly celebrated ARISTOTLE, contrasts the qualities or virtues already mentioned, with the striking vices, that are their opposites, as *imprudence, irascibility, fear of death, intemperance, incontinence, injustice, illiberality, and pusillanimity*. To pronounce that such human depravities of the soul, are debasing and vicious, is sufficient to render them detestable, in the mind of every well disposed virtuous youth.

THE NECESSARY MENTAL QUALITIES OF A MEDICAL STUDENT.

THE synopsis and the studies to be pursued, already mentioned, shew the universal knowledge necessary for the contemplation and practice of physic. A greater character for learning and science cannot exist, than what constitutes an accomplished physician ; therefore, the most early study, and comprehensive mind, are requisite. The youth intended for physic, should have all his senses acute, and in the utmost degree of perfection ; for from the perceptibility of the senses alone, is the human mind stored with all those sublime ideas, that shine so conspicuously in future practical life.

If the senses be obtuse, slow dulness is the consequence, and a dull scholar never made a brilliant physician. The pupil, therefore, should have organs capable of the clearest perception, to receive accurate impressions, and possess a tenacity in their retention. The intellectual faculties, should, by study and industry, be copiously enriched with the most extensive ideas of sensation and reflection, with memory, invention, and genius, to call them forth with order and logical arrangement on all important occasions. When all the demonstrative facts are acquired, appertaining to the art, reflection, acute reasoning, and profound judgment, decide how they are to be applied with safety and efficacy, in the cure of diseases. What a vast field of science is comprehended ! How many days and years of labour and industry are required ! What sedulous diligence is absolutely necessary ! Pursue, therefore, with an ambitious zeal, all the various branches of the science ; never attach yourselves to one, but embrace the whole ; for they, all united, form, with experience, the greatest medical characters.

TERMINOLOGIA, ANATOMY, AND PHARMACY.

EARLY learn terms, the constituent parts of substances, and definitions. With your own hands practise dissections in the dissecting room, chemistry in the laboratory, and pharmacy, in the apothecary's shop. Reading, merely, on these subjects, gives but a very faint and inadequate idea of those useful branches, but practice makes perfect, and lays the foundation of clear reasoning on analysis, synthesis, the doctrines of composition, decomposition, and of analogies, &c. and forms the judicious structure of all learned prescriptions. Books on these subjects can always be referred to ; first, as introductory, and afterwards, as occasion may require, to be correctors, and remembrancers, of early studies. A spirited emulation should animate the soul, to obtain excellence by unremitting application and industry. Neither indolence nor inattention, can ever be allowed in the medical art. The whole soul should be absorbed in the daily contemplation and humane duties of the profession ! On a future occasion I shall enlarge on all these important topics.

HOSPITAL STUDIES, &c.

IN this grand and extensive metropolis, great hospitals, with many of the most excellent preceptors in Europe, for the cultivation of all the branches of medical science, furnish opportunities for industrious students to become skilful practitioners. The professors teach, and it is expected the scholars should learn.

All the efforts and experience of the former will prove abortive, if the latter be not attentive, sober, and industrious. It is best to commence studies, in great practical hospitals, at the age of fourteen or fifteen, and those who do, it is their own fault, if they should not become expert. Those who are loosened upon the town at the age of twenty or more, and commence their London hospital studies, should be uncommonly assiduous, during the short period they remain. Every hour should be employed, and the study of every branch arranged, so that one should not interfere with another. No loitering, no dissipation, no card playing, no pursuits of pleasures are permissible. The town, with all its bewitching attractions, must not invade the unexperienced juvenile mind. The medical student comes from the distant provinces to improve, and be enabled to conscientiously perform the sacred duties of the profession ; if he, through negligence, should return little wiser than he came, he disgraces the art, and injures society, who suppose ability, where dangerous insufficiency exists. Nothing can be more infamous than to pretend to knowledge, and be deficient in an art, on which the preservation of health, the cure of diseases, and life of human beings depend. The world at large, indeed, are but ill judges of medical abilities, and they sometimes applaud superficial talents, and neglect profound science ; but this is no argument in favour of deficient knowledge.

knowledge. He who well comprehends the art, if he acquire practice, will soon distinguish himself by superior talents, and successful cures, will establish a permanent reputation, which no opposition, however formidable, or malevolent, can overthrow. Acquire science, be humane, and assist the poor, reject novel narrow-formed systems, avoid disputation and strife, be attentive, kind, generous, and civil to all who apply for relief, and your labours will be incessantly crowned with honours, and all the emoluments which follow merited estimation.

Let the hospital pupil keep a book, and write down all cases that occur in practice, the age, disease, constitution, remedies prescribed, and observations on the success of the practice adopted. This mode leaves on the mind strong impressions, which future age shall not obliterate, but which will be promptly called forth on similar occasions. The plan I recommend at the St. Mary-le-bone Infirmary, is the following, divided into columns.

Name. Age. Disease. Symptoms. Habit. Indications. Remedies. Observations. Such a register used in an hospital of full practice, with wonderful facility, initiates the young student into the very essence of sound practice, and conveys the science of the old experienced preceptor into the inexperienced juvenile mind. Those who have had the greatest opportunities of education and practice in the country, previous to attending a London hospital, will benefit sooner than those, who have every branch of science to commence on their arrival in the metropolis; but the latter should make up the deficiency by unremitting ardour. All attainments are acquired, and a laudable ambitious zeal for excellence, seldom fails of obtaining it, aut *Cesar*, aut *Nihil*, should be the stimulus and active principle, in every student's mind.

DISSECTIONS OF MORBID BODIES.

ALL reasonings on medicine were defective, very defective, until morbid dissections demonstrated by ocular evidence, the effects of diseases in the dead human body; all other sources of intelligence were doubtful, conjectural, and liable to error; but these are real, indisputable, and overturn, at once, all imaginary systems, and pave the way, above all other means for perfecting the art: Bonetus, Morgagni, Lieutaud, and Sauvage, De Haen, Stork, and our excellent anatomists, Dr. Hunter, Mr. J. Hunter, Dr. Baillie, and others, occasionally, have given distinguishing proofs of the utility of this modern science, and illustrated the art with new and useful observations. These authors should be all seriously studied, and applied as direct as possible to the practice of medicine, surgery, and midwifery.

For above forty years, no opportunity has been neglected, to promote these essential and necessary inquiries, and, indeed, my whole medical principles, which will hereafter appear, have been formed from such indubitable demonstration, joined to reflection, long practical experience, and conclusions from these sources. It is natural, then, to inculcate its absolute necessity, to advance the only solid foundation of the art, though this practical part be not in much esteem with many, from the disgusting appearance dead bodies exhibit. The pursuits are highly meritorious, however, from that very circumstance, and my *élève*, and indefatigable friend, Dr. Hooper, has acquired, by an unexampled industry, from morbid dissections performed in the presence of myself and pupils, a most profound science in these not very common investigations. Seeing the diseased before death, and examining the effects afterwards are more advantageous than the subjects, supplied for the common dissecting room purposes. This circumstance is of great importance to our pupils.

The opportunities for extispicial inquiries are immense, from the magnitude of the practice, the diversity of cases in all diseases; the seeing, previous to death, all the symptoms that led to fatality, at the St. Mary-le-bone Infirmary.

These advantages, young gentlemen, are the sublimest in the art to check imaginary conceits, promote true science, and to leave on juvenile minds impressions of diseases, consequences, and morbid appearances, never to be effaced. It is not reading desultory accounts, but viewing with your own eyes the dreadful effects of diseases, in all their various modifications. See, reflect, investigate, reason, conclude. Endeavour to discover whether any better treatment than that adopted could have been devised; or whether the cases were in themselves inevitably fatal. Whether the neglects of the patients, or the non-admission of timely remedies, or the inefficacy of the practice adopted, led to death. All these are very delicate, but profound professional inquiries, and they should be conducted with great candour, circumspection, a regard to the honour of the profession, and all its members; but above all, ascertain the truth as far as possible. Avoid the rocks others have split on, and so shall you arrive safely into port, on all occasions, like skilful pilots. It is very difficult for the most scientific and experienced, to judge rightly in difficult cases; but it will always be an honourable conduct to investigate facts, and support the dignity of the profession against the surmises of ignorance, or error; for the art has, at times, to contend with both, for the patient's benefit. Never give an opinion that may injure the character of any other practitioner; neither criticise nor

censure the practise of others, either by speech, inuendo, or writing, without the justest and honourable motives. It is more generous to conceal than expose errors. Every artist endeavours the best for the afflicted, and whoever insinuates deficiency of science in another, breaks those bonds of harmony, that should ever pervade medicine. It is a very mean reputation, that is built on the ruin of others; it is better that fame should follow generosity, humanity, deep professional skill, which most may acquire by great industry and experience, for as Cicero says, *Nil sine labore*.

It is supposed, that you have fulfilled all the intentions of study. You comprehend the composition of medicines, chemistry, pharmacy, anatomy, physiology, surgery, midwifery, the diseases of women and children, and medical practice. You are now going to launch into the treatment of complaints to the utmost of your own skill, and you all wish to get some share of practice and professional confidence. The requisites for a general practitioner have been only considered; in the elevated rank of a physician, the advantages of an university education lead the mind into all the higher branches of a complete erudition, in geometry, logic, rhetoric, mathematics, and in the various philosophical sciences, united to the antecedent knowledge in medicine. These, the university statutes of *alma mater*, Oxford, and the university of Cambridge, prescribe and elucidate. Pre-eminence in the Royal College of physicians, in London, flow from these sources, where there has appeared a succession of the most learned in Europe, not only in medicine, but in various branches of profound literature.

In the entrance into active medical life, and attempting the acquisition of practice, little can be expected, at first, without great professional and personal talents, and the interest of some senior practitioner, family, or other connections. The commencement cannot be better employed, than by relieving the indigent, daily, at certain fixed hours, gratuitously; thus, if success attend your humane endeavours, will be laid the foundation, of a spreading permanent reputation, for skill and judgment; thus will the mind be generously employed in the feeling acts of benevolence and christian charity, and medicine thus exercised, not only improves from experience, but gives confidence to the reflecting and sensible artists, constantly employed in rendering the art, what it ought to be, a real blessing to society. The rewards of such conduct are certain. A physician may prescribe, a surgeon may bleed, dress wounds, and relieve other accidents; and all these kind offices should be conducted with great tenderness and feeling, for the distressed sufferers. Favours conferred in a coarse manner, are scarcely received or considered as favours; but if with great solicitude, and a pious concern for human misery, they make lasting and favourable impressions on the human mind. The poorest should be treated with as much affability and politeness, as the richest and most elevated. Indeed, the poor frequently want all the necessaries and comforts of life; add sickness to their poverty, and it is impossible to conceive more absolute wretchedness. Medicine, that divinest of arts! should expand its cheering rays, in alleviating such complicated afflictions, and to speak the truth, there is no profession, that has so many opportunities of exercising the tender emotions of humanity and sensibility; nor is there any that practises christian charity, to a greater extent through all ranks and conditions of life. Never desert a patient in the most extreme danger; but endeavour to administer relief as long as life may remain.

In practice, it is of great consequence to study and well comprehend human character, with all its singularities and diversities, for a knowledge of physiognomy is half the knowledge of the art; to possess a very tranquil, accommodating, cheerful temper, and to never suffer wrath to preside over reason. There are a variety of provoking circumstances, daily arising in extensive practice, from ignorance, fears, and sometimes impertinence, which a physician should parry with smoothness, and overlook, if he should wish to be happy within himself. It is too great a sacrifice, for a man of science, strict honour, and integrity, to disturb his tranquillity at the versatility, follies, or vices of the world; for he, who from inexperience, expects more steadiness, wisdom, or virtue, than the world at large possesses, will be cruelly disappointed all through practical life.

CONCLUSION.—The sentiments promulgated, young gentlemen, it is hoped, and not even doubted, will make a proper impression on your juvenile minds. Your honour, your interest, your reputation, all depend on the prosecution of your studies with energy and vigilance. You are engaged in a profession that cannot admit any moments for idleness, relaxation, or other pursuits. The human intellects, however gifted, however formed by nature, and improved by application, can scarcely even be equal to the boundless diversities of medicine and human constitutions. Pursue your honourable profession with ardour, never be satisfied with present knowledge, exert yourselves daily for fresh accessions to science; so shall you be an honour to human nature, ornaments to the profession, and fortunate in life. Though stratagems and finesse artfully directed to interested purposes, many sometimes succeed; yet they are beneath your dignity. Real science, humanity, and urbanity, with sedulity, always lead to professional fame. Practice all the virtues, avoid all the vices, be strictly honourable in your professions, and your rewards through life will be certain and durable.

SCHOLA

SCHOLA ET HISTORIA
MEDICINÆ UNIVERSALIS NOVA,

OR THE

NEW UNIVERSAL SCHOOL AND HISTORY OF MEDICINE,

Abridged, Translated, &c. from the Latin Original.

I. **MEDICINE** is the art of preserving health, and curing diseases:

II. The principal parts of Medicine are three—Φυσιολογική, Physiology; Παθολογική, Pathology; and Θεραπευτική, Therapeutics.

1. **PHYSIOLOGY** considers the human body in a state of health.

2. **PATHOLOGY** contemplates the human body in disease.

3. **THERAPEUTICS** preserves the body in an healthful state, and cures, as far as the medical science extends, all diseases.

As **ANATOMY** is the foundation of Medicine, and leads to a knowledge of Physiology, it shall be first considered.

OF ANATOMY.

III. **ANATOMY**, or Ανατομή, is an artificial dissection of the human body, demonstrating the situation, connexion, figure, and structure of all the parts.

IV. The first object of Anatomy respects the human body; but the second, that of other animals.

V. DIVISION. The principal parts of Anatomy are :

1. OSTEOLGY which examines bones, their structure and connexions.
2. SYNDESMOLOGY explains the ligaments and their uses.
3. MYOLOGY contemplates and shews the muscles and their actions.
4. ANGIOLOGY expounds the difference of vessels in the human body.
5. NEUROLOGY demonstrates the nervous system and distribution of the nerves.
6. ADENOLOGY teaches the structure and offices of glands.
7. SPLANCHNOLOGY explains the viscera and their functions.
8. HYGROLOGY considers the human fluids.

VI. The means by which a knowledge of Anatomy is perfected, are :

1. By artificial dissections of the human body.
2. An accurate demonstration of parts.
3. A perspicuous explication.
4. The reading of modern anatomical authors.

The Anatomical Instruments.

1. Before dissection, needles are to be ready.
2. Thread, and that it may be stronger it should be waxed, to serve for ligatures, or for tying any part.
3. Scalpels, or dissecting knives, made with the best tempered steel, and a larger one for cutting the cartilages of the ribs, or other purposes.
4. A dissecting hook, or tenaculum, to lay hold of any part.
5. A hone to sharpen the knives, when blunted.
6. Sponges should be ready to cleanse parts and to dry up cruor, or any humidity.
7. Probes to explore the progress of vessels, &c.
8. Scissars are required to cut membranes, &c.
9. A blow pipe is necessary for whatever may require inflation.
10. A small pair of bellows should be ready to inflate larger parts.
11. A saw to open the cranium.
12. An elevator to raise the bone already sawed.
13. Besides these, wedges, a hammer, syringes for vessels, &c. tubes for injecting quicksilver, and a microscope for examining minute parts are necessary. Pails, basons, pans, water, cloths, and a marble table are appendages of the dissecting room.

VII. Some general precepts to be observed in dissections.

1. No person should be admitted to dissections, but those who devote themselves to the medical or chirurgical art, except learned philosophical investigators.
2. The time most eligible for anatomical administrations is winter.
3. The cadaver, or dead body, should be first cleansed from all impurity.
4. The room of administration should be cool.
5. The place in which dissections are performed should be light.
6. The dead body, in public dissections, should be placed on a versatile table, that the Students, or Auditors, should see the subject, by turning the table in different directions.
7. The hand, in operating, should be held suspended.
8. Humidity should be often absorbed by a sponge.
9. The daily dissection being finished, the body, or parts, should be accurately covered, and every thing ought to appear as neat as possible.
10. Persons admitted to dissections should observe secrecy, and never speak of those subjects, which, though indispensably necessary to the Faculty, fill the minds of the rest of mankind with horror.

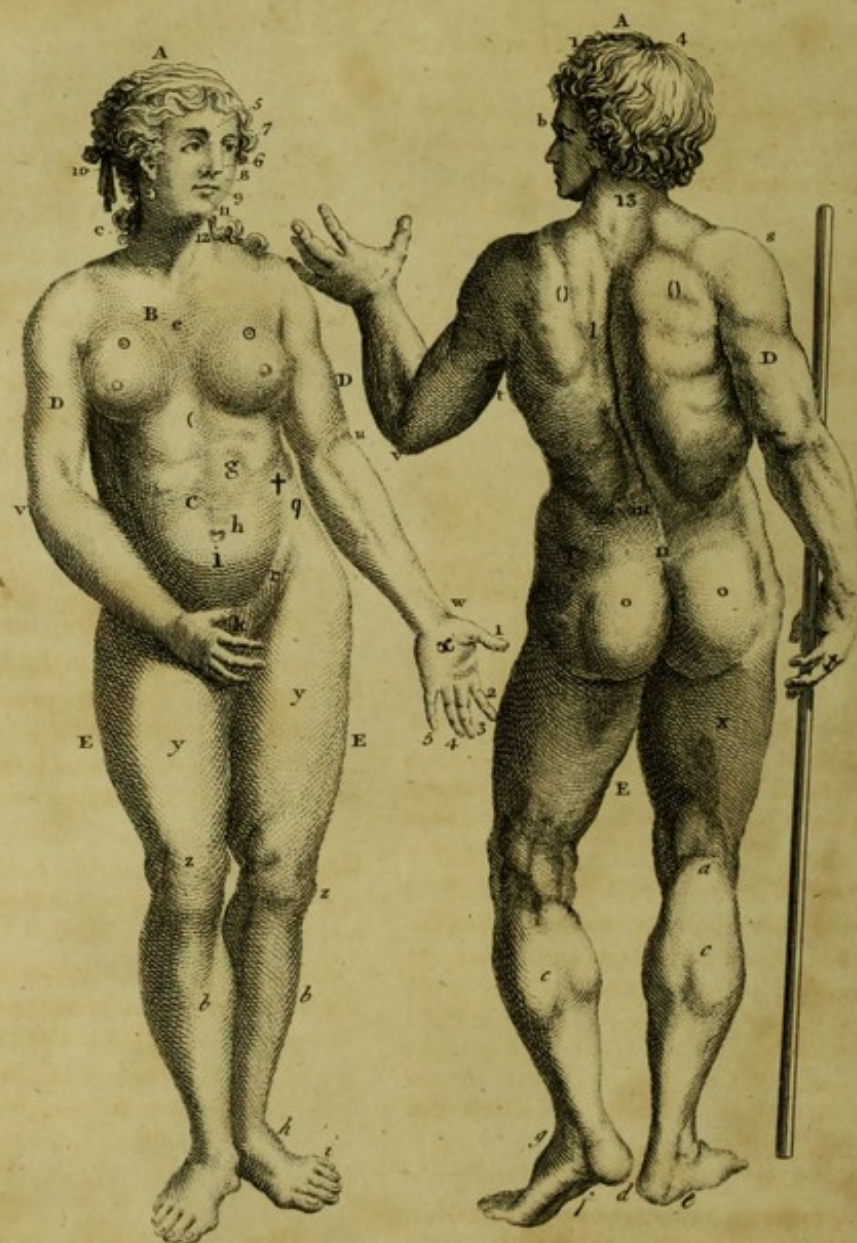


Edwards del.

Sharp sculp.

Schola et historia medicinae a Gul. Rowley.

TABVLA. I.



Schola et historia Medicinæ, a Gul. Rowley.

PLATE I.

On the Names of the external Parts and Divisions of the Human Body.

A.

The human body is divided into the head, trunk, and extremities.

The face and the parts covered with hair is called the head.

The parts of which are:

1. *Sinciput*, or anterior and superior part.
2. *Occiput*, or posterior part.
3. *Tempora*. The temples, or sides.
4. *Vertex*, or crown of the head.

b The face.

5. *Frons*, or forehead, under the sinciput.
6. *Nares*, the nostrils from which mucus.
7. *Oculi*, the eyes under the eye-lids.

Palpebræ, or the eye-lids.

Cilia, or eye-lashes, the outer edge of the eye-lids, on which hairs grow.

Canthus major, the great angle of the eye towards the nose.

Canthus minor, the smaller angle of the eye towards the temples.

8. *Malæ*, the cheeks, which when inflated are called *buccæ*.
9. *Os*, the mouth; it divides the lips, and is that empty space which extends from the lips to the fauces internally.
10. *Aures*, the ears; the lobe is the extremity.
11. *Mentum*, the chin, in the middle of which the dimple.
- c *Collum*, or neck, is immediately below the head.
12. *Jugulum*, or throat, is the anterior part.
13. *Cervix*, is the posterior part.

B.

Thorax, between the neck and abdomen; in which the heart, lungs, &c. are seated.

e *Sternum*, or pectus.

o *Mammæ*, or breasts, carneous eminences on the anterior part of the thorax.

Papilla, or nipple in the extreme part.

(*Scrobiculus cordis*.

() *Scapulæ*, or broad bones lying behind, called shoulder blades.

C.

Abdomen, or the inferior belly, is situated between the thorax and pubis; in it are contained the liver, spleen, stomach, intestines, pancreas, kidneys, bladder, &c.

g The space above the navel is called epigastrium.

The extremities of the short ribs are terminated by cartilages.

† *Hypochondria* are immediately under the short ribs.

h *Umbilicus*, or the navel, is the place where formerly the umbilical vessels passed to nourish the fœtus in the gravid uterus.

The middle part of the navel is called *acromphalon*, the surrounding skin *vetula*, when shrivelled, signifying old age.

i *Hypogastrium* is below the navel.

k The part lower down to the pudenda is called pubes, or ephebæon.

l The bones of the back-bone are called *vertebræ*, and the whole assemblage of them is the spine; (m) the lower part is called *lumbi*, or *loins*; (n) the last bone is the *os sacrum*, called *hyposphondelon*, which is terminated by the *coccyx*.

o On the sides and below the loins posteriorly are the nates, or posteriors.

q *Iliæ* are the cavities between the costæ, or ribs, and the femur, or thigh.

r *Inguina*, the groins, are next the upper part of the thighs.

D.

The *arms*, or superior extremities, extend from the shoulders.

s *Humerus* is the uppermost part of the brachium, or arm.

t *Axilla*, or *arm-pit*, is the cavity under the articulation of the humerus.

u *Cubitus* reaches from the elbow to the wrist.

v. *Gibber*, or *olecranon*, is the posterior protuberant, sharp end of the cubit, called elbow.

w *Carpus*, the *wrist*, from the lower end of the cubit to the metacarpus.

x The flat, broad part of the hand is called *palma* in Latin, and *metacarpium* in Greek.

† *Dorsum manus*, the back of the hand.

§ *Vola manus*, the inside or palm.

Digiti, the fingers; 1. *Pollex*, the thumb; 2. *Index*, the fore finger; 3. *Medius*, the middle finger; 4. *Annularis*, the ring finger; 5. *Auricularis*, or little finger.

E.

Pedes, the *feet*, are the lower extremities.

y *Femur*, the thigh.

z *Genu*, the knee, is the connection of the thigh with the leg.

a *Poples*, the *ham*, behind and under the knee.

b *Tibia*, the shin-bone, is the anterior part of the leg.

c *Sura*, the *calf of the leg*, is the posterior fleshy part of the leg.

d *Calx*, the *heel*, is the posterior round part of the foot.

e Below that is the hollow of the foot.

f Then comes *planta*, or the *sole* of the foot.

g Opposite, on the upper part, is the *tarsus*.

h *Metatarsus*.

i *Digiti*, the toes of the foot.

PLATE II.

Of the constituent Parts of the Body.

The human body consists of *solids* and *fluids*.

The solids are :

I. A fibre is the most simple part of the body, destined for the construction of all the other parts.

Fibres are divided in *longitudinal A*, *transverse B*, *oblique C*, *orbicular D*, *arched E*, *angular F*, *spiral G*.

From many simple fibres longitudinally and closely applied to each other arises a simple *lamina*.

II. *Tela cellulosa*, or cellular texture; by the union of many simple laminae is produced the *tela cellulosa*, which gives origin to almost all parts of the body.

a Is the texture seen by the microscope.

b The texture with large cells, to receive the adeps, or fat.

III. *Membrane*, is a white, flexible, thin, and expanded part.

a Closer cellular texture, like II. produces membrane III.

IV. *Tunica*, or *coats*, are membranes so turned and formed as to make various cavities; but more properly those that constitute tubes or vessels.

Vessels are long, conic, membranous ducts, through which the fluids of the body are conveyed, and are named as follows :

V. *Artery* } Is a conic, pulsating vessel, carrying the blood from the heart to every part of the body; is composed of five coats.

VI. *Vein* } Is a vessel without pulsation, returning the blood and other fluids from all parts of the body towards the heart.

VII. *Lymphatic Vessels* } Are small pellucid tubes furnished with valves, they absorb from most parts of the body the coagulable lymph, and carry it to the thoracic duct.

VIII. *Valves* } Are small membranes in the heart and veins, and shut like flood-gates, that the blood and other fluids may not repass.

V. *Arterial tunics*, (*a*) the first and outer coat they take from the cavities.

b The second coat is next the former.

c The third is the *muscular coat*, made of spiral muscular fibres, whence the pulse originates.

d The fourth coat is made of the *cellular texture*.

e The fifth is the last and internal.

The *venal coats* VI. have the same structure, except the muscular coat.

All those tunics are nourished by small arteries, veins, and receive their sensation from nerves.

IX. The branches of *arteries* and *veins*. A the artery. B the vein. C the ligature in both to shew by the distention the course of the blood. D the vein swelling below the ligature.

E the artery detumefying, *e, e, e, e*, the connections of the small ramifications.

VII. Exhibits a *lymphatic* or conglobate gland injected with mercury.

A the lymphatic vessel. B the lymphatic gland; a heap of vessels.

X. *Nerves*, are white, hard, elastic, and very sensible parts; they originate in the brain, cerebellum, and medulla spinalis, and are dispersed over the whole body; by them all sensation is produced.

X. The nerve; A the outer coat. B the nervous filaments.

XI. The *muscles*, are organical parts, called flesh, and give motion to the body, they are composed of fibres, cellular structure, arteries, veins, nerves, lymphatics, &c.

Tendons, are the ends of the muscles, called heads or tails; their fibres are tougher, stronger, and more compact than in the muscles, and of a white silver colour.

XI. A double muscle; A, B, C, the outer tendon divided. D, E, the interior tendon. F, G, two orders of fibres, making two bellies of the muscle.

XII. A *gland*, is a fleshy part of the body, hard, round, or oblong, covered by its proper membrane; composed of arteries, veins and lymphatic vessels designed for the determined secretion, or mutation of some particular humours.

XII. A Gland. A. blood-vessels. B. a nerve. C. excretory duct. The rest represent the glandular body.

Ductus excretorius is a canal receiving in certain glands and viscera the secreted liquors, and conveying them off to the proper destined places.

XIII. *Ossa*, bones, are the hardest parts of the body, composed of strong *lamellae*, of the cellular texture, blood-vessels, and nerves, and are destined to be a support to all the other parts.

XIII. *Os*, the bone. *a*, *corpus*, the body of the bone; *b*, *caput*, the head; *c*, the *apophysis*.

XIV. *Cartilages* are parts most similar to the bones, white, flexible, and smooth, generally adhering to the extremities of the bones. The anterior part of the ribs is cartilaginous, the same also is the trachea, or wind-pipe.

XIV. *Ligament* is a membranous part destined to join and connect together other parts.

XIV. The *cross ligaments* in the poples or ham seen from the anterior side. (*a*) *Condylus externus femoris*. (*b*) *The internal condyl.* (*c*) *The tibia.* (*d*) *Fibula.* (*e*) *Ligamenta cruciata.* *a, b*, Smooth, white parts; the ends of the bones covered with a smooth cartilage.

Viscera, bowels, are organic parts, *v. g.* the liver, &c.

Organon, or *pars organica* is any animated part of the body destined for some particular use.

TABVLA. II.



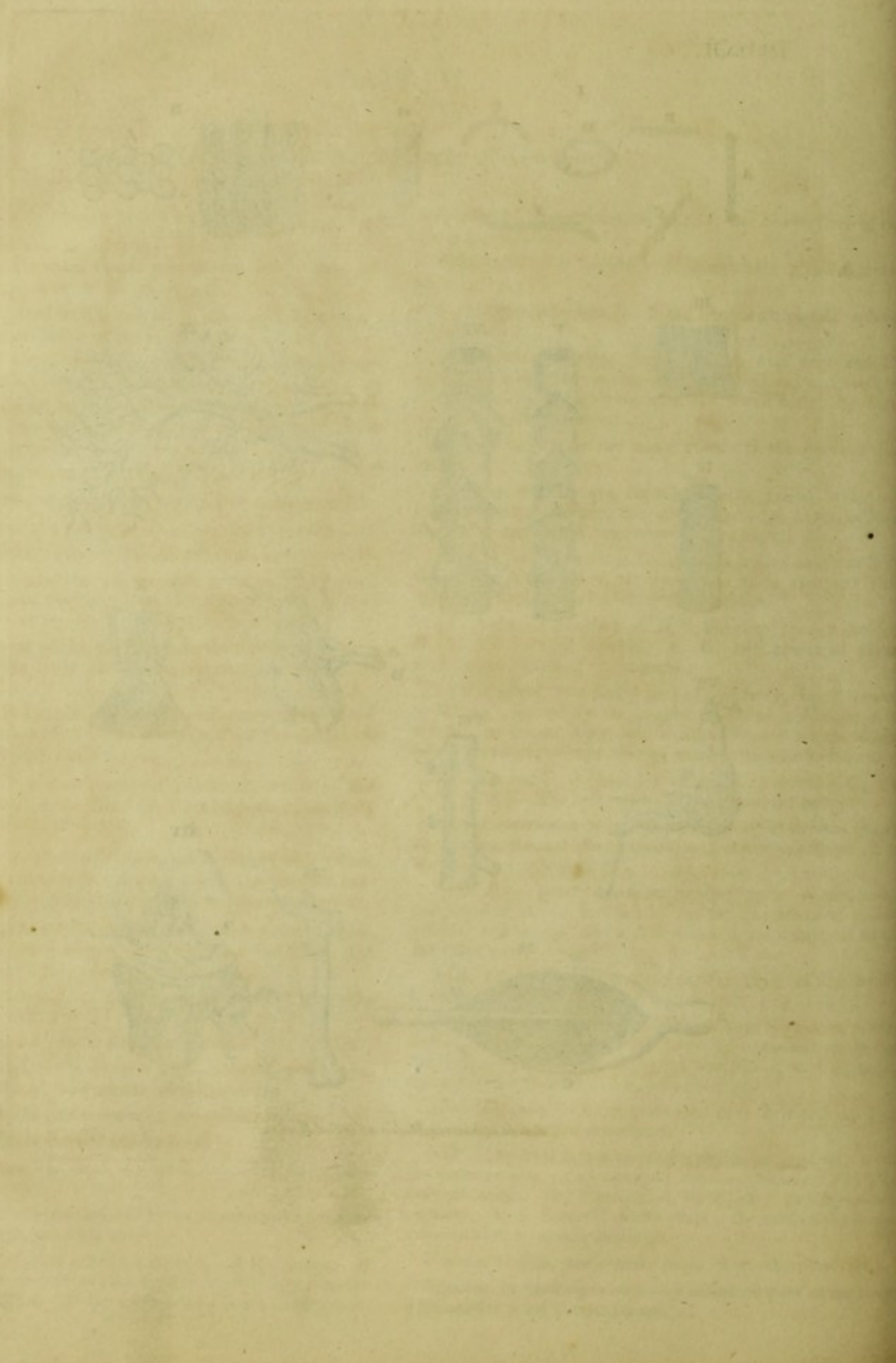
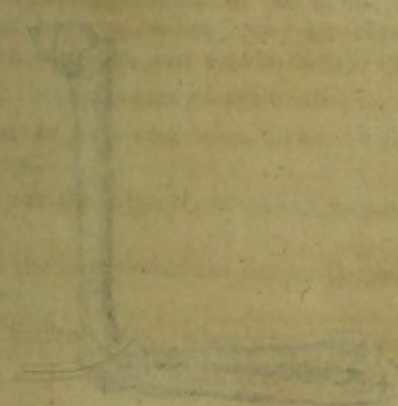
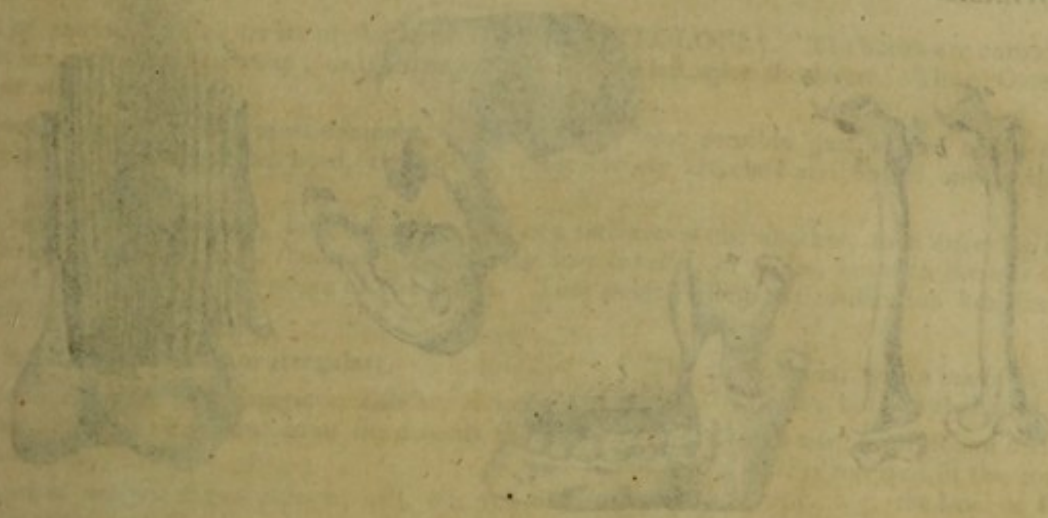


PLATE III

HEAVENLY



TABVLA III.

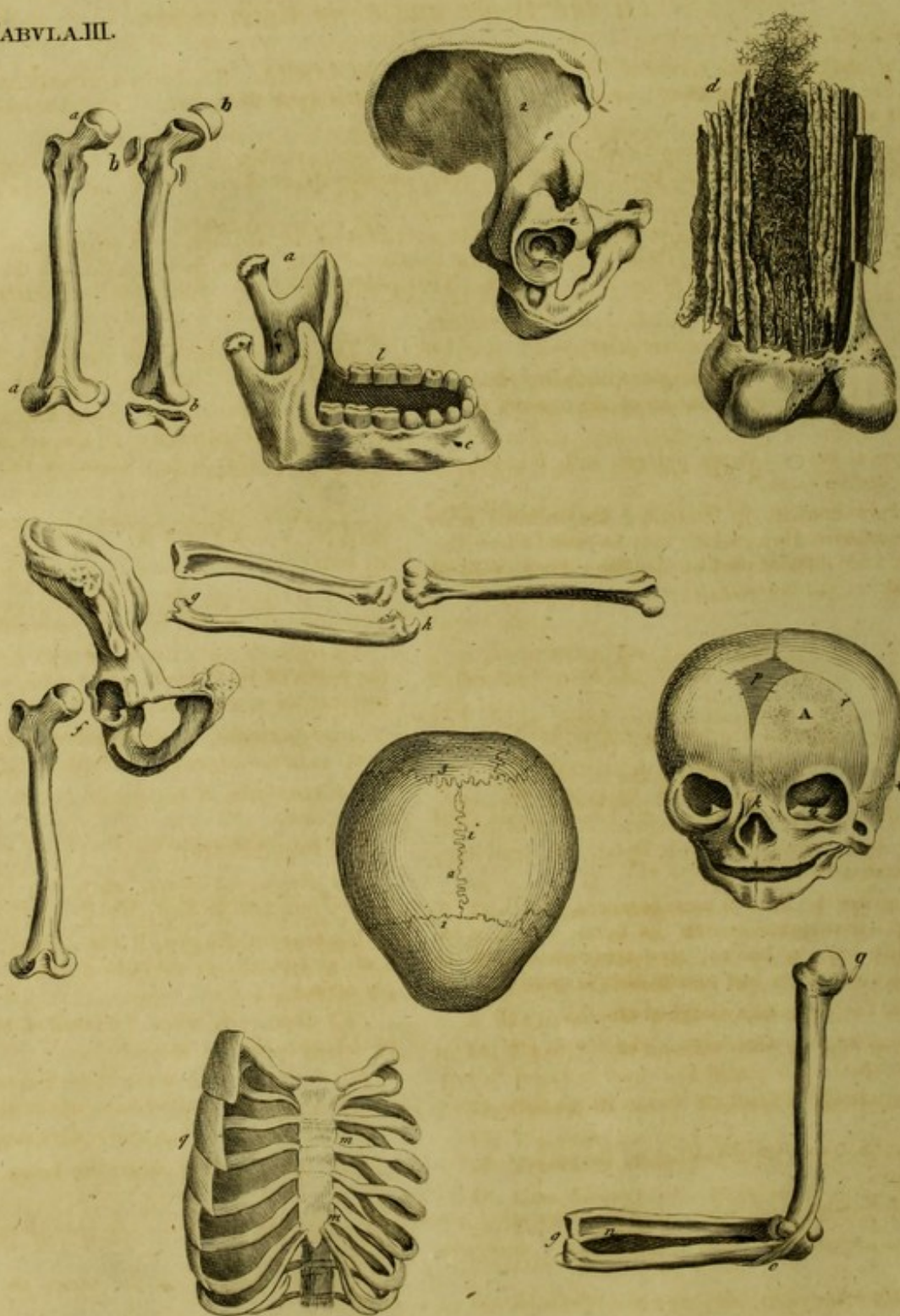


PLATE III.

Of the Bones and their Connections.

That part of anatomy which treats of the bones is called **OSTEOLOGIA**. The bones are considered in the state when all the soft parts are entirely taken away; or when some of them are left upon the bones. Thus, Osteology is divided into *dry*, and *recent*, or *moist*.

Os, the bone, is the hardest, most compact, inflexible, and least sensible part of the body, composed of many small *lamellæ*, originating themselves from hard, rigid fibres, most closely attached and united one to the other, in their proper situation.

When the elements of the body, longitudinally, and in a series meet one another, then arise the osseous *bony fibres*; when these fibres laterally join together, then are produced the *bony lamellæ*, or tables, between them is the effused, and gradually coagulating *gluten* left: this is the origin of the bones. That point, where the ossification has first appeared, is called the *Punctum Ossificationis. r.*

1. A bone is flat, cylindrical, or irregular.
2. In substance compact, (*d*) spongy, cellular, reticular, from the closer adhesion or separation of the osseous fibres, or cohering particles.
3. The chemical analysis shews phlegm, salt, oil, volatile spirit, and calcareous earth.*
4. The texture consists in laminated longitudinal scaly fibres, with transverse fibres, which may be called *Clavicular*. (*d*) Represents the inferior part of the thigh bone, with its lamellæ in their true situation.

The parts of the bones are:

I. *Diaphysis*. A is the body of the bone, which first grows hard, and is the foundation of the rest.

II. (*a*) *Apophyses*, or *processus*, are the various prominent parts of the diaphysis: the round apophyses are called *condyls*, *capita*, or *heads*; others from their shapes are named *cervix*, neck; *spina*, spine; *mucro*, *corona*, *stylus*, &c. and they cannot be separated by boiling.

(*b*) *Epiphyses* are the osseous protuberances, which by the intervention of a cartilage adhere to the bone; and they separate from the bone by boiling, they are cartilaginous in children, harden with age, but remain always spongy.

III. *Cavities*, there are many large or small.

(*c*) *Foramina*, or *perforated holes*. The vessels and nerves pass through them.

(*d*) *Meatus*, are the interior cavities in which the marrow is contained.

(*e*) *Sinus* are the impervious cavities on the surface of the bones, and serve:

1.) To form articulations: when they are deep they are called *cotyle*, or *acetabulum*; when shallow, *glene*, *sinus glenoides*.

2.) To receive other parts, and are named *foveæ*, *fossæ*, as orbits of the eye; when they have a long extent, they are called *sulci*, furrows.

Of the articulations of the bones.

IV. The articulations of the bones are made for the sake of motion.

The articulation, with a manifest motion, is threefold, and called *Diathrosis*, but is subdivided into

(*f*) *Enarthrosis*, or profound articulation; when a great head of a bone is received in the fovea, or deep acetabulum of another bone, e. g. the head of the thigh bone in its acetabulum.

(*g*) *Arthrodia*, or a superficial articulation; as the os humeri is connected with the scapula, or shoulder-bone, where its round head is received in the less deep fovea.

(*h*) *Ginglymus*, a mutual, reciprocal articulation, when a bone receives, and is received by another.

Synarthrosis, or articulation with an obscure motion; like the bones of the carpus, and tarsus, with the bones of the metacarpus and metatarsus.

Amphyarthrosis, or articulation with an imperceptible motion, as in the bones of the carpus and of the tarsus.

V. *Symphysis*, a concretion, when the united bones are immoveable.

The immediate are:

(*i*) *Raphe*, or *suture*, when two bones are mutually indented into one another, like the teeth of a saw.

The true futures are: 1. the *coronal*; 2. *sagittal*; 3. *lambdoid*, or *ypsiloid*: or they are *spurious*, like those on the temple bone.†

(*k*) *Harmonia*, when the mark of union is like a line, as in the bones of the nose.

(*l*) *Gomphosis*, when the bones run one into another like a nail in a wainscot, as the teeth in the maxillæ, or jaw-bones.

The mediate are, when other parts concur together: as

(*m*) *Synchondrosis*, when the bones are joined by cartilages, like the ribs with the sternum.

(*n*) *Syneurosis*, or rather *syndesmosis*, by means of ligaments.

(*o*) *Syntenosis*, when the bones are joined by means of tendons.

(*p*) *Synymensis*, when the bones are connected by membranes.

(*q*) *Syssarcosis*, when they are connected together by muscles.

(*r*) Shews the radiating fibres of a bone. A is the central part of the os frontis, more perfect than the others, and where ossification first commences.

* Chemistry has lately made important discoveries in analyses, &c.

PLATE IV.

When all the bones of the human body are joined together it is called a *Skeleton*.*

The *Skeleton* is called *artificial*, when the bones are connected by brass wires; or it is *natural*, when the bones are prepared and united together by their natural ligaments.

The bones of the body are divided into bones of the *head*, *trunk*, and *extremities*.

The bones of the head and neck.

The bones of the head are the skull (*cranium*) and jaw-bones (*maxillæ*.)

The *cranium*, or *calvaria*, is made of two tables, or lamellæ, between which is the *diploë*.

a. Os frontis, coronale, is on the fore part, called forehead.

The *os frontis*, and all the other bones of the *cranium* consist of two tables, and contain a spongy substance between. Surgeons, in the operation of the trepan, should well attend to the structure of those bones.

b. Ossa syncipitis, or verticis, the bregma. Between *a* and *b* is a part of the coronal suture, the *ossa bregmatis*, or *parietal* bones, form, or constitute the uppermost and lateral parts of the *cranium*.

c. Part of the os squamosum, or squamous part of the temporal bone.

2. The mamillary process.

d. Os jugale, or malæ, zygoma, or cheek-bone.

e. A part of the superior maxillary bone with eight teeth. The superior maxilla has thirteen bones and sixteen teeth.

f. Maxilla inferior, or the lower jaw-bone.

g. Seven vertebræ of the neck with the cartilages.

3. The transverse processes.

Of the trunk.

The *trunk* consists of the dorsal spine, bones of the breast, and the *ossa innominata*.

h. Sternum, or *breast-bone*, has, in adults, one, two, or three parts; on the upper part it has a sinus, or furrow, for the wind-pipe; and on the sides *i.* The heads of the *clavicules* are articulated. On both sides are the superior seven ribs: the *sternum* has the shape of a dagger, on its point is the *cartilago xiphoides, ensiformis. k.*

l. Costæ, the ribs, are twenty-four in number, twelve on each side.

m. Five vertebræ of the loins with the cartilages between.

4. *Processus transversales.*

n. Os sacrum, is composed of five vertebræ.

o. Ossa innominata, called by Galen *ἀνώνυμα*, are divided into *ilia*, *ossa ischia*, and *pubis*. The first, 5. *Os ilium*, is called by some *λαγώνον*, ἡ *κενιώνων*: the second, 6. the anterior, *pubis*, *της ἡβης ὅς ἐστιν*. The third, 7. *os coccygis; ἰσχίον* and *ἀνώνυμον*. 8. *Os ischium*,† the circular appendix on the superior part is by some called *spina illi*, or spine of the *ilium*.

9. The inner cavity of the *os innominatum*, and the *os sacrum*, is called *pelvis*.

Superior extremities.

The superior extremities are divided, I. in the *humerus*, or shoulder-bone, composed of the shoulder and clavicle: II. the *cubitus*, the fore-arm, and is composed of the *ulna* and *radius*: III. *manus*, the hand; which is again divided into the *carpus*, *metacarpus*, and the five fingers, *digiti*.

i. The *clavicles* are crooked like an Italian *s.* the round end articulates with the sternum, and the flat with the acromion of the scapula.

10. *Scapulæ*, the shoulder-blades.

11. *Cervix scapulæ*, or the neck of the shoulder-blade.

g. Os humeri, the shoulder-bone, or upper bone of the arm.

11. *Condylus internus*. 12. *Condylus externus*.

r. Radius lies by the side of the *ulna*, but is a little shorter.

s. Ulna, is also called *cubitus*. The *cubitus* is directed to the little finger; the *radius* to the thumb.

t. Carpus, the wrist, consists of eight different shaped little bones.

u. Metacarpus, four bones belong to it. The bones between the fingers and the carpus, or wrist, are named *metacarpus*.

15. Is the metacarpal bone of the thumb.

w. The bones of the five fingers. The five fingers have three phalanges, or thirteen bones, besides the sesamoid little bones, under the articulations, or joints.

The inferior extremities.

The inferior extremities consist: I. Of the *ossa femoris*, thigh-bones: II. *crura*, the legs, divided into *tibia*, the large or shin-bones, *fibula*, the less bone, and *patella*, knee-pant: III. the foot, is divided into *tarsus*, *metatarsus*, and five toes.

x. The femur, the parts of which are:

14. *Caput*, or the superior head, is uppermost in the furrow of which is the round ligament inserted.

15. *Collum*, or *cervix*, the neck is under the head.

16. *Trochanter major*, }
17. *Trochanter minor*, } are below the collum, or neck.

18. *Condylus internus*. 19. *Condylus externus*.

20. *Patella*, mola, lays on the femur and tibia. *y.*

z. Fibula, in Greek *πρόννη*.

21. *Malleolus internus*. 22. *Malleolus externus*.

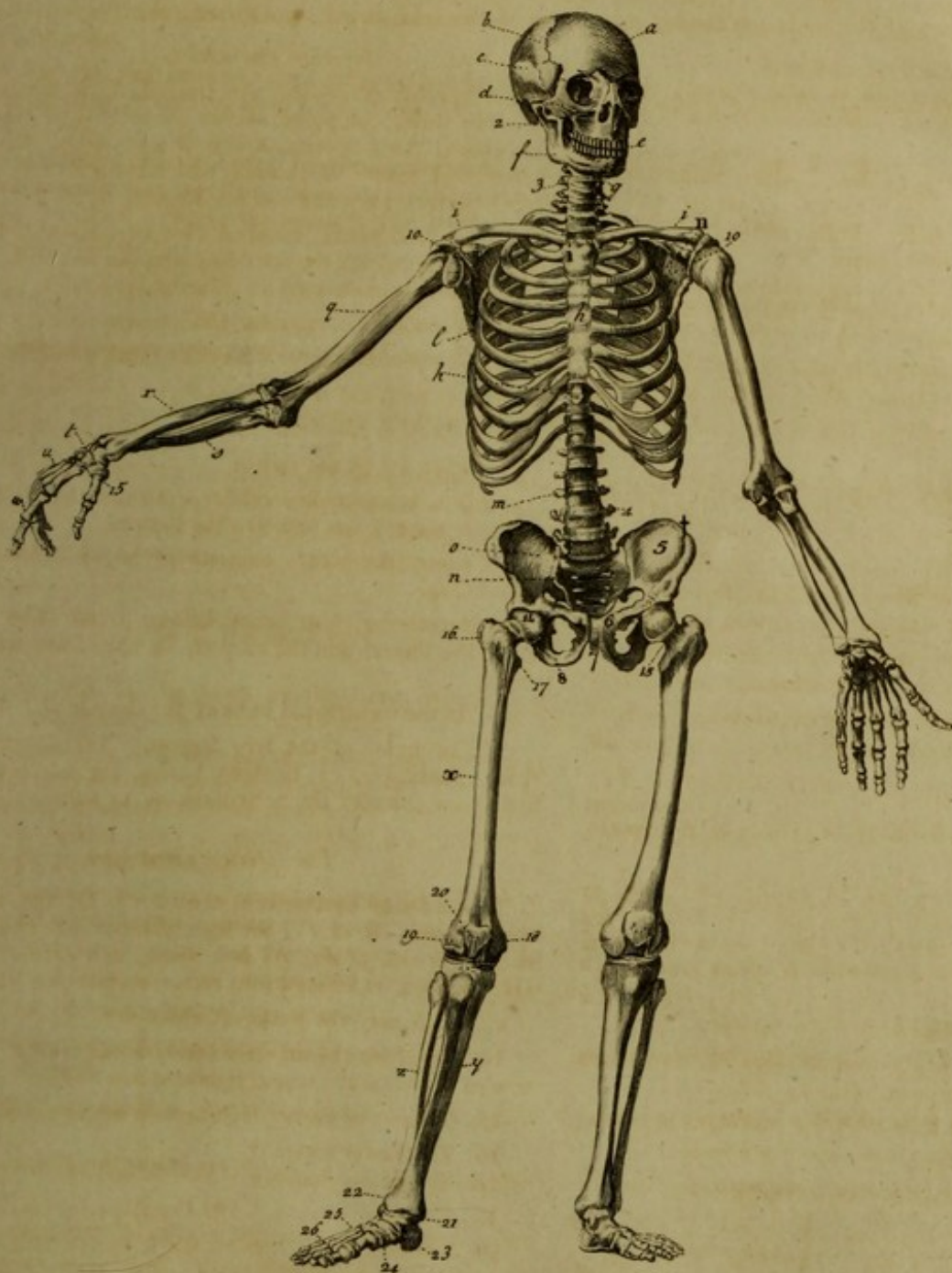
23. *Os calcis*, calx, the bone of the heel. Between 23 and 24 are six other bones of the tarsus.

25. *Metatarsus*, has five bones.

26. The bones of the toes or the *phalanges*.

* The ancients have very well known the bones of the human body, their figures and connections, as may be seen by the Greek descriptions in the *Schola Medicinæ*, extracted from *Hippocrates*, *Rufus Ephesius*, *Galenus*, and *Oribasius*, &c.

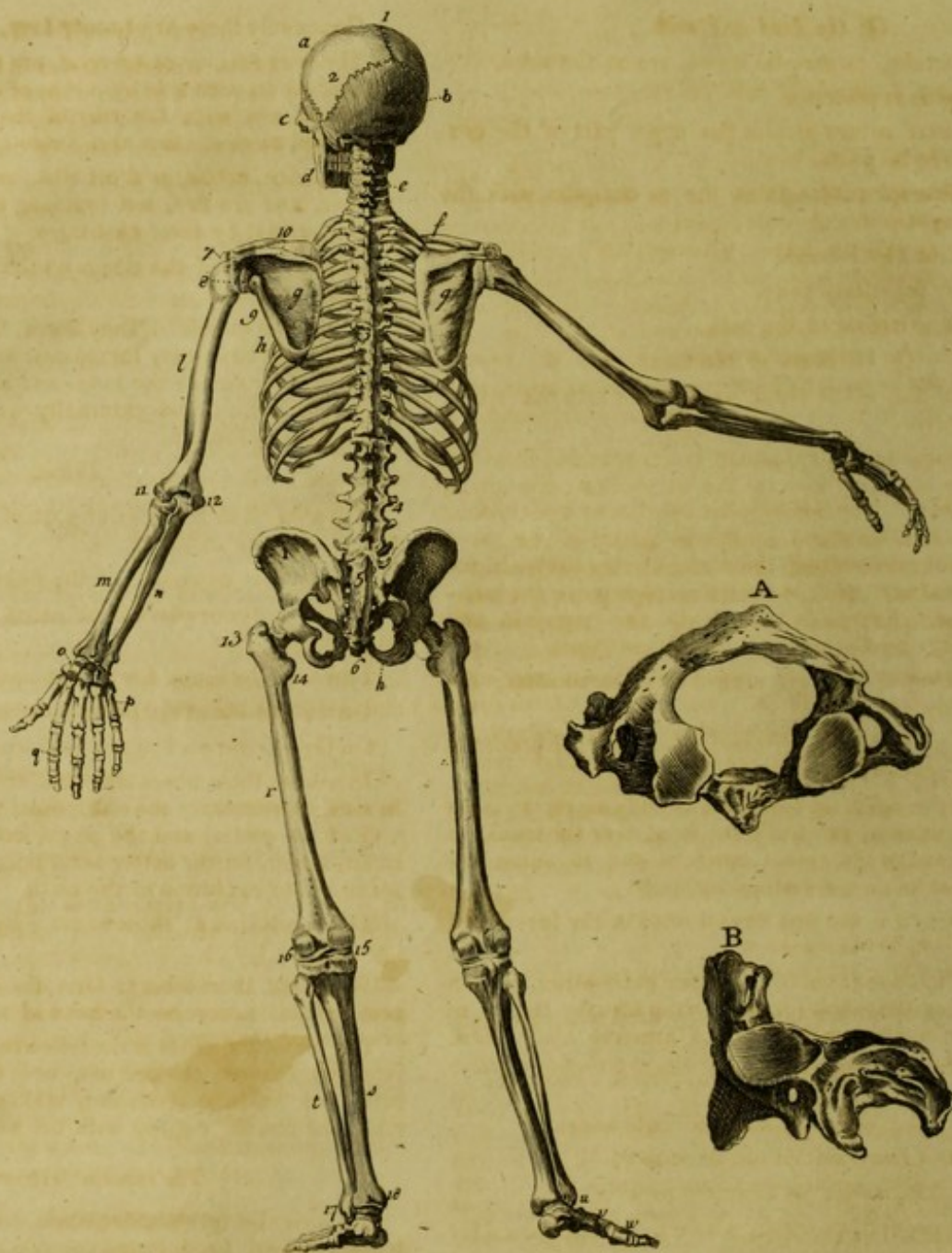
TABULA. IV.



Schola et historia Medicinæ a Gul Rowley

Royce sc.

TABVLA N.



Schola et historia Medicinae a Gul. Rowley.

Royce sc.

PLATE V.

*The back View of the Skeleton.**Of the head and neck.*

a. *Ossa parietalia*, or parietal bones, are on the sides.

b. *Os occipitis* is posterior.

1. The *sagittal* suture divides the upper part of the cranium into two equal parts.

2. The *lambdoidal* suture joins the *os occipitis* with the bones of the *synciput*.

c. *Os mala*, or cheek-bone.

d. The lower maxillary bone.

e. The seven *vertebræ* of the neck.

Of the bones in the trunk.

The bones of the whole trunk are divided into the spine, thorax, and pelvis.

The *dorsal* spine is that column of bones reaching from the condyle of the occipital bone to the *os sacrum*, containing the spinal marrow. The whole spine consists of twenty-four *vertebræ*, which are divided into three parts; e. the seven uppermost are the *vertebræ* of the neck; 3. the twelve in the middle are *dorsal vertebræ*; 4. the five inferior are the *vertebræ* of the loins. Every one has a body, two epiphyses, and seven processes. 5. *Os sacrum*. 6. *Os coccygis*.

A. The first *vertebra* of the neck is nominated *atlas*; the *atlas* has no body nor spine.

B. The second *vertebra*, *epistropheus*, besides the processes it has a dental process, like a tooth.

The use of the spine is to keep the body erect, to leave more room for motion, to sustain the head over the trunk, to receive and preserve the spinal marrow, and to admit the nerves to pass through the lateral openings.

f. The *clavicle*, it is the first bone formed in the *fœtus*, and is of a spongy fragile substance.

Its use is, I. to strengthen the superior extremities, and to hinder the falling too much forward on the breast: II. to give an origin to several muscles: III. to preserve and defend from injury the great subclavian vessels, which lay underneath.

g. *Scapulæ*, *homoplata*; the shoulder blade-bones.

7. *Acromion*. The clavicles are fixed to it.

8. *Processus coracoideus*, or coracoid process.

9. The short process, or *cervix*, where a sinus is formed for the *os humeri*.

10. The *spine* of the scapula, dividing the posterior part into two.

The use of the scapula. 1. To sustain and connect the arm with the trunk. 11. To give rise or insertion to many muscles. 111. To defend the contents of the thorax.

The ribs or costæ.

b. The ribs form the lateral parts of the thorax.

Commonly there are twenty-four, twelve on each side.

The true ribs, or *costæ veræ*, are the seven uppermost ribs, connected on each side by means of their cartilages with the sternum, and with the ribs of the opposite side, make so many full circles. See also Table IV.

False ribs, *nothæ*, or short ribs, are those which follow the former, and are five, not touching the sternum, but are connected with it by their cartilages.

The substance of the ribs is on the outside compact, but internally spongy.

The use of the ribs. They form the sides of the thorax; during respiration they increase or diminish the cavity of the thorax; they defend the lungs and the heart; many muscles adhere to them; and externally and anteriorly are placed the *mammæ*, breasts.

Pelvis.

The *pelvis* is in the inferior part of the trunk, and acquires that name from its shape.

The pelvis is composed of the following eight bones:

On the posterior part of the pelvis is the *os sacrum*, 5. and *os coccygis* 6.*

Laterally the ilium, i. with the superior margin called *crista*

On the foreside of the pelvis the *ossa pubis*, (see Tab. IV.)

On the inferior part of the pelvis *ossa ischii*. k.

In women those bones are smaller and more asunder than in men, particularly the *ossa pubis*; thus they make the cavity of the pelvis, and the angle between the *os pubis* and *ischii*, larger, for the better accommodation of the *fœtus*, and for its easier exclusion in the birth.

The connexion of those bones is by means of cartilages and ligaments.

The use of them all is to form the pelvis, and to make an acetabulum, to receive the head of the thigh-bone.

The use of the *pelvis* is the following: to defend part of the *intestinum ileum*, the rectum, and the urinary bladder; in men, the *vesiculæ seminales*, and spermatic ducts; in women, the uterus, vagina, with the adherent parts.

The superior extremities.

f. *Claviculæ*, g. shoulder-blade, l. shoulder-bone. 11. External condyle. 12. Internal condyle. m. Radius, n. Ulna, the superior part of which is the *olecranon*; the inferior *processus styloideus*. o. Carpus. p. Metacarpus. q. Phalanges of the fingers.

The lower extremities.

r. *Os femoris*. 13. Trochanter major. 14. Trochanter minor. 15. Condylus internus. 16. Condylus externus. s. Tibia. t. Fibula. 17. Malleolus externus. 18. Malleolus internus. u. Tarsus. v. Metatarsus. w. Phalanges.

* Some Anatomists will add the *os sacrum* and *os coccygis* under the name of *vertebra spuria*.

PLATE VI.

Of various Bones.

Figure I. Cranium, &c.

1. Os frontis. 2. The upper foramen orbitale, where passes through the first branch of the fifth pair of nerves, with a small artery; therefore the surgeons should take care, particularly in infants, not to make incisions in those places.

3. Underneath is the frontal sinus, where the trepan cannot be performed without danger.

4. Os bregmatis, or parietal bone. 5. Os temporis, or temporal bone. 6. The squamous part. 7. The petrous part, whence. 8. The meatus auditorius. 9. The mastoid, or mammillary process. 10. The styloid process.

11. Os occipitis. 12. Os malæ. 13. Os sphænoideale, basilare, multifforme, &c.

14. Os maxillæ superioris, or superior maxillary bone; it consists of thirteen bones and sixteen teeth, if the number be complete. Of these thirteen bones, six are pairs: whereof, the lacrymal, ii. the nasal, iii. the jugal, iv. the maxillary, v. the lower spongy, vi. the palatinum, and the last odd one is called vomer.

They are joined together by a plain juncture, called harmonia.

15. Os lacrymale, or unguis; there is to be observed in it a furrow, for the conformation of the nasal duct; which is of use to consider in the surgical operation for the fistula lacrymalis.

16. The pterigoid processes.

17. The coronal suture. 18. The squamous suture. 19. The lambdoidal suture.

The use of those sutures are:

i. The better to affix the dura mater, and to sustain it firmly within the cranium. ii. That some nervous fibrillæ and vessels may pass through them. iii. To let out the vapours through the skull. iv. As some assert, and that the virtues of fomentations, poultices, and other remedies may penetrate. v. That in accidents, the fissures may not extend too far, but may stop in the sutures. vi. In child-birth it is of very great advantage, that the cranium be not made of one single bone, but that there are many in the tender-boned fœtus, to slide one over the other, and bear the compression; it would otherwise cause more difficult labours.

Figure II. The inferior maxilla.

1. The coronal process, to which the adducent muscles are affixed.

2. The condyloid processes, by which the maxilla is articulated with the cranium, or head.

a. The teeth. Dentes.

In both maxillæ are cavities in which thirty-two teeth are fixed.

The teeth are divided in three classes.

b. Incisores are the four anterior ones.

c. Two canini are nearly conical; the two upper canini have the name of eye-teeth.

d. The grinders, or dentes molares, they are blunt, large, and uneven.

e. Dentes sapientiæ are the hindermost, and of the same shape as the molares.

Figure III. A longitudinal section of the cranium.

1. The frontal bone. 2. The os bregmatis with the impressions of the vessels belonging to the dura mater. 3. The os occipitis. 4. The sella turcica, or equina, is a cavity in the sphenoid bone, and in the inside of the cranium. 5. The process of the sphenoidal bone, making a part of the septum narium. 6. The process of the ethmoidal bone. 7. The os vomer. 8. Crista galli, is a third part of the os ethmoides, very like a cock's-comb. 9. The sinus of the os frontis. 10. Various openings for the nerves.

Figure IV.

The cranium with the superior maxilla lying on the vertex.

A. The os occipitis. B. The hole through which the medulla oblongata changes into the medullary spine. C. The inferior part of the os temporis. D. The os basilare. E. The os palati. F. Os jugale, a, a. The processes of the os occipitis which articulate with the vertebra. b. Sinus. c. The mammillary processes. d. The foramen for the lateral sinus of the dura mater. e. The beginning of the meatus auditorius. f. The sinus of the os temporis for the articulation of the inferior maxilla. g. The styloid process. h. Processus jugalis of the os temporis. i. The foramen through which the nerve of the tenth pair comes out. k, k. Processus aliformes of the os basilare. l. The vomer proceeds up to the septum narium, or the eleventh bone of the superior maxilla. m. A foramen for the egress of vessels. n. The teeth. o. A foramen for the passage of another branch of the fifth pair of nerves toward the inferior parts. p. The foramen through which the carotid artery enters the brain.

Figure V. The bones of the carpus and metacarpus, or wrist and hand.

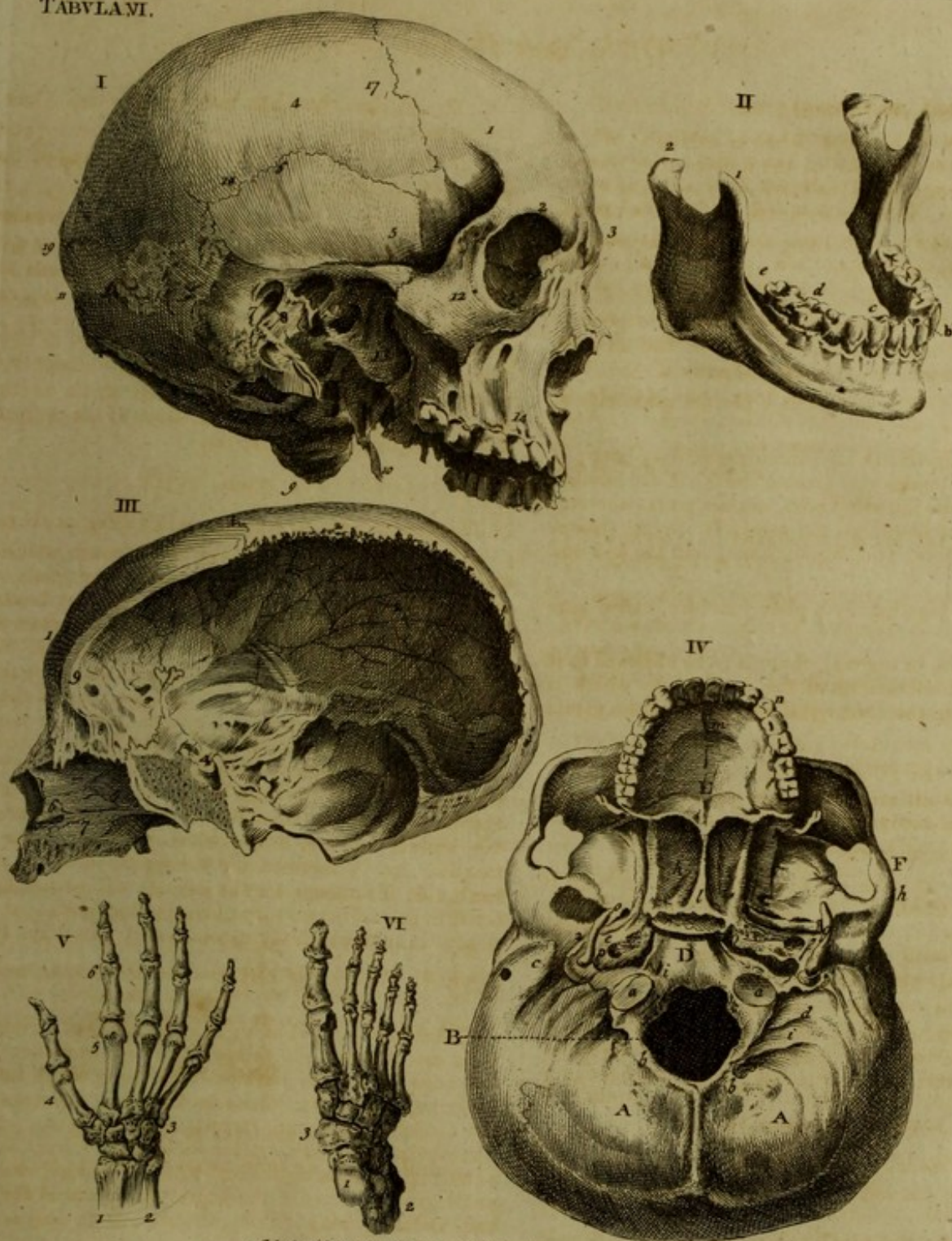
The carpus consists of eight small bones of various shapes. They are placed in the following series, beginning from the side next the thumb, outwards: Os naviculare, lunare, cuneiforme, orbiculare; then, in the row underneath, from the thumb—trapezium, trapezoides, magnum, unciforme. The metacarpal bones, one for each finger, except the thumb, extending from the eight small bones to the knuckles; and the phalanges, or joints of the fingers, comprehend the bones of the hand and wrist.

Figure VI. The bones of the tarsus and metatarsus, or instep and foot.

The tarsus consists of seven bones.—The os calcis, astragalus, cuboides, naviculare, and three cuneiformia.—The metatarsus has five bones. The toes have fourteen bones; they have also sesamoid bones, as in the fingers.

The nails are fixed on the extremities of the fingers and toes, in which is the lunula, which is the whiter part adjoining the cutis, or skin.

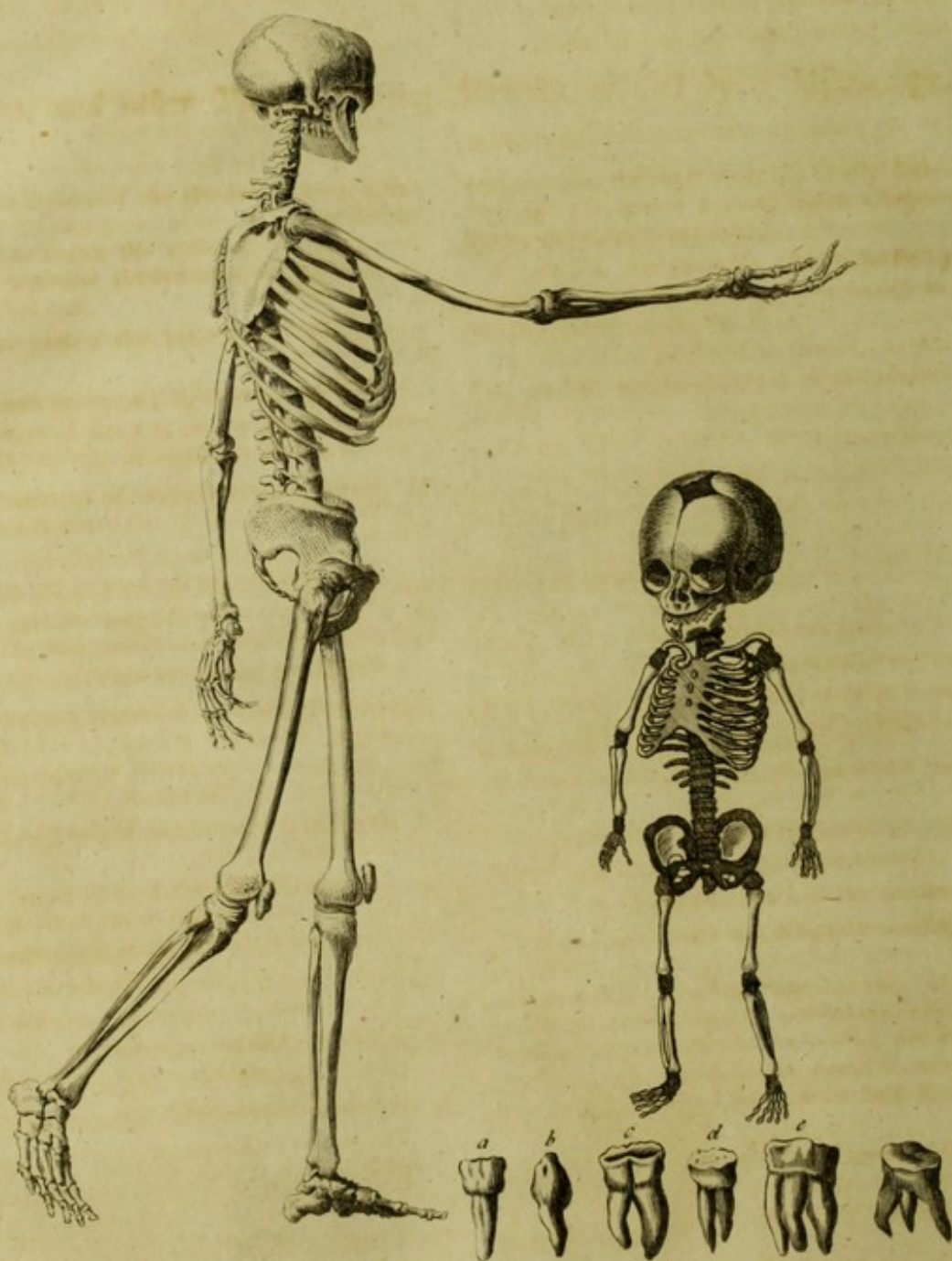
TABVLAVI.



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TABULA VII



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PLATE VII.

The side View of a Skeleton.

THE HEAD AND NECK.

Os parietale, in the superior part of the cranium.
Sutura sagittalis, joins together the parietal bones.
Sutura lambdoidalis, which connects the *os occipitis* with the parietal and temporal bones.
Os occipitis, in the posterior inferior part of the cranium.
Os temporis is the inferior and lateral part.
Os frontis is on the anterior part.
Processus mamillaris or *mastoideus*, to which the *musculus sterno-mastoideus* is inserted.

Os maxillare superius, is on the anterior and middle part of the face; makes a part of the face, palate, nose, and orbit of the eyes.

Os maxillare inferius, is in the lower and anterior part of the face; is the organ for mastication.

Seven *vertebræ* of the neck.

All the *transverse apophyses* of the *vertebræ* of the neck have a peculiar foramen for the ascending vertebral arteries.

THE TRUNK.

Scapula, the shoulder-blade, is on the uppermost and lateral part of the back.

The *vertebræ* of the back are twelve,

And have these particulars:

1. On their sides of their bodies is formed a fovea by the junction of two vertebral bodies, to make a head for the ribs.
2. A superficial groove on the top of the transverse apophyses for the less head of the ribs.

Costæ, the seven superior ribs are called *veræ*, or true.

— the five inferior are named *nothæ*, false ribs.

The two last, or spurious, are entirely loose.

The external surface of the *costæ* ribs is convex, the internal is concave; here, on the inferior margin, is a furrow, which runs from the angle of each rib forward, and receives the greatest part of the blood-vessels and nerves; this is very necessary to be known in the operation for the empyema.

Vertebræ lumborum. The greatest mobility of the spine is between the last vertebra of the back, and the first of the loins.

PELVIS.

Os sacrum is in the posterior part between the last vertebra of the loins and the *os coccygis*.

The *os coccygis* has four small bones at the end of the *os sacrum*.

Their use is to form the pelvis, to sustain the intestinum rectum, and to prevent in labour pains the rupture of the perinæum.

OSSA INNOMINATA.

Os ilii forms the superior part of the pelvis.

Os ischii is inferior, *os pubis* anterior.

The tuberosity of the ischium is the inferior margin on which we sit.

THE SUPERIOR EXTREMITIES.

Os humeri is between the shoulder and the fore-arm.

Cubitus is on the inside of the fore-arm, towards the little finger.

Radius is on the outside of the arm, towards the thumb.

Carpus consists of eight small bones, situated between the fore-arm and metacarpus.

Metacarpus is between the carpus and the fingers.

They constitute the middle part of the hand.

Digiti. The fingers are on the inferior extremities of the metacarpus, formed of three small bones, which are called *phalanges*.

THE INFERIOR EXTREMITIES.

Femur, the thigh-bone is between the pelvis and the shin-bone, or tibia.

Tibia is between the femur and tarsus, in the interior part of the leg.

Fibula is externally lying along the tibia.

Patella, knee-pan, is between the condyles of the femur, and above the tibia in a sinus.

Its use is to strengthen the articulation of the knee, and to serve as a pulley to the tendon of the extensor muscles of the tibia.

Tarsus is between the leg and metatarsus.

Its use is to make the basis of the foot, and to serve towards the motion of the lower part of the foot.

Metatarsus is between the tarsus and the toes.

The use is to make the upper part and sole of the foot.

Digiti, the toes.

SESAMOID BONES.

Are small pea-like bones.

Situation in the junction under the phalanges of the thumb, in the hands and feet.

Figure II. ON THE SKELETON OF AN INFANT.

All their bones generally are softer than in adults or grown persons, and some are yet cartilaginous.

In the bones of the cranium the middle part is most solid.

The *os frontis* is divided through the middle to the nose.

All the sutures are imperfect.

Os occipitis consists of two or four distinct bones.

Ossa temporalia are cartilaginous in their circumference.

The *meatus auditorius externus* is then wanting.

The *processus mastoideus* is not then perceptible.

Maxilla inferior, or the fore part, is divided into two parts.

Dentes, the teeth, are hid in their sockets, covered by thin membranes.

The *sternum* is cartilaginous.

Os sacrum has separate *vertebræ*.

Os coccygis is cartilaginous.

Patella, the carpus also, and *tarsus*, are cartilaginous.

All *epiphysis* in infants, in the beginning, are cartilaginous.

The *nails* in the third month already can be distinguished, in utero.

Figure III. DENTES.

a. *Dens incisoris*, or cutter. b. *Dens caninus*, or dog-tooth. c, d, e. Different *dentes molares*, or grinders, some with two, others with three roots, or phanges.

PLATE VIII.

The Fibres, and other Parts, forming Muscles, viewed by a Microscope, &c.

Figure I. Represents a piece of the *glutæus magnus* muscle, or great muscle of the posteriors, of an adult, not boiled but fresh, in which are shewn the different thickness and figure of the *lacerti*, muscular subdivisions, or *fasciculi*, as they appear to the naked eye.

a. a. Is the exterior part of the muscle and the *vagina* which covers it.

b. b. b. b. Are separations caused by that *vagina*, and penetrate into the substance of the muscle, by which the muscle is divided into large *muscular* divisions, or *lacerti*.

c. c. c. c. Are the sections of those *lacerti*, appearing of different magnitude and figure.

cd. cd. cd. Shew the parallel course of those *lacerti*.

Figure II. Is a small piece of boiled human flesh, or muscle, taken from the *glutæus magnus* muscle, marked 1. 2. 3. 4. 5. 6. 7. 8. The boundaries and divisions which distinguish these *lacerti* are expressed by a single thick line.

It appears, that the greater *lacerti* are composed of smaller, which can be seen plainly in 1. 2. 3. 4. 5. 6. 7. And those smaller *lacerti* consist again of those of the smallest size; but I have delineated this only in No. 8.

Figure III. Shews a *lamella* of the *lacertus i.* in the fig. II. cut off transversely.

This *lamella* is delineated so, as it has appeared by a glass, augmenting the objects five times in diameter.

a. a. a. a. The *vagina* surrounding the greater *lacertus*.

b. b. b. b. Its *processes*, going to the other *lacerti*, which are only in some part shewn.

c. c. c. c. *Separations*, which are produced by the *vagina* of the *lacertus major*, and divide it into eight smaller.

1. 2. 3. 4. 5. 6. 7. 8. The smaller *lacerti* divided out of the *major*.

7. In this *lacertus* is particularly shewn, how each *minor lacertus* by membranous separations, is divided into smallest.

8. Here is shewn how each *smallest lacertus* is composed of muscular fibres.

Figure IV. In this figure is shewn, a small piece of boiled human muscular fibre in its length, seen by a glass, magnifying the objects four hundred times. In the boiled muscles, examined with such microscopes, the transverse white wrinkles are nothing but superficial impressions of the vessels and cellular threads, and perhaps of small nerves in the *vagina* of the fibre. When muscles are boiled, they shrink the fibres in many places, and impress more or less those transverse wrinkles, called *rugæ*.

Figure V. Is another boiled fibre of human flesh, or muscle, seen through the same microscope as in the preceding figure. But in this, partly by maceration, partly by gentle

compression, the outer *vagina* is nearly destroyed, and therefore the *fila carnea rugosa*, which compose the muscular fibres, are more conspicuous.

Figure VI. Are three *fila carnea*, or fleshy threads, whose wrinkles, or greater windings *a. a. a.* are in place of those which are seen in the fig. V.

Figure VII. A single fleshy thread, or *filum carneum*, seen through the same microscope, whose serpentine windings are clearly observable.

Figure VIII. Another *filum carneum*; has transverse wrinkles, which cut the *filum* as it were into little globules, or joints.

Figure IX. The transverse sections of three muscular fibres of the human flesh; are included in their sheaths. They are delineated by the same microscope as fig. VII. VIII. In each of those transverse sections of three fibres, very small, and a great many *areolæ* appear.

Figure X. Is a transverse section of two muscular fibres, ex *Gado mutatio Linnæi*, whereof one is bigger, the other smaller, also seen with the glass, magnifying the diameter four hundred times, that it may be seen how the *fila carnea*, or fleshy small threads, do not differ from the human in thickness.

Figure XI. The smallest *fasciculus* of muscular fibres, seen through a glass, magnifying thirty times.

a. a. a. a. Muscular fibres in the smallest *fasciculus*.

b. b. b. b. Wrinkles and alternate windings of the *fasciculus* itself.

Figure XII. Besides those wrinkles, which we have seen in the preceding figure, and which compose the smaller wrinkles of the muscular *fasciculus*, are often smaller yet in the fibre itself, which I have found in boiled beef, smallest *fasciculus* of which I have delineated by the same microscope.

Figure XIII. Here is given a *lamella* of the injected *supinator longus* muscle, of a child of six months-old. This *lamella* is drawn from a glass, magnifying the diameter one hundred times.

a. Extremities torn off from the muscular fibres, which are much thinner than in an adult person.

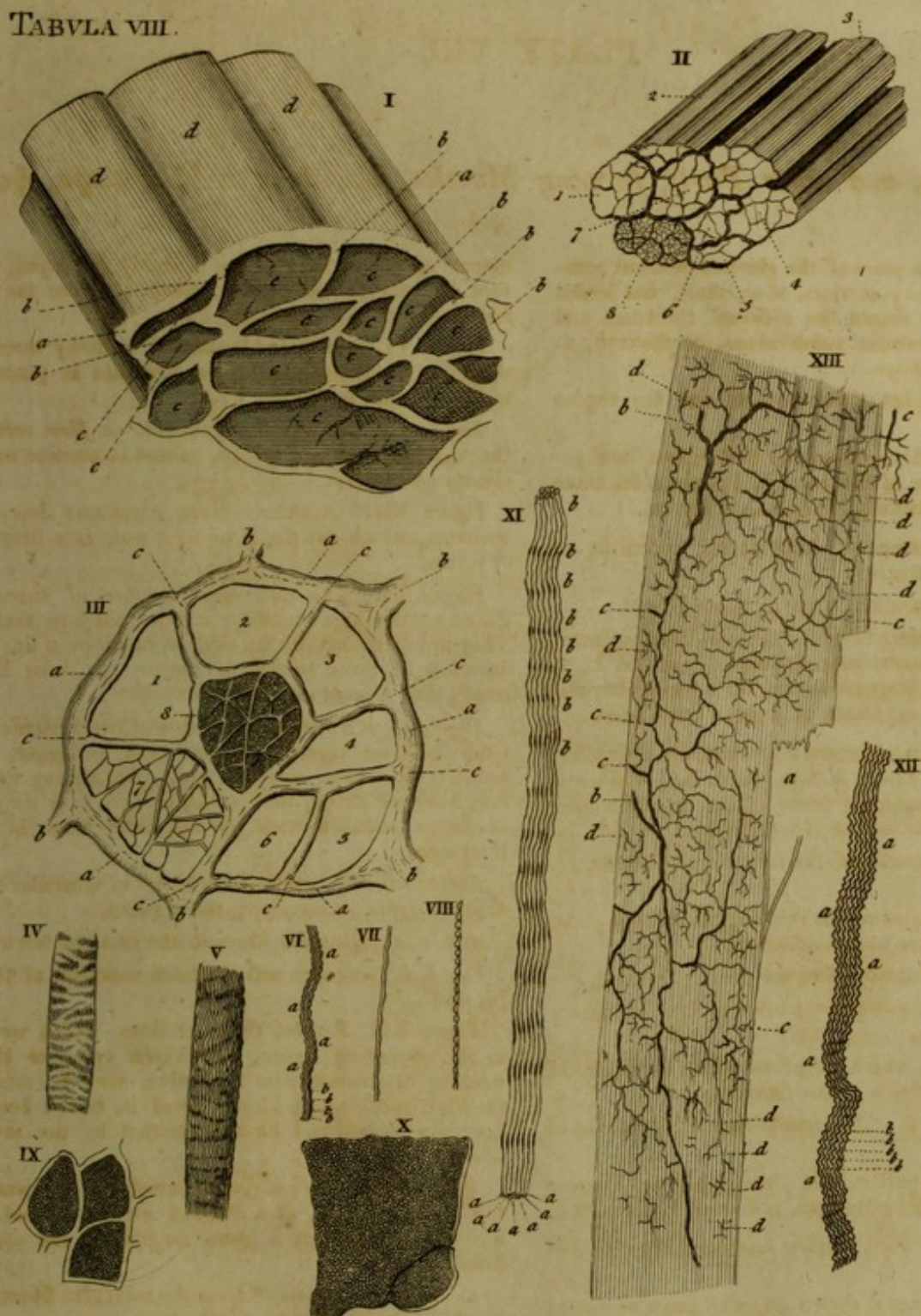
b. b. Two principal arterial branches.

c. c. c. c. The smaller branches cut off.

d. d. d. d. The smallest branches.

Beyond those smallest vessels, the coloured injection will not penetrate; for the smaller vessels are not permeable to the matter of injection, and in particular to the *cinnabar*, which gives the colour to the injection; but there are minute coloured injections, which pass much farther than *cinnabar*, and tinge almost all the parts of muscles, so that they appear nearly vascular in every part of their substance.

TABVLA VIII.



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TABVLA IX.



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PLATE IX.

Muscles of the Head and Neck.

<i>Name and origin.</i>	<i>Insertion.</i>	<i>Action.</i>
a. <i>Occipito frontalis.</i>	Near the lambdoid suture.	Moves the skin.
b. <i>Attollens aurem</i> , from the upper part of the pericranium.	Above the ear.	Its action is scarcely observable.
c. <i>Orbicularis palpebrarum</i> , from the orbital process of the upper maxilla.	Into the nasal process of the superior maxilla.	To shut the eye-lid.
d. <i>Depressor anguli oris</i> , from the edge of the maxilla inferior.	Into the angle of the mouth, and course of the lips.	To depress the lips.
e. <i>Orbicularis oris</i> , is formed by the muscles that move the lips.	Surrounds the mouth like a ring.	Shuts or corrugates the mouth.
f. <i>Platysma myoides</i> , from the deltoid and pectoral muscles.	Into the chin, lips, and the nose.	It depresses the chin and lips.

THE MUSCLES OF THE TRUNK.

a. <i>Pectoralis major</i> , from the clavicle, sternum, and the ribs.	Nearly in the middle of the os humeri.	Moves the arm towards the breast.
b. <i>Serratus magnus</i> , from the true and two false ribs.	On the basis of the scapula.	To move the scapula forward and downwards.
c. <i>Latissimus dorsi</i> , from the os sacrum and ilium.	In all the vertebræ of the back and loins.	To bend the back with other muscles.
d. <i>Obliquus externus descendens</i> , from the ribs near the serratus muscle.	In the linea alba and os pubis.	With other muscles it supports and compresses the abdomen.
e. <i>Linea semilunaris.</i> f. <i>Linea alba</i> , under f. <i>umbilicus.</i> g. <i>Annulus</i> , or abdominal ring.		

THE UPPER EXTREMITY.

a. <i>Deltoides</i> , from the clavicle and scapula.	Nearly in the middle of the os humeri.	To elevate the arm.
b. <i>Biceps flexor cubiti</i> , from the scapula by two heads.	In the uppermost end of the radius.	To bend the fore arm conjointly with the brachii internus.
c. <i>Supinator radii longus</i> , from the external ridge of the os humeri.	Into the inferior condyle, or extremity of the radius.	To roll the radius outwardly with the supinator brevis.
d. <i>Pronator teres</i> , from the internal condyle of the os humeri.	Into the middle of the outward, or posterior part of the radius.	To roll the cubitus and hand inwards, with the assistance of the pronator quadratus.
e. <i>Palmaris longus</i> , from the internal condyle of the os humeri.	In the palm of the hand, near the articulations of the fingers with the metacarpus.	To contract or corrugate the palm of the hand.
f. <i>Palmaris brevis</i> , from the metacarpal bone of the little finger.	In the annular ligament of the carpus and articulation of the thumb.	To draw the thumb towards the little finger.
g. <i>Flexor carpi radialis</i> , from the internal condyle of the os humeri.	In the carpus near the thumb.	To bend the hand.
h. Part of the <i>flexor sublimis perforatus.</i> i. <i>Insertio flexoris carpi ulnaris.</i>		
k. <i>Abductor pollicis</i> , from the transverse ligament of the carpus, and from one of the carpal bones.	In the two first bones of the thumb.	To draw the thumb from the fingers.

THE LOWER EXTREMITIES.

a. The <i>fascia lata</i> is a strong tendinous membrane, beginning from the upper edge of the os ilium, Poupourt's ligament, and obliquus externus muscle, from the os sacrum and greater trochanter, descends down the femur, includes nearly all the muscles of the thigh and leg, at last it disappears on its extremity; the fascia keeps tight the muscles over which it is spread, and strengthens their action considerably.		
b. Part of the <i>glutæus maximus.</i> c. <i>Pectinalis.</i>		
d. <i>Triceps longus</i> , from the os pubis and ilium, has three heads.	In the linea aspera of the os femoris.	To draw the thigh-bone inwardly.
e. <i>Gracilis</i> , from the os pubis.	Into the tibia under the ham.	To bend the leg.
f. <i>Sartorius</i> , from the superior spine of the os ilium.	In the innerside of the tibia.	To bend the leg obliquely inward, to cross the leg.
g. <i>Rectus cruris</i> , from the anterior spine of the ilium.	} In the upper part of the patella. }	To extend the leg.
h. <i>Vastus externus</i> , from the outside of the thigh.		
i. <i>Vastus internus</i> , from the inside of the thigh.		
k. <i>Tibialis anticus.</i> l. <i>Peronæus longus.</i> m. <i>Extensor longus digitorum pedis.</i> n. <i>Gastrocnemius externus.</i>		
o. <i>Soleus.</i> q. <i>Abductor pollicis.</i>		

PLATE X.

The Head and Neck.

<i>Name and origin.</i>	<i>Insertion.</i>	<i>Action.</i>
a. Part of the <i>occipito frontalis</i> , with the aponeurosis; from the inferior part of the os occipitis.	Under the lambdoid suture.	Pulls the skin of the head backwards.
b. <i>Attollens aurem</i> ; from the aponeurotic expansion of the frontal muscles.	Into the upper part of the ear, on the helix by means of a tendon.	To draw the ear upwards.
c. <i>Anterior auris</i> ; from the basis of the zygoma from a tendinous membrane of the temporal muscle.	In the beginning of the helix, to the outer part of the concha.	To make this eminence more tense.
d. <i>Retrahentes auris</i> ; arises from the aponeurotic expansion of the cervical muscles.	Are affixed to the convex part of the concha.	To draw back the ear.

TRUNK.

a. <i>Trapezius</i> , or <i>cucullaris</i> ; begins from the occiput, processes of the neck, and spinous processes of the neck.	In the scapula and clavicle.	Moves the scapula in different directions, according to the lines of its different fibres.
b. Its tendinous junction.		
c. <i>Venter carnosus latissimi</i> . d. The tendon of this muscle, beginning with the serratus posticus inferior. e. Part of the obliquus externus abdominis.		

SUPERIOR EXTREMITY.

a. <i>Deltoides</i> ; from the clavicle and scapula.	Near the middle of the os humeri.	To rise the arm, with others.
b. <i>Infra spinatus</i> ; from the parts below the spine of the scapula. Lower down is the portion of the <i>teres minor</i> and <i>major</i> .	In the neck of the os humeri.	To draw the humerus backwards.
c. <i>Triceps extensor cubiti</i> ; from the neck of the scapula and outward part of the humerus.	Is fixed to the olecranon.	To extend the fore arm, and to draw it a little back.
d. <i>Extensor carpi radialis longior</i> ; from the external condyle of the humerus.	In the bones of the metacarpus.	To extend the wrist, and bring the hand backward.
e. <i>Extensor digitorum communis manus</i> ; from the external condyle of the os humeri.	On the posterior part of the four fingers.	To extend the fore fingers.
f. <i>Extensor ossis metacarpi pollicis</i> ; from the outside of the ulna.	On the outside of the thumb.	To extend the thumb.
g. <i>Extensor primi internodii pollicis manus</i> ; from the ulna and interosseus ligament.	In the upper part of the first bone of the thumb.	To extend the first bone of the thumb.
h. <i>Extensor secundi internodii pollicis</i> ; from the ulna and interosseus ligament.	In the last bone of the thumb.	To extend the last joint of the thumb.
i. <i>Extensor carpi ulnaris</i> ; from the external condyle of the os humeri.	In the bones of the metacarpus, and the basis of the little finger.	To extend the hand backward.
k. Part of the <i>flexor carpi ulnaris</i> ; from the internal condyle of the os humeri.	By a tendon into the os pisiforme and unciforme.	To bend the hand, and to contract it.

INFERIOR EXTREMITY.

a. <i>Glutæus maximus</i> ; from the os sacrum and ilium.	Below the greater trochanter.	To extend the thigh.
b. Part of the glutæus medius. c. Part of the tensor vaginae femoris.		
d. <i>Vasus externus</i> ; from the outer side of the os semoris. On the upper part of the patella.		To extend the leg assisted by others.
e. The long head of the biceps flexoris cruris. f. Part of its short head.		
g. <i>Semitendinosus</i> ; from the protuberance of the os ischium.	On the inner and back part of the tibia, or ham.	To assist with others in bending the leg.
h. <i>Gracilis</i> ; from the anterior part of the os pubis.		
i. Pars vasti externi.		
k. <i>Gastrocnemius externus</i> ; from two condyles of the os femoris.	On the heel they form the tendo Achillis.	To extend the foot.
l. <i>Soleus</i> , or <i>gastrocnemius internus</i> .		
m. <i>Tendo Achillis</i> , with the plantaris.		
n. <i>Peronæus longus</i> ; from the uppermost part of the fibula.	In the second phalanx.	To bend with others the four small toes.
o. <i>Peronæus brevis</i> ; from the external and fore part of the fibula.	In the external metatarsal bone.	To bend the foot outward.
p. <i>Tendines extensoris longi digitorum pedis</i> . q. <i>Abductor minimi digiti pedis</i> .		

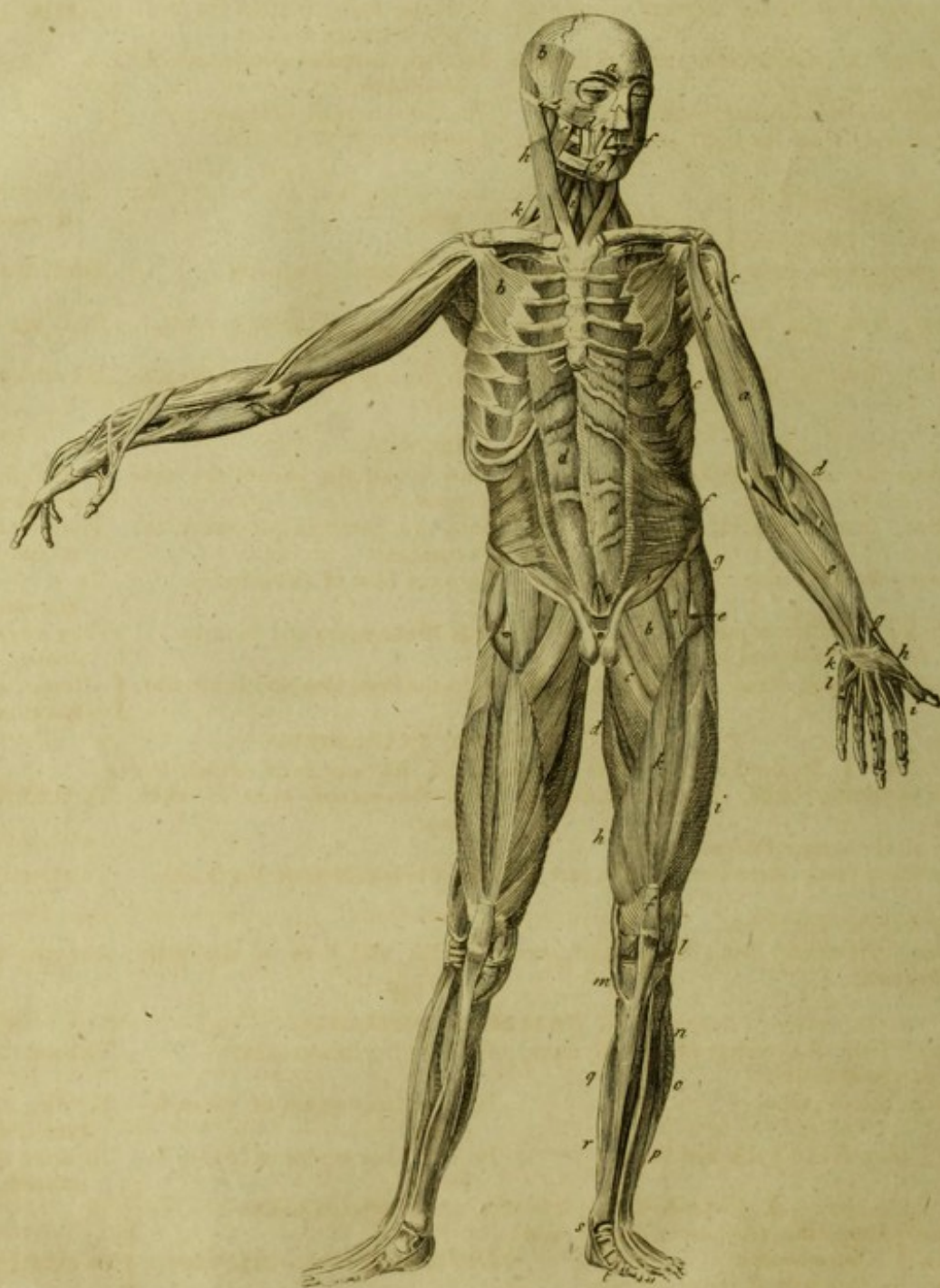
TABVLA X.



Schola et historia Medicinae a Gul Rowley.

Rogee sc.

TABVLA XI.



Schola et historia Medicinæ a Gnd Rowley.

Royce sc.

PLATE XI. *The second Layer of the Muscles on the anterior Part of the Body.*

ON THE HEAD AND NECK.

Name and origin.

Insertion.

Action.

- | | | |
|---|--|--|
| a. <i>Corrugator supercilii</i> ; from the angular process of the os frontis. | Into the fleshy part of the occipito frontalis muscle. | Contracts the eye-brow. |
| b. <i>Temporalis</i> ; from the semicircular ridge of the parietal bone. | Into the coronoid process of the lower jaw. | } To pull the lower jaw upwards in mastication, &c. |
| c. <i>Masseter</i> ; from the processus zygomaticus. | Into the angle of the lower jaw. | |
| d. <i>Levator anguli oris</i> ; from the jugal bone, near the nose. | Into the angle of the lips. | To draw the lips upwards. |
| e. <i>Buccinator</i> ; from both jaw-bones. | Into the angle of the mouth and gums. | To assist in mastication and laughing, and draw the mouth. |
| f. <i>Orbicularis oris</i> . g. <i>Depressor labii inferioris</i> . | | |
| h. <i>Sterno-cleido mastoideus</i> ; from the sternum and clavicle. | Into the mastoid process. | Bends the head forward. |
| i. <i>Sterno hyoideus</i> ; from the first rib, sternum, and clavicle. | Into the base of the os hyoides. | Pulls the os hyoides downwards. |
| k. <i>Levator scapulae</i> ; from the first four vertebræ of the neck. | Into the superior angle of the scapula. | Elevates the scapula. |

TRUNK.

- | | | |
|---|---|--|
| a. <i>Subclavius</i> ; from the cartilage of the first rib. | Into the inferior part of the scapula. | To pull the clavicle forwards and downwards. |
| b. <i>Pectoralis minor</i> ; from the third, fourth, and fifth true ribs. | Into the coracoid process of the scapula. | To bring the scapula forwards, or to raise the ribs. |
| c. <i>Serratus magnus</i> ; from the nine superior ribs. | Into the base of the scapula. | To move the scapula forwards and downwards. |
| d. <i>Rectus abdominis</i> ; from the os pubis. | Into the sternum and the ribs. | } They cover and compress the abdomen, help to expel the feces, &c. and assist in respiration, &c. |
| e. <i>Pyramidalis</i> ; from the fore part of the os pubis. | | |
| f. <i>Obliquus ascendens internus</i> ; from the spina of the os ilium. | Into the linea alba and lower ribs. | |

SUPERIOR EXTREMITY.

- | | | |
|---|---|----------------------------|
| a. <i>Biceps flexor cubiti</i> . b. Its short head. c. Its long head. d. <i>Extensor carpi radialis longior</i> . | | |
| e. <i>Flexor sublimis perforatus</i> ; from the inner condyle of the os humeri. | Into the second bone of each finger. | To bend the four fingers. |
| f. The insertion of the extensor carpi ulnaris. | | |
| g. <i>Extensores pollicis</i> ; from the outer or back part of the ulna. | Into the last bone of the thumb. | To extend the thumb. |
| h. <i>Tendo flexoris longi pollicis manus</i> . | | |
| i. <i>Abductor minimi digiti manus</i> ; from the os pisiforme and annular ligament. | Into the first bone of the little finger. | Abduces the little finger. |

INFERIOR EXTREMITY.

- | | | |
|--|--|---|
| a. <i>Iliacus internus</i> ; from the vertebræ of the loins, and the spine of the os ilium. | Into the trochanter minor. | To bend the thigh with others. |
| b. <i>Pectinalis</i> ; from the os pubis. | Into the linea aspera of the os femoris. | To bring the thigh upwards, and turn it outwards. |
| c. <i>Triceps longus</i> ; from the os pubis and ilium. | Into the linea aspera of the os femoris. | To bring the thigh inwards and upwards. |
| d. <i>Gracilis</i> . e. <i>Rectis cruris</i> . f. Its tendon. g. A portion of the <i>glutæus medius</i> . | | |
| h. <i>Vastus internus</i> , } From the trochanter major and
i. <i>Vastus externus</i> , } linea aspera. | } Into the patella above the knee. | } To extend the leg. |
| k. <i>Cruræus</i> ; from the fore part of the os femoris. | | |
| l. The insertion of the biceps flexor cruris into the fibula. m. <i>Tendines gracilis</i> and <i>semitendinosi</i> in the tibia. | | |
| n. o. <i>Soleus</i> . | | |
| p. <i>Peronæus longus</i> ; from the upper part of the fibula. | Into the os metarsi and cuneiforme. | To move the foot outwards, and to extend it a little. |
| q. <i>Extensor longus digitorum</i> ; from the upper and outer part of the tibia, and from the head of the fibula. | Into the four first joints of the toes. | To extend the four small toes. |
| r. <i>Flexor longus digitorum</i> ; from the back part of the tibia. | Into the first phalanx of the toes. | To bend the last joint of the toes. |
| s. Tendons of the <i>tibialis posticus</i> . | | |
| t. <i>Flexor brevis digitorum pedis</i> ; from the inside of the os calcis. | Into the second phalanx of the smaller toes. | To bend the second joint of the toes. |

PLATE XII. *The second Layer of the Muscles on the posterior Part of the Body.*

IN THE HEAD AND THE NECK.

Name and origin.	Insertion.	Action.
a. <i>Temporalis</i> . b. <i>Masseter</i> . d. A portion of the complexus. e. <i>Levator scapulæ</i> .		
c. <i>Splenius</i> ; from three vertebræ of the neck, and five of the back.	Into the mastoid process.	To bring the head backwards.

TRUNK.

a. <i>Rhomboides major</i> ; from the four superior vertebræ of the back.	Into the basis of the scapula.	To draw the scapula upwards, and inwards.
b. <i>Rhomboides minor</i> ; from the three inferior vertebræ of the neck.		
c. <i>Serratus posticus superior</i> ; from the three last vertebræ of the neck, and two uppermost of the back.	Inserted into the second, third, fourth, and fifth ribs.	To elevate the ribs, and dilate the thorax.
d. <i>Serratus posticus inferior</i> ; from two ribs of the back, and three of the loins.	Into the lower edges of the four inferior ribs.	To depress the ribs, and contract the thorax.
e. <i>Pars spinalis dorsi</i> . f. <i>Pars longissimi dorsi</i> . g. <i>Pars sacrolumbaris</i> . b. <i>Serratus magnus</i> . i. <i>Tendo latus</i> . k. <i>Pars obliqui interni ascendens abdominis</i> . l. <i>Sphincter ani</i> .		

SUPERIOR EXTREMITY.

a. <i>Supra-spinatus</i> ; from the upper part of the spine of the scapula.	Into the neck of the os humeri.	To raise the arm with others.
b. <i>Infra-spinatus</i> ; from the lower part of the spina scapulæ.	Into the neck of the os humeri.	To draw the arm backwards.
c. <i>Teres minor</i> ; from the inferior edge of the scapula.	As above.	To bend the arm outwards, backwards, and downwards.
d. <i>Teres major</i> ; as the former.		
e. <i>Triceps extensor cubiti</i> . f. <i>Its long head</i> . g. <i>Its short head</i> . h. <i>Portio capitis tertii</i> . i. <i>Tendo tricipitis</i> . k. <i>Pars brachialis interni</i> . l. <i>Anconeus</i> . m. <i>Extensor carpi radialis longior</i> .		
s. <i>Indicator</i> , from the middle and posterior part of the ulna.	Into the posterior part of the indicator.	To extend the indicator.
t. <i>Tres interossei manus externi</i> ; from the sides of the metacarpal bones.	Into the joints of the next fingers.	To extend the fingers, &c.
u. <i>The tendo extensorum digitorum</i> .		

INFERIOR EXTREMITY.

a. <i>Glutæus medius</i> ; from the upper part of the os ilii.	Into the greater trochanter.	To bend the thigh outwards, and backwards.
b. <i>Pyriformis</i> ; from the os sacrum within the pelvis.	Into the inner side of the great trochanter.	To move the thigh upwards, backwards, and turn it outwards.
c. <i>Gemini</i> ; from the spinous process and protuberance of the ischium.	Into the inner cavity of the great trochanter.	To draw outwardly the thigh.
d. <i>Quadratus femoris</i> ; from the external protuberance of the ischium.	Between both trochanters.	To bring the thigh outwards.
e. <i>Vastus externus</i> ; from the greater trochanter and linea aspera.	Into the upper part of the patella, and by an aponeurosis, to the head of the tibia.	To extend the leg.
f. Part of the <i>triceps magnus</i> . g. <i>Caput longum tricipitis flexoris</i> , and below it, <i>pars capitis brevis</i> .		
h. <i>Semitendinosus</i> ; from the ischium.	On the inside of the tibia.	To bend the tibia.
i. <i>Gracilis</i> ; from the os pubis.	Into the tibia, under the sartorius muscle.	To bend the tibia with the sartorius.
k. A small portion of the <i>vastus externus</i> .		
l. <i>Popliteus</i> ; from the external condyle of the femur.	At the internal edge of the tibia below its head.	To bring the tibia outwards with others.
m. <i>Venter carnosus plantaris</i> , and its tendon passing through the soleus muscle.		
n. <i>Soleus</i> . o. The tendon of the <i>gemellus</i> cut off. p. <i>Tendo Achillis</i> with the <i>plantaris</i> .		
q. <i>Peronæus longus</i> ; from the upper part of the fibula.	Into the bones of the metatarsus, &c.	To move the foot outwards, and extend a little.
r. <i>Tendines extensorum longorum digitorum pedis</i> ; with the <i>peronæus tertius</i> , and below them the <i>extensor brevis digitorum</i> .		
s. <i>Flexor brevis minimi digiti pedis</i> ; from the protuberance of the os calcis.	Into the second phalanx of the four small toes.	To bend the toes.

TABVLA XII.

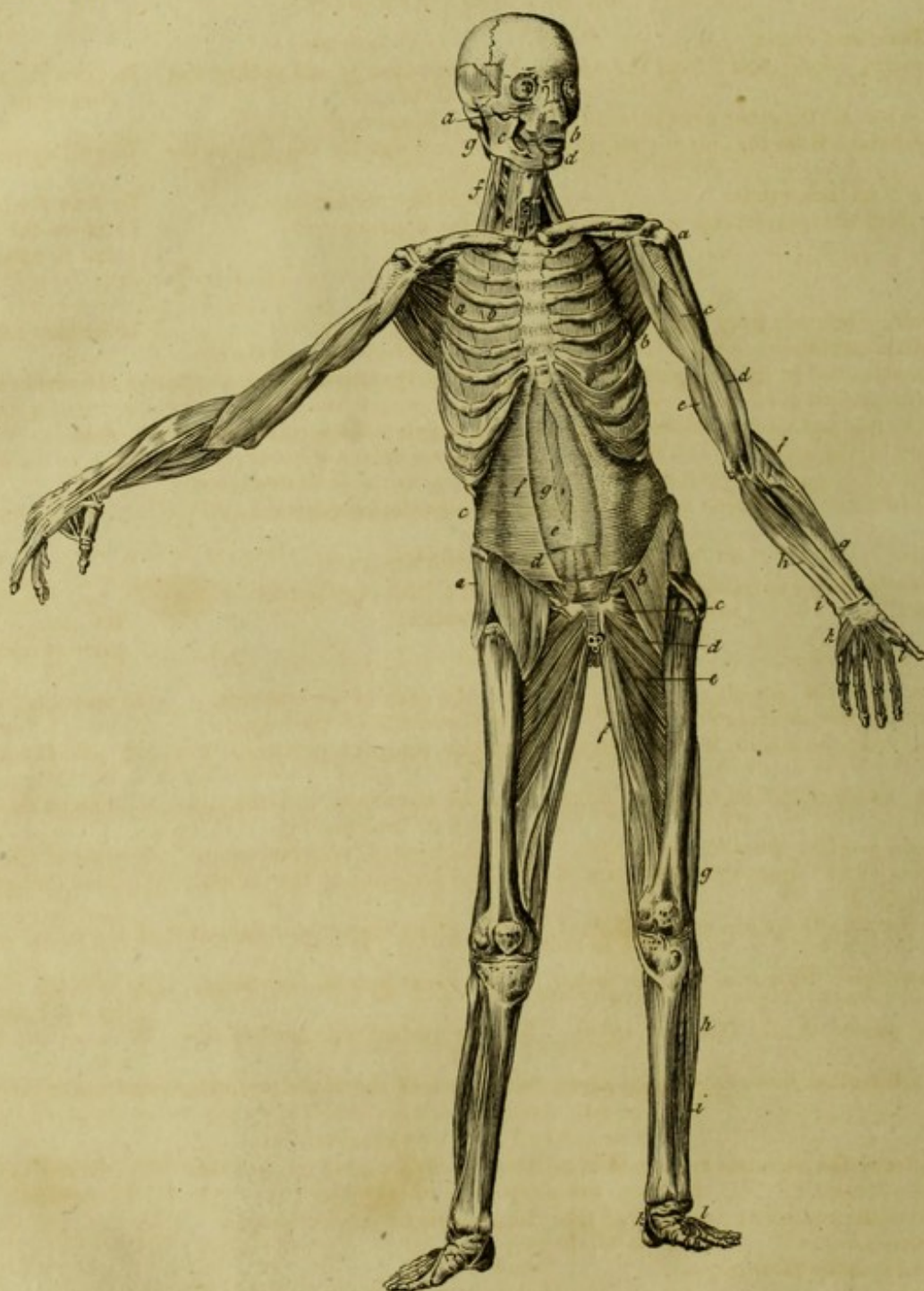


Schola et historia Medicinæ a Gul Rowley.

Royce sc.



TABVLA XIII.



Schola et historia Medicinae a Gul Rowley.

Reyce, sc.

PLATE XIII. *The third Layer of the Muscles on the anterior Part of the Body.*

ON THE HEAD AND NECK.

Name and origin.

Insertion.

Action.

- | | | |
|--|---|--|
| a. <i>Levator labii superioris, alæque nasi</i> ; from the superior maxilla. | Into the upper lip and root of the ala of the nose. | To draw the upper lip down and backwards. |
| b. <i>Orbicularis oris</i> ; when all the other muscles are taken off. | c. <i>Buccinator</i> . | |
| d. <i>Depressor labii inferioris</i> ; from the inferior maxilla. | Into the under-lip and skin of the chin. | To pull upwards the lips and chin. |
| e. <i>Sterno-thyroidæus</i> ; from the sternum. | Into the thyroid cartilage. | To draw the larynx downwards. |
| f. <i>Scalenus medius</i> ; from the transverse processes of the neck. | Into the uppermost rib. | To move the neck on both sides, and to raise the ribs, &c. |

THE TRUNK.

- | | | |
|--|------------------------------------|---|
| a. <i>Intercostales externi</i> ; obliquely from every rib. | From one rib to another. | } To elevate the ribs in respiration, &c. |
| b. <i>Intercostales interni</i> ; from the sternum and the ribs. | Into the obtuse angle of the ribs. | |
| c. <i>Transversalis abdominis</i> . d. The inferior part of the tendon of the <i>transversalis</i> , passing before the rectus and the pyramidalis, here cut off. Between those portions, on both sides, is the peritonæum and ligamenta vesicæ urinariæ, which formerly were the umbilical arteries and ligaments. Between this part and the os pubis is seen the <i>spermatic cord</i> . | | |
| e. The inferior margin of the upper transverse tendon, which passes behind the rectus, and adheres to the peritonæum. | | |
| f. The interior lamella of the obliquus internus; between f. and g. is the posterior lamella. | | |
| g. The <i>linea alba</i> , from which the tendon of the obliquus, and the anterior lamella, of the internal obliquus, were dissected. | | |
| g. <i>Umbilicus</i> . | | |

SUPERIOR EXTREMITY.

- | | | |
|---|---|--|
| a. <i>Subscapularis</i> ; from the inner surface of the scapula. | Into the inner protuberance of the os humeri. | To roll the humerus inwards to the side of the body, and to prevent the ligament from being pinched. |
| b. <i>Teres minor</i> ; from below the scapula. | Into the neck of the humerus. | To draw the humerus backwards. |
| c. <i>Coraco brachialis</i> ; from the coracoid process. | Into the middle of the humerus. | To move forwards and upwards. |
| d. <i>Brachialis internus</i> ; from the middle of the humerus. | Into the coronoid process of the ulna, | To bend the fore-arm. |
| e. <i>Brachialis externus</i> , or <i>caput tertium tricipitis</i> ; from the os humeri. | Into the olecranon and the condyles of the humerus. | To extend the fore-arm. |
| f. <i>Extensor carpi radialis longior</i> ; from the os humeri. | Into the bone of the metacarpus. | To extend the hand. |
| g. <i>Flexor longus pollicis manus</i> ; from the upper part of the radius and condyle. | Into the last joint of the thumb. | To bend the last joint of the thumb. |
| h. <i>Flexor profundus perforans</i> ; is divided in four tendons, passing under the annular ligaments of the wrist, to the third bones of the fingers. | | |
| i. <i>Pronator radii quadratus</i> ; from the inferior inner part of the ulna. | To the lower part of the radius. | To turn the radius together with the hand inwards. |
| k. <i>Adductor metacarpi minimi digiti</i> ; from the os unciforme. | Into the metacarpal bone of this finger. | To bring the finger toward the rest. |
| l. <i>Unus lumbricalium</i> ; the other three appear also along the tendons of the flexor profundus, and under them are the <i>interossei interni</i> . | | |

THE INFERIOR EXTREMITY.

- | | | |
|---|---|---|
| a. <i>Glutæus minimus</i> ; from the spinous process of the ilium. | Into the back part of the trochanter major. | To pull the femur outwards and backwards. |
| b. <i>Iliacus internus</i> ; from the transverse processes of the vertebræ in the loins. | Into trochanter minor femoris. | To bend the thigh, &c. |
| Inward, between b. and c. is the <i>psoas magnus</i> . | | |
| d. <i>Adductor brevii femorii</i> ; } from the os pubis. | Into the linea aspera. | To bring the thigh inwards. |
| e. <i>Adductor magnus</i> ; } | | |
| f. <i>Gracilis</i> ; from the os pubis. | Into the tibia under the sartorius. | To bend the leg. |
| g. <i>Caput bicipitis flexoris cruris</i> ; from the os ischium. | Behind into the fibula. | As the former. |
| h. <i>Peronæus longus</i> ; from the fore part of the fibula. | Into the outside of the metatarsal bone. | To move the foot outwards. |
| i. <i>Peronæus brevis</i> ; from the upper part of the fibula. | Into the second phalanx. | To bend the four toes. |
| Between the peronæus and tibia is to be seen the <i>tibialis posticus</i> . | | |
| k. The tendon of the <i>tibialis posticus</i> , covering the tendon of the <i>flexor longus digitorum pedis</i> . | | |
| l. <i>Extensor brevis digitorum pedis</i> ; from the fore part of the os calcis. | Into the next toes. | To extend the toes. |

PLATE XIV. *The third Layer of Muscles on the back Part of the Body.*

HEAD AND NECK.

Name and origin.	Insertion.	Action.
a. Part of the buccinator.		
b. <i>Complexus</i> ; from six vertebræ of the neck and three of the back.	Under the splenius muscle.	To bend the head backwards.
c. <i>Trachelo-mastoidæus</i> ; from the sternum and clavicle.	Into the mastoid process.	To bend the head forwards.
d. <i>Scalenus medius</i> ; from the cavicle and two ribs.	} Into the sides of the vertebræ of the neck.	} To bend the neck forwards.
e. <i>Scalenus posticus</i> .		

THE TRUNK.

a. <i>Spinalis dorsi</i> ; and below it the <i>multifidus spinæ</i> .		
b. <i>Longissimus dorsi</i> ; from the os sacrum and ilium.	Into all the vertebræ of the back.	} To bring the back backwards.
c. <i>Sacro-lumbaris</i> ; as the former.	Into the vertebræ of the back and loins.	
d. <i>Semi spinalis dorsi</i> ; from the os sacrum and vertebræ of the loins.	Into the vertebræ of the loins.	
e. <i>Transversalis abdominis</i> ; from the sides of the vertebræ in the loins.	Into the linea alba.	To contain and compress the abdomen, to expel the fæces to facilitate the respiration.

THE SUPERIOR EXTREMITY.

a. <i>Teres major</i> , from the lower part of the scapula.	Into the upper part of the humerus.	To bring the humerus downwards.
b. <i>Pars coraco-brachialis</i> ; from the coracoid process.	Into the middle of the os humeri.	To raise the humerus.
c. <i>Pars coraco-brachialis interni</i> ; from the humerus under the deltoid muscle.	Into the upper part of the ulna.	To bend the fore-arm.
d. <i>Caput tertium tricipitis extensoris cubiti</i> ; from the neck of the scapula.	Into the olecranon.	To extend the fore-arm.
e. <i>Extensor radialis longior</i> ; from the internal condyle of the humerus.	Into the carpus near the thumb.	To bend the wrist.
f. <i>Extensor radialis brevior</i> ; from the external condyle of the humerus.	Into the bones of the metacarpus.	To extend the carpus.
g. Part of the <i>flexor profundus perforans</i> ; from the upper part of the ulna.	Into the third joint of the fingers.	To bend the fingers.
h. <i>Supinator radii brevis</i> ; from the upper part of the ulna.	Into the upper part of the radius.	To roll the arm outwards.
i. <i>Pars adductor pollicis</i> ; from the metacarpal bone, that sustains the middle finger.	Into the inner part of the root of the first bone.	To pull the thumb towards the fingers.
k. One of the three <i>interossei externi</i> ; from the sides of the metacarpal bones.	Into the first joint of the fingers.	To bring the fingers towards the thumb.
l. The tendons of the <i>extensores digitorum</i> , jointly with the <i>lumbricales</i> , and <i>interossei</i> , forming the posterior part of the four fingers.		the tendinous expansion in the

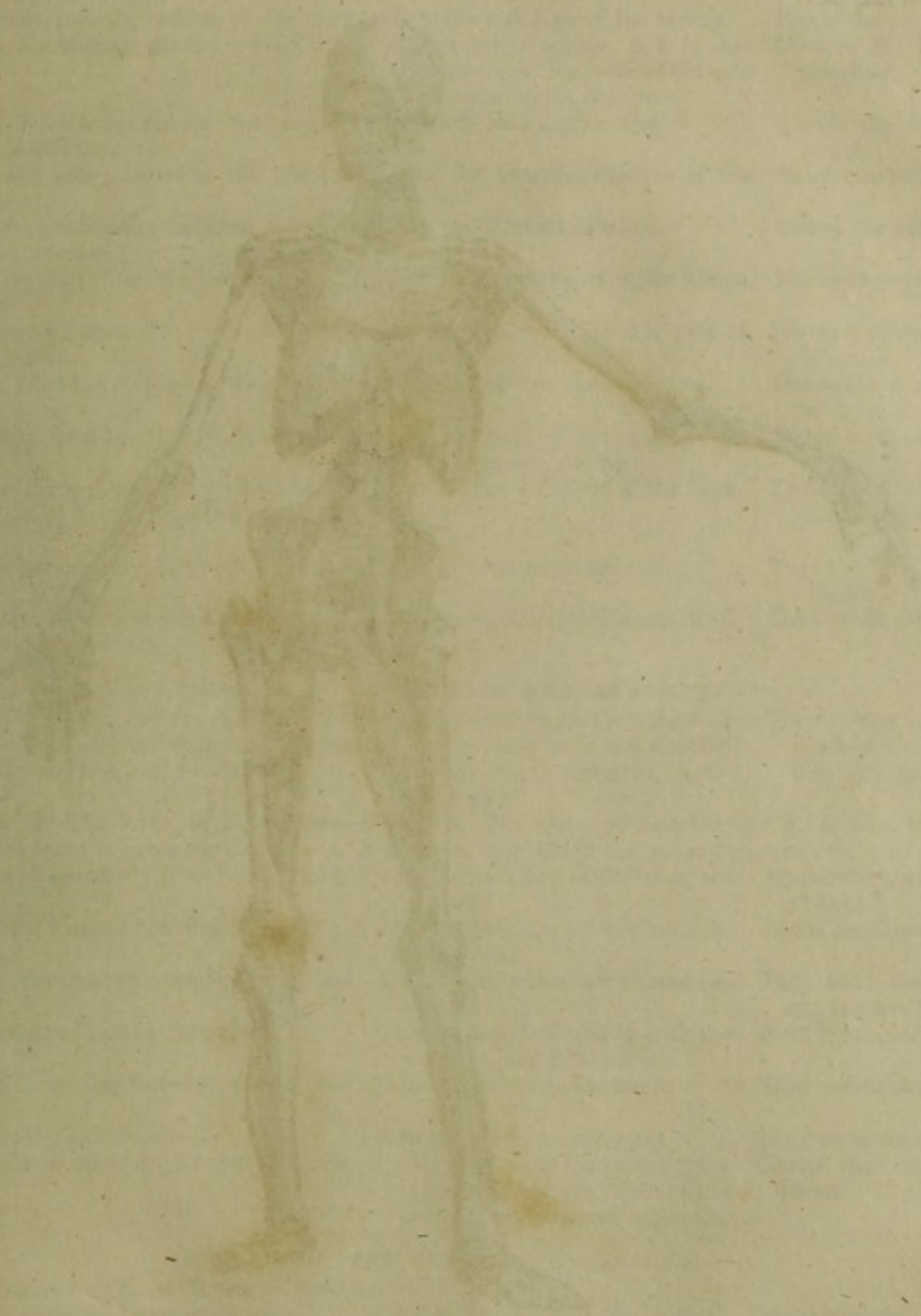
THE INFERIOR EXTREMITY.

a. <i>Gluteus minimus</i> ; from the ilium near the acetabulum.	Into the trochanter major.	To extend the femur.
b. <i>Obturator internus</i> ; from the inner side of the foramen pubis.	Near the trochanter major.	To roll the femur.
c. <i>Semi-membranosus</i> ; from the ischium.	Into the internal side of the tibia.	To bend the leg.
d. <i>Caput brevis bicipitis flexoris cruris</i> ; from the ischium and femur.	On the posterior part of the fibula.	To bend the leg.
e. <i>Triceps magnus</i> ; from the os pubis and ilium.	Into the spine of the os femoris.	To turn the femur outwards.
f. <i>Gracilis</i> ; from the fore part of the os pubis.	Into the ham.	To bend the femur.
Under the ham is the origin of both the <i>gastrocnemii externi</i> and <i>plantaris</i> .		
g. <i>Popliteus</i> ; from the external condyle of the thigh.	Into the tibia under the ham.	To turn the tibia outwards.
h. <i>Tibialis posticus</i> ; from the interosseus ligament.	Into the external bone of the metatarsus.	To bend the foot outwards.
i. <i>Flexor longus digitorum pedis</i> ; from the back part of the tibia, below its head, and divides into four tendons.	Into the extremity of the last joint of the four lesser toes.	To bend the last joint of the toes.
k. <i>Flexor pollicis longus</i> ; from the back part of the fibula.	Into the last joint of the great toe.	To bend the last joint of that toe.
l. <i>Peronæus longus</i> ; from the fore part of the fibula.	Into the outside of the os metatarsis.	To bend the foot.
an. <i>Extensor brevis digitorum pedis</i> ; arises from the fore part of the os calcis.	Into the upper part of the toes, except the little one.	To extend the toes.

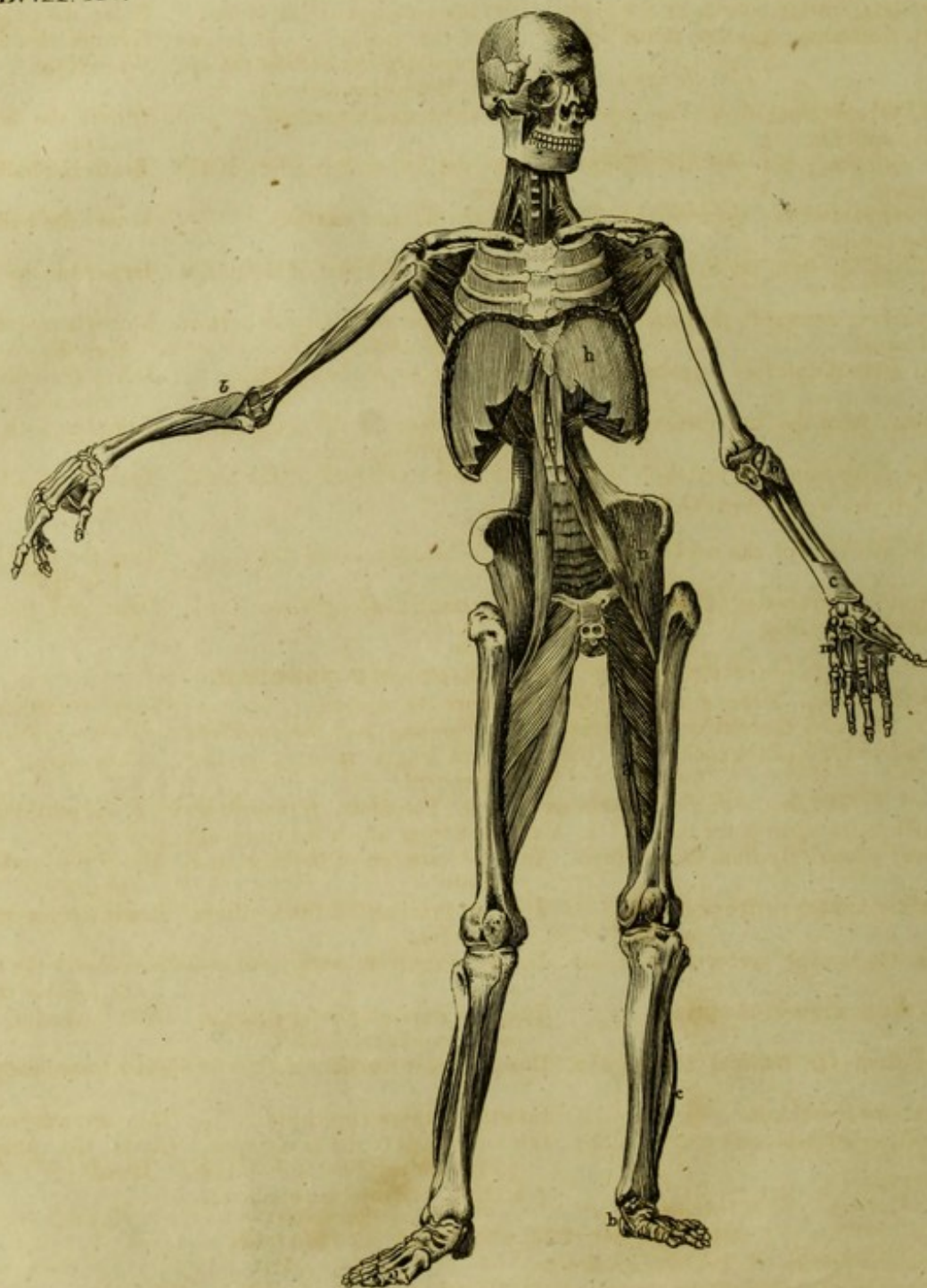
TABVLA XIV.



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TABULA. XV.



Schola et historia Medicinæ a Gul. Rouley

PLATE XV. *Fourth Series of Muscles in the anterior Part of the Body.*

IN THE HEAD AND NECK.

<i>Name and origin.</i>	<i>Insertion.</i>	<i>Action.</i>
<i>Levator palpebræ superioris</i> ; in the bottom of the orbit.	Into the cartilage of the tarsus.	Raises the palpebra.
<i>Obliquus superior, vel trochlearis</i> ; nearest to the optic foramen.	Passes the trochlea, and is implanted into the bulb of the eye near the rectus externus.	Gyrates the bulb, and draws it inwardly.
<i>Attollens rectus oculi, vel superbus</i> ; from the superior part of the foramen opticum.	Into the tunica sclerotica.	Moves the bulb of the eye upwards.
<i>Adductor rectus, vel bibitorius</i> ; between the obliquus superior and depressor.	Into the external canthus of the eye.	Bends the bulb towards the nose.
<i>Abductor rectus, vel indignabundus</i> ; between the foramen, opticum, and lacerum.	Into the internal canthus.	Draws the bulb towards the ear.
<i>Depressor rectus, vel humilis</i> ; from the inferior part of the optic foramen.	Into the inferior part of the tunica sclerotica.	Draws the eye downwards.
<i>Obliquus inferior, seu parvus</i> ; nearest to the orifice of the osseous lachrymal canal.	Into the posterior lateral part of the sclerotica.	Moves it upwards, downwards, and inwardly.
<i>Pterygoideus internus</i> ; from the pterygoid process of the os palate.	Into an angle of the lower jaw.	Draws the maxilla upwards, and to the side.
<i>Obliquus superior capitis</i> ; from the first vertebra of the neck.	Into the bone of the occiput near the mastoid process.	Draws back the head.
<i>Longi colli</i> ; from the three superior vertebræ of the neck, and from the 3, 4, 5, 6, processes of the vertebræ of the neck.	Into all the vertebræ of the neck.	Turn the head anteriorly, backward, and obliquely.
<i>Scaleni medi</i> ; from the processes of the neck.	Chiefly into the dorsal ribs.	Turn the head backward, and obliquely.
<i>Intertransversarii</i> ; from the processes of the vertebræ of the neck, and first of the back.	To the musculus longissimus dorsi.	Draw back the neck.

MUSCLES IN THE BREAST AND ABDOMEN.

<i>a. Levatores costarum primarum.</i> Fibres run down obliquely, between the ribs from the extremity of the eleven uppermost ribs and last of the neck.	From one rib to another, the muscles passing over the next rib are at length inserted in the subsequent.	They strengthen the beginning of the first rib, assisted by others, they elevate the rest.
<i>b. Intercostales externi.</i> <i>c.</i> The first. <i>d. Intercostales interni.</i> <i>e.</i> The first. <i>f. Diaphragm.</i> <i>g.</i> A part laying towards the abdomen. <i>h.</i> Which looks towards the thorax. <i>i.</i> A foramen from which the œsophagus goes out.		
<i>k. Quadratus lumborum</i> ; posteriorly from the os ilium.	Into the vertebræ of the loins, and last rib.	Moves the lumbi, and bends them obliquely.
<i>l. Psoas parvus</i> ; from the lumbar vertebræ.	Into the juncture of the os ilium and pubis.	Bends the femur.
<i>m. Psoæ magni</i> ; from the lumbar vertebræ, and last of the dorsal.	Into the little trochanter, and beneath.	They bend the femur anteriorly and incurve the back.
<i>n. Iliaci interni</i> ; from the os ilium in the pelvis.	They are inserted jointly with the psoæ into the trochanter.	Bend the femur.
<i>o. Obturatores externi</i> ; from the internal side of the pubis.	Into the great trochanter.	They rotate the femur.
<i>q. Erectores penis</i> ; from the os ischium.	Into the corpora cavernosa.	They serve for erection.
<i>r. Sphincter externus ani</i> ; is an orbicular muscle in the intestinum rectum.	It is connected to the os coccygis, intestinum rectum, bulb of the urethra, and internal sphincter.	Closes the anus, restrains the fæces.

MUSCLES IN THE SUPERIOR EXTREMITY.

<i>a. Scapulares.</i> <i>b. Supinator brevis.</i> <i>c. Pronator quadratus.</i>		
<i>d. Flexor brevis pollicis</i> ; from the bones of the carpus.	Into the first bone of the pollex and os sesamoideum.	Bends the pollex, or thumb.
<i>e. Adductor pollicis.</i> <i>f, g, h, i, k, l, m. Interossei interni & externi</i> ; from the bones of the metacarpus; are inserted into the first joints of the adjoining fingers; they draw inwards the fingers.		

MUSCLES IN THE INFERIOR EXTREMITY.

Adductores magni femoris. Tibiales postici. Peronei breves. Interossei primi digitorum secundorum. Interossei secundi digitorum secundorum. Interossei secundi digitorum tertiorum. Interossei secundi digitorum quattorum. Adductor pollicis.
 The muscles of the globe of the eye, being too small in this figure, are demonstrated in Plate XVIII. fig. I. and in Plate XLVI.

PLATE XVI. *The Fourth Series of Muscles in the Posterior Part of the Body.*

HEAD AND NECK.

Name and origin.	Insertion.	Action.
a. <i>Recti postici minores</i> ; from the first vertebra of the neck.	Near the great foramen of the occiput.	They move the head backwards.
b. <i>Recti postici majores</i> ; from the second vertebra of the neck.		
c. <i>Obliqui superiores</i> ; from the transverse process of the first vertebra.	In the os occipitis behind the mastoid process.	They rotate the head.
d. <i>Obliqui inferiores capitis</i> ; from the second vertebra of the neck.	Into the process of the first vertebra of the neck.	
e. <i>Infra spinales cervicis</i> ; between the processes of the neck.	The muscle arising from the superior vertebra goes to the inferior.	They erect the neck, and elevate each spinous process.
. <i>Sc aleni medii quinque. g. Intertransversarii colli quinque.</i>		

THE TRUNK.

a. <i>Levatores breviores</i> of the twelve ribs, from the transverse processes of the first eleven vertebræ of the back, and of the last of the neck.	From one superior rib they run down to the next inferior.	They strengthen the beginning of the first rib, and by means of other muscles elevate the rest.
b. <i>Levatores longiores</i> are proper to the four inferior ribs.	They run from one rib to another, where they are inserted.	They elevate the ribs, and draw them backwards.
c. <i>Intercostales externi. d. Intercostales interni.</i>		
e. <i>Pleura</i> consists of a double membrane, surrounds the whole cavity of the thorax, and every where firmly adheres to it.		
f. <i>Intertransversarii dorsi</i> , in the space between the two processes.	Connect the superior to the inferior process.	They draw in the transverse processes.
g. <i>Semispinales dorsi</i> , from the transverse processes of the 7, 8, 9, 10th dorsal vertebræ.	Into the spinal processes of the dorsal vertebræ.	They extend the spine obliquely and backwards.
k. <i>Spinales cervicis</i> , from the six superior dorsal vertebræ.	Into the spinal processes of the vertebræ of the neck.	Extend the neck obliquely and backward.
i. <i>Multifidus spinæ</i> , from the os sacrum and illum, and transverse processes of the loins of the back and neck.	Into all the spinal processes of the vertebræ of the loins, back, and neck.	They move the back obliquely and backward.
k. <i>Interspinales dorsi</i> , { from the spinal processes of the back and loins.	The superior processes are inserted into the inferior.	They draw together the processes.
l. <i>Interspinales lumborum</i> , {		
m. <i>Intertransversarii lumborum</i> , from the transverse processes.	They fill the spaces between the transverse processes.	They draw the lumbar vertebræ.
n. <i>Quadratus lumborum. o. Diaphragm. p. Psoæ. q. Iliaci.</i>		

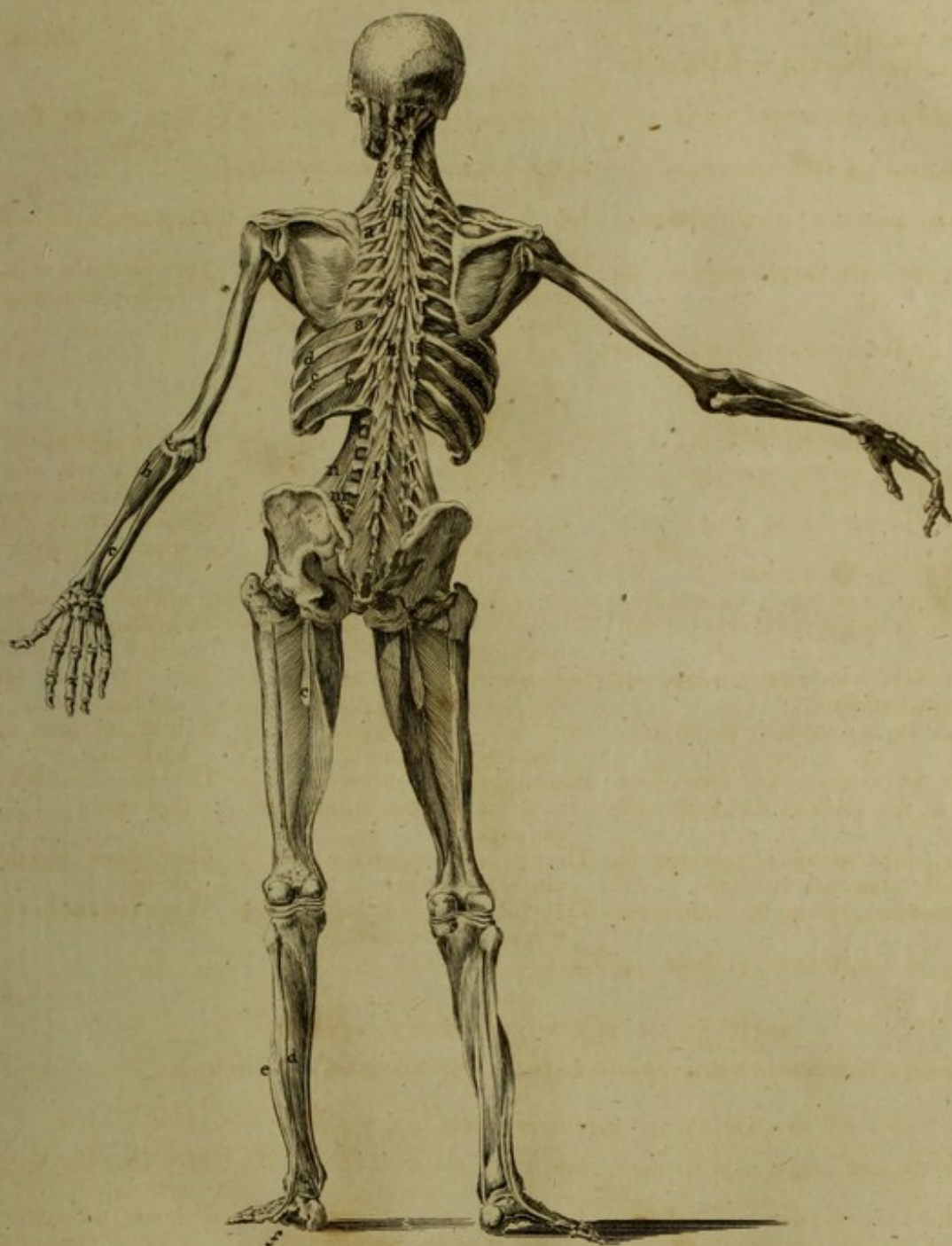
MUSCLES IN THE SUPERIOR EXTREMITY.

Subscapulares. Supinatores. Pronatores teretes. Flexores breves. Adductores pollicis. Interossei.

MUSCLES IN THE INFERIOR EXTREMITY.

a. Tendons common to the <i>psoæ magna</i> with the <i>iliaci interni</i> .	Into the minor trochanter of the os femoris, and below.	They bend the body and the femur anteriorly.
b. <i>Obturator externus</i> , from the os pubis and ischium, and from the margin of the oval foramen.	Into the base of the large trochanter of the femur.	It bends the femur inward, and rotates it outward.
c. <i>Adductor magnus</i> , from the symphysis of the pubis and ischium.	Into the linea aspera, and below the condyle of the os femoris.	Moves the femur upwards, inwards, and rotates it outwards.
d. <i>Tibiales postici. e. Peronei.</i>		
f. <i>Interossei 3 inferiores</i> , they draw the first phalanx of the four toes towards the pollex, or great toe.		
——— 4 superiores, they draw the same phalanx from the pollex, or thumb.		
<i>Transversales pedis</i> , from the fifth bone of the metatarsus, and from the plantar aponeurosis.	Into the sesamoid bone, and adductor pollicis.	It draws the thumb to the fingers.
<i>Adductor pollicis</i> , beneath the 4th, 3d, and 2d os metatarsi.	Into the sesamoid bone, and first bone of the phalanx of the great toe.	It draws the pollex, or thumb.

TABVLA .XVI.



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TABVLA .XVII.



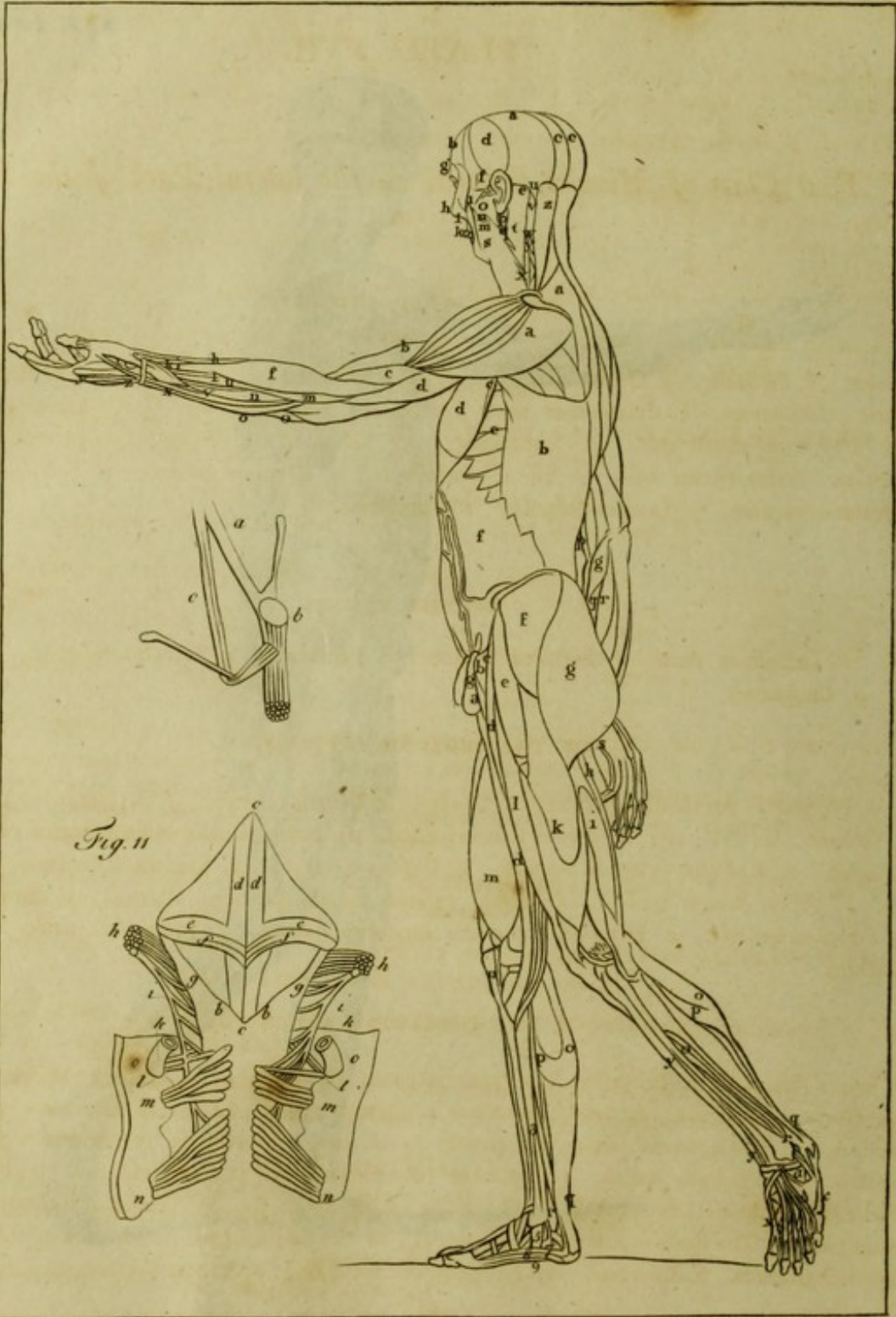
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PLATE VII



PLATE VII



The Letters of the 11 Fig. were omitted in Tab. XXVIII.

PLATE XVII.

First Class of Muscles situated on the lateral Part of the Body.

OF THE HEAD AND NECK.

a. b. c. Epicranii. *b.* Frontalis. *c.* Occipitalis. *d. e. f.* Muscles of the ear. *d.* Attollens. *e.* Retrahens. *f.* Anterior. *g.* Orbicularis palpebrarum. *h.* Compressor naris. *i.* Nasalis labii superioris. *k.* Orbicularis oris. *l.* Zygomaticus major. *m.* Dépressor anguli oris. *n.* Buccinator. *o.* Masseter. *p.* Pterygoideus externus. *q.* Stylo-hyoideus. *r.* Stylo-glossus. *s.* Latissimus colli. *t.* Sterno-mastoideus. *u.* Biventer cervicis. *v.* Splenius capitis. *w.* Splenius colli. *x.* Scalenus medius. *y.* Levator scapulæ. *z.* Cucullares.

OF THE TRUNK.

a. Cucullares. *b.* Latissimus dorsi. *c.* Serratus anticus. *d.* Pectoralis. *e.* Serratus magnus. *f.* Obliquus externus abdominis. *g.* Cremaster.

OF THE SUPERIOR EXTREMITY.

a. Deltoides. *b.* Biceps. *c.* Brachialis internus. *d.* Triceps. *e.* Ulnaris internus. *f.* Supinator longus. *g.* Pronator teres. *h.* Radialis internus. *i.* Sublimis. *k.* Flexor longus pollicis. *l.* Tendo radialis externi longioris alterius. *m.* Radialis externus longior. *n.* Radialis externus brevior. *o.* Ulnaris externus. *p.* Supinator longus. *q.* Radialis externus. *r.* Sublimis. *s.* Flexor longus pollicis. *t.* Tendo radialis externi longioris alterius. *u.* Radialis externus longior. *v.* Radialis externus brevior. *w.* Extensor communis digitorum manus. *y.* Indicatoris tendo. *z.* Extensor proprius digiti auricularis.

OF THE INFERIOR EXTREMITY.

a. Abductor longus femoris. *b.* Pectineus. *c.* Psoas magnus. *d.* Sartorius. *e.* Tensor vaginæ femoris. *f.* Glutæus medius. *g.* Glutæus maximus. *h.* Semitendinosus. *i.* Biceps cruris. *k.* Vastus externus. *l.* Rectus cruris. *m.* Vastus internus. *n.* The ligament joining the patella to the tibia. *o.* Gemelli. *p.* Solæus. *q.* Tendo Achillis. *r.* Tendo plantaris. *s.* Peronæus longus. *t.* Ligament belonging to the peronæus longus. *u.* Peronæus brevis. *v.* Ligament belonging to the peronæus brevis. *w.* Extensor longus digitorum. *x.* Tendon of the extensor proprius pollicis. *y.* Tibialis anticus. *z.* The ligament on which the tendons on the side of the leg and back of the foot are spread. *a.* Extensor brevis digitorum. *b.* Interossei. *c.* Abductor minimi digiti. *d.* Flexor brevis digiti minimi.

PECULIARITIES OF THE RIGHT INFERIOR EXTREMITY.

1. Flexor longus pollicis. 2. Ligament, by which the tendon of this muscle is confined. 3. Flexor longus digitorum. 4. Tendon of the tibialis posticus. 5. Ligament, which lies over the tendons of the flexor longus digitorum pedis and tibialis posticus. 6. Ligament, which confines the tendon of the tibialis anticus. 7. Abductor pollicis. 8. Flexor brevis pollicis. 9. Flexor brevis digitorum.

PLATE XVIII. *Of various Muscles.**Figure I. OF THE EYE.*

- a.* The bulb. *b.* The optic nerve. *c.* The trochlearis, or obliquus superior muscle. *d.* The trochlea with part of the os frontis. *e.* Obliquus inferior. *f.* Levator oculi. *g.* Depressor oculi. *h.* Adductor oculi. *i.* Abductor oculi.

Figure II. MUSCLES OF THE ANTERIOR PART OF THE CARTILAGE OF THE EAR.

<i>Name and origin.</i>	<i>Insertion.</i>	<i>Action.</i>
<i>a. Helicis major</i> , from the acute process of the helix.	Inserted on the outer part of the helix.	These two muscles appear to be of use to extend the cartilage of the ear, that sounds may be more distinctly heard.
<i>b. Helicis minor</i> , from the inferior and anterior part of the helix.	Into the edge of the helix.	
<i>c. Tragicus</i> , from the middle and outer part of the concha, near the root of the tragus.	Into the interior part of the tragus.	To extend the tragus.
<i>d. Antitragicus</i> , from the external part of the antitragus.	Into the tip of the concha in the fissure itself of the cartilage of the ear.	To dilate the mouth of the concha.

Figure III. MUSCLES ON THE POSTERIOR PART OF THE CARTILAGE OF THE EAR.

- a. Transversus auris*, arises opposite to the outer side of the antihelix and scaphæ.

MUSCLES OF THE INTERNAL EAR.

<i>Laxator tympani</i> ; from the superior and internal part of the tympanum.	Into the handle of the malleus.	All these muscles are employed in the action of hearing, to convey and moderate sounds.
<i>Externus mallei</i> ; from the extremity of the spinous process of the sphænid bone.	Its tendon is inserted into the long process of the malleus.	
<i>Tensor tympani</i> ; from the cartilaginous extremity of the Eustachian tube.	By its tendon into the small orifice of the ossieus canal.	
<i>Stapedius</i> ; from the little cavern of the os petrosum.	By its tendon into the posterior part of the stapes.	

Figure IV. MUSCLES ON THE POSTERIOR PART OF THE LARYNX AND PHARYNX.

- a.* Upper part of the membrane of the pharynx. *b.* The trachea taken from its situation. *c.* The œsophagus cut off. *d.* The interior transverse fibres of the œsophagus. *e.* The exterior fibres descending obliquely backwards. *f.* *Constrictor inferior* pharyngis. *g.* *Constrictor medius* pharyngis. *h.* *Cornu ossis hyoidis*. *i.* *Constrictor superior* pharyngis. *k.* That part of it which unites with the buccinator. *l.* *Stylo-pharyngeus*.

Figure V. CONNECTION OF THE LEVATOR ANI, WITH THE INTESTINUM, RECTUM, & URETHRA.

- a.* Urethra. *b.* Bulb of the urethra. *c.* *Sphincter internus*. *d.* *Levator ani*.

Figure VI. THE CORPORA CAVERNOSA OF THE PENIS & URETHRA, THE ACCELERATORES URINÆ, TRANSVERSALES & ERECTORES PENIS.

- a.* The corpus cavernosum of the penis cut off. *b.* The corpus spongiosum of the urethra separated. *c.* *Erector penis*. *d.* *Accelerator urinæ*. *f.* *Transversalis penis alter*.

Figure VII. OF THE SPHINCTER ANI, AND BULB OF THE URETHRA.

- a.* The urethra and corpus spongiosum. *b.* The bulb. *c.* Part of the sphincter ascending obliquely. *d.* The angular part which is inserted into the perinæum.

Figure VIII.

- a.* The anterior part of the anus. *b.* Its origin from the spinous process of the os ischium. *c.* The posterior part, which appears to be external. *d.* Its insertion into the os coccygis. *e.* The internal sphincter ani. *f.* Anus.

Figure IX.

- a.* Insertion of the sphincter into the os coccygis. *b.* The anus.

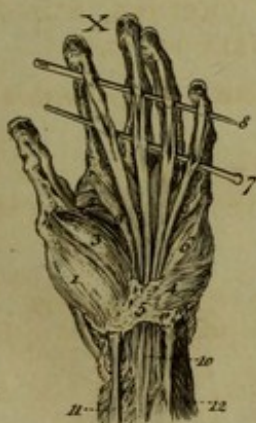
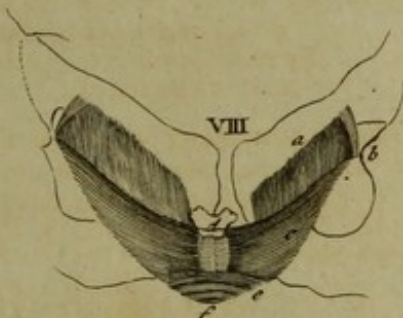
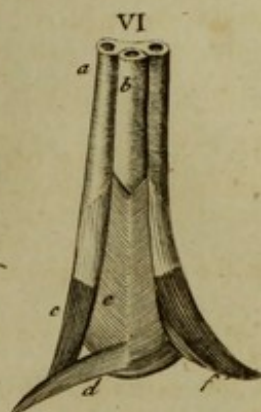
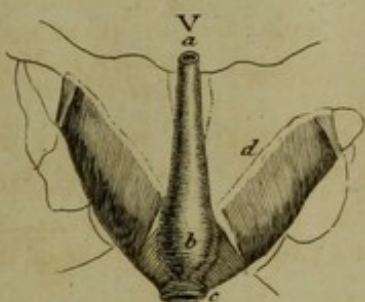
Figure X. MUSCLES OF THE INTERNAL PART OF THE HAND.

1. *Abductor pollicis*. 2. *Adductor pollicis*. 3. *Flexor brevis*. 4. *Quadratus*, or *palmaris brevis*. 5. *Ligament of the carpus*. 6. *Abductor minimi digiti*. 7. *Probe* passed under the tendons of the perforati. 8. *Probe* passed under the tendons of the perforans. 9. *Lumbricales*. 10. *Perforatus*. 11. *Flexor carpi radialis*. 12. *Flexor carpi ulnaris*.

Figure XI. MUSCLES ON THE BACK OF THE FOOT.

1. *Tendo Achillis*. 2. Part of the astragalus which corresponds with the tibia. 3. The tendon of the *tibialis anticus*. 4. Tendon of the *extensor pollicis pedis longus*. 5. Tendons of the *extensor communis digitorum*. 6. *Extensor pollicis pedis brevis*. 7. *Extensor digitorum brevis*. 8. Communication of the tendons of the *extensor longus*, and *extensor brevis*.

TABVLA XVIII



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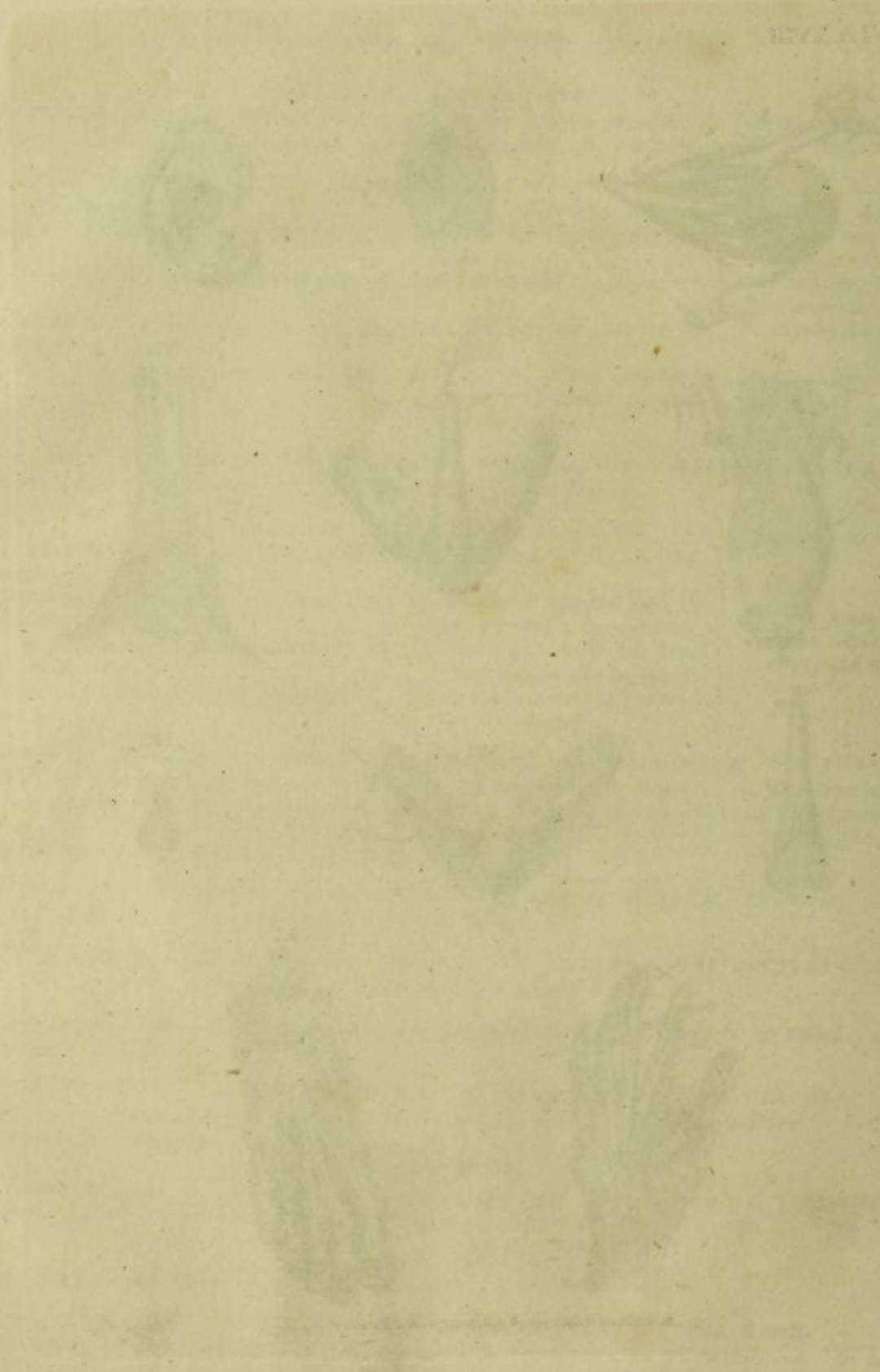


Fig. 1.



TABVLA, XIX.



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Rogee Sculp.

PLATE XIX. *The anterior Arteries of the Body.*

a. The heart.

b. *The aorta*; arises from the left ventricle of the heart, gives off the coronary arteries, and makes the great arch towards the dorsal vertebræ, then descends through the opening of the diaphragm into the abdomen, in which it proceeds near the left side of the back to the last vertebræ of the loins, and there is divided into the two iliac arteries.

c. *The coronary arteries*; arise from the aorta under its arch, and are distributed into the substance of the heart and auricles.

d. *The great arch*; gives off three branches: 1. *The arteria innominata*. 2. *The left carotid*. 3. *The left subclavian*.

e. *The arteria innominata*; arises from the arch of the aorta, is immediately divided into two branches. g. *The right subclavian*; and h. *the right carotid*.

The carotid arteries ascend in a straight line to the larynx, and are there divided into the external and internal.

The external carotid ascends by the ear to the temples, and ramifies into eight branches: 1. The superior thyroid; 2. the sublingual; 3. the inferior maxillary; and, 4. the external maxillary; 5. the pharyngeal artery; 6. the occipital; 7. the external auditory; and, 8. the temporal, from which arises the frontal.

The internal carotid in the cavity of the cranium gives off the cerebral branches.

i. *The left subclavian*.

The subclavian arteries, near the clavicles, are inflected outward, like an arch into the submaxillary cavity, where they are called the submaxillary arteries.

The subclavian artery gives off four branches.

1. *The internal mammary*; it descends near the sternum, and sends forth, 1. the arteria mediastina; 2. the thymic a. 3. The pericardic, from which arises the superior diaphragmatic; and, 4. the inferior tracheal.

2. *The cervical*; goes to the muscles of the neck.

3. *The vertebral*; ascends through the seven foramina of the transverse processes of the neck, and enters the cavity of the cranium.

4. *The superior intercostals*; run on the inferior margin of the ribs to the sternum.

k. *The axillary artery* gives off four branches: 1. The external mammary; 2. the inferior thoracic; 3. the external and internal scapular; 4. the humeral—then

l. *The brachial artery*; runs under the arm to the bend of the elbow, and is divided into three branches.

m. 1. *The cubital artery*, runs down near the elbow, arrives at the palm of the hand, and there forms the palmary arch.

n. 2. *The radial artery*, descends along the radius into the palm of the hand.

3. *The interosseal artery*, external and internal, are distributed to the muscles of the fore-arm.

o. *The palmary arch*; from this arise the four digital arteries.

THE BRANCHES OF THE AORTA DESCENDENS.

The aorta from the arch to the diaphragm gives off four

branches; 1. the bronchial artery; 2. the œsophageal; 3. the eight pairs of intercostals; 4. the inferior diaphragmatic arteries.

a. *The bronchial artery*; going to the bronchiæ and pulmonary vesicles.

The œsophageal artery goes to the inferior part of the œsophagus.

The inferior intercostals go to the sternum along the inferior margin of the eight lower ribs.

The inferior diaphragmatic arteries supply the diaphragm.

The aorta sends off eight branches in the abdomen.

b. 1. *The coeliac*, which is solitary; under the stomach it is divided into three branches; 1. *the arteria stomachica*; 2. *the splenic a.* 3. *The hepatic*.

c. 2. *The superior mesaraic*; tends towards the jejunum, cœcum, and right colon.

d. 3. *The renal arteries*, which go to the kidneys.

e. 4. *The spermatic arteries*; passing to the testicles in men; but in women, to the ovaria.

f. 5. *The inferior mesenteric*; it goes to the left colon, and to the rectum.

g. 6. *The lumbal arteries*; which go to the muscles of the loins and abdomen.

h. 7. *The sacral*; pass near the os sacrum.

i. 8. *The iliacs*; near the last vertebræ of the loins the aorta is divided into two.

The iliac arteries are divided into external and internal.

The internal iliac artery is called the *hypogastric*; in the fœtus it divides itself into six, in the adult into five branches, which are divided within and without the pelvis.

k. *The external iliac*; it comes out of the cavity of the pelvis under Poupart's ligament, and runs backward into the internal part of the thigh to the subpopliteal cavity.

l. In this course it is called the *crura* or *femoral artery*, and under the ham the *subpopliteal*.

m. *The external iliac artery*; at its exit from the pelvis it gives off the epigastric, which ascends under the rectus muscle to the sternum.

n. *The crural artery*, gives many muscular branches to the muscles of the thigh and lateral arteries, which anastomose with the *recurrent genual arteries* from the tibial.

o. *The popliteal artery*, is divided into the *anterior* and *posterior tibial*, and the *peroneal*.

p. *The anterior tibial artery* perforates the interosseal ligament, descends to the back of the foot, (perforates it near the great toe) and runs into the sole of the foot.

q. *The posterior tibial* descends in the internal and posterior part of the tibia.

r. *The peroneal*, or *fibular artery*, descends behind the fibula, perforates the inferior part of the interosseal ligament, and runs on the back of the foot.

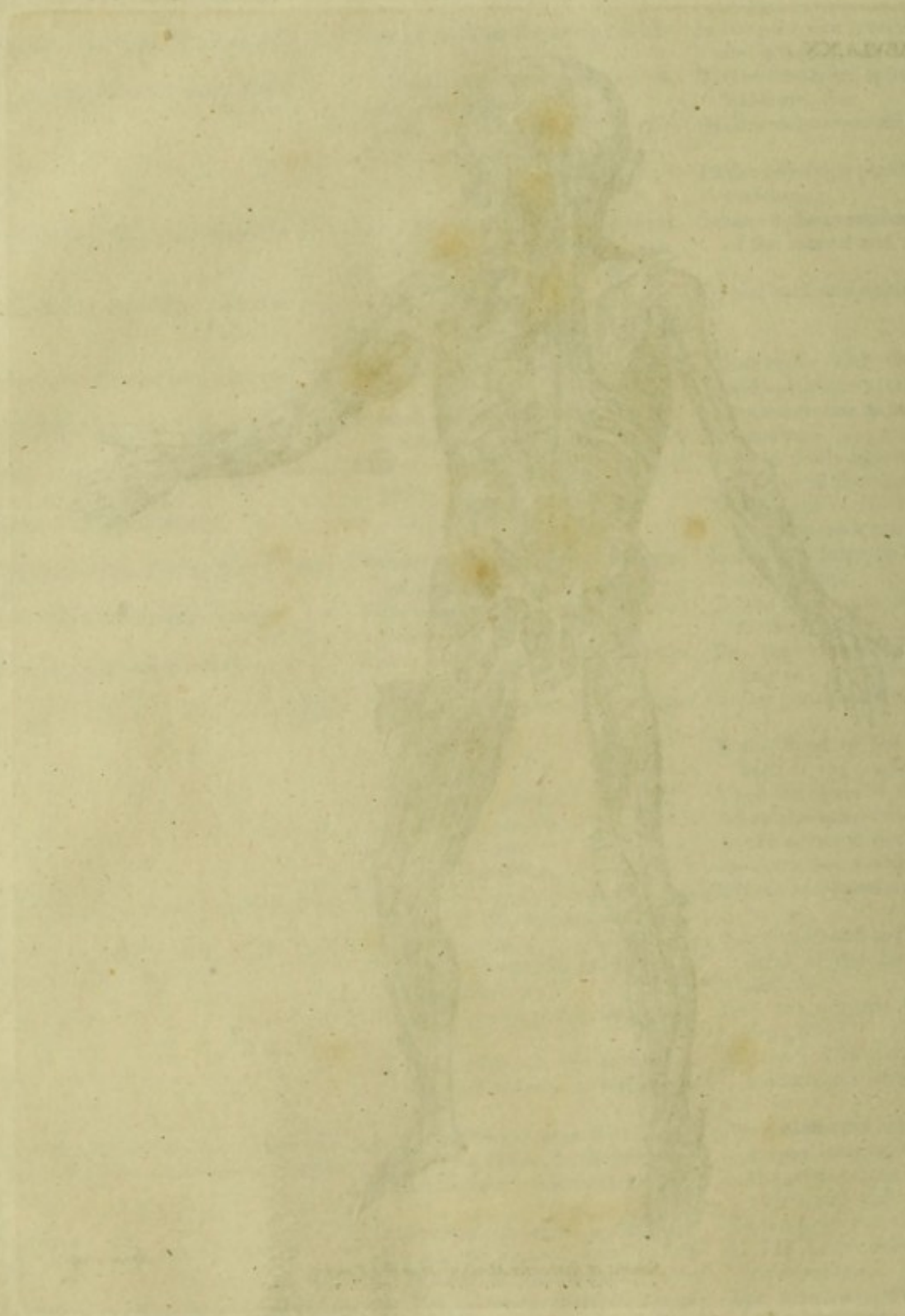
The plantary arch is formed by the anterior and posterior tibial, and the peroneal, in the sole of the foot.

The digital arteries (of the foot) arise from the plantary arch.

PLATE XX. *The posterior Arteries of the Body.**Name, origin, trunks.**Branches.**Terminations.*

- a. *The occipital artery*; emerges under the splenic muscle. Is distributed through the occiput. Sends forth branches to the rectus, oblique, complexus muscles, &c.
- b. *The posterior auricular*; a branch of the temporal. Often arises from the occipital artery. In the posterior muscles of the ear, the biventer, mastoideus, &c.
- c. *The dorsalis suprema*; mostly from the thyroid artery. The branches are, 1. Scapularis; 2. spinalis; 3. dorsalis scapulæ. To the trapezius, splenius, coracohyoideus, &c.
- d. *The occipital arch*. Formed by the union of the branch of the opposite side. Makes an anastomosis.
- e. *The superior intercostal*. In the adjoining periosteum of the vertebrae.
- f. *The intercostal aortic arteries*; nine pair from the descending aorta. The first arises between the third and fourth vertebrae of the neck. The ninth under the 11th rib. Sends off the bronchial; the dorsal of the second and third.
- They separate near the head of the rib into two branches. 1. The dorsal branch; 2. The intercostal branch, which continually divides and again unites. In the back and spinal marrow.
- g. *The lumbal arteries*; arise from the aorta almost at right angles. They have a simple trunk. Anastomose with the abdominal and epigastric artery.
- h. *The trunk of the axillary artery*; arises from the subclavian. It bifurcates into the humeral and brachial arteries. It nourishes the os humeri and its muscles.
- i. *The inferior scapular* from the subclavian; often from the scapularis interna. Is distributed all through the scapula. Goes to the long extensor and infra-spinal muscles, &c.
- k. *The posterior circumflex* from the axillary. Nourishes the muscles of the scapula and humerus. To the head of the humerus, deltoid, extensor longus, &c.
- l. *The trunk of the humeral* from the axillary, often from the brachial artery. Follows the linea aspera of the humerus. Is changed into the radial and ulnar arteries.
- m. *The profunda humeri*; from the humeral artery. Branches; 1. posterior; 2. inferior. To the short and long extensors, to the skin, &c.
- n. *The posterior and superior interosseous artery*. 1. *The arteria nutrita* of the scapula. To the extensors of the little fingers.
- o. *The superior dorsal of the scapula*; mostly from the thyroid. 2. *The dorsal A.* In the periosteum of the scapula.
- Its principal branches are: 3. *The supra-spinalis*. In the head of the humerus and back of the scapula.
- p. *The trunk of the axillary artery*. 4. *The infra-spinalis*. Upon the spine of the scapula.
- q. *The posterior circumflex artery*; from the axillary artery. 5. *The muscular*. Below the spine of the scapula.
- r. *The arteria profunda of the humerus*: from the axillary A., it sends forth many branches. Passes in the axilla. In the adjacent muscles.
- Are distributed to the deltoid, medulla of the humerus, radius, skin, &c. In the upper circumflex artery.
- Into the spinator brevis, the radius, &c. To the epiphyses and os humeri.
- The carpal is produced from the anastomosis with other arteries.
- Are distributed through the metacarpus, carpus, fingers, back of the palm of the hand, it communicates with others.
- To the pyramidal muscle, &c.
1. *The hemorrhoidal*. 2. *the arteria pudenda*.
- The articular, interosseal, cutaneous, muscular arteries, &c.
- Goes down to the back of the foot.
1. *The posterior tibial*; 2. *the peroneal*.
- Is now called the posterior peroneal.
- Is united with the tibial.
- u. *The radial artery*; from the humeral artery in the top of the humerus, often goes off from the trunk at the bend of the elbow. 1. *The median*. 2. *the radial*; 3. *the carpeo-radial*; 4. *the carpeo-ulnar*.
- v. *The posterior iliac artery*. Above the pyramidal muscle.
- w. *The ischiadic artery*. Is variously divided about the tuberosity of the ischium.
- x. *The popliteal artery* is a continuation of the crural under the poples, or ham. 1. *The posterior tibial*. 2. *the anterior tibial*; 3. *the peroneal*.
- y. *The anterior tibial artery*. Perforates the interosseous ligament.
- z. *The posterior tibial artery*. Branches: 1. *the interior*; 2. *the posterior*.
- a. a. *The anterior peroneal artery*. Perforates the interosseous ligament.
- The posterior peroneal artery*. Descends near the fibula.

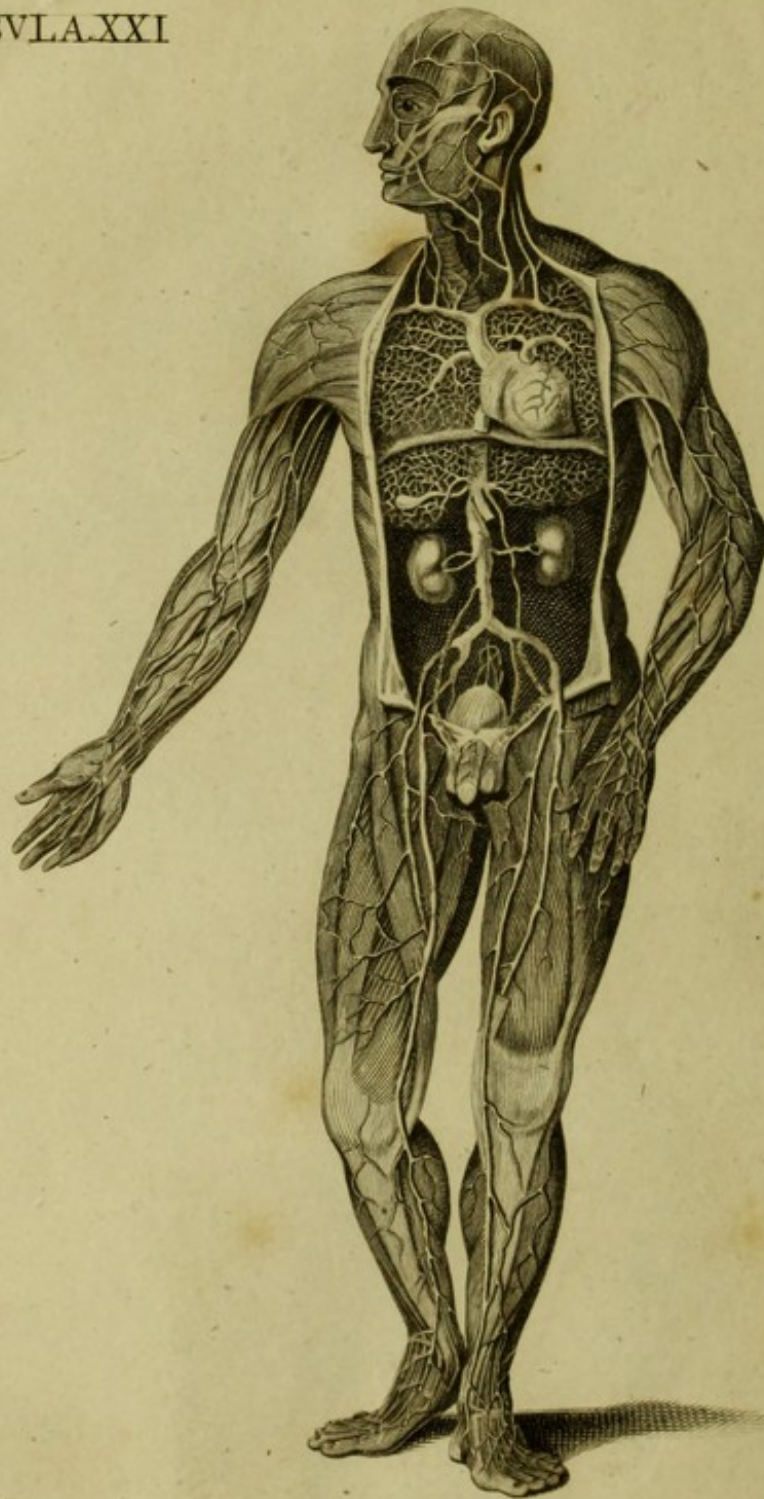




TAB. LXI



TABVLA.XXI



J. P. Fallon delin.

Cook Sculp.



TABVLXXI.

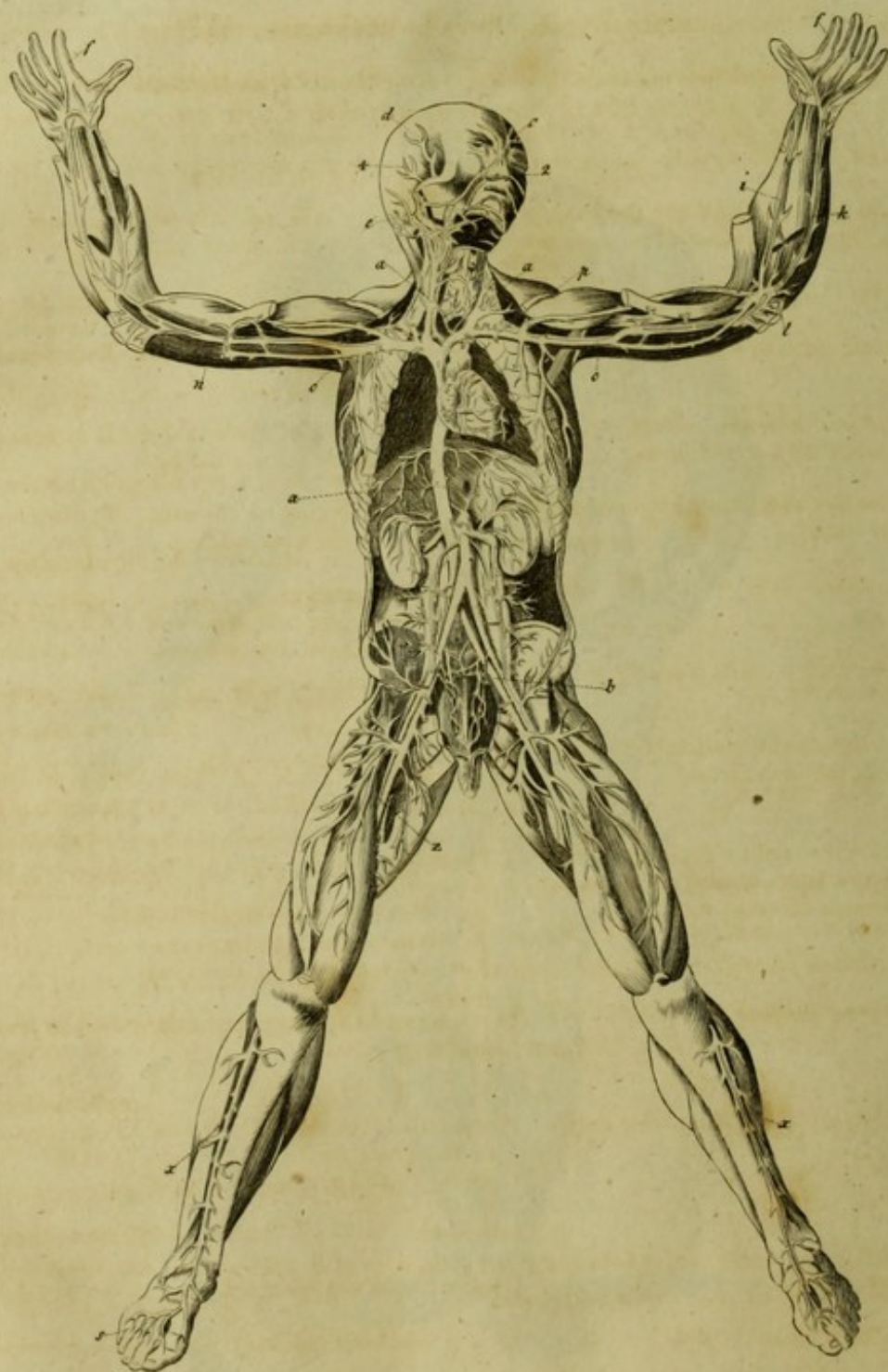


PLATE XXI. *The Veins.*

All the blood of the head, face, and neck.

The blood driven through the arteries into the cerebrum and cerebellum.

a. The *internal jugular veins* descend into the neck.

Veins 1. c. The *frontal*; 2. the *angular*; 3. *d.* the *temporal*; 4. the *auricular sublingual*; 5. *e.* the *occipital*.

f. The *digital veins of the hand*; arise from the extremities of the arteries, through innumerable anastomoses.

i. The *external radial vein*; runs down the length of the radius.

k. Veins 1. The *external and internal cubital*; 2. the *collateral*; 3. the *superior deep seated veins*.

m. The *larger cephalic median vein*; 2. the *inferior profunda*; 3. the *internal radial*.

The *cephalic* and *basilic veins*.

n. The *brachial vein*.

o. The *axillary vein*; it receives.

p. The *subclavian veins*; are a continuation of the axillary veins, and receive the blood from

Both subclavians unite on the right side, and thence convey the blood into the right atrium (*i. e.* *venous sinus*) of the heart through the vena cava.

r. The *vena azygos*, or *vena sine pari*.

s. The *digital veins of the foot*; arise from the extremities of the toes.

The *vena plantaris*.

— *surales*.

t. The *anterior* and *posterior tibial*.

y. The *popliteal vein*; ascends by the poples.

z. The *crural vein*; in the pelvis it is called the *external iliac*.

a. The *vena cava inferior*; begins from the iliac veins to the last vertebrae of the loins; near the heart it unites with the *vena cava superior* in the *anterior sinus of the heart*.

b. The *internal iliac vein*; receives

Is discharged.

Flows into the sinusses of the dura mater.

Receive the *thyroid b.* and *internal maxillary veins*.

Descend in the lateral parts of the neck under the common integuments.

Flow into 1. *g.* the *cephalic vein of the thumb*, and unite with the inferior.

2. Into the *salvatella*; *b.* this comes to the second finger.

By its union with the *mediana cephalica minor*.

From the flowing of these veins into the inferior part of the humerus.

Flow into the flexure of the arm, and become the *vena mediana*.

Unite in the humerus.

Ascends in the internal surface of the humerus to the submaxillary cavity.

1. The *thoracic veins*; the *muscular* and *scapulary*.

1. The *internal jugular veins*.

2. The *external* ———

3. The *vertebral* ———

4. The *mediastina*; 5. the *pericardic*; 6. the *diaphragmatic*, or *phrenic*; 7. the *internal mammary*; 8. the *laryngeal*; 9. the *superior intercostal*; 10. the *vena azygos*.

Is composed by the conflux of the following veins.

Are emptied into the *cephalic vein of the great toe t.* 2. the *saphena u.* and 3. the *dorsal vein of the foot w.*

Inferius.

Superius.

Unite with the *vena peronea*.

After it is out of the ham.

It receives the external pudenda. Unites with the internal iliac vein.

In the cavity of the pelvis and abdomen, the following veins flow to them:

1. The *external hæmorrhoidal veins*.

2. The *hypogastric veins*.

Into the two internal and two external jugular veins.

Is received by the internal jugular veins.

Are emptied into the subclavian veins.

Convey the blood into the external jugular veins, which carry it into the subclavian veins.

Is emptied into the external radial vein.

This flows into the external and internal cubital.

Becomes the *cephalic major*, which adheres to the superior part of the arm.

Is formed the *vena basilica l.*

The median vein unites at one of its ends with the *cephalica magna*, and at the other with the *basilic*.

Run into the brachial vein.

When entered into this cavity it is called the axillary vein.

When it reaches the clavicles, it is called the *subclavian vein*.

From the head.

From the external parts of the head.

From the *veins* and *vertebral sinusses*.

All these come from the internal parts of the thorax and neck.

1. The *bronchial*; 2. the *superior œsophageal*; 3. the *vertebral*; 4. the *superior right intercostals*; 5. the *left inferior intercostals*.

These run into the *anterior tibial vein*.

Empty themselves into the posterior tibial vein.

And are then called the *popliteal vein*.

It is called the *crural*, or *femoral vein*.

It passes into the *inferior vena cava*.

1. The *sacral*; 2. the *lumbar*; 3. the *right spermatic*; 4. the *renal*; 5. the *hepatic*; 6. the *inferior diaphragmatic*.

Into these flow 1. the *internal pudendal veins*; 2. the *dorsal veins of the penis*; 3. the *obturator*.

PLATE XXII.

The Absorbent Lymphatic System.

This system includes the lacteals, mesenteric glands, receptaculum chyli, thoracic duct, lymphatic absorbents and glands; for the purposes of conveying nutritive chyle and coagulable lymph to the blood.

THE GLANDS AND LACTEAL VESSELS.

Figure I.

- a. A portion of the jejunum.
- b. A branch of the superior mesenteric artery.
- c. c. c. The lacteals conspicuous with their little knots.
- d. An island of lacteals.
- e. A mesenteric gland, receiving the chyle from the vessels spoken of.
- f. An oblong gland with a simple inferent vessel.
- g. A gland, consisting of six or seven lymphatic inferent ducts.
- h. The vasa egredientia, vel efferentia, of a gland migrating to another gland of the next order.

The *lymphatic vessels*, when they successively enter many glands, the first gland is then said to be of the first order, or genus; the next one to this, of the second order or genus; but this division of Winslow is uncertain, and of no use in physiology, it may with propriety be omitted, because one and the same gland may receive from many glands and new vessels of different orders which are not yet called glands.

i. The thoracic duct; there are two, a primary and a secondary one.

k. Part of the aorta descendens.

l. The receptaculum chyli.

A dilation of the receptaculum is often wanting in men.

Haller says, it is wanting six times in 21. Dead human bodies, in which I have shewn the thoracic duct, I have seen the ampulla, that is, the cistern of the chyle.

m. The trunks of lacteals opening into the receptaculum.

n. The celiac artery.

o. The emulgent arteries.

p. The inferior mesenteric artery.

q. The iliac arteries.

r. The sacral artery.

s. Some trunks of the abdominal viscera and lower extremities.

t. The thoracic duct arises from the receptaculum.

Figure II.

A little membrane, composing a lymphatic vessel visible by a microscope.

a. A membrane of a lymphatic.

b. Small globules dispersed through the membranes.

c. Fibres, or small striæ, resembling small vessels.

Figure III.

The coats of the thoracic duct visible in the microscope.

a. The exterior tunic of the thoracic duct, consisting of large globules joined together in clusters.

b. The interior tunic conspicuous with similar globules, but smaller.

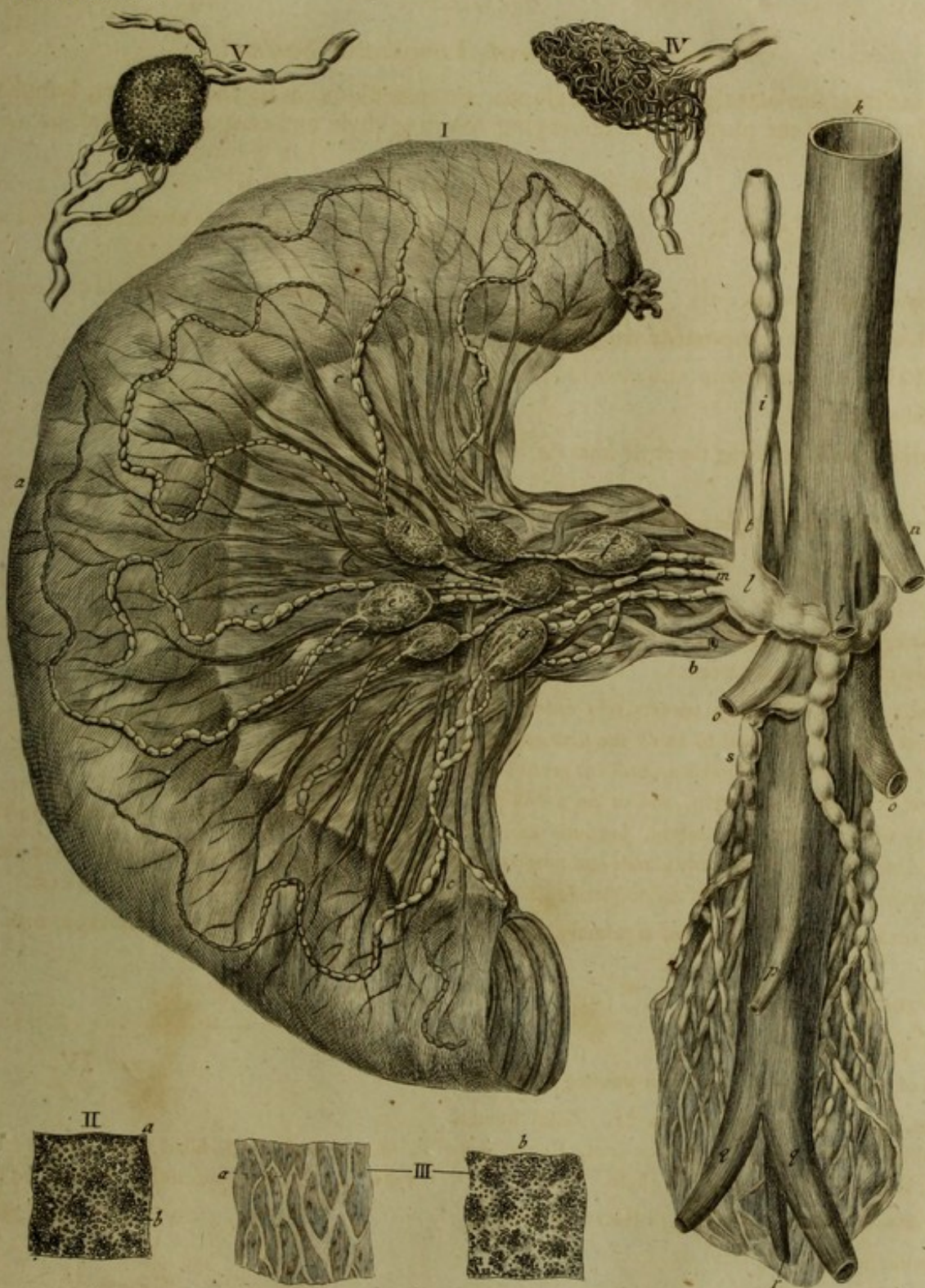
Figure IV.

An injected gland, filled with mercury from the absorbents only, exhibiting a congeries of convoluted lymphatic vessels.

Figure V.

A gland filled with mercury, injected by the absorbents, in this the cells are very evident.

TABULA XXII.



Schola et historia Medicinæ a Gul Rowley.

Ryce fecit.

TABULA XXIII



P. Willou, delin.

Schola et historia Medicinæ a Gul. Rowley.

Rowley sculp

PLATE XXIII.

*The Lymphatic Glands and Absorbents.**Name and Situation of the Glands, &c.*

Rete; it arises in the extremity of each foot and hand: where the arteries terminate, out of the tela cellulosa originate absorbent lymphatics, which, when they enter glands, are called *inferent*; but when they leave glands, *efferent* vessels, in pursuing their course towards the thoracic duct.

The *tibial gland*; in the middle of the tibia

The *popliteal glands*; under the poples.

The *inferior inguinal glands*; they constitute the seat of pestilential buboes.

The *superior inguinal glands*; venereal buboes arise in them.

The *iliac glands*; in the pelvis near the arteries and iliac veins.

The *mesenteric glands*; are innumerable through the whole mesentery.

The *renal and atrabiliary glands*.

The *receptaculum chyli*, or ductus Pecquetianus, discovered by John Pecquet, 1649. It is often deficient.

The *primary thoracic duct*; is the principal trunk of the absorbent system.

The *right absorbent*, or *secondary duct*; arises from four large lymphatic trunks.

The *glands of the stomach*, or *gastric glands*; are four or six.

The *hepatic glands*; a great plexus near the vena portæ.

The *cardiac*, or *pericardiac glands*; near the rise of the carotid artery.

The *glands of the lungs*; are rarely found in the substance of the lungs.

The *brachial glands*; in the flexure of the arm.

The *axillary glands*; under the clavicle, and in the axilla; they swell from a cancer of the breast.

The *glands in the face*; near the zygomatic process and parotid glands.

The *cervical glands*; are very numerous; the seat of scrophula and struma.

Inferent Vessels.

The small vessels cannot be seen by the naked eye, on account of the great exility of their origins. Injections from the trunk to the lesser vessels do not penetrate, the valves oppose them: mercury easily proceeds from the small trunks to the larger vessels, and points out the direction.

In the ends of the toes.

In the parts situated under the knee.

The crural vessels swell when pus is absorbed from ulcers of the foot.

The vessels come from the genitals and nates.

Receive the lymph from the inferior parts, and from the pelvis.

Receive the lymph from the lower extremities, chyle from the intestines, &c.

From the kidneys and atrabiliary capsules.

Is composed of two trunks of absorbents, and one of the lacteals within the diaphragm.

Receives the chyle and lymph of the abdomen, and lower extremities, from the receptacle.

The lymph comes from the right side of the liver, diaphragm, heart, lungs, head, &c.

They are 1. The coronary vessels.

2. The left gastric.

3. The right gastric.

The vessels on the liver are distinguished by several divisions.

1. The right coronary vessels of the heart; 2. the left.

Receive the lymph from the lungs.

1. The *basilic* vessels in the hand, from the palm and little finger; 2. the *cephalic* from the thumb and index; 3. the *median* from the other fingers.

The vessels come from the head, neck, arms, scapula, breasts, heart, lungs, and liver.

Several vessels come from the internal canthus of the eye, from the nose and lips.

The vessels come from the external and internal parts of the head and neck.

Efferent Vessels.

The small vessels, united with others, make branches, by the union of many of which they become trunks, which at length are terminated in the thoracic duct and subclavian veins, where they empty their chyle and lymph.

Are emitted to the popliteal glands.

Proceed to the inguinal glands.

These vessels go to the iliac region and its glands.

These vessels proceed as the above.

Carry the lymph to the superior parts.

Go into many trunks, and thence to the thoracic duct.

Go to the receptaculum chyli.

Where its dilatation ends, it is called the thoracic duct.

Perforates the diaphragm, ascends the thorax, exonerates itself in an angle of the left subclavian and jugular veins.

This duct empties itself into the right subclavian and jugular veins.

Go to the thoracic duct.

Unite with the lymphatics of the omentum, spleen, and pancreas.

They flow with the pyloric of the omentum and liver.

They send the lymph to the pericardiac glands.

Both flow and enter the thoracic duct.

Empty themselves into the thoracic duct, or subclavian veins.

They tend to the axillary glands, or the thoracic duct.

On the left side they are exonerated in the primary or superior trunk; on the right side they are emptied into the secondary or inferior trunk.

They descend to the neck, and unite with other cervical trunks.

Two trunks, a right and left, flow into the subclavian veins.

P L A T E XXIV.

Basis of the Cranium.

- A. *Tentorium cerebelli*, or tentorium of the cerebellum; the part which comes to the anterior clinoid processes is removed.
- B. The *longitudinal sinus* of the dura mater. The posterior end is bifurcated; the interior and duplicated lamina of the dura mater, which forms the falciform process; the lateral processes, and falx of the cerebellum, has peculiar cavities, which are called *sinuses*.
The conjunction of the four greater sinuses is called *torcular of Herophilus*; the *longitudinal sinus* to the end, for the most part, is a continuation of the other sinus in the right transverse process, to which the other sinus is joined belonging to the left transverse process; these are called *lateral sinuses*. In that place, in which the longitudinal sinus is changed into the right lateral, another sinus is opened for a process of the cerebellum, which is called *occipital*; then another, which runs into the same place from the interior parts of the cerebrum, venous, as it were, in its nature, and is called the *fourth sinus*, &c.
- C. The *fourth bifurcated sinus*; inserted into the right transverse crus, and into the left other crus; yet this is very rare.
- D. The remaining part of the *falx cerebri*.
- E. E. The great veins of the tentorium.
- F. The veins of the cerebrum, inserted by transverse sinuses in the tentorium cerebelli.
- G. The opening of the posterior occipital sinus.
- H. H. The right and left posterior *occipital sinuses*.
- I. *Falx cerebelli*; placed between the two lobes of the cerebellum.
- K. K. The *great transverse*, or two *lateral sinuses*.
- L. L. The *jugular fossæ*, or depressions; into these fossæ, besides the transverse, petrose, and occipital sinuses, are usually inserted the vertebral veins sent into the great jugular sinus by a peculiar meatus of the occipital bone, as also other veins from the occipital dura mater, and frequently the mastoid.
- M. M. The *inferior petrous sinuses*; two inserted into these fossæ.
- N. N. The *superior petrous sinuses*; two ascend on either side near the root of the petrous bone, and are inserted into the receptacula and jugular fossæ.
- O. O. The veins inserted into these sinuses of the cerebellum.
- P. P. The *anterior and inferior occipital sinuses*.
- Q. Q. *Emmissarium* passing out a nerve of the ninth pair.
Emissaria are small veins, &c.
- R. R. *Anterior and superior occipital sinus*; perpetual.
- S. S. Its anastomosis with cavernous receptacula and circular sinus.
- T. The opening of the superior petrous into the cavernous.
- V. V. *Receptacula*, or *cavernous sinuses*; on the side of the sella equina.
- X. X. The *transverse sinus of the sella equina*.
- Y. Y. The *circular sinus* of Ridley.
- Z. Z. Anterior veins of the cerebrum.
- a. a. The principal artery of the dura mater.
- b. b. The veins which accompany it.
- d. d. The carotid arteries in the receptaculum.

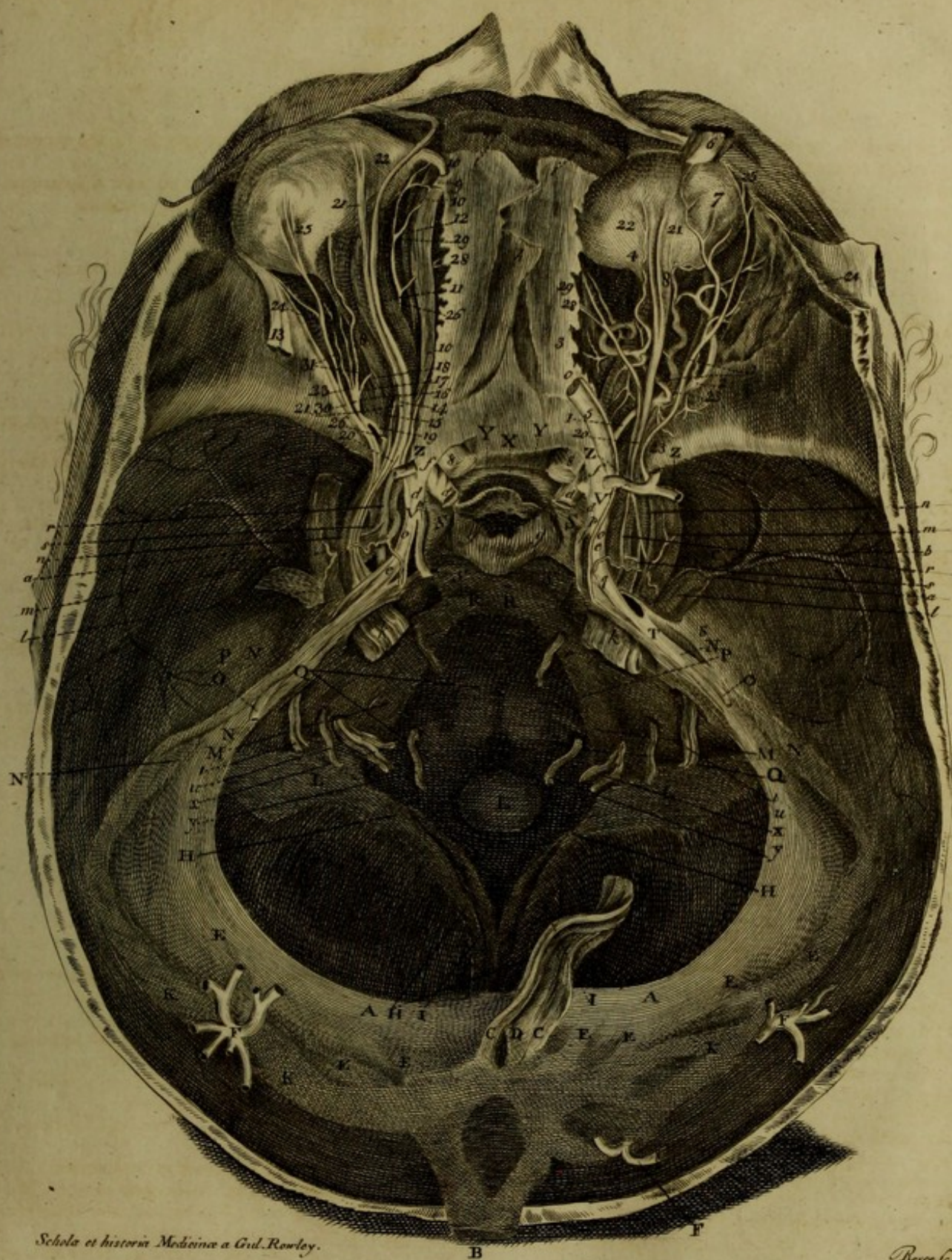
- e. e. The little artery in the receptacle to the nerves of the fifth pair.
- f. f. Ophthalmic arteries, the origin from the carotid.
- g. g. The posterior angulated clinoid processes.
- h. Crista galli. i. i. Frontal sinuses.
- k. k. Nerves of the fifth pair.
- l. The third branch. m. The second branch.
- n. The first branch, f. Ophthalmicus.
- o. Nerve of the fourth pair.
- p. Nervous trunk of the third pair.
- q. The division of the fifth pair from the sixth.
- r. Nerve of the sixth pair.
- s. Origin of the intercostal nerve.
- t. t. The entrance of the seventh pair into the dura mater.
- u. u. The first roots of the eighth pair.
- x. x. Second root of the eighth pair. y. y. Ninth nerve.
- z. Foramen of the medulla spinalis.

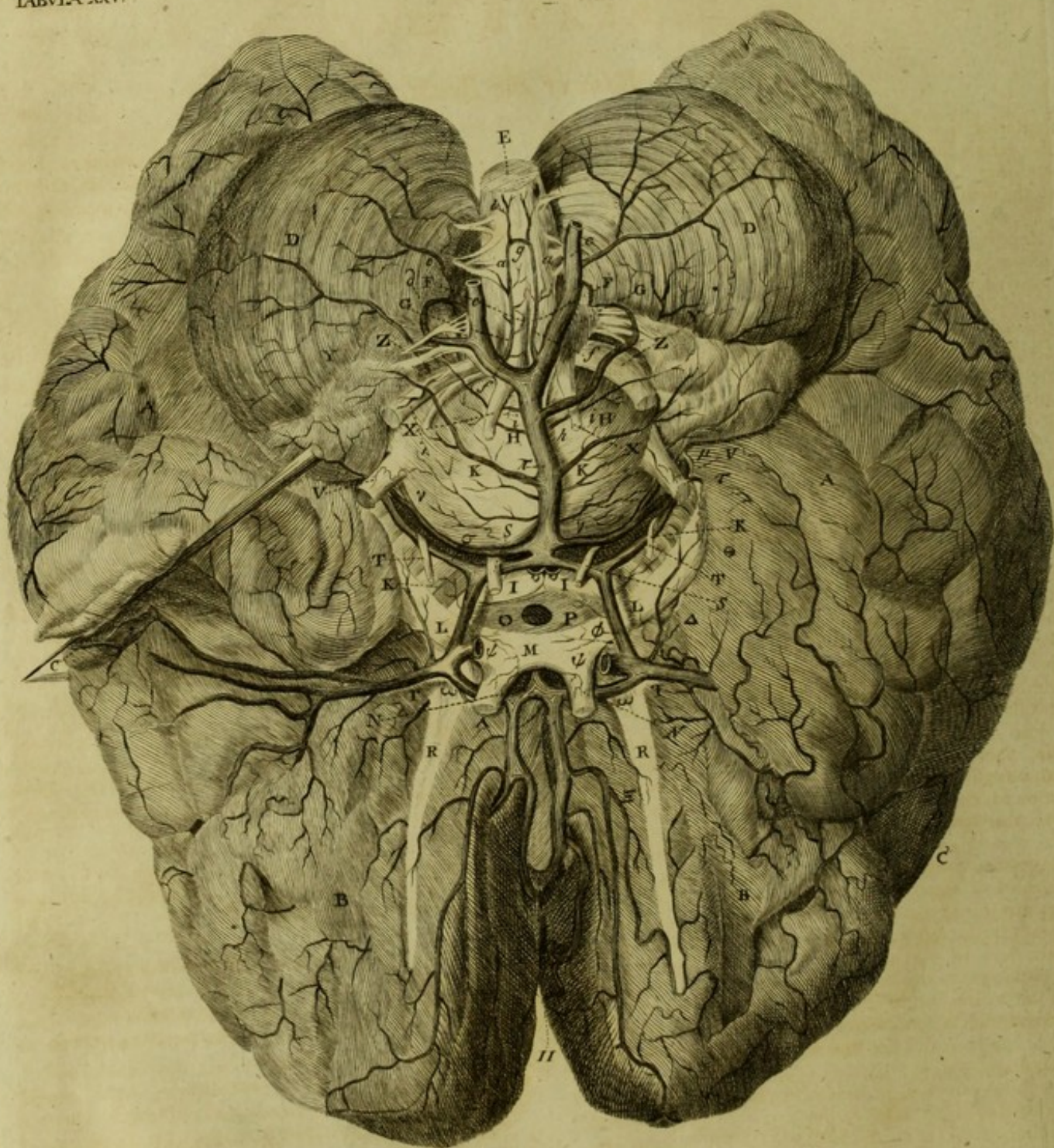
IN THE RIGHT EYE: AFTER THE LACUNAR OF THE ORBIT, AND A GREAT PART OF THE OS MALÆ HAVE BEEN DEMOLISHED.

1. 1. Ophthalmic artery.
 2. 2. An exterior, or lachrymal branch of the same, accompanying the nerve.
 3. 3. Interior surculus extending to the nose.
 4. 4. Branches which go to the sclerotica, some to the uvea.
 5. 5. The remains of the muscles of the palpebræ and eye.
 6. End of the levator palpebræ.
 7. Lachrymal gland. 8. Optic nerve.
- 20, 21, 22, 23, 24, 25, 26, 27, 28, 29. As in the other eye.

IN THE LEFT EYE.

9. Trochlea. 10. Pathetic muscle.
11. Levator muscle of the eye.
12. Internal muscle of the eye.
13. Abductor cut off.
14. A branch of the third pair to the levatores oculi and palpebra.
15. Another trunk.
16. The outermost branch to the obliquus inferior.
17. The middle branch to the rectus inferior.
18. The innermost branch to the rectus inferior.
19. A branch to the ophthalmic ganglion.
20. A branch of the first ramus, the superior branch of the fifth pair.
21. Exterior surculus of the same, 22 interior.
23. Exterior branch of the first ramus of the fifth pair.
24. Ramuli going to the face through the foramina malæ.
25. Small branches to the lachrymal gland.
26. Inferior branch of the first ramus of the fifth pair.
27. A surculus of the same to the ganglion.
28. A ramulus to the nostrils.
29. A branch creeping anteriorly.
30. Ophthalmic ganglion.
31. Ciliary nerves.
- 31, 7 & 8. As in the right eye.





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P L A T E XXV.

Basis of the Brain.

An anterior view of the basis of the cerebrum, with the posterior lobe a little reclined, to shew the *fissura Sylvii*, and the cerebrum somewhat drawn back to exhibit the lowest seat of the ventricle.

- AA. *The posterior lobes of the cerebrum.*
- BB. *Anterior lobes of the cerebrum.*
- CC. *Fossa Sylvii*: which ascends to the bivium of the anterior ventricle.
- DD. *Cerebellum.*
- E. *Commencement of the spinal marrow.*
- FF. *Corpora pyramidalia*, at the beginning of the medulla oblongata, are four eminent bodies, of which the interior and tumid collicles diminished backwards in a point, are called *corpora pyramidalia*.
- GG. *Corpora olivaria*; are two exterior, short, medullary, obtuse collicles, or *eminences*, mixed with cineritious stria, called *corpora olivaria* from their figure, and may be easily displaced from their situation.
- HH. *Pons Varolii*: not only inscribed with transverse, but also with furrows decussating in different ways, which the arteries seem to cause; it is a convex body in the superior surface of the medulla oblongata; as the crura of the cerebellum subject themselves to the crura, they then become, as it were, an arch, placed over two streams meeting together, which is called *pons*, and attributed to Varolius; others call it the annular protuberance.

Part of the *plexus choroides*: in the anterior ventricles, plexuses of vessels occur, as it were, twisted into a rope by means of a membrane, which is an elongation of the pia mater, and are called *plexus choroides*: the figure is triangular, plane, and expanded, like a veil painted with many small arteries. But other more compound plexuses are continued, in part, convoluted, slender, the *right and left*; and, lastly, they are joined together. The pia mater, convoluted, spreads in the inferior part of both cornua of the lateral ventricle. In that seat of the plexus of the cranium propullates into the basis of the cerebrum, free, placed on the arising optic nerve, and covered by the pia mater alone, is continued to the anterior and posterior end of the thalami, and the terminations of the *septum lucidum*.

- II. *Mamillary eminences*, or *eminentie quadrigeminae*.
- KK. Part of the *crura cerebri*; the *crura cerebri* are two medullary eminences which arise from the basis of the cerebrum, and terminate in the *pons Varolii*.
- LL. The *optic nerves* before they unite.
- M. Their conjunction.
- NN. The *optic nerves* separated.
- O. Part of the pia mater subject to the third ventricle.
- P. The seat of the *infundibulum*.
- II. Anterior part of the *corpus callosum*; upon cutting away the *falx* from the *crista galli*, and drawing down the hemisphere, a longitudinal white, convex portion presents itself, called *corpus callosum*.
- Z. Part of the anterior perpendicular lobe of the cerebrum.
- RR. *Olfactory nerves*; arise from the *corpora striata*, and

they pass through the *cribrose foramina* of the *ethmoid bone* into the cavity of the nose, and are distributed in numerous branches on the *pituitary membrane*, for the purpose of smelling.

- SS. Nerves of the *third pair*, *motores oculorum*: are divided into six branches; 1. to the levator muscle of the palpebra; 2. to the *superbus*; 3. *humilis*; 4. *bibitorius*; 5. to the *oblique inferior*; 6. to the *tunics of the eye*, goes out from the lowest *crura cerebri* and migrate to the orbit of the eye.
- TT. Nerves of the *fourth pair*, or *sympathetic nerves*; they are the smallest.
- VV. Nerves of the *fifth pair*; this pair is the largest of all; divides into 1. *ophthalmic*; 2. *superior maxillary*; 3. *inferior maxillary*, afterwards into the *infra orbitale*, *temporal*, *palatine*, *nasal*, *pterygoid*, *dental*, *lingual*, *auricular* branches, &c.
- XX. Nerves of the *sixth pair*; the *par adducens*.
- YY. *Hard and soft nerves*, or the *seventh acoustic pair*, is composed of two nerves, the nature of which is different; the *soft* to the organ of hearing; the *hard* makes to the *facial* branches; the second, the *auricular*.
- ZZ. Nerves of the *eighth*, or *par vagum*.
 - aa. Nerves of the *ninth*, or *lingual* pair.
 - bb. Anterior roots of the *first cervical* nerve; *tenth*, or *cervical* pair, discovered by Willis, and properly called the *first nerve of the neck*, has two roots, anterior and posterior, run into a ganglion, and form an arch with the adjoining second nerve of the cervix, supplies a branch to the *intercostal* nerve, and beneath the *occiput*, goes out of the *medulla spinalis*.
 - cc. *Vertebral* arteries.
 - d. *Right inferior* arteries of the *cerebellum*.
 - e. A branch to the inferior surface of the *cerebellum*.
 - ff. *Anterior spinal* arteries.
 - g. Their first arch.
 - h. *Left inferior* arteries of the *cerebellum*.
 - ii. Branches of the *basilary* to the *pons Varolii*.
 - kk. Branches of the same to the *cerebellum*.
 - l. A branch of the accompanying *auditory* nerve.
 - μ. A branch of the *fifth* pair.
 - vv. *Superior* arteries of the *cerebellum*.
 - π. *Cervical*, or *basilary* artery.
 - σσ. *Deep* arteries of the *cerebrum* arising from the *cervical*.
 - τ. A branch thence to the *plexus choroideus*.
 - υυ. Branches to the *mamillary eminences*, and *fundus* of the third ventricle.
- ΦΦ. *Communicating* arteries, or *circle of Willis*.
- ↓↓. *Trunks of the internal carotids*.
- ωω. Their *anterior* branches.
 - A. Their *anastomosis*, and a branch going out to the third ventricle.
- ΓΓ. *Posterior* branches of the *carotids*.
- Λ. A branch from thence to the *plexus choroideus*.

PLATE XXVI.

Plexus of the Cerebrum.

The greatest portion of the anterior and posterior part of the *cerebrum*, or brain, removed to the posterior end of the lateral ventricle, to shew the uncovered and perfect velum injected, &c.

AAA. *Medulla cerebri*; of which more will be said hereafter.

B. Part of the cerebellum; in general the lobes of the cerebellum are two, alike and equal, which a falx from the dura membrane divides into two parts.—Some divide the lobes that are somewhat deeper than a furrow into three lobules.

C. *Vermis*.

D. *Corpus callosum*.

E E. Arteries of the corpus cut.

F. Middle part of the anterior cerebrum confusedly expressed between the corpora striata.

G G. *Corpora striata*; obscurely drawn, are two long cineritious eminences, elevated in the basis of the anterior ventricle: they were so called from the external appearance, exhibiting many longitudinal roundish white streaks; they are composed externally of a cortical, and internally of the medullary substance of the brain; together united they concur to the formation of the crura of the cerebrum.

H H. *Thalamus of the optic nerves*.

I I. The double semicircular centre, or *limbus* of the striated body of *Willis*: white streaks produced from the *anterior commissure*, and frequently from the crura of the fornix, but especially from the medulla itself, before the thalami of the brain. The anterior end is various, and is continued with one large fibre of the fornix of the anterior crus; the other part before that crus, subjected to the corpus callosum of the cerebrum, is lost: another, lastly, in the posterior surface of the larger *commissura*.

K K. The *posterior crura* of the *fornix* reflected.

Lower than the corpus callosum, and forwarder, more short and slender, the rest parallel, the other a medullary arch, which is called *fornix*.

The middle base of it is simple, as of the corpus callosum, it lies upon the interior convex jugum; yet as a curtain from the pia mater it intercedes the medullary collicles, which are called the *thalami opticorum nervorum*: these are two posterior protuberances of the ventricles of the cerebrum, white and terminating in the optic nerves.

The anterior and posterior terminate in two *crura*.

The anterior go behind the anterior commissura of the cerebrum, under the thalami of the optic nerves.

The posterior *crura* distribute themselves on the hippocampus, but not always.

L L. *Plexus choroides*; within the anterior and lower part of each of the ventricles begins as the vascular plexus, called *choroides*, included in the *pia mater* only, it lying naked in the rest of the cavity of the skull, formed of a great number of small arteries, together with little veins, originating from a larger trunk; all which vessels, joined together by the *pia mater*, resemble a curtain variously folded. From this plexus, probably, proceeds the internal warmth of the brain, with its exhalation and absorption. The choroid plexuses become very broad, where the anterior ventricles of the brain begin to descend; and thence, contracting gradually downward, they project their extremities to the ends of the anterior ventricles, covered only with the pia mater.

M. Some glands in the dura mater of the tentorium first discovered by *Haller*.

NNN. Origin of the *velum*, or *plexus*, interposed to the *choroides* from the *pia mater* of the posterior lobe of the cerebrum.

O. The anterior end of that velum in the choroid plexuses.

P. *Glandula pinealis*; obscurely appearing, subjected to this middle plexus. It is a small conoid eminence of a cineritious colour, lying on the quadrageminae eminences, joined with the basis of the medulla of the cerebrum.

Behind the third ventricle, and superior of the cerebrum, are four eminences, called *nates* and *testes*; the pineal gland is lying on these, covered upwards with a great series of vessels, which are a continuation of the choroid plexus.

Q. The great veins of *Galen*, the right trunk: *Galen* not only hath seen the vein, but the division of it, and he calls it a *great vein*, the division of which fills the *conarium*, the declivity also about the conarium he observed.

R. The trunk of it is always present.

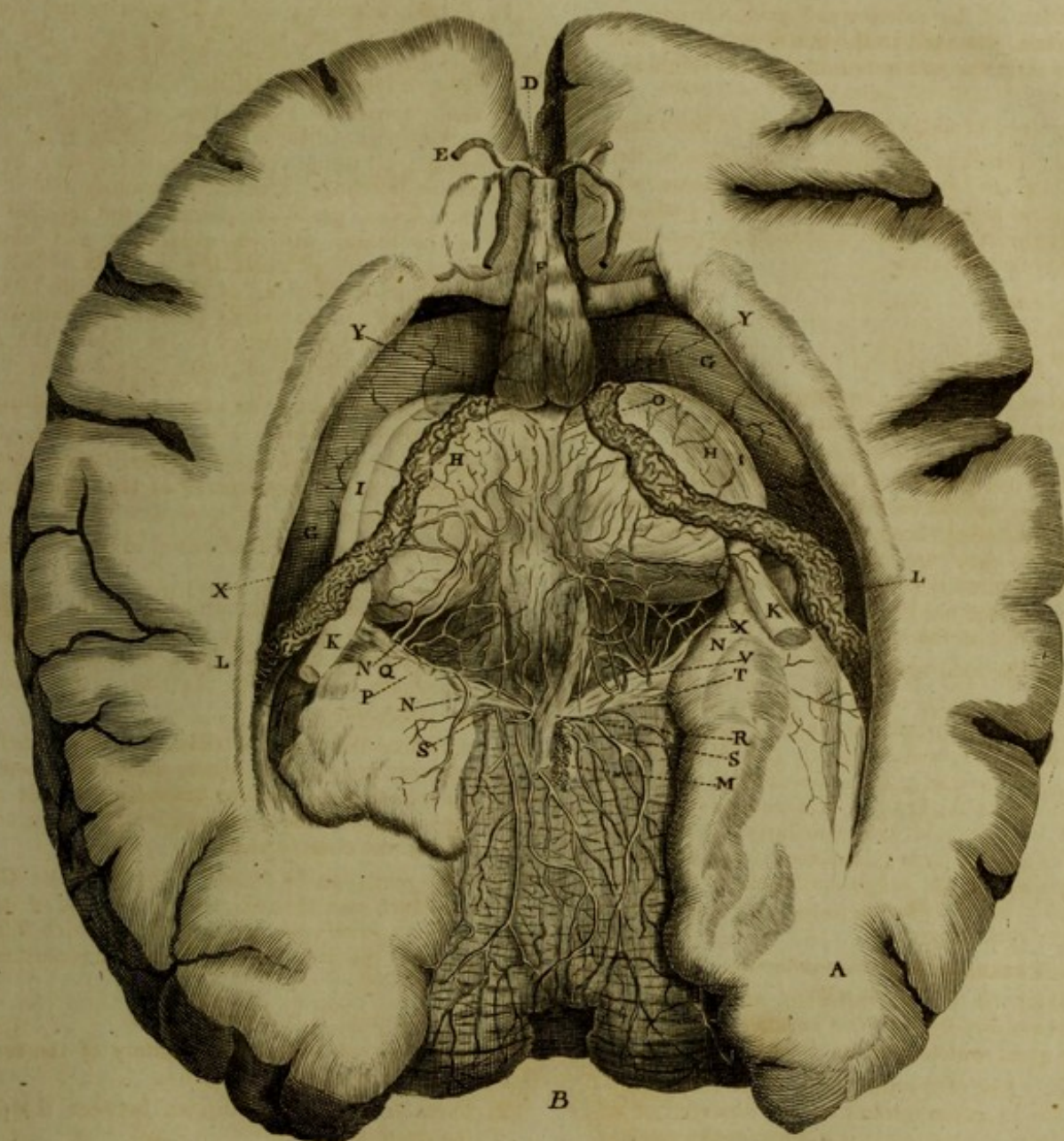
SS. Branches of the superior artery of the *cerebellum* spread through that viscus.

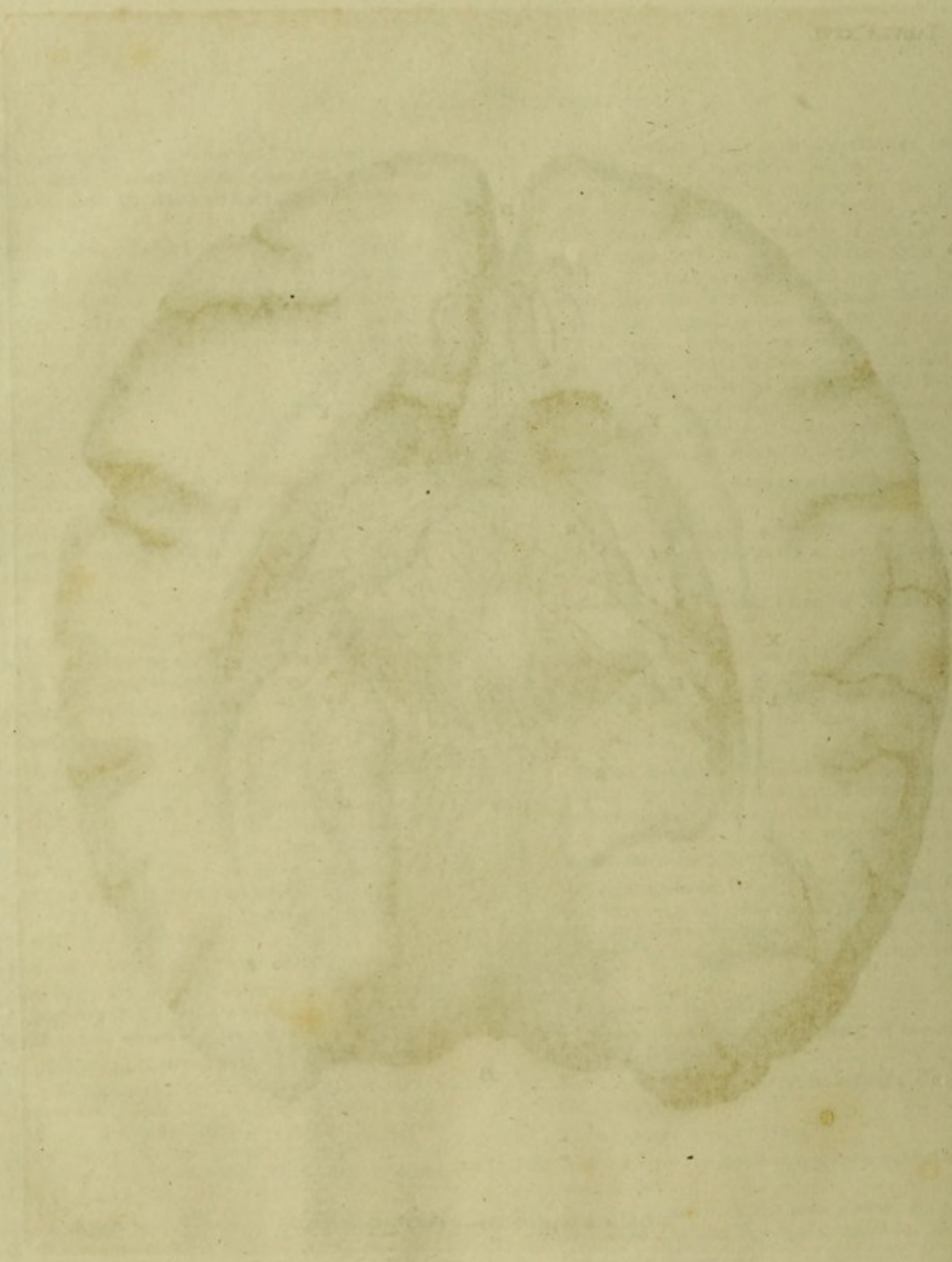
T. *Surculus* of its artery thrown between the plexus of the choroides.

V. The other *surculus*, or sprig.

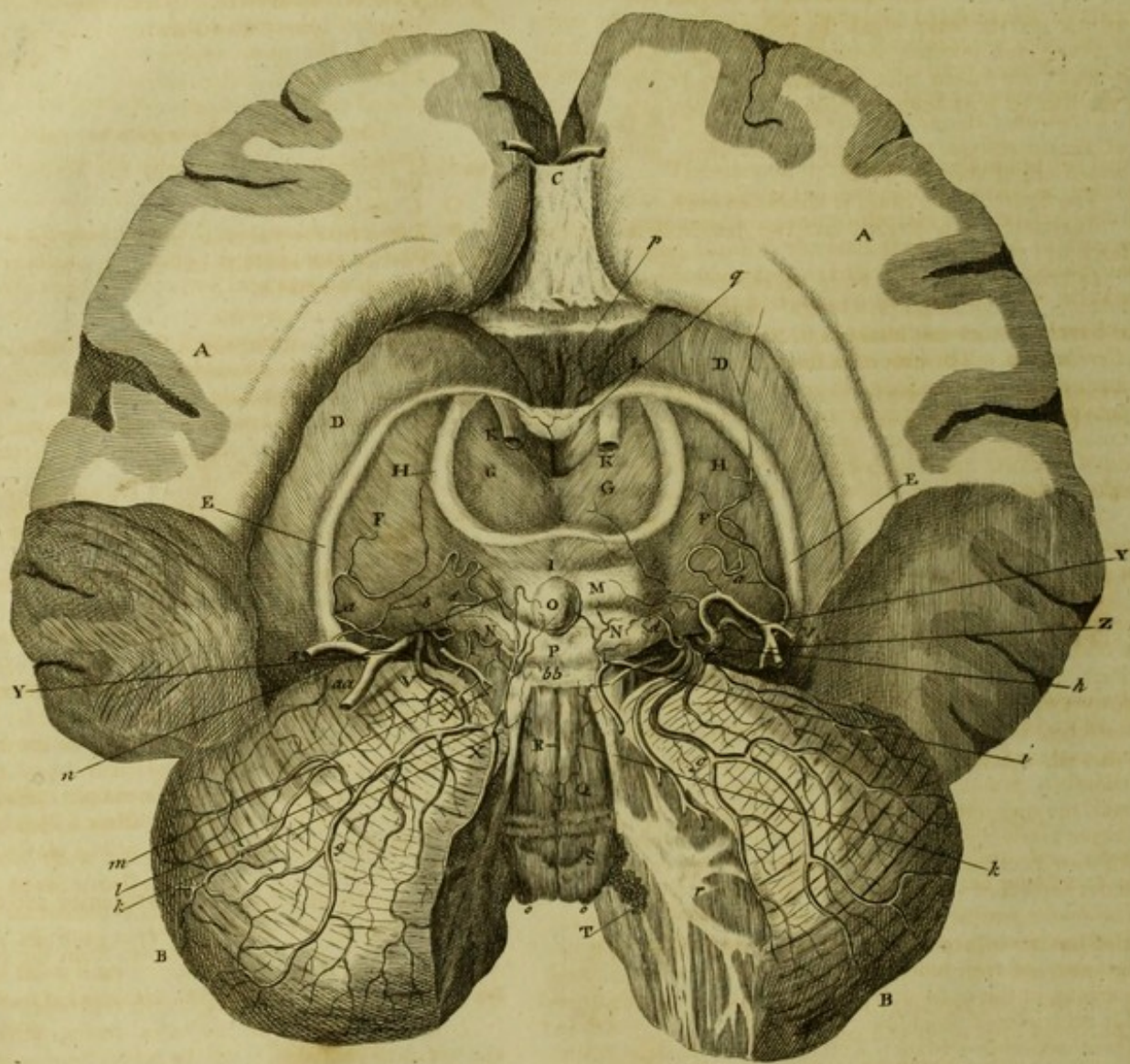
XX. Arteries from the profound, or deep cerebral, to the same plexus.

YY. Anterior branches of the same plexus, they go out in the *corpora striata*, lightly expressed in this figure of the cornu of the posterior ventricle, of uncertain length—short, and sometimes longer they are found; which seems to arise from the foot of the hippocampus; yet as a *fossa* separated from the foot of the hippocampus. This oval tubercle is used to be, as with one end bent inwardly.





TABVLA XXVII.



P L A T E XXVII.

Arteries of the Brain.

Upon removing the middle plexus, and cutting through the great part of the nudated thalamus and cerebrum, the cerebellum becomes conspicuous. The weight of the parts containing the anterior ventricle, makes them fall down on each side, and discovers the ventricle very beautifully.

A A. *Cerebrum*: its medulla appears yellow from the blood of the dissected arteriolæ, but when these guttulae are wiped off, it appears white.

The figure of the brain is almost an oval.

Superiorly, it is divided into two hemispheres by the falciform process.

Inferiorly, from the basis of the cranium into six lobes. The external or cortical substance is greyish; the internal and medullary is white.

B B. *Cerebellum*. The processes from the cerebellum to the medulla spinalis are four; in general, similar and equally converging medullary columns tend downwards from the crura of the cerebellum into the beginning of the medulla spinalis, and touch one another with their utmost extremities.

Externally, they are moderately conspicuous from the medulla, unless at its end, which swelling in the form of a club, resemble some of the corpora olivaria.

On the internal side of these processes, some, but obscure tumors, sometimes appear, subrubellous, and of a cortical nature.

C. Part of the corpus callosum; transverse striæ in the corpus callosum, are easily discovered more evident posteriorly, but also lines of the same kind appear in its interior medulla. The corpus callosum is an oblong medullary prominence, which is conspicuous by turning back the anterior and middle hemispheres of the brain.

D D. Corpora striata externally cineritious. The *corpora striata* are two protuberances of a greyish colour anteriorly, under each fore ventricle one is placed.

E E. The double semicircular centre, or *tænia semicircularis*.

F F. Thalami nervorum opticorum, are two posterior protuberances of the ventricles of the brain, whitish, and finishing in the optic nerves. They extend to the superior ventricles of the brain, and to the third ventricle.

G G. Their superior surface, exteriorly, is partly white, partly cineritious. Their convexity tends towards the third ventricle, and receive the fornix, then in a direct line, as if resected, they touch together, and frequently coalesce.

H H. *Linea alba*; it begins in the posterior commissure, and is inserted into the double semicircular centre.

I. *Posterior commissure of the cerebrum*.

K K. Anterior crura of the fornix cut.

L. *Anterior commissure of the brain*. This medullous, robust, fibrous funis, stretched beyond the anterior termination of the ventricle, which unites the right medulla of the cerebrum with the left before the thalami opticorum nervorum, and before the anterior crura fornicis. It runs into that white fibrous commissure, which proceeds through the thalami and geminum centrum, and crura of the fornix, and gives some white filaments.

M. *Testes*; in the four quadrigemina eminences, are four collicles, or eminences, the inferior, less, and more flat

pair, is called *testes*, of which the exterior face is white; they are sphericles divided.

N. *Nates*; the more superior pair of the collicles, nearer to the conario, called *nates* by the ancients; a vellum is placed on these collicles.

The *corpora quadrigemina*, therefore, are four eminences, or prominences, the anterior are called *nates*, the posterior *testes*.

O. *Glandula pinealis*.

P. *Linea transversa alba*, fourth ventricle.

Q. Part of the medulla oblongata, which is the side of the fourth ventricle.

R. *Calamus scriptorius*.

S. *Linea alba*, from which the nervus mollis arises.

T. *Fourth plexus choroideus*.

V V. Part of the crura of the cerebrum. The crura of the cerebrum are two medullary columns, which proceed from the basis of the cerebrum, or brain, and are terminated in the *pons Varolii*.

X X. Process from the cerebellum to the nates.

Y Y. Arteria profunda of the cerebrum arising from the vertebral.

Z Z. Branches to the posterior processes of the cerebrum resected.

a. First external branch, thence to the plexus medius and thalami.

β. Second branch to the testes and that plexus.

c c. Third branch to that plexus.

d. A branch of the *arteria superior* of the cerebellum going to the nates and testes.

e. The left fourth nerve with a simple radix.

f. Right fourth nerve arising from a double root.

g g. Branches from the superior artery of the cerebellum to that viscus.

h. Propago, or a shoot of the superior artery of the cerebellum deeper than the left.

i. Artery of the nates and testes from the superior part of the cerebellum.

k k. Branch from it to the fourth ventricle.

l. A large branch to the nates testes, pineal gland, and fourth ventricle.

m. Another branch of it to the nates and testes.

n. Anastomosis of the branch a & l.

x. Branch from the profound trunk of the *arteria cerebelli* to the nates and testes.

a a. Right trunk of an artery of the same.

b b. Another branch to the nates and testes.

o o. Arteriolæ to the plexus choroideus, arising from the inferior artery of the cerebellum.

p. Arteries arising from the anterior carotids to the profunda of the cerebrum before the anterior commissure.

q. And ascending behind that commissure.

r. Arbuscula vitæ.

The superabundant humidity of the brain from the exhalants, if not absorbed, produces the dropsy of the ventricle and membranes of the brain: the latter of which I have proved curable, if timely discovered. See the Treatise.

PLATE XXVIII.

Of the Medulla Spinalis, or Medullary Spine.

Figure I. The cerebellum of an infant cut perpendicularly into two parts, the *fourth ventricle* and *medulla spinalis*, beheld on its posterior side, together with its nerves.

- a. Pineal gland.
- bb. Corpora quadrigemina.
- cc. The fourth pair of nerves of the cerebrum.
- ddd. The cerebellum cut through perpendicularly to shew the *fourth ventricle*.
- eeeee. The two appearances of a perpendicular section of the cerebellum, in which the medullary substance on either side appears dispersed into rami, which is called *arbor vite*.

From this arbor the medullary substance, as it were collected from branches into a trunk, ascends, as is evident, to the corpora quadrigemina, and is called *valvula magna cerebri*, seu *pedunculus cerebri superior*.

But a part of the medulla cerebelli, particularly extends to the *pons Varolii* and inferior pedunculi, or posterior corpora pyramidalia of the medulla oblongata, which, nevertheless, cannot be shewn in this view.

ff. *Fourth ventricle*, which is nothing else than a kind of furrow imprinted on the posterior face of the posterior corpora pyramidalia of the medulla oblongata.

These two bodies are separate from one another in the fourth ventricle by a perpendicular sulcus, to whose sides they descend *perpendiculares eminentiæ duæ*, from which others laterally proceed outwardly, and at length bending to the sides of the corpora pyramidalia, run anteriorly to the origin of the portion nerve, called *mollis acusticus*.

Above these last eminences, white medullary, as it were, fibres usually run, from which, with propriety, some anatomists deduce the origin of the soft portion of the auditory nerves, at least pro parte.

But these lines are not always present, from which it is doubted whether they are at all essential to the soft nerve.

- hh. Eighth pair of nerves of the cerebrum, with the accessory nerves, and the recurrent from the medulla spinalis.
- i. Ligamentum of the pia mater.
- k. Appendix of the medulla spinalis intercepted with the cauda equina.

The posterior appearance of the medulla spinalis with thirty pair of spinal nerves are evident of themselves.

And it is also evident, that every spinal nerve arises from one double anterior root, and another posterior, of which every one is composed of many nervous funiculi, and that those roots continually increase in

length from the first pair of cervicals, until they are the longest of the last sacral.

Also, ganglia, of single spinal nerves, are perceptible, into which neither anterior nor posterior root run, but the posterior only passes the ganglion, but the anterior is found annexed to it by cellular structure only.

The sizes of the spinal ganglion are evident also; the least are in the first pair of cervicles, thence they gradually increase to the last cervical and first dorsal, again through the back they diminish in size, and in the lumbar they increase to the first sacral, until the last sacral becomes equally small as the first cervical.

The roots of the sacral nerves are placed without the natural situation to shew them better.

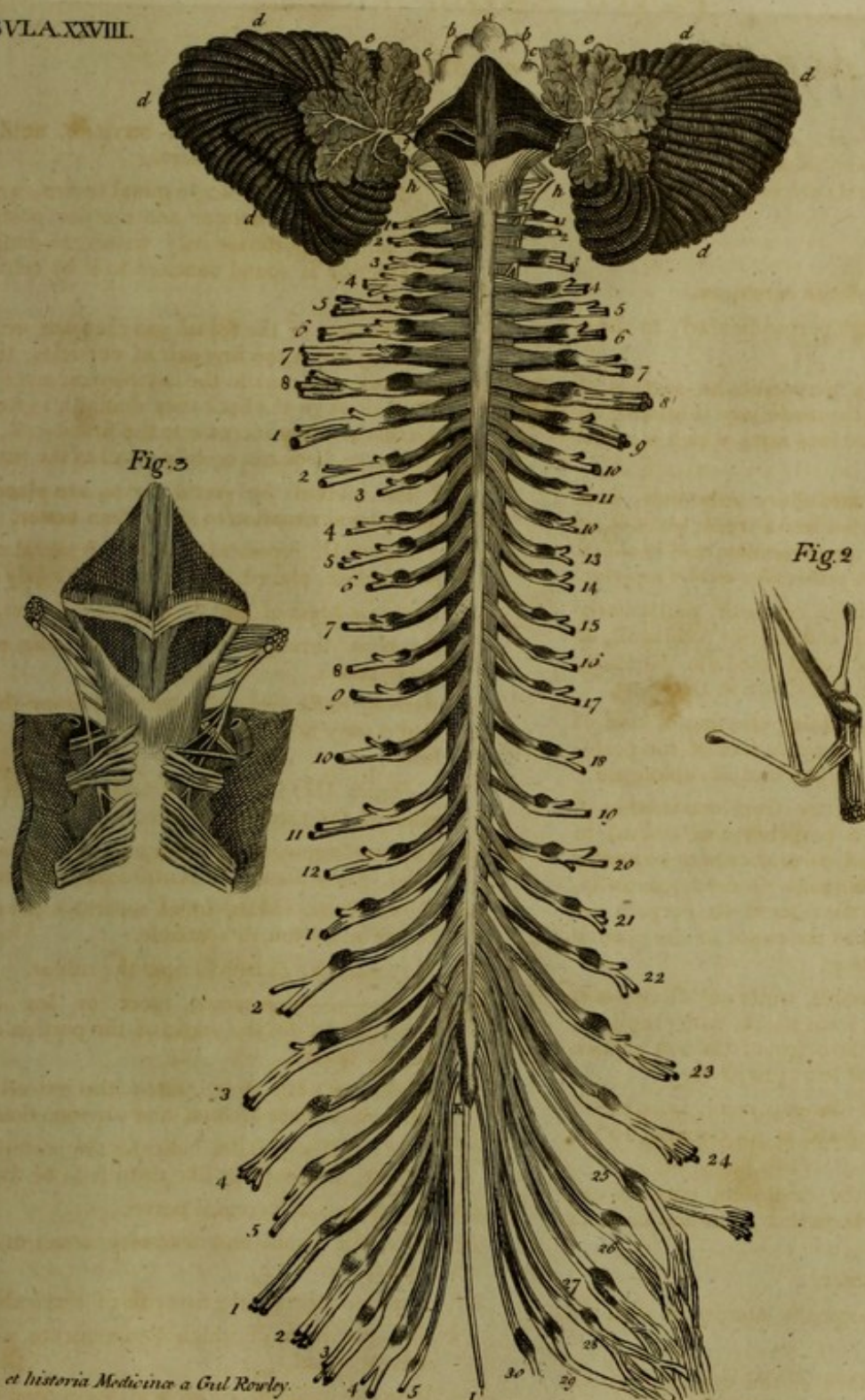
Figure II. represents one of the sacral nerves with its ganglion, placed, that it may be clearly seen.

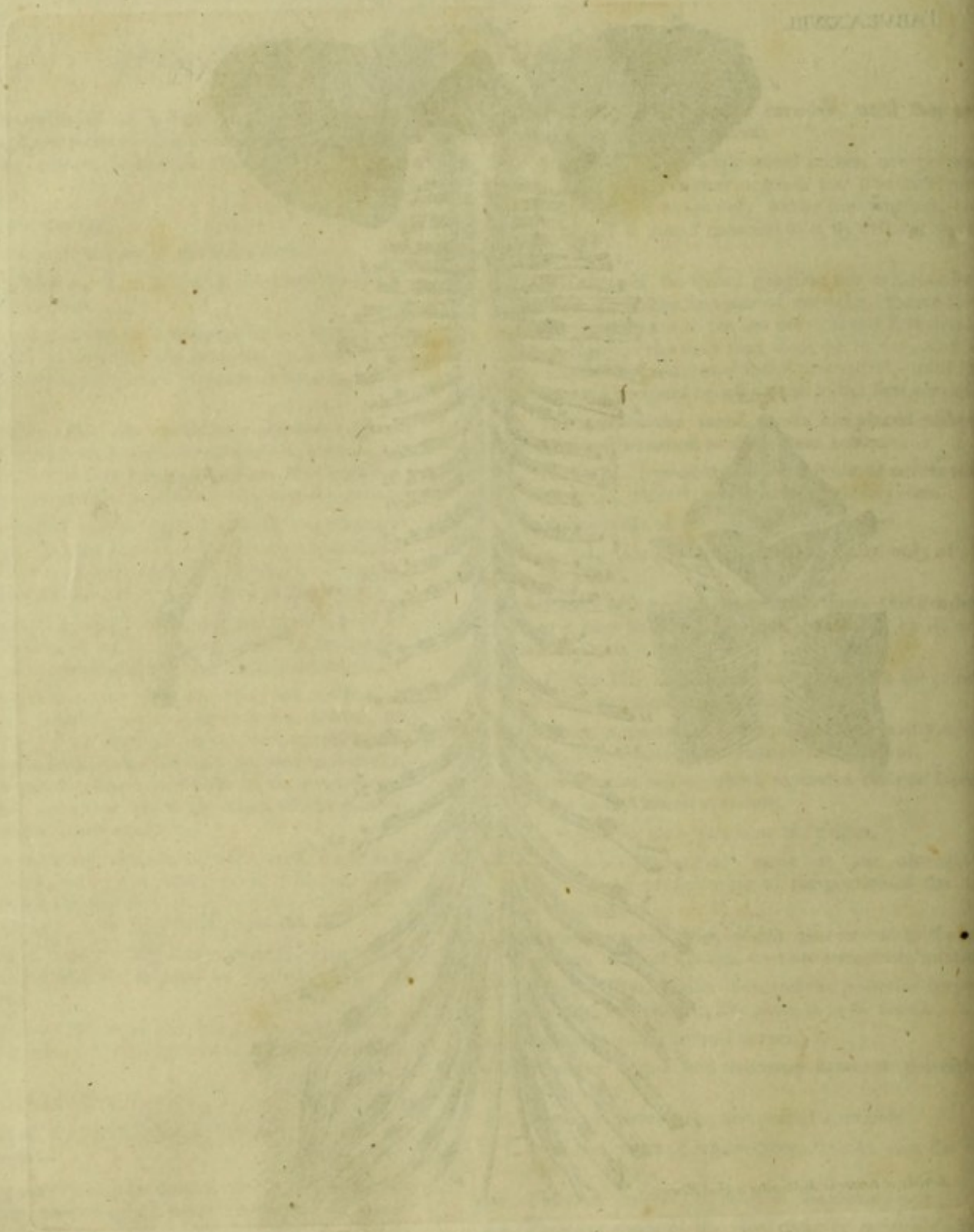
- a. Posterior radix of one of the sacral nerves.
- b. Ganglion, through which the first radix only of the nerve passes.
- c. Anterior radix evidently separated from the ganglion that it may be seen alone, only adhering by its cellulosity.

Figure III. is the *fourth ventricle*, with the principium of the medulla spinalis.

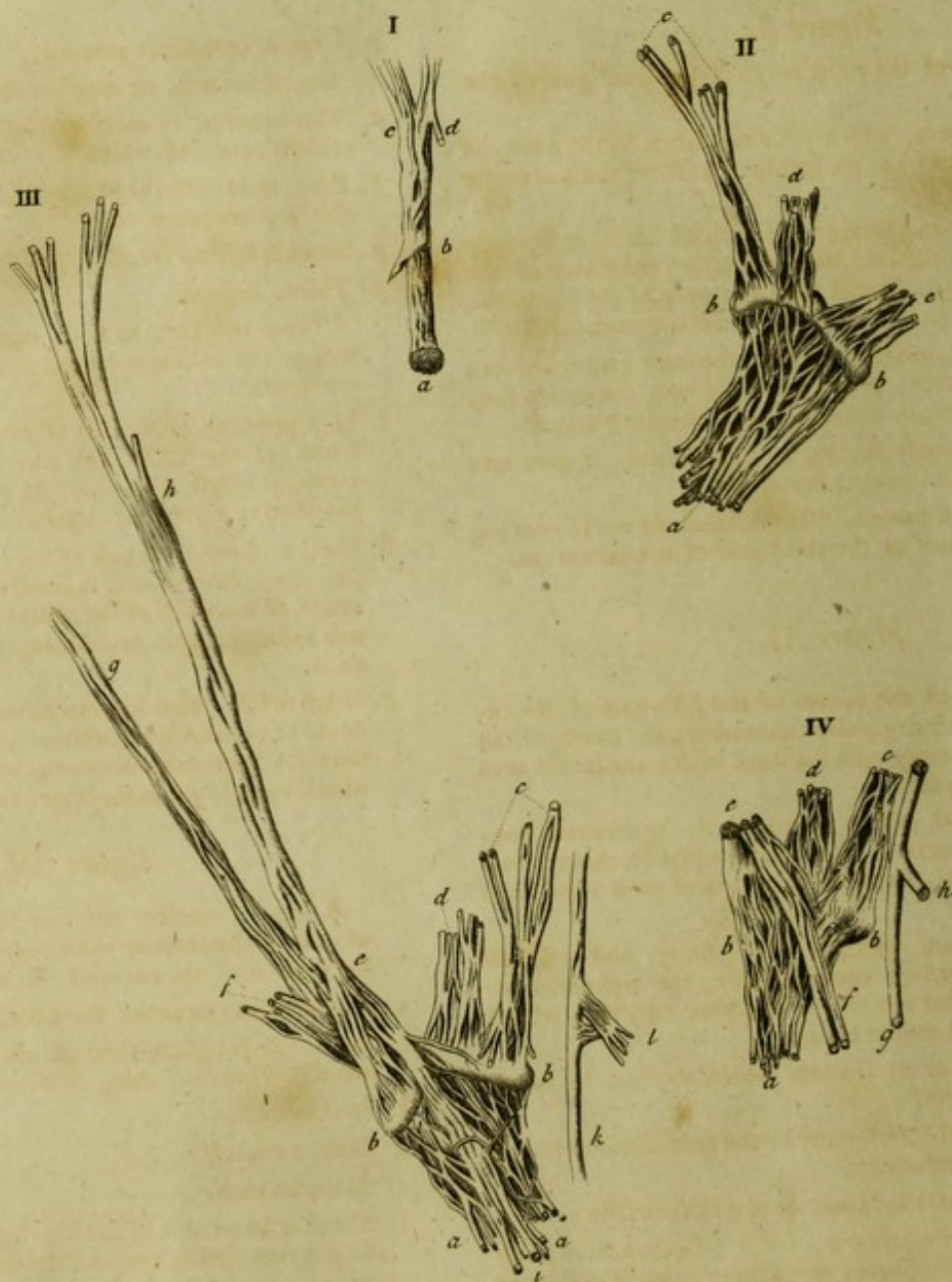
- ab. a b. Posterior appearance of the posterior corpora pyramidalia, when the fourth ventricle is taken out.
- cc. Perpendicular sulcus, which separates the two former bodies in the fourth ventricle.
- dd. Perpendicular eminences near the sulcus.
- ee. ——— transverse, more or less observable, they extend to the origin of the portion of the soft acoustic nerve.
- ff. Medullary white striæ, which also extend to the soft portion, but not always, and are sometimes wanting.
- gg. Here the Illus. Haller indicates the posterior corpora olivaria, but nothing like them is to be found.
- hh. Eighth pair of cerebral nerves.
- ii. Recurrent spinal and accessory nerves to the eighth repair.
- kk. Anterior roots of the first pair of cervicals.
- ll. Posterior roots of which communicate with the left current spinal.
- mm. Posterior radices, or roots of the second pair.
- nn. Posterior radix of the third pair of cervicals which do not consist of ramous, or branched, but of cylindrical nervous cords.
- oo. Vertebral arteries perforating the dura mater, which invests the medulla spinalis.

TABVLA XXVIII.





TABVLA XXIX.



Schola et historia Medicinæ a Gul Rowley.

PLATE XXIX.

*The Ganglions and Plexuses of Nerves, &c.**Figure I.*

Is a portion of the right nerve of the third pair of the cerebrum.

- a b. Part of this nerve, which yet runs down in the cavity of the cranium, and has its involucrum from the pia mater only.

In this part are observed interrupted striæ sufficiently deep, penetrating into the medullary substance of this nerve, which are formed from the *septa* of the pia mater, sent down into that substance, and those vascular.

Similar *striæ*, originating from the same cause, are seen in the optic nerves; before entering into the orbits they acquire *involucra*, or covering, from the dura mater.

- b c. Here more strongly finding an involucrum, it goes into thicker and concatenated funicles.
d. Is a cord from a branch of the ophthalmic nerve running to the third ramus of the third pair of the cerebrum.

Figure II.

That portion of the nerves of the fifth pair of the cerebrum, which is principally contained in the cavity of the cranium, taken away, and the dura mater nudated is seen on the superior part.

- a. Trunk of the fifth pair of nerves of the cerebrum, consisting of many nervous cords of unequal thickness, and uncertain number, so that 70, 90, and even 100, have been discovered.

These cords are multiplied to infinity, and concatenated together, which concatenation, the most *scientific anatomists* have not remarked, but have only represented their parallel and united course.

- b b. *Semilunar ganglion* of Gasser, which derived its name from the discoverer.
c. First branch of the fifth pair, or the *ophthalmic* deprived of its cellular involucrum.
d. Second branch of the same, or *superior maxillary*.
e. Third branch, or *maxillaris inferior*. Upon taking away the cellulous involucrum of these three rami, it is evident that each is composed of many *funiculi* frequently concatenated together.

Figure III.

Is a nerve of the fifth pair of the cerebrum of the same side, beheld on its inferior part.

- a a. Trunk of the fifth pair.
b b. Its *semilunar ganglion*.

- c. First, or ophthalmic ramus.

- d. Second branch, or superior maxillary.

- e. Third ramus, or *maxillaris inferior*, which gives off three evident rami, of which

- f. First, sends off the *pterygoid*, *masseteric*, *temporal*, *buccinatory* branches, &c.

- g. Second, *inferior maxillary*, or *alveolaris*, properly speaking.

- h. Third, *lingual*.

These two last, at their commencement, are covered with much cellulous substance, so as to appear to form one trunk.

- i. Is a peculiar fasciculus of nervous funiculi under the trunk of the fifth pair, which arising from almost a common origin with the fifth pair under the semilunar ganglion in a peculiar impression, runs into that ganglion.
k. Portion of the sixth pair of the cerebrum running through the sinus cavernosus, consisting of one cord, after its origin or insertion of the great intercostal nerve becoming somewhat thicker, and having two short striæ impressed on it.
l. Origin of the great intercostal nerve, or rather, as it were, double posterior and anterior insertion into the nerve of the sixth pair, consisting of many and very thin funicles, which suddenly run together, and are again dissolved.

Figure IV.

A view of another nerve of the fifth pair of the right, viewed on the inferior side, together with the neighbouring portion of the nerve of the sixth pair.

- a. Trunk of the nerve of the fifth pair.
b b. *Semilunar ganglion*, through which, towards the inferior maxillary branch, many funiculi irresolved pass.
c. First branch.
d. Second branch.
e. Third branch.
f. Peculiar fasciculus of nervous funicles under the semilunar ganglion, going towards the inferior maxilla.
g. Portion of the sixth pair of the cerebrum.
h. Another origin of the great intercostal nerve, or sympatheticus magnus of Winslow, different from the former, but which is frequently observed. This other nexus of the 6th pair of nerves, with the ophthalmic, is not found by Haller and many others; unless cellular and vascular; but not at all by any nervous funicles, neither from the ophthalmic to the great intercostal, any nervous root is cut off, and unless a subtile injection of the vessels with coloured liquor penetrate, the observator is easily mistaken.

PLATE XXX.

*The Ganglions and Plexuses of Nerves, &c.**Figure I.*

This represents the brachial plexus of the right side of an adult, together with the ganglions of the fifth, sixth, seventh, and eighth pair of cervical, and first of the dorsal nerves, from which the brachial plexus is composed.

Every plexus of this nerve was carefully excorticated of its first cellulous covering, to shew the *funiculi* of the nerves alone and naked, and their different thickness and manner of communication.

5. 6. 7. 8. Nerves of the four last pair of cervicals.

1. Nerve of the first pair of dorsals.

aaaaa. *Funiculi*, which are made of the anterior roots of these nerves arising from the medulla spinalis, and they pass the ganglions of the posterior roots, nor do they unite to the posterior roots, unless afterwards these go out of their ganglions.

bbbbb. *Funiculi*, from the posterior roots.

ccccc. Ganglia formed from the posterior roots.

ddddd. Trunks of nerves running together to form the brachial plexus: of which the first, *i. e.* five cervicals, consists of one gross funiculus only; but the others frequently communicate together.

These trunks afterwards are implicated in a surprising manner, which are better understood by a figure than an operose description.

e. *Nervus supra scapularis.*

f. *Axillary, or circumflexal nerve.*

g. *External cutaneous, or musculo cutaneous nerve.*

h. *Radial nerve.*

i. *Median nerve* with double root; *viz.*

k. l. Going out of the brachial plexus.

m. *Cubital nerve.*

n. *Internal cutaneous nerve.*

ooo. Are other lesser nerves coming out of the brachial plexus indiscriminately, and without any names.

Figure II.

Is a portion of the *median nerve*, of which *funiculi* being disjuncted, by the removal of the external *cellular vagina*; yet the mutual inosculation are exhibited.

They are all delineated in their natural size, yet it was necessary to prolong some *funiculi*, and especially those which connect the others transversely, in the delineation, to exhibit them clearly at one sight, yet some of the *funiculi* were obliged to be cut.

aaa. Are tubercles, to which many others may be seen, which arise from the medulla of the nervous *funiculi*, there propelling the *vagina*, which has less resistance.

Figure III.

Are portions of the nerve of the ninth and tenth pair of the cerebrum.

Both were cut off near their exit from the cranium, and are of the right side.

a. Nerve of the eighth pair, here consisting of many *funiculi*, of which one goes to form.

b. The *nervus pharyngeus*.

c. Here the *nervus vagus* swells, and consists of fewer *funiculi*.

d. *Nervus laryngeus*, arising from the *vagus*, and cut off, and reclined posteriorly.

ee. Portion of the *nervus vagus* descending through the neck, conspicuous after its cellulous involucre, or coat, is taken off, so that the nervous *funiculi* may be seen in it, which are joined together in a multiplied concatenation.

gg. Nerve of the ninth pair, or *lingual* of the cerebrum, consisting of one only gross funicle, yet ramous, at the time it enters the tongue. This nerve coheres with the *vagus*, as well through the cellulous, as small nervous *funiculi*, which are apparently cut.

h. Nerve from the ninth pair, called the *descendens*, cut off, having many roots from the ninth pair, of which some are the beginning of the *lingual nerve*, &c.

Figure IV.

Is a similar portion of the tenth nerve and ninth pair of the cerebrum from the right side, but taken from another subject, which is here given for the sake of variety.

a. *Nervus vagus*, consisting of three *funiculi*.

b. *Nervus pharyngeus*, from which one *funiculus* descends, and below unites with the trunk of the eighth pair.

c. *Nervus laryngeus*.

d. Here the *nervus vagus* consists of one *funiculus* only, and that large and unequally round.

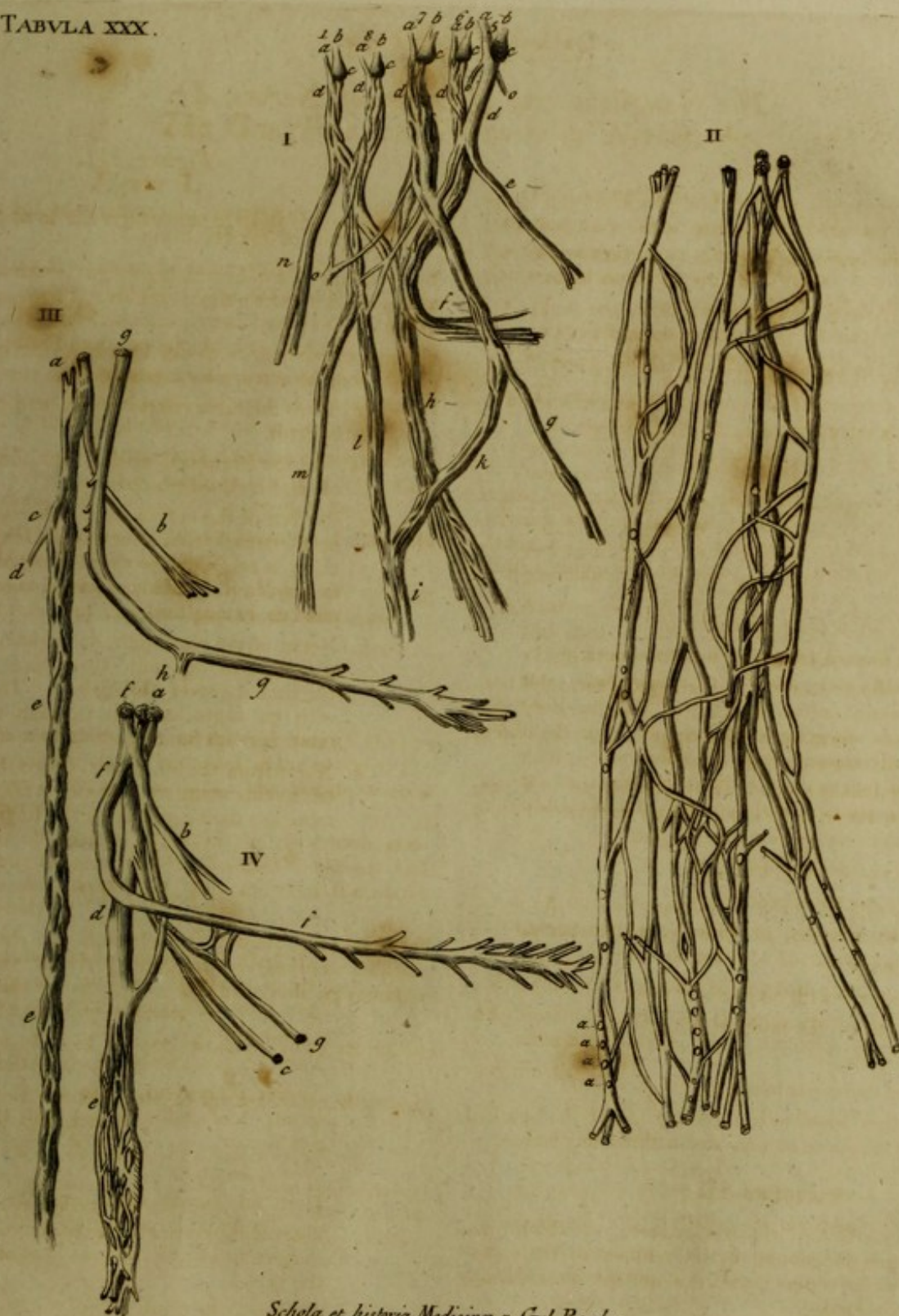
e. A portion of the *nervus vagus* descending through the neck.

fff. Nerve of the ninth pair of the cerebrum, or *lingual*, making one funicle only, ramous towards the tongue.

g. The nerve called *descendens*, from the ninth pair of the cerebrum, of which the superior extremity cut away, was united with the *nervus vagus*.

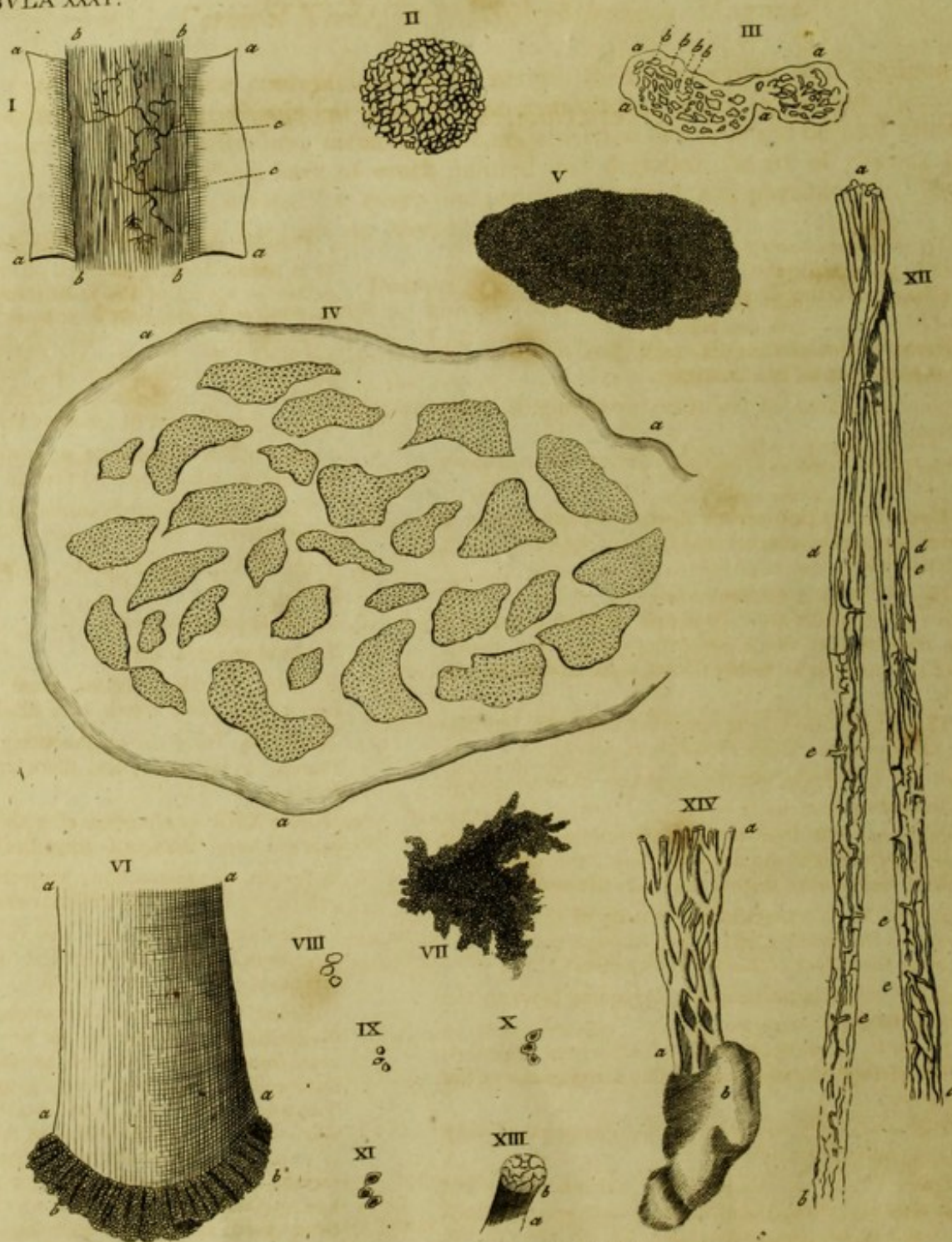
If we attentively consider the nature of the *nexus*, we shall easily be persuaded, that this nerve ought to be called, not less *ascendens*, than *descendens*.

TABVLA XXX.



Schola et historia Medicinæ a Gul Rowley.

TABVLA XXXI.



Schola et historia Medicinæ a Gul Rowley.

P L A T E XXXI.

The component Parts of Nerves exhibited, chiefly, as they appear, viewed by a Microscope.

Figure I. represents a particle of the optic nerve running in the orbit to the bulb of the eye, beheld through the lens, with the diameter of the objects increased 400 times.

aaaa. External vagina of the optic nerve produced from the internal lamina of the dura mater.

bbbb. Interior substance of the nerve, consisting of many funiculi.

cc. Two arteriolæ, which disseminate nervous funiculi above and below.

Figure II. is a transverse section of the optic nerve, in which sections of the nervous funiculi appear distinct, like mole hills.

Figure III. is a transverse section of the ischiadic nerve of an adult, which was first dried to cut from it the thin lamella, which was afterwards again moistened in water, so as nearly to attain its lateral magnitude.

The natural size is here somewhat increased, the better to express the thinner funiculi of nerves.

aaaa. Cellular membrane constituting the external vagina of the nerve.

bbbb. There are only four transverse sections of funiculi composing the ischiadic nerve expressed, the others are evident, and in what respect they vary in size and figure.

Figure IV. Is a particle of a lamella of the ischiadic nerve cut transversely, delineated through the lens, increasing the object 100 times in diameter.

aaa. Cellular vagina surrounding and running between the nervous funiculi.

Figure V. Transverse section of a nervous funiculus, beheld through the lens, augmenting the diameter of the object 400 times.

The whole section appears to be composed of very little globuli unequally divided.

Figure VI. Is a lamella of the ischiadic nerve cut transversely, which, suspended in water, was examined by means of the lens, augmenting the diameter of the object 400 times, one nervous funiculus hath had a pendulous situation, which the figure represents.

aaaa. Part of the funiculus, surrounded with its own vagina.

bb. Medulla of the funiculus expressed by the elasticity of the vagina, viewed laterally.

Figure VII. is a particle of the pulpa medullæ spinalis suspended in water.

Consists merely of very little globules promiscuously, as it seems, leaning on each other, and connected together by means of the most minute cellulous texture, scarcely to be dissolved even by macerating in water.

Figure VIII. IX. X. XI. represent three medullary globules of greater magnitude, varying their figure and size according as the lens by which they are examined is either placed nearer to, or more remote from the object.

Figure XII. represents a portion of the ischiadic nerve of an infant injected through the arteries.

The size is moderately increased to represent the arteriolæ better.

a. Trunk of the ischiadic nerve, in which the funiculi are clearly seen.

b. External popliteal nerve.

c. Internal popliteal nerve.

b.d.c.d. Here the tela cellulosa, more copious, covers the nerves, and more vessels were filled.

cccc. Arteriolæ, from the neighbouring cellulous substance running to the nerve, and there creeping into nervous funiculi.

a. Figure XIII. is a portion of a thick funiculus of the cervical nerve running to form the brachial plexus.

b. A fungus, or monticulus, projections of a medullary substance, divided into irregular *areolæ* by deep streaks.

These striæ demonstrate how the membranous *septa* arise from the internal superficies of the exterior involucrum of the nervous funiculi.

Figure XIV. represents the præternatural fungosity of the medullary substance of the nervous funiculi, which arose from an amputation of the arm of a woman, whose hand and fore-arm were badly gangrened, or mortified. The woman lived a long time after the operation; at last, when she died of another disease, it gave an opportunity of examining the truncated member, in which were observed, that all the extremities of the abscised nerves had swelled into nodes, from which the radialis nerve being more accurately examined, after the cellular structure was removed, it demonstrated how the medullary substance grew out, as of an unformed white mole, and sufficiently hard.

a. a. Nervous funiculi here forming the radial nerve connected together by a wonderful concatenation.

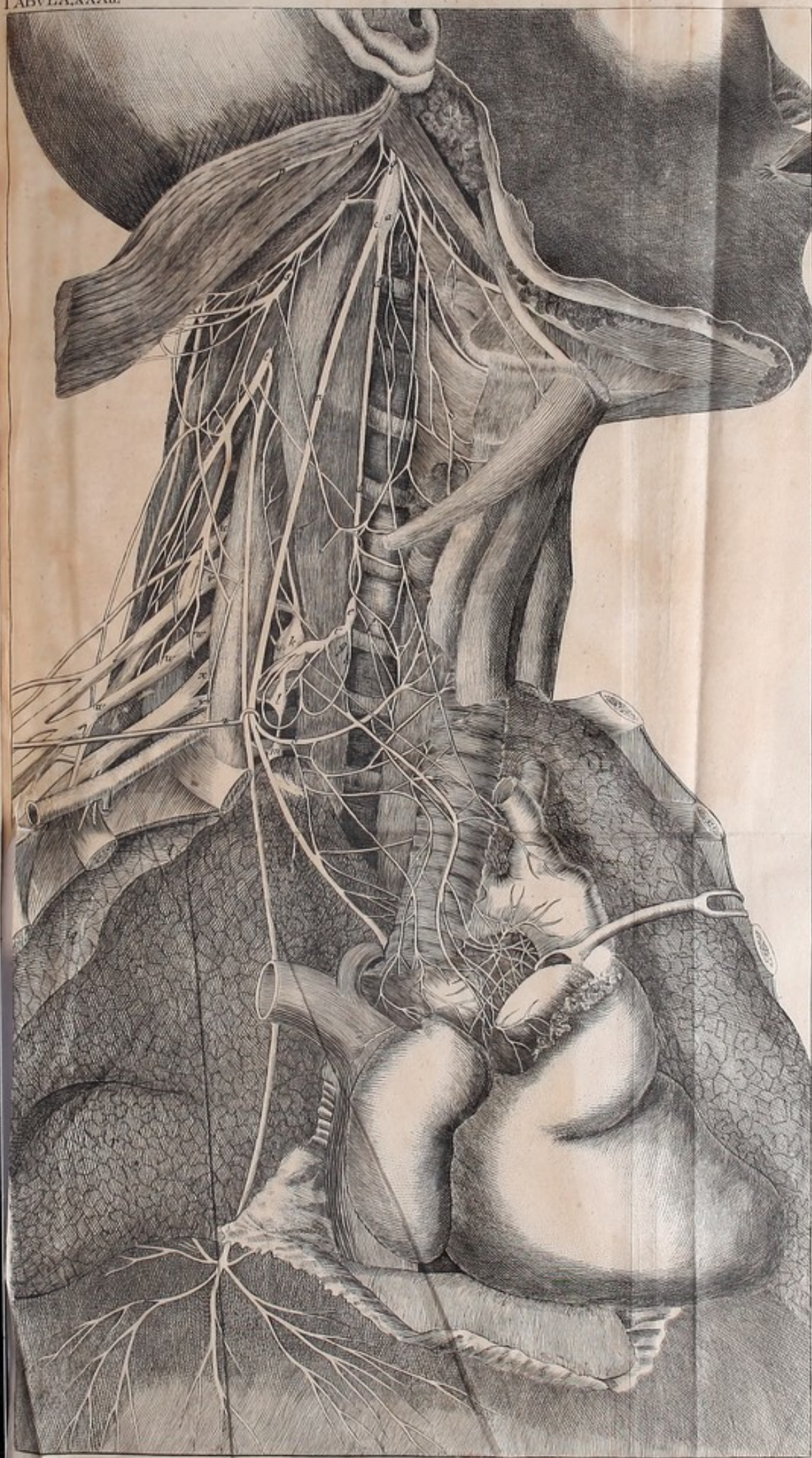
b. Fungosity, or excrescence of the medullary substance of the funiculi of the radial nerve.

PLATE XXXII.

Intercostal, Cervical Nerve, or the Sympatheticus Magnus.

The great importance of an accurate conception of these nerves, their connections and distributions to various parts, must be obvious. Symptoms arising from sympathy of parts in various diseases, are clearly demonstrated, and many affections, formerly obscure, traced to their true and original causes, not by imaginary vain hypotheses, which have so much injured and degraded the art of physic; but by demonstrative facts, that can be reiterated by every industrious anatomist and physiologist. On these subjects, much may be seen in my Treatises on Nervous Diseases, &c.

<i>Name and origin.</i>	<i>Divisions.</i>	<i>Distributions.</i>
<i>Great sympathetic nerve; from the sixth pair of nerves of the brain.</i>	Has three ganglions, branches, filaments, and many <i>surculi</i> , or sprigs.	Distributed through the neck, thorax, abdomen, &c.
<i>a. First, or great cervical ganglion; between the processes of the first and second vertebra, and angle of the maxilla inferior.</i>	Receives ramuli from the first, second, and third nerve of the cervex, sometimes from the eighth and ninth pair of the cerebrum.	Sends out the ramus mollis, cardiacus supremus, and inferior trunk.
<i>b. Ramus mollis; is of reddish soft nature.</i>	Two branches. A third.	Run up to the internal carotid. Covers the external carotid, and goes to the larynx and pharynx.
<i>c. Ramus cardiacus supremus, vel superficialis.</i>	Receives a branch from the intercostal cervical nerve, and many anastomoe s.	Runs to the larynx, musculus sterno thyroideus and gland, and aorta.
<i>d. Truncus intercostalis cervicalis; from the superior to the inferior ganglion.</i>	Communicates with the second branch of the fourth pair.	A ramification goes to the thyroid gland; the trunk runs to the inferior ganglion.
<i>e. Inferior cervical ganglion; to the fifth vertebra of the neck.</i>	Receives branches from the fifth and sixth pair of cervicals.	Sends off branches the first, second, superficial, and deep seated.
<i>f. First internal branch.</i>	Anastomoses with the supreme and recurrent cardiac.	To the cardiac plexus.
<i>g. Second ramification.</i>	Communicates with recurrent of the eighth pair.	Runs to the trachea, pulmonary artery, vena cava.
<i>h. Superficial branch.</i>	} Are inserted into the first dorsal ganglion above the subclavian artery.	} Form the ansæ, or laquei Vieussenii.
<i>i. Deep-seated branch.</i>		
<i>k. Ganglion dorsale primum; magnum, seu thoracicum superius; to the first vertebra of the back.</i>	Communicates with the sixth pair, eighth and first dorsal.	Sends off an anonymous trunk, branches to the cardiac plexus, aorta, pulmonary, and coronary arteries.
<i>l. Ganglion parvum, vel secundum; between the first and second rib.</i>	Is as it were an appendix of the great thoracic ganglion; receives a branch from the first dorsal nerve.	Trunk runs to the third ganglion.
<i>m. Ganglion dorsale tertium; between the second and third rib.</i>	Receives a ramulus from the second dorsal nerve.	As the above.
<i>n. Par vagum: eighth.</i>	Its trunk.	Descends in the neck.
<i>o. Nervus recurrens; of the par vagum; about the subclavian artery.</i>	Has many ramifications and anastomoses.	To the larynx, trachea, arteria pulmonaris, aorta.
<i>p. Nervus accessorius Willisii; or superior recurrent nerve.</i>	Perforates the sterno and cleido-mastoid muscles.	Descends to the musculus cucullaris.
<i>q. Anterior ramus, or branch of the first pair of cervical nerves.</i>	Unites with the second pair.	Sends out a small branch to the great cervical ganglion.
<i>r. ————— of the second pair.</i>	Communicates with the former.	Gives two small ramifications to the ganglion.
<i>s. ————— trunk of the third pair.</i>	Has many anastomoses with the fourth pair.	Forms the phrenic nerve, and runs to the sterno cleidohyoid muscle.
<i>t. ————— fourth pair.</i>	Communicates with the third pair.	Gives phrenic, diaphragmatic, profundus and median nerves.
<i>u. ————— fifth pair.</i>	} The sixth and sixth pair are joined together.	} Hence the scapula and phrenic nerve, and pectoral muscle.
<i>v. ————— sixth pair.</i>		
<i>w. ————— seventh pair.</i>	Communicates with the sixth pair.	To the serratus anticus, &c.
<i>x. ————— eighth pair.</i>	} Are joined together, and send off ramuli.	} To the pectoral serrated muscles; form the cutaneous, internal, and median nerve.
<i>y. First pair of dorsal nerves.</i>		





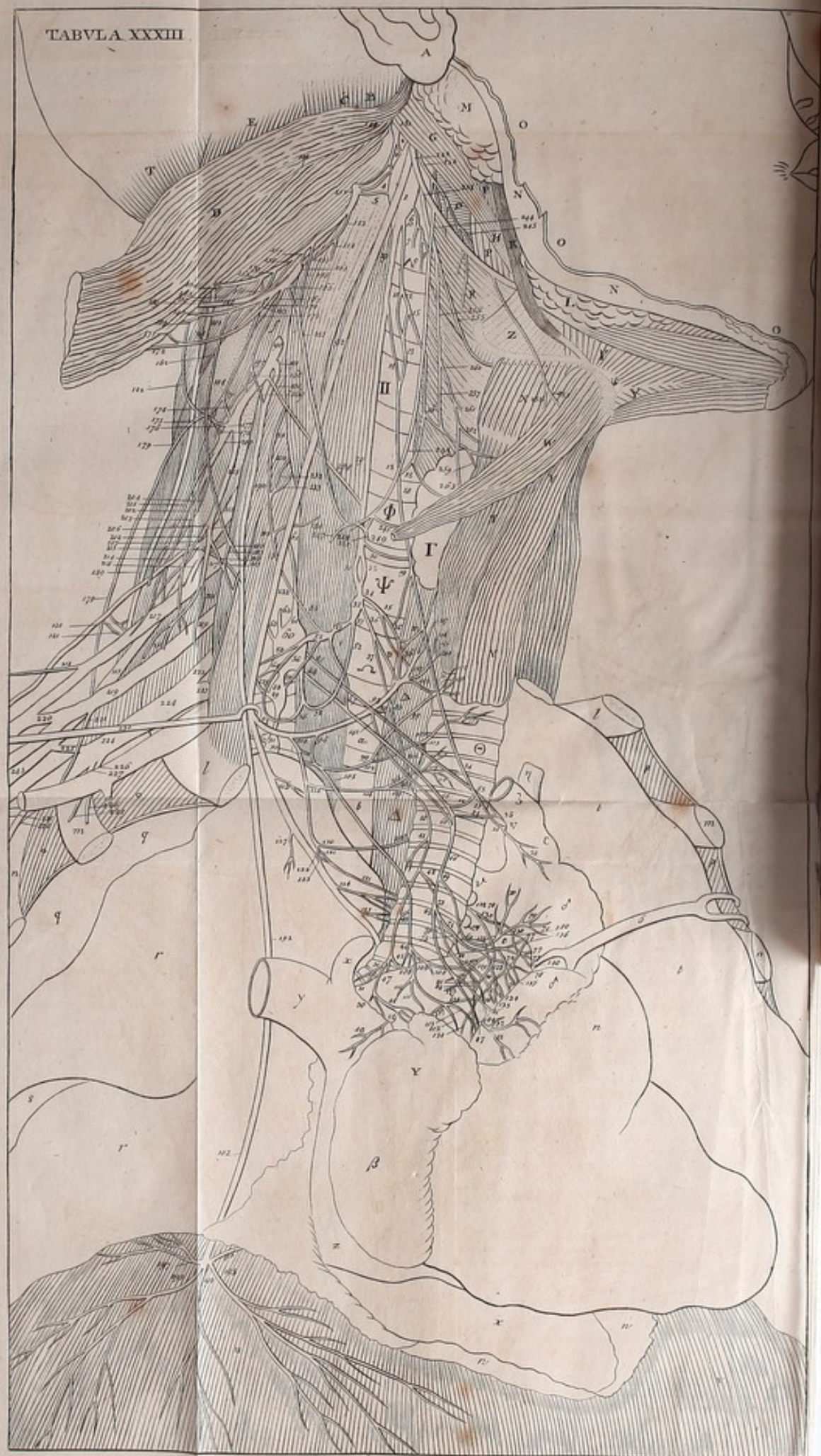


PLATE XXXIII.

De Nervo Sympathico Magno; or, Of the great Sympathetic Nerve.

Represents the nerves in the right side of the body running to the heart, and their *plexus*, between the *aorta*, *pulmonary artery*, and *trachea*. The proper and relative situation of many nerves is changed, otherwise they would not be clearly exhibited, or in any way delineated. Thus, the *subclavian artery* is cut off; the *common*, *external*, and *internal carotid*, with other sanguiferous vessels; also may be seen the *aorta* drawn on the left side. The appearance of the head, with the *larynx*, *pharynx*, *trachea*, and *oesophagus*; which being deprived of the posterior cellular structure, by which the adjacent parts adhere, by so much they secede from the bodies of the left vertebræ. But the *par vagum*, with the *recurrent nerve*, and other nerves coming forth from that, as likewise the *vena cava superior* of the right side are removed.

A. Part of the right external ear.

B. Mamillary process covered by the *sterno-cleido-mastoid muscle*.

C. D. *Sterno-cleido-mastoid muscle*; C. their insertion into the *os occipitis* and *temporal bones*; D. separated from the *sternum* and *clavicle*, and reclined upwards and posteriorly.

E. The *splenic muscle* of the head, by which it is inserted into the *os occipitis*.

F. *Musculus biventer cervicis*, and especially its extremity inserted into the *os occipitis*; the whole *cucullaris muscle* is taken away.

G. H. I. *Musculus biventer maxille inferioris*; G. its first venter: H. *Tendo medius*: and I. second venter inserted in the *maxilla inferior*.

K. *Musculus stylo-hyoideus*, annexed to the basis of the *hyoid bone*, which in this body was found divided into two flat portions, between which two bellies the tendon was seated.

L. *Maxillary gland*; which in part covers the *biventer muscle* of the *maxilla inferior*, or rather is marked with a longitudinal sulcus, in which this muscle is situated.

M. *Parotid gland*.

NN. Part of the *maxilla inferior* denudated.

OOO. An incision of the common integuments.

PP. *Musculus stylo-pharyngeus*, in part conspicuous.

Q. *Superior constrictor muscle* of the *pharynx*.

R. *Middle constrictor*.

SS. *Inferior constrictor*.

T. *Musculus sterno-thyroideus*.

VV. ——— *sterno-hyoideus*.

W. Another venter of the *coracoid muscle* (inserted in the inferior and anterior part of the basis of the *os hyoides*, with a part of the middle tendon.

X. *Musculus hyo-thyroideus*.

Y Y. The right and left *mylo-hyoid muscles*, inserted in the base of the *hyoid bone*.

Z. *Musculus ceratoglossus*, arising from a horn of the *os hyoidis*.

Γ. Part of the *thyroid gland*.

Δ Δ. *Oesophagus*.

Θ Θ. *Aspera arteria*, or *trachea*; dividing on the lower part into two branches, which are usually called *bronchia*.

Δ. Ξ. II. Σ. Φ. Ψ. Bodies of the vertebræ of the neck; Δ. of the second; Ξ. third; II. fourth; Σ. fifth; Φ. sixth; Ψ. seventh from the head.

Ω. a. b. Bodies of the dorsal vertebræ; Ω. of the first; a. of the second; b. three from the neck. The bodies of the vertebræ of the neck and back, upon removing the sanguiferous vessels, and reclining the *pharynx* and *larynx* on the right, here come in sight.

c. The *longus colli*.

d. ——— *rectus capitis internus major*.

e e. ——— *scalenus prior*, divided into three caudæ.

f f. ——— *scalenus medius*.

g g. ——— *lateralis*, with its superior cauda running to the transverse process of the third vertebra; in this body it is thicker than usual.

h. *Musculus levator scapulæ*.

i. The axillary artery.

k. *Arteria thoracica externa s. secunda*.

l m n. Three superior ribs; l. first; m. m. second; n. n. third.

o o. *External intercostal muscles*.

p p. *Internal*.

q q. r r. s. *Right lung*; q q. its convex s. external surface r r. internal plane surface, running towards the *mediastinum* reclined on the right hand; s. an incisure, dividing the superior and middle lobe.

t t. Convex s. external surface of the *left lung*. The whole of this lung appears compressed from the arch of the *aorta* being drawn on the left.

u. v. Two fleshy parts of the diaphragm, u. right; v. left; conspicuous on its superior & convex surface.

w w w. x. *Pericardium* in part left; w w w. its lateral parts x. inferior part connected with the tendinous centre of the diaphragm.

y. *Vena cava superior*, moved out of its situation on the right, whence the *vena azygos* appears a little retracted.

z. *Vena*

z. *Vena cava inferior* ; s. *ascendens*, which expand to constitute the right sinus.

a. *Vena azygos*.

β. Sac of the vena cava.—Lower's saccus dexter, not well expressed by the engraver.

γ. The right auricle.

99. The arch of the aorta, drawn on the left side by an hook σ, and partly compressed.

ι. Arteria innominata, or common trunk of the right subclavian artery and trunk of the carotids.

ζ. The right subclavian artery.

η. The right common trunk of the external and internal carotid arteries.

θ. The common left trunk of the carotids.

λ. The left subclavian artery.

μ. The origin and progress of the pulmonary artery.

ν. The right branch of the pulmonary artery.

ξ. The left branch of the pulmonary artery, conspicuous in part, but rather obscurely.

ο. An hook, confining the arch of the aorta to the left side.

φ ↓. Os hyoides. φ its cornu ; ↓ its basis.

1. The first, or superior great cervical ganglion, which receives

2. A small branch from the anterior ramus of the first pair of cervical nerves, (No. 151.)

3. Another small branch arising from a ramus of the first pair, communicating with the second pair of cervicals, (No. 151. 152) inserted into the superior cervical ganglion.

4. A small branch from the interior ramus of the second pair (No. 152) of cervical nerves, ascending to the ganglion, (No. 1.)

5. Another branch, running in a transverse course, from the anterior branch of the second pair of the first cervical ganglion.

6. Ramulus mollis, descending from the superior cervical ganglion, whence arise

7. 8. Two small branches, accompanying the carotid artery.

9. The third small branch, passing a little beyond the anterior surface of the external carotid, afterwards connected by its ascending and descending surculi, with small branches from the nerve of the pharynx and larynx.

10. A branch, called the cardiacus supremus, or superficialis, descending from the superior cervical ganglion in a direct line with the cervical trunk of the intercostal nerve (No. 29) on its inner side.

11. 12. Its division into two branches, viz. exterior (No. 11) and interior, (No. 12) which separate, leaving a space like an island, then again unite.

13. 13. A branch formed by the combination of eleven and twelve branches, and descending, receive

14. A branch from the intercostal cervical trunk.

15. 15. A branch arising from No. 12, which, with No. 13, form a larger island. From this first ramus arises

16. A branch, joining with the laryngeal branch, No. 257, goes to the larynx, and partly to the musculus sterno-

thyroideus, and partly under it to the thyroid gland, (Vide 268. 269.)

17. Another ramification from No. 15, going off to the thyroid gland.

18. The branch, called cardiacus supremus, again uniting from branch 15 and 13, which, after descending lower, forms

19. A small branch, forming an anastomosis with the descending ramulus, No. 35, of the inferior cervical ganglion.

20. Another branch of the superior cardiac nerve, with the same ramulus of the inferior cervical ganglion, (No. 35) forming two anastomoses.

21. 21. Nervous cardiacus supremus, descending, and at length dividing into two ramuli ; of which,

22. The first forms an anastomosis with the principal cardiac nerve, (No. 66. 66) arising from the first thoracic ganglion.

23. The second ramulus of No. 21, which, in its descent, divides into 3 Ramuli. 24. 25. 26. of which

24. The posterior again unites with that cardiac nerve, (66) passing from the thoracic ganglion.

25. Another small branch of (No. 23) which receives a branch (No. 65) passing down from the first thoracic ganglion, and afterwards descends on the internal side of the arteria innominata to its external surface, and even to the aorta.

26. The middle small branch of the same nerve, (No. 23) which again divides into the

27. The internal, or anterior ramulus, which, incurvating in internal side of the arteria innominata, runs to the anterior surface of the same artery, and to the aorta.

28. 28. The external, or posterior ramulus of (No. 26) running down the posterior surface of the arteria innominata : but it must be observed, that the branches 21. 22. 24. 25. 26. 27. are very much removed from their natural situation for the arch of the aorta with the carotid and right subclavian arteries, and being drawn on the left side, elongates these small branches.

29. 29. The intercostal, cervical trunk descending from the superior cervical ganglion, drawn a little forward to elucidate more clearly Ganglia, No. 53 and 55.

30. A branch of the intercostal cervical trunk with the inferior thyroid artery running down to the thyroid gland, sometimes it there anastomoses with the branch of the recurrent nerve of the eighth pair.

31. 32. Two branches, into which the intercostal trunk in this subject was divided : one of them (No. 31) a little thinner, runs down above the inferior thyroid artery ; the other, No. 32, and thicker, is continued down behind it, forming an island, by which the artery is confined, they both again unite.

33. The inferior cervical ganglion.

34. Its first, or external branch, which descending a little, divides into No. 35 and 36.

35. 35. 35. A small branch from 34, joined to the first with a branch, No. 19, then by two circuli with a branch, No. 20, of the *nervus cardiacus supremus* ; but, after descending a little, it is inserted into a branch, No. 37 ; so that in conjunction with this, and a branch of the recurrent, No.

119, it constitutes the branch, No. 40, descending to the cardiac plexus.

36. 36. Another division of branch 34, running to the recurrent nerve of the eighth pair, (No. 93.)

37. 37. The second ramus of the inferior cervical ganglion, which, soon after its first origin, forms

38. A small branch, descending to the recurrent nerve of the eighth pair.

39. The remaining part of nerve (No. 37) descending behind the recurrent nerve, (39) joined with a branch 35 and 119, constitutes

40. A branch on the right side of the trachea above it passing downwards.

41. The first surculus of branch 40 going to the posterior surface of the trachea.

42. The second surculus of branch 40, ascending to the external, lateral, and anterior surface of the trachea.

43. A surculus from branch 105, uniting with No. 40, (S. a surculus) constituting the anastomosis of branch 40 and 105.

44. Here the branch, (No. 40) divides into 4 ramuli, of which 45, 46, two run down between the pulmonary artery and trachea, to the left sinus, and even surface of the heart.

47. The third small branch of No. 40, runs above the right pulmonary artery, and then divides into the third ramuli.

48. The internal ramulus of branch 47, forming the third surculi, going to the right auricle.

49. 49. The middle ramulus of No. 47, which, after giving a surculus to the right auricle, ascends to the lateral internal, and then external surface of the vena cava: inflecting a little forwards (Vieussens, plate 23, No. 12. 12. 12) has delineated a small ring, formed by the par vagum surrounding the vena cava where the rami vieussenii are joined to the branch 49, this subject only.

50. The third and external small branch of No. 47, distributed on the surface of the right pulmonary artery.

51. 51. The fourth branch of No. 40, which, soon after its origin, divides into two, and runs down with 44, 45, 46, between the pulmonary artery and trachea, to the left sinus.

52. The superficial ramus, from the inferior cervical ganglion, (No. 33) which running above the subclavian artery, surrounds it, and re-ascending behind No. 57, where it is inserted into the first dorsal ganglion, (No. 60.) This in its course forms the ansa, as described by Vieussens.

53. 54. A deep-seated branch from the inferior cervical ganglion to the first dorsal, or the trunk of the cervical intercostal nerve, going towards the outside, and backwards from the inferior cervical ganglion, under the vertebral artery to the first dorsal ganglion; in this subject it consisted of two very evident ganglia 53 and 54; this trunk, with the branches 52, 56, forms those ansæ, including the subclavian artery.

55. A branch formed from ramuli of the fifth pair of cervicals, No. 231; and of the sixth, No. 232, 233, which descends above the vertebral artery to the second lateral ganglion, No. 54, and is inserted into it.

56. A branch from the second lateral ganglion, No. 54, descending above the subclavian artery, and carried round it is inserted into the posterior surface of the second branch 52; thus the second ansa of Vieussens was found in this body.

57. The conjunction of the branches 52 and 56, constituting a common part of both ansæ.

58. Another small branch running from the second lateral ganglion, No. 54, going to the smallest scalenus muscle, in this subject concealed under the letters e e.

59. Another small branch of the second lateral ganglion, (No. 54) descending to the ganglion, No. 88, behind the subclavian artery.

60. The first, or great dorsal ganglion, called by some the superior thoracic ganglion.

61. 61. A thicker branch, which arises from the sixth pair of cervicals emerging from between the scaleni muscles, and goes to the first dorsal ganglion.

62. 63. Two branches from the eighth pair of cervicals, descending between the *scalenus minimus* and *longus colli* to the superior thoracic ganglion.

64. A branch from the first pair of dorsal nerves ascending to the superior thoracic ganglion, (or, *vice versa*) descending from the thoracic ganglion to the first pair of dorsal nerves.

65. 65. A branch running down from the first dorsal ganglion to the truncus anonymus, where it is joined with branch No. 25.

66. 66. 66. A very thick branch, twice the diameter of the former, descending from the first dorsal ganglion to the cardiac plexus, forming, in this cadaver, the principal nerve of that plexus: first, it descends as a companion of 65, but at some distance from the arteria innominata, inflects a little, but above the trachea it passes in a straight direction, and at last subdivides into three branches, No. 69. 73. 85: but it must be observed, that the superior part of this nerve, on account of the arch of the aorta and trachea being drawn to the left, is very much distended, and removed from its natural situation.

67. 67. A small branch going from the second lateral ganglion, (No. 54) to the ramus, No. 66, in its descent.

68. The insertion of a thick branch, No. 141, from the recurrent of the eighth pair into the principal cardiac nerve, (No. 66.)

69. 69. Internal ramus of nerve, No. 66, which, running down on the left side, enters the branch, No. 131 & No. 129, and afterwards, in part, carried backwards round these branches, it ascends, principally, to the posterior surface of the arch of the aorta, dispersing into several surculi.

70. 70. 70. 70. Surculi of ramus 69, conspicuous in the posterior surface of the arch of the aorta.

71. A ramulus of the branch 69, distributed in the internal lateral surface of the arch of the aorta.

72. Another ramulus of branch 69, running between the aorta and right pulmonary artery, then dividing into two parts, extends to the left auricle below the common trunk of the pulmonary artery.

73. Middle branch of the principal cardiac nerve, (No. 66) which running a little lower, divides into two small branches, viz. No. 74 & 79.

74. Left ramulus of the 73 ramus.
75. A ramulus, soon after the commencement of the 74th branch drawn on the right hand from it, *running in two surculi* between the trachea and arteria pulmonalis to the left sinus and smooth surface of the heart.
76. Trunk of the 74th branch, which, after advancing further on the left, divides into 2 ramuli.
77. 77. Three ramuli of ramus, of the superior nerve 76, descending between the pulmonary artery and aorta, emerging with many surculi in the interior surface of the pulmonary artery, (which in this plate is not seen.)
78. The other and inferior small branch of nerve, No. 76, under the aorta, descending with ramulus, No. 140, between it and the pulmonary artery to the left sinus.
79. The right ramulus of the middle branch 73, running almost in a direct line between the arch of the aorta and right pulmonary artery, and there distribute into the third rami 80, 81 and 84.
80. 80. Left ramulus of branch 79, descending under the arch of the aorta and right pulmonary artery to the left sinus by two surculi.
81. 81. Middle small branch, ramus 79, which proceeding a little between the arch of the aorta and right pulmonary artery, bends round the ramus, No. 86, and ascends to the posterior surface of the arch of the aorta.
82. 83. Two ramuli, arising from ramulus 81, which surrounding the aorta coming from the right, the ventricle on the right side, there disperse many surculi, and at length accompanies the right coronary artery in the anterior surface of the heart.
84. 84. Right branch of 79, which, after receiving No. 229 and 113, runs between the aorta and pulmonary artery, and at length extend under the right pulmonary artery in two surculi to the left sinus, in the same manner as ramulus 80.
85. 85. External ramus of the nerve 66, descending between the right pulmonary artery and aorta, and uniting two ramuli num.
86. 87. Which accompany the left coronary artery.
88. A small ganglion, which forms as it were an appendix to the great thoracic ganglion, (No. 60) situated on its superior part between the first and second rib, but on the inferior side, placed on the second rib.—(It may be called *Dorsale Secundum*; which, however, is seldom found in this place.)
89. A branch running from the first dorsal nerve to this ganglion.
90. Ganglion *dorsale tertium*, (in other bodies the second) situated between the second and third rib.
91. A ramulus, running from the second dorsal nerve to the ganglion, No. 90.
92. 92. The trunk of the eighth pair, called *Vagus*, descending in the neck, drawn on the right side below by an hamulus, better to elucidate the recurrent with its ramifications: whence, its former situation, on the superior side, could not be preserved.
93. 93. Recurrent nerve of the par vagum, which bending about the subclavian artery, ascends to the larynx.—It is evident that this must be drawn out of its natural situation.
94. First ramus of the recurrent nerve soon after its rise giving off.
95. A small branch, which running a little on the left is united with
96. The second branch of the recurrent nerve.
97. Another ramulus of the first recurrent branch, which also is inserted into the united ramuli 95 and 96.
98. A ramus, from the combination of the 95, 96, and 97th rami, which running on the left, is divided into two, 99 and 102.
99. 99. A small branch arising from a division of the branch 98, which ascends towards the trachea, and after taking up the fourth ramus of the recurrent, (No. 142) is distributed into the third rami, of which
100. 100. The second superior are inserted in the musculus sterno-hyoideus.
101. But the third is distributed on the right lateral surface of the trachea.
102. Another small branch, arising from a division of the 98th, proceeding together to the trachea, and ascending on it.
103. Conjunction of the ramus 102, with Num. 116 ramus.
104. Three surculi of ramus 102, dispersed in the anterior surface of the aspera arteria.
105. Two nerves, formed by the coalescing rami 95, 96, 97, descending to the cardiac plexus: in its passage forming an anastomosis, No. 43 with branch No. 40.
106. 106. Three of its ramuli, extending behind the right pulmonary artery to the left sinus, and plain surface of the heart.—Vide Haller's Elem. Physiol. §. I. p. 360.
107. Fourth ramulus of 105, running on the left above the right pulmonary artery, also forming in part No. 81 and 84.
108. Surculus, distributed in the right pulmonary artery.
109. Fifth and middle ramulus of the ramus 105, in like manner ascending on the right pulmonary artery, which gives
110. A surculus to the above artery; and
111. Another ramulus to the right ear; and also
112. A third ramulus, accompanying the right coronary artery: but before it gives off the surculus.
113. Anastomosing with ramulus 84.
114. Third branch of 94, which running on the left, is divided into 115 and 119.
115. A branch ascending a little towards the trachea, or aspera arteria; but before it arrives there is divided into three ramuli, of which the superior
116. Runs between the aspera arteria and oesophagus; but prior to that, by means of ramulus, No. 103, it anastomoses with ramus, No. 102; but the
117. Middle
118. Inferior ramus ascend the aspera arteria, and there separate into several surculi.
119. Another ramus, arising from a division of the ramus 114, which descending, is joined to the ramus 39, and with it forms a ramus, No. 40, running to the cardiac plexus.

120. 120. Fourth ramulus, from ramus 94, which extends on the left towards the trachea, running on its posterior surface.

121. 121. Fifth ramulus of ramus 94, proceeding behind the trachea to the œsophagus.

122. A branch from the par vagum, running to form ramus No. 121.

123. Last ramulus of ramus 94, which is inserted into the par vagum.

124. A ramulus, arising from the par vagum, which soon subdivides into 3 ramuli, and is inserted into the posterior surface of the trachea.

125. Another ramus from the par vagum, inserted into the œsophagus behind the trachea.

126 & 127. Two rami from the par vagum, (a little below the origin of the recurrent) before inserted into the œsophagus; but are here represented cut off, on account of the par vagum being drawn to the right side.

128. A ramus, running from the inferior cervical ganglion of the left side, which descends behind the subclavian artery and arch of the aorta.

129. 129. Its ramus, which after running on the right, spreads between the aorta and right pulmonary artery, and at length is inserted into No. 84.

In other bodies I have always observed a different distribution of the branch 128, other courses of the ramuli; and, lastly, another anastomosis with those of the right side.

130. 130. Another ramulus of No. 128, which bends round the left side of the aorta between it and the pulmonary artery, running towards the anterior part of the aorta.

131. Ramulus, running from the recurrent nerve of the left side, and stretching between the arch of the aorta, and the right pulmonary artery forms,

132. Which proceeds above the right pulmonary artery, inserted into it by 3 surculi.

133. But another ramus of branch 131, descends a little, and towards the end is divided into a ramulus.

134. Which is united with a surculus of No. 80.

135. Another small branch from 133, which, with the surculus of No. 80, descends to the left sinus. Yet I have frequently been unable to find No. 133, 134, 135, after very minute investigations.

136. A ramus which I found in this body only, running near the left side of the aorta, between that and the trunk of the pulmonary artery from the left cardiac (and even from a branch of the superior cervical ganglion) to this great plexus: but first it forms

137. A small branch, accompanying No. 72, to the left sinus. Then, No. 136, proceeding further on the right, sends off another ramulus,

138. Which is inserted into No. 112.

139. 139. Lastly, the third ramulus, descending with No. 111, and No. 48, to the right ear.

140. 140. A branch arising from the left cardiac, accompanying ramus 78, with which it descends under the arch of the aorta to the left sinus.

141. Third branch arising from the recurrent nerve of the

eight pair, No. 93, which, under No. 66, is inserted into the principal cardiac nerve, No. 66, arising from the first thoracic ganglion.

142. Fourth descending branch from the recurrent, anastomosing with No. 99.

143. A branch ascending from the recurrent.

144. 145. Two of its surculi inserted in the sterno-thyroid muscle, lit. T.

146. A third small branch of 143 ascending towards the larynx.

147. Another branch from the recurrent, which ascends under the same to the larynx.

148. 148. The accessory nerve of Willis, or superior recurrent nerve of the 8th pair, perforating the sterno and cleido-mastoid muscles.

149. 149. The same nerve again emerging from the sterno and cleido-mastoid muscles, and descending further to the cucullaris muscle.

150. Ramulus, which recedes in the sterno and cleido-mastoid muscles, from the trunk of the accessory nerve, and after branching out several ramuli into these muscles, again emerges separately, and is ultimately connected with the accessory nerve.

151. Anterior branch of the first pair of cervical nerves, which, after sending off ramulus, No. 2, to the great cervical ganglion, communicates with the second pair. Its inferior part is thinner than usual.

152. 152. Anterior ramus of the second pair, which descends with two ramuli, No. 4 and 5, inserted into the great cervical ganglion.

153. Its first ramulus, which gives

154. A surculus to the rectus anticus-major muscle of the head, lit. d; then descending lower is

155. Inserted with its small trunk into the third pair of cervical nerves.

156. Second ramulus of the nerve 152, running to the ansa of communication between the cervical nerves with the ninth pair of nerves of the cerebrum.

157. Third ramulus of nerve 152, inserted into the former s. trunk of the third pair.

158. Fourth ramulus of nerve 152, communicating with No. 183 of the third pair.

159. Fifth ramulus of nerve 152, passing to the posterior auricular nerve, No. 189.

160. Sixth ramulus of nerve 152, which forms

161. A surculus to the great posterior auricular nerve, No. 189; but by

162. Its remaining part is inserted into the accessory nerve of Willis.

163. Seventh ramulus of nerve 152, also inserted into the accessory nerve.

164. Lastly, the eighth branch joined to the same accessory nerve, but a little higher.

165. Trunk of the third pair of cervical nerves, or its first branch.—For the proportion of the former branch of the third

third and following cervical pairs to their posterior branches, is much greater than those of the first and second pair: with justice, therefore, those denominated anterior branches, may be called Trunks.

166. Its first branch descending to the ansa of communication with the descending ramus of the ninth pair, like No. 156.

167. Second ramus of the third pair running down to the fourth pair, and phrenic nerve.

168. A small branch inserted in the trunk of the fourth pair.

169. Another ramus implanted into the diaphragmatic nerve.

170. Third ramus of the third pair, which in the posterior margin of the cleido-mastoid muscle is divided into two ramuli, of which the superior

171. Unites with the superior branch of the fifth of the third pair, No. 187, and constitutes the nervus cutaneus medius colli.

172. Inferior ramus arising from No. 170, which runs down in a straight direction in the sterno-mastoid muscle, distributed near the posterior margin.

173. Fourth branch of the third pair first descending a little.

After drawing back the anterior branch of the second and trunk of the third pair with the sterno-cleido-mastoideus muscle, there is a larger branch, in its natural situation, descending behind these nerves.

174. Its ramus going to the trunk of the fourth pair.

175. 176. 177. 178. Another, and that a double anastomosis of ramus 173 with the trunk of the fourth pair; for this anastomosis arises by two roots, 175, 176, from the ramus of the third pair already mentioned, which run together, and are again divided and inserted by two small branches, 177, 178, into the trunk of the fourth pair. In the midst of its course, having made a conjunction, it represents a cross, and forms two circumscriptions, or triangular islands. Another small branch, No. 175, 178, seems to come from ramus 173 to the fourth pair: but the other, No. 177, 176, by turns to ascend from the fourth pair, No. 173, of the third pair.

179. 179. A small branch from 173, (or for the conjunction of 170 with a branch, No. 177, of the fourth pair) which accompanying the accessorius of Willis, No. 149, descending with the cucullaris muscle, is united to it by two ramuli 180. First, anastomosis of ramus 179, with the accessorius, which arises with its root from the mentioned ramus 179, and is inserted by two surculi into the accessory nerve.

181. Another anastomosis of branch 179, with the accessory nerve, No. 149.

182. The remaining part of ramus 173, which again ascending, constitutes the small posterior auricular nerve.

183. Fifth ramus of the third pair, which, soon after its commencement, receives the ramus 158 of the second pair,

184. And sends off a branch, running in this body almost directly downwards, near the posterior margin of the cleido-mastoid, dividing into two ramuli.

185. Its external ramulus, joined with a branch of No. 210 of the fourth pair.

186. Another, or internal branch of it, united with a branch No. 212, of the fifth pair.

187. A ramus arising in the posterior margin of the cleido-mastoid muscle from No. 183, which in those parts is inflected about the margin, and ascends upon the cleido and sterno-mastoid muscle on the exterior surface, and uniting with the No. 171, constitutes the nervus cutaneus medius colli.

188. Another ramus in the posterior margin of the cleido-mastoid muscle proceeding from ramus 183, and there inflecting, running above the cleido and sterno-mastoid muscle, as before mentioned, and forming the nervus cutaneus inferior colli.

189. The greatest ramus of the third pair, or trunk of the third pair, which increased by No. 157, 159, and 161, of the second pair, inflects to the posterior margin of the cleido-mastoid muscle, and advances above the sterno-mastoid forwards and upwards, and then constitutes the nervus auricular posterior,

190. Fourth pair of cervical nerves.

191. First branch of the fourth pair, which, with a branch of No. 169, of the third pair, constitutes the superior origins of the phrenic nerve.

192. 192. 192. 192. Descent of the phrenic nerve.

193. 194. 195. Three branches of the phrenic nerve which are distributed in the second, or superior fleshy part of the diaphragm of the right side.

196. 197. Two remaining rami of the diaphragmatic nerve which descended to the first fleshy part of the same side.

198. Second branch of the fourth pair running on the right to the intercostal cervical trunk.

199. 199. Third ramus of the fourth pair, very thin, which is distributed in the musculus scalenus medius, let. f.

200. A deep seated branch of the fourth pair, (Winslow calls it posterior, §. 189.)

201. Its exterior branch descending to the interior surface of the musculus cucullaris.

202. Second ramus of the ramus profundus, No. 200, running to the infra-scapularis muscle.

203. Third small branch of ramus profundus, No. 200, proceeding to the inferior substance of the coraco-hyoideus.

204. Fourth small branch of the ramus profundus, No. 200, stretching out of the supraspinatus: also many others from No. 201, 202, 203, 204, run down the interior surface of the cucullaris, and are inserted into the cucullaris, and other muscles of the scapula, and also into the scalenus medius.

205. Exterior ramus of the fifth pair, or medius of Winslow, §. 110, p. m. 185.

This may also be called the anterior; and No. 200, posterior.

206. Its first ramus, which, at its commencement, is divided into No. 107 and 108.

207. A

207. A small branch of 206, which descends externally above the fifth and sixth pair of cervical nerves, and is finished under the skin, after sending off some surculi.

208. Another ramulus of ramus 206, descending behind the fifth and sixth pair of cervicals, inserted into some of the jugular glands.

209. Second ramus of the exterior ramus, No. 205, which may be called the subcutaneous thoracis.

210. First branch of the subcutaneous thoracis, No. 209, which, in its descent, anastomoses with No. 185, and is inserted in the branch of the fifth or sixth pair, No. 212, and in part constitutes the rombus mentioned, No. 186.

211. 211. Division of subcutaneous nerves into 3 rami, which, with many ramuli, the greater part of which run above the pectoral muscle; the other above part of the deltoid under the skin, and supply the skin with many surculi; and also the tunica cellulosa, and above mentioned muscles.

212. 212. A branch for the fifth pair of cervicals, running to the anterior scalene muscle, anastomosing with ramus 186 and 210, (and thus that rhombus is formed, in part, which we have mentioned in No. 186 and 210) running to the subclavian muscle, (removed in this subject.)

213. Fifth pair of cervical nerves.

214. Nervus scapularis of Monro, or supra-scapularis of Haller, which in this body arose from the fifth pair only, before its combination with the sixth, otherwise proceeding from the fifth, sixth, and seventh.

215. 215. Ramulus running from the fifth pair of phrenic nerve.

I have sometimes seen the ramus arising a little lower from the conjunction of the fifth and sixth pair, descending anteriorly and backwards, giving off a small branch to the subclavian muscle, and at last inserted into the phrenic nerve in the superior part of the cavity of the thorax. Huber also saw such an example, (Commentatione de Medulla Spinali, Specimen de Nervis ab ea provenientibus) Gotting. 1741. §. xx. p. 50.

216. Conjunction of the fifth pair with the sixth.

217. 217. Sixth pair of cervical nerves.

218. Ramus running to the pectoral muscle drawn backwards.

219. 219. Seventh pair of cervical nerves.

220. Communication of the seventh pair with the sixth pair.

221. Ramus descending from the seventh pair to the serratus anticus and serratus magnus.

222. 222. Eighth pair of cervical nerves.

223. 223. First pair of dorsal nerves.

224. 224. Conjunction of the eighth pair of cervicals with the first dorsal.

225. Ramus ascending from nerve 224 to the nerve of the fifth pair.

226. 226. Another branch of nerve 224 running to the pectoral muscle.

227. 227. Third ramus of nerve 224, which anastomoses with ramus 221, and is then inserted with it into the serratus anticus & serratus magnus.

228. Nervus cutaneus internus arising from nerve 224.

229. Ramus of nerve 224 ascending obliquely to ramus of the seventh pair, and with it constituting the nervus medianus.

230. A tenaculum drawing the trunk of the eighth pair to the right.

231. A branch from the fifth pair, emerging through the interstice of the second and third cauda of the muscle scalenus with another.

232. Branch from the sixth pair of cervicals going out in a similar manner, but between the first and second cauda of the scalenus, and with the third.

233. Small branch from the sixth pair which runs through the first cauda of the above-mentioned muscle, uniting and forming No. 55, descending to the second lateral ganglion of the neck, No. 54.

234. A small branch running from the common trunk of No. 231, 232, 233, to the longus colli.

235. Capitulum majus of the first rib.

236. ————— of the second rib.

237. Second pair of dorsal nerves.

238. Nervus pharyngeus of the eighth pair of cerebral nerves, sometimes the inferior branch of the glosso-pharyngeus nerve.

239. 240. 241. Three of its small branches running into the middle constrictor muscle of the pharynx

242. Its fourth branch inserted in the stylo-pharyngeus muscle.

243. Ninth pair of cerebral nerves, called lingual.

244. A nerve descending from the ninth pair, which meets the nerve descending

245. From the second, No. 156, and third pair of cervicals, and joining with it, forms the ansa communication is No. 244, 245, of the ninth pair of nerves of the cerebral with the second and third pair of cervical nerves.

246. Left ramus running from the inferior part of the ansa communications to the superior substance of the coraco-hyoideus muscle.

247. Right branch arising from the inferior part of the ansa communications, and inserted into the inferior substance of the coraco-hyoideus muscle: (but this ramus, with the inferior substance, is cut off.)

248 & 249. Two middle branches soon uniting, and thus forming a triangular space.

250. A branch from the coalesced ramuli, No. 248 & 249, which descending a little on the left, is inserted with many ramuli

ramuli into the sterno-hyoid and sterno-thyroid muscle: (but that ramus in this plate is cut off to better elucidate the other nerves.)

251. Ramus descending obliquely from the ninth pair anteriorly.

252. Its ramulus running to the hyo-thyroid muscle.

253. Another ramulus of the same to the coraco-hyoid muscle.

254. Ramus pharyngeus of the eighth pair, which dividing, gives

255. The superior branch inserted near the os-hyoides.

256. Inferior branch of the eighth laryngeal pair, which receives two very thin surculi of the nervus mollis, here not expressed.

257. A small branch of it, which, joined with No. 16, running from the superior cardiac nerve, gives off

These minute exhibitions of the principal ganglions, of the connections, and distribution of the nervous trunks, numerous branches, and exquisite filaments in this Plate, explain a variety of sensations that may be experienced in different thoracical, abdominal, and muscular functions, when labouring under disease. The causes of nervous sympathy are rendered manifest: how one ramification, or filament, may affect another, and convey sensations grateful or ungrateful to the brain, and intellectual powers. Life cannot exist without the nerves influencing the heart, lungs, and diaphragm—to perform their involuntary actions, in conjunction with air, the muscles of the chest, &c. The nervous powers proceeding to those vital parts being totally impeded—death must immediately ensue.

258. A small branch to the muscle sterno-thyroid; and another

259. Running to the thyroid gland under the sterno-thyroid muscle.

260. Trunk of the inferior branch of the larynx, No. 256.

261. Its small branch going to the inferior constrictor of the pharynx.

262. Ramulus of nerve 260, proceeding to the sterno-thyroideus muscle.

263. Ramulus from the nerve 260 to the thyroid gland, which is joined by anastomosis to the recurrent nerve of the eighth pair.

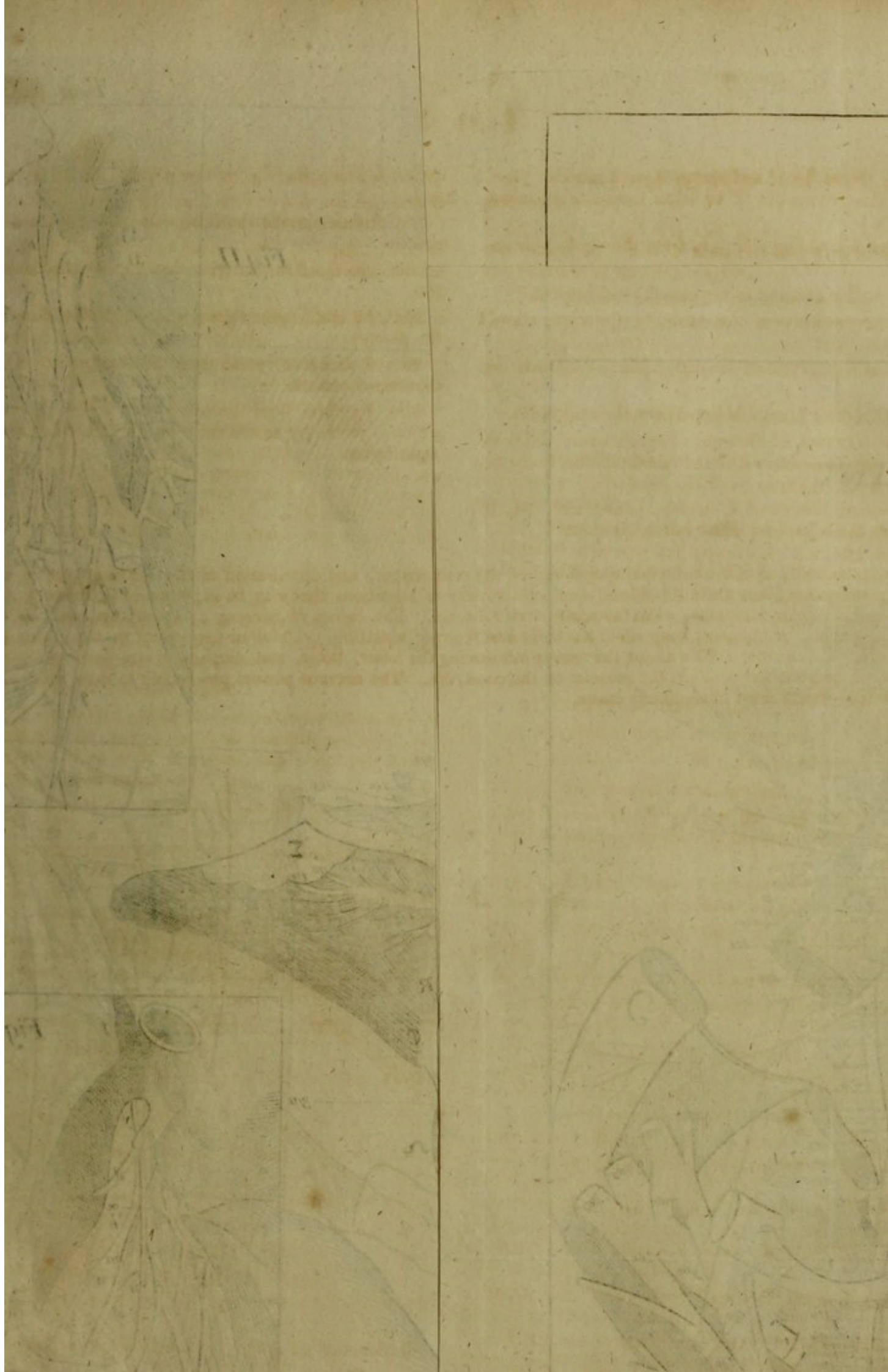


Fig. II.



Fig. I.



Fig. III.



PLATE XXXIV.

Figure I.

Also delineates the nerves running to the heart from the right side of the human body, and the branches lying over the *arteria aorta*. Thus, this is represented with the *subclavian*, *common*, and *internal carotid* arteries, in as natural a situation as could be preserved: the more considerable nerves running behind these vessels are only marked by points. The whole neck, for the same reason, is extended as in the first plate, viz. by putting under it a wooden cylinder. But of those parts which the preceding plate represents, the following are cut away: *external ear*, *sterno*, and *cleido-mastoideus* muscles, *biventer maxillæ inferioris*, *stylo-hyoideus*, with the *mylo-hyoideus* muscles, and also the *maxillary* gland, and *processus stylo-hyoideus*.

- A. *Musculus biventer cervicis*, whose tendinous extremity, affixed to the *os occipitis*, with a certain part of the flesh is perceived.
- B. *Musculus splenius capitis*, and its tendinous extremity, inserted in the *occipital* bone, *maxillary* bone, and *processui cognomini*.
- C. *Musculus levator scapule*.
- D. ——— *scalenus lateralis*.
- EEE. ——— *medius*.
- F. ——— *prior*.
- G. ——— *rectus capitis internus major*.
- H. ——— *stylo-glossus*.
- I. ——— *stylo-pharyngeus*.
- K. ——— *constrictor-pharynges medius*.
- L. ——— *inferior*.
- M. ——— *hyo-thyroideus*.
- N. Superior venter of the *musculus coraco-hyoideus*.
- O. *Musculus sterno-hyoideus*.
- P. ——— *sterno-thyroideus*.
- Q. ——— *cerato-glossus*, proceeding from the *cornu* of the *hyoid* bone to the tongue.
- R. ——— *basio-glossus*, arising, some part of it from the horn of the *os hyoidis*, but the greater part from its basis.
- S. ——— *genio-hyoideus*.
- T. ——— *genio-glossus*.
- V. ——— *longus colli*, visible in part.
- W. Part of the *superior constrictor* muscle of the *pharynx*.
- X. *Musculus sterno-mastoideus* of the left side.
- Y. *Occipital* bone.
- A. *Mammillary* process of the *temporal* bone.
- Θ. *Meatus auditorius externus*, as yet covered with skin on its inferior surface. At the same time a particle of the cartilage adheres to it.

A. *Styloid* process is removed with a part of the *temporal* bone, from which it was taken.

Ξ. *Capitulum maxillæ inferioris*, s. *processus condyloideus*. The ligament covering it is dissected.

II. *Angle* of the *maxilla inferior*.

Σ. *Sublingual* gland, in a part prominent.

Φ. *Basis* of the *hyoid* bone.

Υ. A situation where the *cornu* of the *os-hyoides* lies concealed.

Ω. *Thyroid* cartilage.

a. *Common* trunk of the *carotid* arteries.

b. Its *cerebral* ramus, called *internal carotid*.

c. Its flexure, called *flexura Cowperiana*, always present beyond the canal of the *carotid*; in this body it verges so much out as to cover, in a part, the *internal jugular vein*.

d. *External* ramus of the *carotid*, called *externa carotis*.

But it must be observed, that the *common carotid* artery, lit. a. *internal*, lit. b. and *external*, lit. c. in this figure are removed a little forward. For in its natural situation, the *carotis communis* and *interna* lay near to that very long ganglion, Num. 168, 169, 170, even somewhat cover it.

g. *Common* trunk of the *lingual* and *labial* artery.

h. *Lingual* artery, under the *cerato-glossus*.

i. *Labial* artery of *Haller*, the rami of which are omitted; it is called by others *angularis*, or *facialis*.

k. Trunk of the *external carotid* artery rising towards the temples.

l. *Occipital* artery, which ascends obliquely above the *internal jugular vein*.

m. The *auricularis posterior* artery is cut off in this body more remarkable than usual.

n. Artery running to the *masseter* muscle.

o. ——— *parotid* gland.

p. ——— *maxillaris interna*.

q. ——— *temporalis*.

r. ——— *subclavia*.

s. ——— *axillaris*.

t. ——— *cervicalis profunda*.

u. ——— *thyroidea inferior*.

v. *Transverse scapular* ramus of the *thyroid* artery

w. *Arteria vertebralis*.

x. ——— *mammaria interna*.

z. ——— *laryngea* (otherwise, it usually proceeds from the *superior thyroid*.)

γ. *Arteria*

- γ. Arteria thyroidea superior.
 α. ——— inominata, the common trunk of the subclavian and right carotid artery.
 γ. The left carotid artery.
 ε. The left subclavian.
 ι. Aorta ascendens bending into an arch.
 ζζ. The aorta is far covered by the pericardium, which is directed inwards at the margin, descending back on the inferior part of the aorta, and the whole of the heart, &c.
 η. Superior vena cava drawn to the right.
 θ. The connection of the vena cava superior, and inferior.
 ι. i. The pericardium thus far surrounds the vena cava as lit. ζ.
 κ. Vena azygos.
 λ. Its branch forming the intercostal vein.
 μ. Trunk of the pulmonary artery, prominent under the pericardium.
 γ. Anterior ventricle covered by the pericardium.
 ζ. ζ. Aspera arteria, or trachea.
 ο. ο. ο. ο. ο. Bronchial glands.
 π. The first rib.
 ρ. The second rib.
 σ σ. The thyroid gland.
 1. Accessory nerve of the eighth pair.
 2. Anterior ramus of the first pair of cervicals descending to the second pair.
 3. Its branch ascending, forming many surculi under the par vagum, running upwards to the lateral rectus muscle of the head, and rectus anticus major.
 4. A small branch from No. 3, running down almost in a right angle to the first cervical ganglion.
 5. A branch running upwards under the par vagum, intercostal and internal carotid arteries, obliquely to the muscle rectus capitis anticus minor.
 6. A branch going to the ninth pair.
 7. 7. Anterior branch of the second pair of cervicals, and its conjunction with the branch, No. 2.
 8. A branch from the combination of No. 2 and 7, arising in an acute angle to the rectus anticus major muscle of the head.
 9. A small branch arising from No. 7, dividing into two diverging filaments, inserted into the same muscle.
 10. A small branch descending from No. 7, which unite
 11. With another decurrent branch, constitutes
 12. A nerve, descending to the superior cervical ganglion; but before it is inserted into the ganglion, it is again divided into
 13. The ascending and
 14. Descending branch.
 15. Insertion of a small branch, No. 113, running from the par vagum to nerve, No. 7.
 16. A thick branch of No. 7, descending to the superior cervical ganglion; and before its insertion, uniting with the transverse branch, No. 24, of the third pair.
 17. Insertion into the ganglion.
 18. A branch of the second pair going towards the extremities to the descendens of the ninth pair.
 19. Conjunction of the branch, No. 7, with the third pair.
 20. 21. Two ramuli, running from No. 7 to the accessorius of the 8th pair.
 22. Trunk of the anterior ramus of the second pair, which ascending near the posterior margin of the sterno-mastoid muscle forms, the nervus parvus auricularis posterior.
 23. Third pair of cervicals.
 24. Its branch going to the ganglion with No. 16.
 25. Its ramus running to the descendens of the ninth pair.
 26. Descending branch of the third, and the same divided into two parts, forming
 27. A branch to the fourth pair, and another
 28. Descending lower, and anastomosing with a branch of the phrenic, No. 59.
 29. Superior ascending branch of the third pair.
 30. Inferior ascending branch of the third pair.
 31. A branch from No. 30, running to the inferior cutaneous nerve of the neck, to be united with No. 47.
 32. Conjunction of No. 29 & 30.
 33. Ramus, arising from this conjunction.
 34. Its anterior ramus, which, with three small branches,
 35. 36. 37. Is inserted into the fourth pair.
 38. The posterior branch of No. 33, going to the cucullaris muscle.
 39. Distribution of ramus, No. 29, into 3 rami, No. 40, 41, 42.
 40. This nerve inflected into the posterior margins of the sterno-mastoid muscle, ascends upon it, and forms the posterior branch of the great posterior auricular nerve.
 41. The second branch.
 42. The third branch about to form the superior cutaneous colli.
 43. Superior ramus of No. 41, or the No. 41 ascending further, which, in the external surface of the sterno-mastoideus, is called nervus magnus auricularis.
 44. A small branch of ramus, No. 41, forming the inferior branch of the great posterior auricular nerve.
 45. Further progress of No. 30.

46. Its superior branch in the external surface of the sterno-mastoideus, called *nervus cutaneus medius* of the neck.

47. Inferior branch, constituting the inferior cutaneous nerve of the neck, with ramus, No. 31.

48. Fourth pair of cervicals.

49. Its branch forming the phrenic nerve.

50. A branch of the fourth pair running downwards to the descendens of the ninth.

51. Another small branch of the fourth, extending itself to the phrenic.

52. A branch of the fourth, descending to the inferior part of the neck, and exterior surface of the cleido-mastoid, constitutes another, called *inferior cutaneus colli*.

53. The remaining part of the fourth, in this body, declining in almost a straight line under the skin of the inferior part of the neck, gives off four branches.

54. 55. First branch, which, divided into two, No. 54 and 55, advancing further posteriorly, with many *surculisubcute*, run to the *cucullaris* muscle.

56. 57. 58. Three other rami, which spread above the *pectoralis* and *deltoid*, with many *ramuli* and *surculi*, and constitute the subcutaneous nerve of the thorax, or No. 56, particularly belongs to the posterior surface of the *deltoid*; No. 57, to the anterior facies of the same muscle; and No. 58, to the anterior parts of the *pectoralis* and *deltoid*.

59. A branch arising from the phrenic, and uniting with the ramus, No. 28, gives

60. A branch, again inserted into the phrenic; and another,

61. Proceeding further to the inferior parts of the great cervical ganglion.

62. Fifth pair of cervicals.

63. Branch of it joined with ramus, No. 61, running to the ganglion.

64. Another branch of the fifth, perforating the superior cauda of the muscles *scalenus-prior*, and thus inserted into the *intercostal* nerve.

65. A branch of the fifth running to the phrenic.

66. Posterior branch running from the fifth and sixth, between the *scalenus medius* and *lateralis*.

67. A small branch of the sixth pair running to the first thoracic ganglion.

68. A small branch of the seventh pair to the first thoracic ganglion, emerging on the posterior side of the vertebral artery.

69. Another small branch of the seventh pair, running to the first thoracic ganglion in the anterior side of the vertebral artery.

70. Part of the *portio dura* of the auditory nerve re-clipped backwards,

71. Its first deep-seated branch, which in this subject is present, and descends to the *stylo-hyoideus* muscle; and is therefore called *Stylo-hyoideus*.

72. Its second deep-seated branch in this subject, running to *nervus mollis*, accompanying the external carotid artery.—(Vide No. 150.)

73. Third deep-seated branch of this subject, called *nervus biventricus*, which descending, perforates the *biventer* muscle of the *maxilla inferior*, and then changing its course, ascends behind it to the *glosso-pharyngeus* nerve, and thus forms the *ansa*.

74. Ramus of the *biventer* nerve, No. 73, extends over the *biventer* muscle of the *maxilla inferior*, and anastomoses with another deep-seated branch, omitted in this plate.

75. *Nervus glosso-pharyngeus*, first branch of the eighth pair.

76. First branch of the *glosso-pharyngeus*, anastomosing with the *biventric* nerve of the *portio dura*.

77. Second branch of the *glosso-pharyngeus*, descending above the internal carotid artery, which in the region of the first flexure of the carotid, without the cranium, gives

78. A branch, tending downwards to the *nervus mollis* of the *intercostalis*.—(Fig. II. No. 4 & 5.)

79. And another nerve running down above the internal carotid to its origin, then behind the carotid artery.

80. Here nerve, No. 77, inflects round the posterior side of the carotid, and ascends behind it above the *parvagum*, anastomosing with a small branch of the *pharyngeus*.

81. Third branch of the *glosso-pharyngeus*, called *inferior pharyngeus*, running above the internal carotid; then on its anterior side, divided into three branches, of which

82. The superior passes under the external carotid, and forming an arch, again ascends to be inserted into the *constrictor medius* of the pharynx,

83. The middle pursuing the same course, which, however, gives off a *surculus* to the *stylo-pharyngeus*,

84. Inferior small branch runs to the internal surface of the external carotid, there to be joined with the *nervi molles*.—(Vide Fig. II. No. 3.)

85. 86. Fourth or fifth branch of *glosso-pharyngeus*, both running to the *musculus pharyngeus*.

87. Trunk of the *glosso-pharyngeus*, which proceeds anteriorly under the muscles *stylo-pharyngeus*, and is divided into four branches,

88. First, superior and thick branch, which, with the following three branches,

89. 90. 91. Passing under the *stylo-glossus* and *cerato-glossus* muscles, and run together to the tongue,

92. *Nervus pharyngeus* of the eighth pair.

N

93. 94.

93. 94. 95. 96. Four small branches of the *nervus pharyngeus*, dispersed in the middle constrictor muscle of the pharynx, and in the stylo-pharyngeus.

97. Fifth ramulus of the pharyngeus, inserted into the *nervus mollis*, accompanying the labial artery.

98. The ninth pair, or lingual nerves.

99. A small branch of the anterior branch of the first pair, joined to it by anastomosis.—(Vide No. 6.)

100. Descending branch of the ninth, forming two ansæ, with the cervical nerves in this body.

101. Branch of the ninth running down to the hyo-thyroid muscle.

102. 102. Two small branches of the ninth pair, proceeding to the cerato-glossus.

103. 104. 105. Three small branches interwoven with the basio-glossus muscle by many filaments.

106. 107. Two small branches of the ninth, terminated in the genio-glossus.

108. A small branch of the same ninth, which forms anastomosis, after giving off the filamentum basio-glossum, with the ramulus of the third lingual branch of the fifth pair.

109. A branch running to the genio-glossus.

110. Another, forming an anastomosis with the lingual nerve.

111. The remainder of the ninth pair under the sublingual gland, partly communicating with the lingual of the fifth, partly distributed in the genio-glossus muscle.

112. A small part of the par vagum; the larger part is removed.

113. A branch of it going to the anterior ramus of the second pair of cervicals.

114. The laryngeal nerve of the eighth pair.

115. A branch of the same, running to the nerve, No. 124.—(Vide No. 125.)

116. 117. 118. 119. 120. 121. Separation of the same into two larger, and four smaller ramifications.

116. The lowest and largest branch of the *nervus laryngeus*, or the trunk, which descends under the hyo-thyroid muscle a little before the superior process of the thyroid cartilage, to the interior part of the larynx, anteriorly.

117. Superior branch, thicker than the others, which sends off many surculi under the hyo-thyroid muscle, above the internal surface of the membrana-crassa of Morgagni, (expanding between the os-hyoides, and thyroid cartilage) but the other part rises under the right cornu of that bone.

118. 119. 120. 121. Four intermediate smaller branches diffused under the hyo-thyroid muscle in the exterior surface of the membrane of Morgagni.

122. A ramification from the anterior branch of the great cervical ganglion, running backwards almost in a direct line, which, with

123. The fourth anterior branch of the same ganglion, forms

124. 124. A ramification, rather reddish, running obliquely, and anteriorly behind the carotid arteries.

125. Combination of the same with No. 115; and again, its separation into two, No. 141 and 147.

126. Anterior branch, which running farther in the direction of No. 139, passes under the coraco-hyoid, or sternothyroid muscles, to the crico-thyroid.

127. A surculus of the same, migrating to the thyroid gland. This surculus, like No. 128, 129, 130, 131, is marked by a dot.

128. A ramification of nerve, No. 126, entering the larynx under the inferior margin of the thyroid cartilage, to be distributed on its internal surface.

129. 130. 131. Three other surculi that supply the crico-thyroideus.

132. Posterior branch of conjunction, No. 125, which

133. Gives a surculus to the inferior constrictor muscle, and to a part of the same, arising from the cricoid cartilage.

134. The remaining part, No. 132, descending under the common carotid artery, from which also a surculus runs to the thyroid gland.

135. The reddish gangliform ramification, which arises from No. 124, behind the external carotid artery, and directs its course on the anterior side of this artery to the external surface.

136. Here the same nerve, after taking up ramulus, No. 78, and 84, from the glosso-pharyngeus, (Vide Fig. II. Num. 4, 5, and No. 3, lit. k.) again separates into four ramifications.

137. First, running anteriorly from nerve, No. 136, which is carried obliquely under the ninth pair to the lingual artery, and gives off

138. A ramification, united by anastomosis to No. 140; for this runs backwards above the common trunk of the lingual and labial arteries, and incurvating about its inferior surface, again runs upwards behind it, and is received by No. 141, and No. 140.

139. A branch, connected with the cerato-glossus muscle by two surculi.

140. Second ramification, in like manner anterior, No. 136, which runs a little above the former, and almost transversely to the labial artery of Haller, and accompanies this artery, receives No. 97, of the pharyngeus muscle.

141. The reception of No. 138, into the branch, No. 140.

142. Third posterior ramulus, No. 136, which, after ascending obliquely, the external carotid artery is joined with

143. Another gangliform, and reddish branch of No. 124, ascending behind the external carotid, and then on its posterior side.—(Its origin is seen, Fig. II. lit. s.)

144. Ramulus, arising from the united ramuli, No. 142, 143, ascending behind the commencement of the occipital artery, and further in the posterior lateral surface of the external carotid, until it enters the small ganglion, No. 148.

145. Fourth ramus, No. 136, which ascends almost in a right line, in the lateral anterior surface of the external carotid.

146. The first ramification of the same, running above the externalsurface of the carotid to the ganglion parvum, No. 148.

147. Posterior ramification, which ascends round the internal side of the artery, lit. m. and about the internal and posterior surface of the external carotid, to the ganglion, parvum, No. 148.—Thus, this branch forms communication with the former, No. 146, surrounding the external carotid.—(Vide Fig. II. lit. v. ξ.)

148. Ganglion parvum, situated in the exterior and posterior surface of the external carotid.

149. The soft and reddish branch running further from this ganglion with the above-mentioned carotid, to which it firmly adheres.

150. Insertion of the portio-dura of the branch, No. 72, into the nervus mollis, No. 149.

150. Anterior branch, No. 149, the companion of the internal maxillary artery.

151. Posterior ramification, accompanying the temporal artery.

152. A small branch, which the descendens of the ninth, No. 100, give to the coraco-hyoideus.

153. Another branch of the *descendens noni paris*, passing transversely, under the coraco-hyoid to the sterno-hyoideus.

154. Conjunction of the descendens of the ninth pair with

155. The common trunk, from the combination of No. 18, of the second of No. 25, of the third pair of cervicals.—Thus, by this communication of nerves, No. 18, 25, 153, and 100, a kind of ansa is formed.

156. Two surculi, by which the mentioned ansa is annexed to the carotis communis.

157. 158. Two branches of the above ansa, uniting by a converse direction.

159. Nerve, which rami No. 157, 158, constitute.

160. Its first ramus, which bifurcates anteriorly in its descent, and gives many surculi, No. 161, 162, to the muscles sterno-thyroideus.

163. Second branch, whence the posterior ramus first emerges, inserted into the inferior portion of the coraco-hyoideus muscle.—In this delineation, lest the other parts be obscured, this ramulus is omitted.

164. Anterior ramification, No. 163, which running above the sterno-thyroideus, goes anteriorly to the sterno-hyoideus by three surculi, marked with point.

165. The remaining portion of No. 160, descending in a straight line above the sterno-thyroideus, and inserted into its lowest part, which is cut off in this figure.

166. The third branch, No. 159, running posteriorly to unite by anastomosis with ramus, No. 50, and form the second ansa from the descendens of the ninth pair, interwoven with the cervical nerves,

167. A branch of this ansa, which passing downwards on the external surface of the jugular veins passes into the cavity of the thorax.—The ultimate distribution of this nerve could not be here represented.

168. The superior cervical ganglion, longer than usual in this subject.

169. Third projection of the same. (The two superior are covered by the internal carotid.—Vide Fig. II.)

170. Its fourth, or inferior projection.

171. 171. A branch of the fourth pair of cervicals, inserted into the inferior projection.

172. A branch of the fifth, in like manner connected with the inferior projection of the ganglion.

173. Insertion of the common trunk, arising from the ramifications, No. 61, 62, into the ganglion-magnum.

174. The second small branch, which the anterior and inferior part of the ganglion-magnum sends off to the thyroid gland.

175. Third ramification, in its descent with the following:

176. Fourth, joined behind the carotid.

177. A branch, arising from the combination of No. 175 and 176, a little beyond, descending behind the trunk of the corotids, until it unites with the following branch, 178, (only marked with points.)

178. First ramification of the inferior part of the long ganglion, descending in a straight line on the posterior surface of the carotid.

179. Surculus of the same going to the No. 187.

180. The conjunction of the branches, No. 177 and 178, or 188. The ramus communis runs farther in the course, marked with dots.—(Vide, No. 230.)

181. Trunk of the intercostal nerve from the ganglion-magnum.

182. Insertion of No. 64, into this trunk.

183. Division of this trunk into the anterior nerve, No. 184, and posterior, No. 218.

184. Anterior branch of the intercostal trunk, which, bending downwards, and running above the inferior thyroid artery, here swells, and forms

185. The small cervical ganglion, inferior and anterior.

186. Its first ramification, increasing the branch, No. 220.

187. Second branch of the same, which, after uniting with No. 179, is joined to No. 178.

188. Insertion of No. 187 into No. 178, from which the common trunk of these nerves arises.

189. Third ramus, which, carried under the inferior thyroid artery, unites with the other inferior cervical ganglion, No. 219.

190. Fourth branch of ganglion, No. 185, at the beginning, proceeding downwards almost in a direct line.

191. Surculus, which this branch sends off to the posterior surface of the carotid, and arteria innominata.

192. A ramification of No. 190, descending farther behind the subclavian artery; at length to be combined with nerve, No. 268, of the eighth pair.—(See No. 269.)

193. Surculus, encreasing No. 248, the preceding nerve, by its accession.

194. The remaining portion of nerve, No. 190, to which the following

195. Is joined to No. 251.

196. Nerve, formed by the combination of No. 194, and 251, descending above the subclavian and innominata: to be called the cardiacus superficialis.

197. First, and inferior branch of the same, which soon sends off

198. A surculus to the vena cava.

199. Conjunction of the ramification, No. 197, with a small branch, No. 267, of the recurrens.—Hence, these nerves combined, proceeding farther in their course, send off

200. A branch, which, then dividing into two parts, forms a surculus to nerve, No. 231; and

201. Running into another surculus above the aorta, goes to the pericardium.

202. Connexion of surculus, No. 213, and of the remaining part of ramulus, No. 197, whence is emitted

203. A surculus, terminating on the anterior surface of the arch of the aorta.

204. Another surculus, turning to the right side of the aorta.

205. Lastly, the remaining portion, which goes over the anterior surface of the aorta, by running on the left; but in its passage forms

206. A surculus, uniting by anastomosis with the ramification, No. 233; and

207. And another surculus, terminated on the anterior surface of the aorta.

208. 209. Two surculi, the ends of nerve, No. 197, inflected on the right about the aorta.

210. Second, or superior surculus of nerve, No. 196, running above the arteria innominata, to be distributed on its left side.

211. Third surculus, distributed on the anterior surface of the arteria innominata.

212. Fourth branch of nerve, No. 196, which sends off

213. A ramification, anastomosing with No. 199, (marked No. 202.)

214. 215. 216. 217. Four surculi, from No. 212, distributed on the anterior surface of the arteria innominata,

and aorta; the superior, No. 214, goes to the left side of the innominata.

218. Posterior branch of the intercostal trunk, which, in descending behind the inferior thyroid artery, forms

219. Another ganglion cervicale inferius, and posterius, covered, for the most part, by the inferior thyroid.

220. 221. Two surculi, sent out of the superior part of the inferior and posterior ganglion, surrounding the anterior surface of the inferior thyroid.

222. The conjunction of the anterior surculus with ramus, No. 186, whence

223. A common branch, arising from No. 186 and 220, which in its course runs downwards.

224. Another insertion of the posterior surculus of the same ganglion, into the inferior part: thus surculus, No. 221, and the inferior, or posterior cervical ganglion, form an annulus, intercepting the inferior thyroid artery.

225. Posterior intercostal branch, which immediately divides in two parts, and sends off

226. Anterior branch, increased in its progress by No. 223.

227. Ganglion parvum cervicale, imum, (perhaps it may be called the cardiac) which the united ramifications swelling No. 223 and 226, produce

228. A branch of the mentioned ganglion, which, running downwards above the subclavian artery, bends in its lowest margin on the left, and interiorly, and is concealed, in part, under the arteria innominata.

229. In this place the ramus, No. 228, again emerges.

230. Conjunction of it with the descending branch, No. 80, covered by the carotid artery and the innominata; and in this figure marked with dots.

231. A nerve, originating from the combination of the branches, No. 180, and 230.

232. Insertion of surculus, No. 200, into the preceding nerve.

233. Anterior ramification which nerve, No. 231, gives out.

234. Two of its surculi, going to the pericardium.

235. Union of the ramifications, No. 206, and 233.

236. Superior surculus of the anterior branch, No. 233, running above the aorta on the left.

237. The middle surculus, stretching to the pericardium.

238. Inferior ramulus, giving off several surculi to the pericardium.

239. Nerve, No. 231, farther in its progress, entering the aorta.

240. Posterior branch of nerve, No. 225, which receives

241.

241. The first dorsal ganglion, or its superior tuberosity.

242. Its first and posterior ramus, which, surrounding the anterior surface of the vertebral artery, is again united to the same ganglion.—(This ramus, running behind the inferior thyroid artery, is marked with dots.)

243. Second and middle branch of ganglion, No. 241, which extends a surculus

244. To be inserted into No. 250.

245. Descent of the second branch, No. 243, above the subclavian artery; about the inferior parts of that artery, this ramus bends backwards, and again rises behind it to the first thoracic ganglion.

246. Third, and anterior branch of ganglion, No. 241, which soon after dividing into two, sends off

247. The left branch, forming a surculus farther in its course,

248. Which gives a surculus to the subclavian artery; but the other part, marked under No. 193, coalesces by anastomosis with No. 192.

249. Another insertion of the left, No. 247, into the right, No. 250.

250. Right branch, No. 246, which is increased by the insertion of No. 244 and 249.

251. Ramulus of the nerve already mentioned, which passing anteriorly, is carried into No. 194.

252. Right ramulus, No. 250, running above the subclavian artery, then inserted behind it into another ramus of the first thoracic ganglion, and makes another ansa, inclosing the subclavian artery.

253. Nerve, which arises from the conflux of cervical nerves, No. 67, 68, 69, and passes into the superior thoracic ganglion, behind the inferior thyroid, (marked here with dots.)

254. Inferior part of the eighth pair.—For we have thought proper not to delineate its cervical trunk to shew the other parts better.

255. Its recurrent branch carried upwards to the larynx.

256. First branch of the recurrent nerve, which is given off at its commencement.

257. Superior ramification of the same, augmenting the cardiac nerve of the first thoracic ganglion.

258. Another and inferior branch, which proceeding towards the cardiac plexus, receives

259. A ramification of the second recurrent branch.

260. A branch arising from the combination of No. 258, and 259, which, after proceeding farther, gives off

261. A surculus to the trachea; and

262. Another surculus to the bronchial gland, adhering to the vena cava.

263, 264. Third and fourth surculus of the cardiac branch, No. 258, dispersed above the trachea.

265. The remainder of nerve, No. 258, migrating to the cardiac plexus.

266. Second branch of the recurrent, which, after sending off a ramulus, No. 259, to the first of the recurrents, gives off another.

267. A ramification to the superficial nerve, No. 197.—(Its third ramulus inserted into the cardiac nerve of the superior thoracic ganglion, is covered by the arteria innominata.)

268. A branch descending from the par vagum a little below the origin of the recurrent nerve.

269. Conjunction of this branch with No. 192.

270. 271. First and second surculus of nerve, No. 268, turning to the trachea.

272. Insertion of the second branch of the par vagum, No. 278, into its first part, No. 268.

273. Connection of the third branch of the eighth pair with the first Num. 268.

274. Third surculus of No. 268, which, dividing in two parts, is terminated above the *aspera arteria*, or trachea.

275. 276. 277. Three ramifications of No. 268, running to the cardiac plexus.

278. Second branch of the eighth pair.

279. Third branch of the eighth, which exhibits the following—marked,

280. Running to the first part of the eighth pair.

281. Surculus of the third branch of the par vagum running to the vena cava.

282. Another small branch running to the cardiac plexus.

283. Third ramification distributed on the lungs.

284. Descent of the fifth pair of cervicals, or the first of the brachial nerves.

285. The sixth pair of cervicals, or second of *Brachial nerves*.

286. Conjunction of the first and second brachials.

287. Nerve from the divided combination of the first and second, to be joined with the third, fourth, and fifth.

288. The supra-scapular nerve.

289. A nerve, arising from the connection of the first, as well as second: also, from the third of the brachials, passing forwards with No. 290, 292, 293.

290. Its ramification migrating to the super-scapular nerve, No. 288.

291. Conjunction of No. 289 with the fourth and fifth.

292. Origin of the median nerve.

293. The muscular cutaneous nerve, or cutaneous externus.

294. Third of the brachial, or seventh pair of cervicals.

295. Nerve, composed of the fourth and fifth of the brachials, or eighth pair of cervicals, and first of dorsals.

296. Conjunction of the same with a part of the third of brachials; and also

297. With a part of the first and second.

298. Posterior branch, about to send off the articular and radial nerve.

299. The anterior branch, constituting the cubital and external cutaneous nerves.

300. 301. A line drawn transversely through the middle of the neck, from which the nerves of another plate take their origin; the arteries are removed.

Figure II.

DELINEATION OF THE GREAT CERVICAL GANGLION ON ITS SUPERIOR PORTION, AND OF THE NERVES ARISING FROM ITS ANTERIOR PART, THAT WERE COVERED BY THE ANTERIES IN FIG. I.—WHICH ARE HERE REMOVED.

- a. The external branch of the intercostal nerve, which descends in the canalis caroticus, above the exterior surface of the carotid, and emerging from the canalis already mentioned, runs towards the posterior side of the carotid to its external surface, and downwards.
- b. Interior branch of the intercostal nerve, carried downwards behind the interior surface of the carotid.
- c. Intercostal nerve, formed by the combination of the branches a. and b. not inclosed in the canalis-carotidis.
- d. e. f. Superior part of the great cervical ganglion: d. Its first protuberance; e. the second; f. the third.
- g. First branch, arising from the anterior side of the ganglion, which proceeding obliquely, inferiorly, and anteriorly, is united with No. 3, of the glosso-pharyngeal nerve.
- h. A common trunk, arising from that part.
- i. A ramification of the same, passing back to the second branch, No. 2, of the nervus pharyngeus.
- k. The remaining part, descending to the anterior gangliform branch, lit. x. z.
- l. Second branch of ganglion, running almost in a parallel direction with branch g.—But this is inserted into the gangliform posterior branch, lit. r. i.
- m. Third branch of the ganglion thicker than the preceding ones.
- n. First, or posterior ramulus of the same, going to the fourth, lit. 9.
- o. Another, or middle ramification, which is carried almost directly downwards, until it is inserted into the fourth branch.—Vide lit. v.
- p. Third superior ramification of the branch, marked m. running obliquely to the anterior gangliform trunk, lit. x. z.
- q. q. Fourth branch, arising from the anterior side of the ganglion.
- r. Insertion of the branch n.
- s. Posterior gangliform ramification, ascending behind the internal surface of the cerebral carotid, and then between the internal and external carotid to the external surface of the latter artery.—(Vide Fig. I. No. 143.)
- t. Another ramification descending from the branch q. to the internal and external carotids.
- u. Another, or third branch, q. distributed by a superior surculus on the middle constrictor muscle of the pharynx, but by an inferior surculus on the inferior constrictor of the pharynx.
- v. Insertion of the branch o.
- w. Insertion of the branch, No. 9, descending from the par vagum.
- x. Anterior gangliform ramification, which ascends behind the external carotid, and afterwards ascends on its anterior side.—(Vide Fig. I. Num. 135.)
- y. A small branch of the laryngeal nerve of the eighth pair going to the anterior gangliform branch, marked x.
- z. The place where the branches k. p. and y. are inserted into the gangliform branch, and *others are sent out*.
- α. A branch of the nervus laryngeus of the eighth pair, which is inserted into the fourth ramification of the ganglion q.
- β. Posterior branch, proceeding from the communication above-mentioned.—(Vide Fig. I. Num. 132, 133, 134.)
- γ. Anterior branch.—(Vide Fig. I. Num. 126, 127, 128, 129, 130, 131.)
- δ δ. First anterior branch, running from the anterior gangliform branch, x. 2. to the internal surface of the lingual artery.—(Vide Fig. I. No. 135.)
- ε. Second anterior branch, which, after uniting with the small branch of the nervus pharyngeus, lit. ψ, proceeds to the labial artery.—(Vide Fig. I. Num. 140.)
- ζ. Ramulus, by the medium of which ramus, lit. δ, is joined with ramus, lit. ε, and the common trunk of the lingual and angular artery is almost surrounded.—(Vide Fig. I. No. 138, 141.)
- η. Third posterior ramus of anterior gangliform, ramus x. z. ascending obliquely to the anterior surface of the carotid artery.
- θ. Combination of the same, with the posterior gangliform ramus, marked s.—(Vide Fig. I. No. 144.)
- ι. A common trunk arising from thence, stretching upwards on the posterior side of the external carotis, and inserting itself into the ganglion parvum, lit. π.—(Vide Fig. I. No. 144.)
- λ. Fourth ramus of the gangliform ramus, ascending in a straight direction above the anterior side of the carotid already mentioned.—(Vide Fig. I. Num. 145.)

μ. Divarication

- μ. Divarication of the same into
- ν. The first, or external branch, running obliquely to the ganglion parvum, lit. π. (Vide Fig. I. No. 146.)
 - ξ. Posterior, or internal branch, which surrounding the internal surface of the external carotid, is inserted into the posterior side of that ganglion parvum, lit. π. (Vide Fig. I. No. 147) whence this ramus, with ramus, lit. ν. and the ganglion-parvum, lit. π. forms an ansa, enclosing the external carotid.
 - π. Ganglion-parvum, into which rami, lit. ν. and ξ, are inserted.—(Vide Fig. I. Num. 148.)
 - ρ. Ramus-mollis, stretching upwards from the small ganglion.—(Vide Fig. I. No. 149, 150, 151.)
 - σ. Insertion of the hard portion of the ramus-profundus. (Fig. I. No. 72.) into the nervus-mollis, lit. ρ.
 - τ. Some part of the nervus glosso pharyngeus of the 8th pair, of which the superior part running beyond the internal carotid, and nervus intercostalis.—(Vide Fig. I. Num. 75) is cut off.
 - φ. Its inferior ramus, called Pharyngeus, which soon divides into three parts, is inserted into the pharynx and ramuli-molles of the intercostal nerve.—(Vide Fig. I. Num. 81.)
 1. First, and superior ramulus of the same, distributed to the middle constrictor of the pharynx.—(Vide Fig. I. Num. 82.)
 2. The middle, or second ramulus, which, joined by anastomosis, (lit. I.) with ramulus, lit. h. runs into the same muscle; yet it affords a surculus to the stylo-pharyngeus.—(Vide Fig. I. Numb. 83.)
 3. Inferior, and third ramulus of nerve, lit. φ, which, joined with the ramulus-mollis of the great cervical ganglion, lit. g, constitutes ramus, lit. h.
 - ↓. Ramulus of the nervus pharyngeus of the eighth pair, going to the nerve, lit. i. accompanying the labial artery.—(Vide Fig. I. No. 97.)
 4. 4. Ramulus, running from the nervus glosso-pharyngeus, above the internal carotid, and running between it and the external carotid, and at length behind the external. (Vide Fig. I. Num. 77, 78.)
 5. Ramulus of the same, running to the anterior gangli-form nerve, lit. x. z.
 6. Another ramulus, running in the posterior surface of the external, and afterwards of the common carotid.
 7. Par vagum, running from the foramen lacerum.
 8. Its first ramus, which, in this body, exhibits the eighth pair, going out of the cranium, passing down to the second pair of cervical nerves.
 9. Another ramus of the eighth, extending to the fourth nervus-mollis of the great cervical ganglion, lit. w. g.
 10. Third ramus of the par vagum, called the Nervus-Laryngeus, which runs beyond the ganglion-magnum, and other nerves, as far as it is marked with dots.
 12. 13. 14. 15. 16. Division of the same into the sixth rami.—(Vide Fig. I. Num. 116, 117, 118, 119, 120, 121.)
 17. First pair of cervical nerves, or anterior ramus of the same, joined with the second pair.—(Vide Fig. I. Num. 2.) whence,
 18. First ramulus, inserted into the rectus lateralis, and rectus anticus major of the head, by many surculi.—(Vide Fig. I. No. 3.)
 19. Second ramulus, descending behind the par vagum to the great cervical ganglion.—(Vide Fig. I. Num. 4.)
 20. Third, ascending to the anterior minor rectus-muscle of the head.—(Vide Fig. I. Num. 5.)
 21. Fourth ramus, going to the ninth pair, here cut off.—(Vide Fig. I. Num. 6.)
 22. Anterior ramus of the second pair of cervical nerves, and its communication with the anterior ramus of the first pair.—(Vide Fig. I. Num. 7.)
 23. Ramus, proceeding from the above communication to the rectus anticus major muscle of the head.—(Vide Fig. I. Num. 8.)
 24. Another ramulus of the same branch, inserted into the same muscle by two surculi.
 25. 26. Two ramuli, of the anterior ramus of the second pair, which converging, unite; and, afterwards, by two ramuli, are inserted into the great cervical ganglion.—(Vide Fig. I. Num. 10, 11, 12, 13, 14.)
 27. Third ramus of the anterior ramus of the second pair, descending to the ganglion just mentioned.—(Vide Fig. I. Num. 16.)
 28. Ramus, of the third pair of cervicals, united with ramus, No. 27.—(Vide Fig. I. Num. 24.)
 29. Fourth ramus, running to the descendens of the ninth pair.—(Vide Fig. I. Num. 18.)
 30. Insertion of ramulus of the eighth pair.
 31. Condylod process of the inferior maxilla.
 32. Meatus-auditorius externus.
 33. Mamillary process of the temporal bones.
 34. Place where the styloform process is cut off.
 35. External ramulus of ramus, lit. δ, extending itself to the cerato-glossus muscle.

Figure III.

- A. Internal musculus rectus major of the head.
- B. Musculus scalenus prior.
- C. The first rib:
 - a. Transverse process of the first vertebra of the neck.
 - b. The mastoid process.
 - c. The styloform process.
 - d. Ossiculum, joined to the styloform process.
 - e. Meatus auditorius externus, in part cartilaginous.
 - f. Condylod process of the maxilla inferior.
 - g. Angle of the maxilla inferior.

- h. i. k. Arteria carotis. h. Internal entering the foramen caroticum. i. External cut off. k. The common trunk.
- l. Artery, rising in the middle of the neck from the common trunk of the carotid, divided into the superior ramus, s.
- m. Stylo-mastoid artery, which enters the stylomastoid foramen. Sometimes it arises from the internal carotid artery.
- n. Another inferior ramus of the artery, lit. l, cut off, which ascends above the nerves, and biventer muscle of the maxilla inferior to the mastoid depression, and is inserted into the beginning of the biventer of the maxilla inferior, and other muscles.—This also sometimes arises from the external carotid artery.
- o. Right subclavian artery.
- p. Inferior thyroid artery.
- q. Internal mammary artery.
- r. The lateral rectus capitis muscle.
- s. Obliquus superior capitis.
- t. ——— inferior capitis.
- u. Cervicalis descendens. The levator scapulae is cut off.
- v. Part of the muscle pterygoideus internus, not very conspicuous.
- w. Ninth pair of the nerves of the cerebrum, which, because it descends upon the eighth, and intercostal nerve, in a transverse direction, is only marked by dots.
- x. x. Eighth pair of nerves of the cerebrum, drawn a little outward, and backwards.
- y. y. Intercostal nerve going out of the carotid canal.
- z. z. Anterior ramus of the first pair of cervical nerves.
- a. Its ramus, extending to the ninth pair.
1. 1. ——— going to the first cervical ganglion.
2. Anterior ramus of the second pair of cervicals.
3. Its anterior ramus, descending anteriorly, and then dividing into two
4. & 5. Ramuli, which are inserted into the superior cervical ganglion.
6. The remaining part of it, annexed to the third of the cervicals.
7. 7. Trunk of the third pair of cervicals.
8. Fourth pair of cervicals.
9. A ramus of it, running to the inferior cervical ganglion.
10. Diaphragmatic nerve, arising from the fourth pair.
11. The remaining part of the fourth pair.
12. Ramus, passing from the fifth pair to the inferior cervical ganglion, (where No. 12 is adjoined there, it goes under the muscle scalenus prior.)
13. Superior cervical ganglion.
14. Its gangliform appendix.
15. Inferior cervical ganglion.
16. Its ramus, descending above the subclavian artery, and running round it, again ascending behind it to the first thoracic ganglion, and thus forming an ansa. —(Vide No. 78.) It is called Ramus Superficialis.
17. Trunk of the intercostal cervical nerve, inserted into the first thoracic ganglion, (or ramus profundus.)
18. 19. 20. 21. 22. Five nervi molles running from the appendix of the ganglion, No. 14.—18. First. 19. Second. 20. Third. 21. Fourth. 22. Fifth.
23. Surculus of the first nervus mollis, accompanying external carotid artery, No. 18.
24. Another surculus, running to the internal carotid.
25. Second nervus mollis, uniting to a surculus of the glosso-pharyngeus nerve, No. 38.
26. Surculus of the same running to the musculus stylo-pharyngens.
27. Another surculus, carried to the constructor medius of the pharynx.
28. Surculus of the second nervus mollis, running down to the third, No. 20.
29. Third nervus mollis, joining with surculus, No. 28, running down to the carotis communis.
30. 31. Anterior ramus of the fourth nervus mollis, surrounding the trunk of the carotids.
32. Conjunction of the same with the fifth, No. 22.
33. Posterior ramus of the fourth nervus mollis.
34. There inserted into the inferior constrictor muscle of the pharynx.
35. Ramulus, proceeding from the conjunction of the anterior ramus of the fourth with the fifth ramus mollis, which descended behind the trunk of the carotids, in its natural situation.
36. Surculus of the same, proceeding to the ramulus of the nervus laryngeus.
37. Another surculus of ramulus, No. 35, to be inserted into the inferior cervical ganglion.
38. Surculus of the nervus glosso-pharyngeus, to be joined to the second ramus mollis, No. 19.
39. Surculus of the nervus laryngeus, joining to the nervus mollis, No. 21.
40. Ramulus, descending from the nervus laryngeus.
41. Anterior ramulus of the same, which gives off
42. A surculus, to be inserted into the inferior constrictor of the pharynx.
43. Posterior ramulus, No. 40.
44. Anterior ramification, running back to the posterior, and with it constituting an island.
45. Ramulus, formed by a conjunction of No. 43 and 44.
46. Ulterior descent of the same, after receiving the ramulus mollis, No. 36.
47. Third surculus of the nervus laryngeus, running to the posterior surculus, No. 33, of the fourth ramus mollis.
48. Nervus

48. Nervus laryngeus of the eighth pair.
49. First ramulus of the inferior cervical ganglion, where it advances behind the trunk of the carotids.
50. Part of the same ramulus, passing beyond that trunk, to be inserted into the nervus mollis decurrens, No. 46.
51. Second ramulus of the inferior cervical ganglion.
52. Ramulus, composed of the preceding ramulus, and descending nervus mollis; whence arise
53. A ramification to the third ramulus of ganglion, No. 15; and
54. Another, running to the fourth ramulus of the inferior cervical ganglion.
55. Third ramulus of ganglion, No. 15.
56. Surculus of the same, descending to the fourth.
57. Another surculus of the third to be joined with ramus, No. 53.
58. Fourth ramulus of the inferior cervical ganglion.
59. Surculus of the same, descending to the sixth ramus of the ganglion, No. 15.
60. The remaining part of the fourth ramulus, which, united with ramulus, No. 54, goes to the fifth.
61. Fifth ramulus of the inferior cervical ganglion.
62. Further progress of the same, after receiving ramulus, No. 60.
63. Surculus of ramus, No. 62, declining to the sixth.
63. b. Ramulus, from its conjunction with ramuli, No. 53 and 57, running down to the ramulus, No. 62, of the fifth.
64. Conjunction of ramulus, No. 62, with ramulus, No. 63, b.
65. Ramulus, proceeding from the conjunction of No. 64, which forms the superficial cardiac nerve.
66. Surculus, from the conjunction, No. 64.
67. Surculus mollis, which the third nervus mollis of the superior cervical ganglion, No. 20, 29, sends off, descending behind the trunk of the carotids to ramulus, No. 66.—(Partly marked with dots.)
68. Ramulus, arising from the combination of ramuli, No. 66 and 67, to be again joined with the nervus cardiacus superficialis, No. 65.
69. The sixth ramulus of the inferior cervical ganglion to the plexus cardiacus, situated between the aorta and pulmonary artery.
70. First thoracic ganglion, which is marked with dots, where covered by the arteries.
71. 72. 73. Rami, of the cervical nerves, running to that ganglion. 71. Of the sixth. 72. Of the seventh. 73. Of the eighth pair.
74. Conjunction of the ramus of the eighth pair, with a continuation of the seventh, and insertion into the ganglion already mentioned.
75. Ramus of the first pair of dorsals, encreasing the first thoracic ganglion.
76. Ramus of the second, belonging to the same ganglion, from ganglion to the second pair.
77. First ramulus, migrating from ganglion, No. 70, to the cardiac plexus.
78. Insertion of ramus, No. 16, into the first thoracic ganglion.
79. Second cardiac ramus of the mentioned ganglion.
80. Third cardiac ramulus of the same ganglion.
81. Ramus, arising from the combination of the second and third ramulus cardiacus.
82. Superior ramulus, No. 81, proceeding to the first cardiac ramus.
83. Ramus, which ramulus, No. 77, combined with ramulus, No. 82, gives to the cardiac plexus.
84. Inferior ramulus of ramus, No. 81, proceeding to the cardiac plexus.

PLATE XXXV.

Figure 1.

The body being placed in the same position as in the explanation of Plate XXXIII. the whole of the *auris externa*, with the *cartilaginous meatus auditorius*; also, the *mastoid* and *styloform* processes, with the annexed muscles, and some other parts, are removed, to elucidate more clearly the conformation of the superior nerves.

- a. The osseous *meatus auditorius*.
- b. Radix of the *mastoid* process cut off.
- c. *Condylloid* process of the *inferior maxilla*.
- d. Angle of the *inferior maxilla*.
- e. Transverse process of the first vertebra *atlas*.
- f. Inferior lateral part of the body of the *atlas*, process of the *obliquus descendens*, which forms a little protuberance.
- g. Muscle *rectus lateralis* of the head.
- h. Superior part of the *levator scapulae*.
- i. Part of the *oblique inferior*.
- k. *Musculus scalenus prior*.
- l. First rib, to which the muscle, just mentioned, is annexed.
- m. *Rectus internus major* of the head.
- n. *Longus colli*.
- o. *Arteria innominata*.
- p. ——— *subclavia dextra*.
- q. ——— *thyroidea inferior*.
- r. Transverse scapular ramus of the same.
- s. *Arteria vertebralis*.
- t. ——— *cervicalis profunda*.
- u. *Common trunk of the carotids*.
- 1. Superior radices of the *intercostal* nerve running into one nerve in the *canalis caroticus*, which here emerges from the canal already mentioned.
- 2. Ramus, from the first pair of *cervical* nerves, inserted in this nerve.
- 3. Another ramulus, running from the anterior ramus of the first pair of *cervicals* to this nerve.
- 4. 5. *Ganglion cervicale superius*, consisting of two tubera, and a thinner intermediate portion in this case.
- 6. Ramus *gangliiformis*, stretching out from the third pair of *cervicals* to the first *cervical* ganglion, and forming, as it were, the *cauda*, or tail of the ganglion.
- 7. Ramulus, which descends from the preceding ramus

to the fourth pair, or vice versa, it ascends from the fourth.

- 8. 9. Two ramuli, running from the conjunction of the anterior ramus of the first pair, with the anterior ramus of the second pair, to the superior ganglion.
- 10. Ramulus passing from the anterior ramus of the second pair to the ganglion already mentioned.
- 11. Ramus, from the *par vagum*, inserted into that ganglion.
- 12. First ramus *mollis*, running from the ganglion.
- 13. Superior ramulus of the same, which uniting with a ramulus of the *nervus glosso-pharyngeus*, Num. 35.
- 13. Goes to the *constrictor medius* of the *pharynx* and *stylo-pharyngeus*.
- 14. Inferior ramulus of nerve, Num. 12, inserted in the *constrictor medius* of the *pharynx*.
- 15. Second *nervus mollis* of the superior *cervical* ganglion.
- 16. Surculus of this running to the third *nervus mollis*.
- 17. Conjunction of ramus, Num. 15, with surculus, Num. 33, of the *nervus glosso-pharyngeus*.
- 18. Surculus of the second *nervus mollis*, Num. 15, to be united with a surculus of the *nervus laryngeus*.
- 19. Another surculus of ramus, Num. 15, which is implanted in the *inferior constrictor* muscle of the *pharynx*.
- 20. Third, and more remarkable *nervus mollis* of the superior ganglion.
- 21. First ramulus of the same, which gives
- 22. A surculus to the *lingual artery*, and
- 23. Another surculus running to the ramus, Num. 39, of the *nervus laryngeus*.
- 24. 24. Ramulus, from the third *nervus mollis*, Num. 20, which descends behind the trunk of the *carotids*, then curving round the same, appears in the exterior surface.—(Vide Num. 246.)
- 25. In this part the third *nervus mollis* is inflected around the inferior part of the *thyroid artery* exteriorly.
- 26. Ramulus, accompanying the *thyroid artery*.
- 27. Ramulus, of the third *nervus mollis*, Num. 20, ascending exteriorly above the *external carotis*.
- 28. Its ramulus, approaching the *labial artery*.
- 29. Ramulus, which ascends further to the *internal* and *temporal maxillary artery*.
- 30. First ramus of the *par vagum*, called the *glosso-pharyngeus*, drawn a little upwards from the other nerves.

31. Insertion

Fig. I.

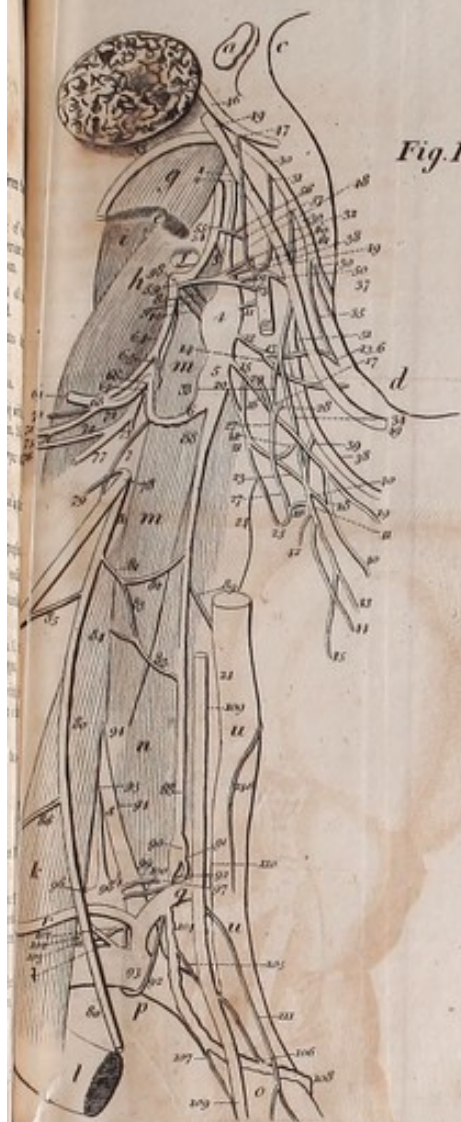


Fig. II.

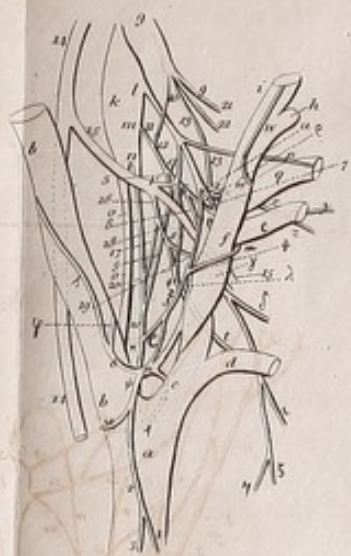


Fig. III.

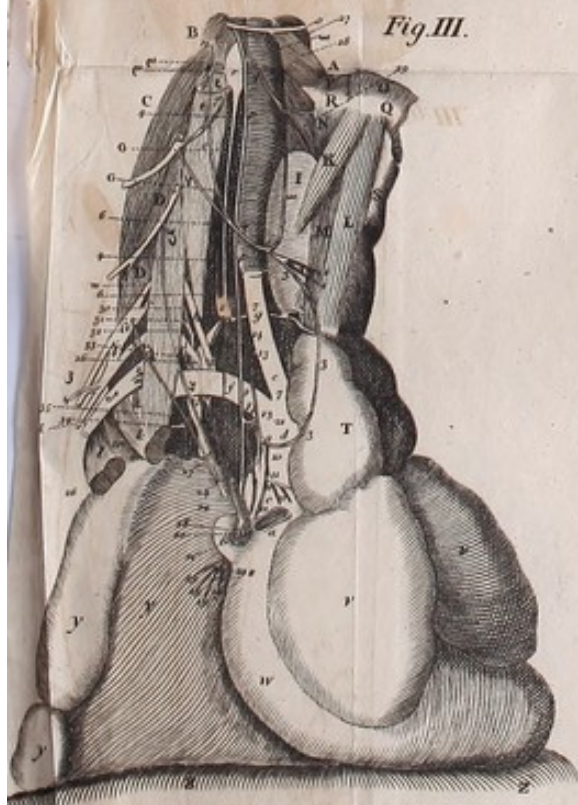
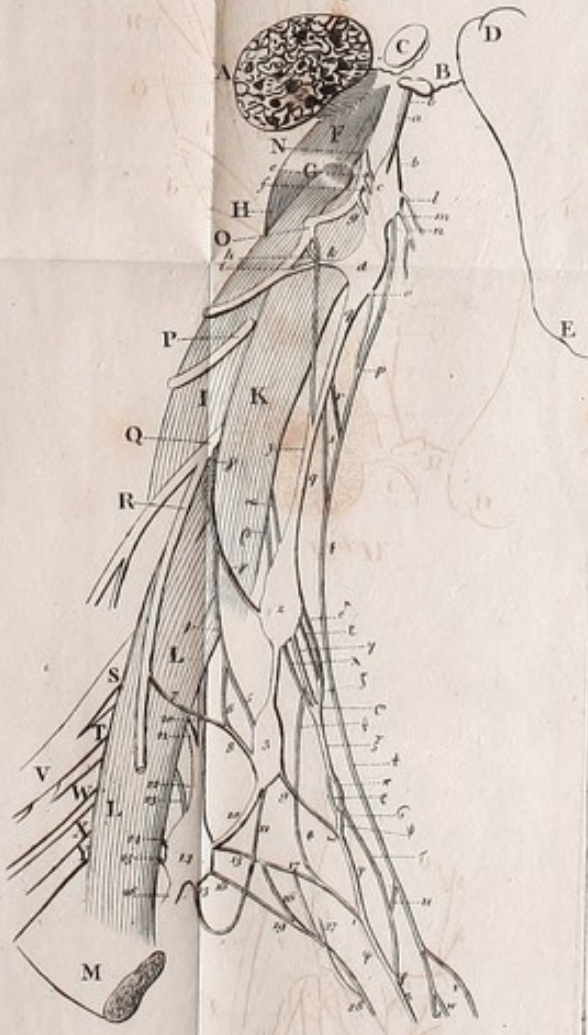


Fig. IV.



1832

1832

1832

31. Insertion of the *portio dura* of ramulus, Num. 47, in this nerve.
32. Ramulus of the *glosso-pharyngeus*, descending to the *nervi molles*.
33. Posterior surculus of the same acceding near the second *nervus mollis*.
34. Anterior surculus, going to the ramulus of the *nervus laryngeus*, Num. 39.
35. Another ramulus of the *nervus glosso-pharyngeus*, to be united with a surculus of the first *nervus mollis*, Num. 13.
36. 37. The remaining part of the *nervus glosso-pharyngeus*, exhibiting two *lingual* nerves.
38. *Nervus laryngeus* of the eighth pair.
39. Ramulus of the same, running to the *nervi molles*.
40. Anterior surculus of it, which uniting with ramus, Num. 18, of the second *nervus mollis*, goes to the *constrictor inferius* of the *pharynx*.
41. Posterior surculus of the same, which sends off
42. 43. 44. Three surculi, passing to the *constrictor inferior* of the *pharynx*.
45. Fourth surculus, running to the thyroid gland.
46. *Portio dura* of the auditory nerve, emerging through the *stylomastoideus*.
47. 48. Ramus profundus, called *Gastricus* of the same, forming a chain of communications with *nervus glosso-pharyngeus*.—(Vide No. 31.)
49. 49. Ninth pair of the nerves of the cerebrum.
50. Its anastomosis with the *par vagum*.
51. Descending ramus of the same, constituting an anastomosis with the cervical nerves, cut off.
52. Superior part of the *par vagum*.
53. Accessory nerve of the *par vagum*.
54. Anterior ramus of the first pair of cervical nerves.
55. Its ramulus, which, dividing into two
56. 57. Ramuli, is inserted by the same into the *par vagum*.
58. Conjunction of the anterior ramus of the first pair, with a similar ramus of the second.
59. Ramulus, arising from this conjunction, which
60. 61. 62. 63. Is inserted by four surculi into the *par vagum*.
64. Anterior ramus of the second pair of cervicals.
65. Ramulus of the same, going to the descendens of the ninth pair.
66. Third pair of cervicals.
67. Ramus of the same, constituting the union of the second pair with the anterior ramus.
68. Conjunction of the anterior ramus of the second pair, No. 64, with ramus, No. 67, of the third
69. Superior ramus, proceeding from this conjunction, No. 68, which, in this body, ascends to the occiput, and with the posterior ramus of the first pair, is there in part united.
70. Middle ramus of conjunction, No. 68, forming the posterior small auricular nerve.
71. Inferior ramus of conjunction, No. 68, forming the large auricular nerve.
72. The remaining part of the third pair.
73. Ramulus of the same, proceeding to the descendens of the ninth pair.
74. Superior ramus of ramus, No. 72.
75. Ramus, running from ramus 71 to ramus 74.
76. This nerve, in the exterior surface of the back, constitutes the cutaneous medius of the neck.
77. Inferior ramus, No. 72, which descending backwards, principally disperses itself above the *cucullaris* muscle.
78. Fourth pair of the cervical nerves.
79. Ramulus of the same, running backwards to the *splenius colli*.
80. 80. 80. The phrenic nerve, arising from the fourth pair.
81. Its ramulus, which, dividing,
82. Ascends by the superior ramulus to the trunk of the intercostal nerve,
83. 83. By the inferior one, it is carried to the same trunk; but first receives
84. Ramulus, of the fifth pair.
85. Ramus, uniting the phrenic nerve with the fifth pair.
86. Ramulus, constituting the conjunction of the phrenic with the fifth pair.
87. Part of the fifth pair of cervicals.
88. 88. Trunk of the intercostal nerve, descending below from the superior cervical ganglion.
89. Ramulus of the same, migrating to the thyroid gland.
90. The inferior cervical ganglion.
91. Its ramus, going backwards to the first thoracic ganglion.
92. 92. 93. Ramus of the inferior cervical ganglion, descending beyond the subclavian artery, and behind it again ascending in the part marked with dots, No. 93, to be inserted into the first thoracic ganglion.
94. 95. 96. Rami, of the cervical nerves, advancing to the first thoracic ganglion, 94, of the sixth pair; 95, of the seventh; and 96, of the eighth.
97. 98. First thoracic ganglion: 97, anterior part of the same, as observed in this body, but in others it is wanting; 98, the posterior part.
99. 100. Two ramuli, which arising from the anterior part of the ganglion, No. 97, runs above the vertebral artery, and is again inserted into the posterior part.
101. Ramulus,

101. Ramulus, arising from the great dorsal ganglion, running behind the artery, lit. t.
102. 103. Two surculi of the same, inserted into the musculus scalenus prior et minimus.
104. Ramus gangliiformis, proceeding from the anterior part of the great thoracic ganglion to the plexus cardiacus.
105. Ramulus, produced from the anterior margin of the same, which, after forming an island, is at length inserted into the gangliiform ramus.
106. The part where it is again inserted.
107. Ramulus, going from the gangliiform ramus, No. 104, about the posterior surface of the arteria innominata to the internal and cardiac plexus.
108. The ramus gangliiformis, which running to the anterior surface of the same artery, is there inflected, extends behind the internal surface to the cardiac plexus.
109. Inferior part of the par vagum.
110. Its ramulus, passing to the thyroid artery.
111. ———, which, in this body, is turned towards the arteria innominata and aorta, and forms the superficial cardiac nerve.

Figure II.

REPRESENTS, PRINCIPALLY, THE NERVI MOLLES FROM ANOTHER BODY.

- a b c. Trunk of the carotid artery. b. The internal. c. The external.
- d. The superior thyroid artery.
- e. The lingual artery.
- f. The ascending pharyngeal artery of Haller.
- g. The labial artery of Haller.
- h. The occipital artery.
- i. The remaining trunk of the external carotid artery ascending further.
- k. Ganglion cervicale superius.
- l. m. Its two rami molles. l. First. m. Second.
- n. n. Nervus cardiacus supremus, or superficialis, arising from ganglion k.
- o. o. Trunk of the intercostal nerve.
- p. p. Superior ramulus of the first ramus mollis, running to the labial artery.
- q. Another ramulus of the first ramus mollis, lit. l. which, by the following
- r. Ramulus ascending from the nervus laryngeus of the eighth pair, is joined with the above-mentioned nerve.

- s. Ramus, lit. q. which running downwards almost in a straight line, is combined with ramus, No. 20.
- t. t. ———, formed of lit. s. and No. 20, which descends to the superior thyroid artery.
- u. Third ramulus of nerve lit. l.
- v. Its superior ramulus, soon dividing itself into surculi w and x.
- w. Surculus, ascending in the internal surface of the external carotid. For, in this figure, the carotis externa is removed anteriorly, to shew its internal surface exteriorly.
- x. Another surculus, lit. v. which dividing into two,
- y. Accompanies the lingual artery in the superior surculus;
- z. But by the inferior it is distributed in the musculus stylo-pharyngeus, and constrictor medius pharyngis.
- α. α. Inferior ramulus of nerve, lit. u, forming an ansa around the external carotid artery.
- β. Trunculus of the first nervus mollis, descending further.
- γ. Ramulus, ex. lit. β, extending anteriorly.
- δ. Its surculus, inclining to the middle constrictor of the pharynx.
- ε. Surculus, going to the part of the constrictor pharyngis inferior, ascending from the thyroid cartilage.
- ζ. Surculus, proceeding to the thyroid gland.
- η. Surculus, running to the constrictor inferior pharyngis.
- θ. Insertion of ramus, lit. α, into ramus, lit. β.
- λ. Ramulus, derived from ramulus, lit. β, to the ganglion parvum, lit. μ.
- μ. Ganglion parvum, which is situated on the division of the carotids; but upon drawing away the arteries, now appears in rather a superior position.
- ξ. Another ramulus, descending from the first nervus mollis.
- κ. Surculus of the same, touching the trunk of the intercostalis.
- ρ. Another surculus of it, verging to the ganglion parvum, lit. μ.
- σ. Ramulus mollis, passing from the ganglion parvum to the internal carotid.
- τ. Exterior surculus of the same.
- φ. Internal surculus.
- ψ. Another ramulus of the ganglion parvum, running to the carotis communis.
- ω. Its ramulus, surrounding the beginning of the internal carotid artery.
- No. 1. Indicates the part delineated by dots, running behind the artery.
2. Ramulus, running downwards above the common trunk of the carotids.
3. 4. Its

3. 4. Its two surculi.—3. External. 4. Internal.
5. 6. Two ramuli of the second ramus mollis, lit. m.
5. Posterior. 6. Anterior.
7. Surculus of the anterior passing to ramulus, lit. α .
8. ———, lit. β .
9. 9. Nervus pharyngeus of the eighth pair.
10. Ramulus of the same, which
11. 12. Is inserted by two surculi into the second ramus mollis.
13. 13. Another surculus of the nervus pharyngeus, implanted in the first nervus mollis.
14. 14. Trunk of the par vagum.
15. 15. Its nervus laryngeus.
16. Ramulus of nervus laryngeus going to the nervi molles.
17. Its posterior surculus given to the cardiacus supremus.
18. Anterior surculus, which is soon divided.
19. Superior surculus of the same, proceeding to ramus, lit. β .
20. Inferior surculus, deflecting to the ramus, lit. γ .
21. 22. Two rami of the nervus glosso-pharyngeus, No. 9, going to the tongue.

Figure III.

IS TAKEN FROM AN INFANT EIGHT DAYS OLD.

- A. Angle of the inferior maxilla.
- B. Rectus lateralis muscle of the head.
- C. C. Levator scapulae.
- D. E. Musculi scaleni.—D. Medius. E. Prior.
- F. The rectus internus major of the head.
- G. The longus colli.
- H. The bodies of the vertebrae of the neck.
- I. I. Thyroid gland, which in this body is almost oval.
- K. Superior venter of the coraco-hyoideus, inserted into the base of the hyoid bone.
- L. Sterno-hyoideus muscle.
- M. Sterno-thyroideus.
- N. Hyo-thyroideus.
- O. Mylo-hyoideus.
- P. Cerato-glossus.
- Q. R. Os-hyoides.—Q. Its base. R. Right cornu.
- S. Thyroid cartilage.
- T. T. Two superior parts of the thymus gland.
- V. V. ——— inferior of the same gland.

W. X. The heart yet inclosed in the pericardium.

X. Its apex.

Y. Y. Y. Right lung.

Z. Diaphragm.

a. The superior vena cava cut off.

b. Vena azygos.

c. Part of the arch of the aorta.

d. Arteria innominata, or trunk of the carotid, and left subclavian.

e. Truncus communis of the carotid artery.

f. Right subclavian artery.

g. ——— inferior thyroid artery.

h. Vertebral artery, which, in this body, ascending, enters the foramen of the fourth vertebrae of the neck.

i. Arteria cervicalis profunda.—Perill. de Haller. Icon. Anat. Fasc. II. Arter. thyroid. Icon. 1. not b.

k. l. Parts of the costae.—k. Of the first. l. Of the second.

m. External intercostal muscle.

n. Transverse process of the first vertebra of the neck, projecting.

o. Ninth pair of nerves of the cerebrum.

p. p. Trunk of the eighth pair.

q. Its thyroid ramus, which descending, is divided into two rami.

r. Ganglion cervicale primum.

s. Anterior ramus of the first pair of cervical nerves, running to the second pair.

t. Anterior ramulus of the second pair of cervical nerves running backwards to the third pair.

u. v. w. x. y. z. Six inferior pairs of cervical nerves.—u. Third pair. v. Fourth. w. Fifth. x. Sixth. y. Seventh. z. Eighth pair.

a. First pair of dorsal nerves.

β . Coalition of the fifth and sixth pair.

γ . Connection with the seventh pair, lit. y.

δ . Conjunction of the eighth pair of cervical nerves with the first pair of dorsal.

ϵ . Ramus, going out from this combination, constituting anastomosis with the seventh pair.

ζ . Communication of the sixth pair with the fifth.

η . Nervus superscapularis Perill. de Haller.—(Elem. Physiol. Tom. IV. page 246.) ξ . Scapularis of the Ill. Monro.—To this another ramus of the fifth and sixth pair generally runs.

θ . Trunk of the phrenic nerve arising from the fourth pair.

λ . Ramus, proceeding downwards from the union of the

Q

the

the fifth and sixth pair, about to run in the cavity of the thorax to the nervus phrenicus.

- μ. Two surculi of the anterior ramus of the first pair, running to the ganglion cervicale primum.
- φ. Ramulus, proceeding downwards from the anterior ramus of the first pair to the descendens of the ninth pair.
- σ. τ. Two surculi of the anterior ramus of the second pair, ascending to the ganglion cervicale primum.
- φ. Ramulus, proceeding downwards and anteriorly, from the third pair to the descendens of the ninth pair, which in this its course is joined with ramus, lit. ξ, of the first pair going to the same nerve.
- ψ. Conjunction of the descending ramus of the first pair, with a similar ramus of the third pair.
- ω. ω. The descending ramus (so called) of the ninth pair.
 1. Conjunction of the ramus, descending of the ninth pair with the descendens of the cervicals, lit. ψ.
 2. Two surculi, going from this conjunction to the sterno-hyoid muscle.
 3. Ramus, running from the same communication into the thorax, where it is connected with the cardiac ramus, No. 7.—(Vide No. 9.)
 4. Trunk of the cervical intercostal nerve.
 5. Ganglion cervicale inferius.
 6. Ramus, arising from the inferior cervical ganglion to the theca vertebralis.
 7. Nervus cardiacus, arising from the same ganglion.
 8. Its first ramus to the recurrens of the eighth pair, again behind the subclavian artery, ascending a little.
 9. Conjunction of nerve, No. 7, with ramulus, No. 3.
 10. Another ramus, No. 7, extending to the internal surface of the arteria innominata, after having left a surculus in the external surface of the same artery.
 11. Third ramulus of nerve, No. 7, distributed by many surculi upon the arch of the aorta.
 12. Trunk of the ramus cardiacus, No. 7, which bending itself about the right lateral surface of the arch of the aorta, is inserted into the cardiac plexus, situated between this arch and the right pulmonary artery.
 13. Ramus medius, descendens from the inferior cervical ganglion, and forms the ansa, surrounding the right subclavian artery, then it is called Ramus Superficialis.
 14. Third, and exterior ramus of the inferior cervical ganglion, running obliquely to the first thoracic ganglion, named Ramus Profundus.
 15. Ramulus of the first thoracic ganglion, which, ascending a little, is inflected round the internal side of the vertebral artery, and runs above its anterior surface behind the subclavian artery into the cavity of the thorax.
 16. Another ramus of the first thoracic ganglion, which, in ascending, is incurvated round the arteria cervicalis profunda of Haller, lit. i, and in like manner enters the thorax behind the subclavian artery.
 17. Conjunction of ramus, No. 15 and 16, whence the ramus communis arises, running in an oblique direction downwards towards the heart, and in the region of the vena azygos, incurvating anteriorly, dividing into three ramuli.
 18. Exterior ramulus of this nerve, No. 17, which running under the arch of the vena azygos backwards, and a little outwards, disperses five surculi, of which
 19. Four are directed towards the right side of the lungs, running under its external covering; but the fifth
 - 19*. Goes to the pericardium.
 20. Ramulus medius of nerve, No. 17, which passing behind the arch of the aorta, between the same and the right pulmonary artery, is incurvated round the inferior part of the right pulmonary artery, and again extending behind the same, is carried into the right lungs.
 21. Ramulus internus of that nerve, No. 17, which extending between the arch of the aorta, and right pulmonary artery, is united in the cardiac plexus.
 22. Ramulus of the nervus recurrens of the eighth pair, which running along the right side of the arteria innominata and aorta, tends downwards, and is inserted into No. 17.
 23. Nervus recurrens of the eighth pair.
 24. Inferior part of the nervus vagus, which, sending off the recurrent to the larynx, ascends to the posterior surface of the lungs.
 25. 26. Ganglia thoracica.—25. The first, or greater.
 26. The second, or smaller ganglion.
 27. 28. 29. Constrictor muscles of the pharynx. 27. Superior. 28. Medius. 29. Inferior.
 30. Ramulus of the fifth pair of cervical nerves.
 31. A smaller branch of the sixth pair.
 32. Ramus, formed from No. 30 and 31, running to the thoracic ganglion.
 33. Ramus of the seventh nerve of cervicals, carried to the same.
 34. Second dorsal nerve.
 35. Ramulus of the same, communicating with the first thoracic ganglion.

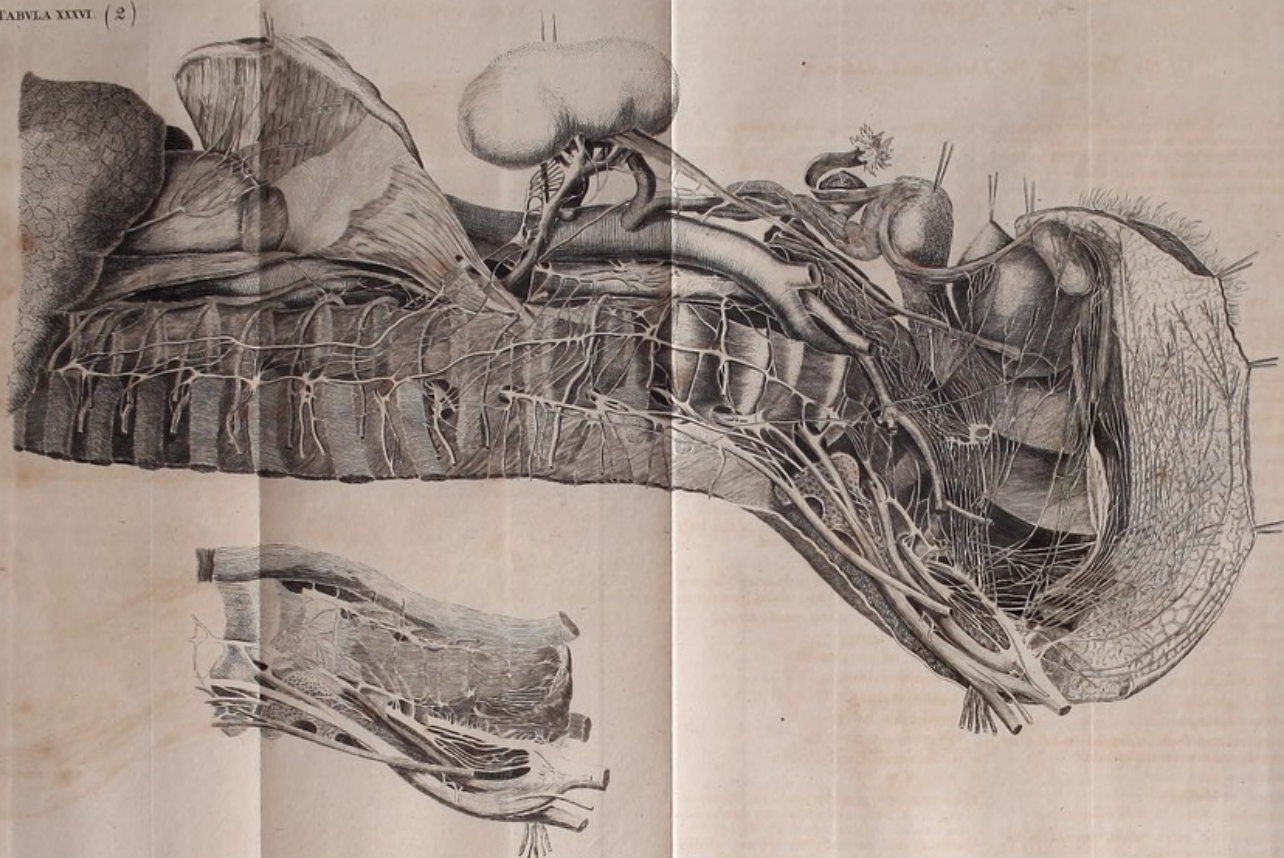
Figure IV.

THE BODY OF AN ADULT DISSECTED, AND PLACED NEARLY IN THE SAME POINT OF VIEW AS FIG. I. IN THIS PLATE, EXHIBITS THE FOLLOWING APPEARANCES:—

- A. Radix of the mammillary process cut off.
- B. Root of the processus styli-formis, also cut off.
- C. Osseus meatus auditorius.
- D. Condylloid process of the inferior maxilla.
- E. Angle of the same maxilla.
- F. The lateral rectus muscle of the head.
- G. Transverse process of the first vertebra of the neck.
- H. Part of the inferior oblique muscle of the head.
- I. Part of the levator scapulæ.
- K. Musculus rectus internus major of the head.
- L. L. ———— scalenus prior.
- M. Part of the first rib.
- N. Anterior ramus of the first pair of cervical nerves.
- O. ———— ———— ———— second pair of cervicals.
- P. Trunk of the third pair of cervicals.
- Q. Of the fourth pair of cervical nerves.
- R. The diaphragmatic, or phrenic nerve.
- S. Fifth pair of cervical nerves.
- T. Sixth pair of cervical nerves.
- V. Combination of the fifth and sixth pair.
- W. Seventh pair of cervical nerves.
- X. Eighth pair of cervical nerves.
- Y. First pair of dorsal nerves.
 - a. Ramus of the intercostal nerve, which descends above the external surface of the carotis cerebialis, through the foramen caroticum.
 - b. Another ramus, running above the internal surface of the same artery.
- c. d. Ganglion cervicale superius, which, in this body, forms two protuberances.—c. The superior. d. The inferior.
- f. g. Three ramuli, running from the anterior ramus of the first pair of cervicals to that ganglion.
- h. i. Two ramuli of the anterior ramus of the second pair, which uniting, form
 - k. Nerve, inserted into the inferior protuberance of the superior cervical ganglion.
- l. m. Two nervi molles, running from the superior protuberance of the ganglion.
 - n. Third nervus mollis, arising from the same place, but a little lower, which runs downwards to the superficial cardiac nerve.
 - o. Another, and firmer ramulus, forming the superficial cardiac nerve, arising from the lowest and anterior part of the inferior protuberance.
- p. Conjunction of the same with ramulus mollis, lit. n.
- q. q. Part of the intercostal nerve, placed between the superior and middle cervical ganglion.
- r. s. Two ramuli of the same, running to the superficial cardiac nerve.
- t. t. Further progress of the superior cardiac nerve.
 - u. Surculus of the same, running to nerve, lit. τ.
 - v. Another surculus of the cardiacus superficialis, going to the left side of the arteria innominata.
- w. x. Two other surculi of the same nerve, to be dispersed in the exterior surface of the arteria innominata and aorta.
- y. Insertion of the surculus of the anterior ramus of the second pair, lit. o, into the nervus intercostalis lit. q. q.
- z. Ganglion cervicale medium, conspicuous in this subject.
- α. β. Two rami of the fourth pair, passing behind the rectus anticus major muscle of the head to the ganglion medium.
- γ. Third ramulus of the fourth, running above the inferior part of the mentioned muscle to the same ganglion.
- δ. ε. First and second surculus of ganglion, lit. z, which, in descending, unite, and form the branch marked ζ.
- η. Third ramulus of the ganglion.
- θ θ. Surculus of the same, going to the ramulus of the first thoracic ganglion, No. 15, 17, almost in a direct line.
- λ. Fourth ramulus of the ganglion cervicale medium.
- μ. Place where ramuli ξ, η, and λ, converging, meet
- ξ. Nerve, arising from the assemblage of those ramuli, ξ, η, and λ.
- π. ρ. Two rami of the same.—π. Anterior. ρ. Posterior.
- ς. Another conjunction of the anterior and posterior ramus.
- τ. Surculus from the anterior ramus, carried downwards.
- φ. Insertion of the same into ramus, lit. ψ.
- ↓ ↓ ↓. Ramus, from combination, lit. σ, running a little forwards.
- ω. Insertion of ramulus, No. 9, of ganglion cervicale inferior, into this ramus.
 - 1. Combination of ramulus, No. 17, with nerve, lit. ψ.
 - 2. Further descent of ramus, lit. ψ, after having received several additions.
 - 3. Ganglion cervicale inferius.
 - 4. Ramus

4. Ramus of the fifth pair of cervicals, which, in descending, is divided into two.
5. Superior ramulus of the same, entering the middle and posterior part of ganglion, No. 3.
6. Inferior ramulus, No. 4.
7. Ramulus of the phrenic nerve.
8. Nerve, arising from the confluence of ramuli, No. 6 and 7, to be inserted into the inferior region of ganglion, No. 3.
9. Ramulus of the ganglion cervicale inferius, leading to nerve, lit. ψ .
10. Ramulus profundus of ganglion, No. 3, going to the first thoracic ganglion.
11. 12. 13. Ramus of the inferior cervical ganglion, forming an anse around the subclavian artery. 12. Incurvated direction of the same towards the superior parts. 13. Insertion into the first thoracic ganglion.
14. Ganglion thoracicum primum.
15. First and superior ramulus of the same.
16. Surculus, going to the second ramus of the first thoracic ganglion, No. 18.
17. The remaining part of ramus, No. 15, which, upon receiving ramulus, lit. θ , runs to the nerve, lit. ψ , into which it is inserted under No. 1.
18. Second, and inferior ramus of the first thoracic ganglion.
19. Combination of the same with ramulus, No. 16.
20. Ramus of the sixth pair of cervical nerves, tending to the ganglion thoracicum magnum.
21. Ramus of the seventh pair, going to the same ganglion.
22. Ramus communis of both No. 20 and 21, to be inserted into the superior apex of the above ganglion.
23. Ramulus of the eighth pair of cervicals passing to this thoracic ganglion.
24. 25. Two ramuli of the first pair of dorsals also entering that ganglion.
26. Nervus intercostalis thoracicus, going downwards from the first thoracic ganglion.
27. Ramulus of the nervus recurrens of the eighth pair.
28. Insertion of the same into ramulus, No. 18, 19.

TABULA XXVI. (2)



Schole et Medicina a Col. Newby.

PLATE XXXVI.

Of the Nerves of the Thorax and Abdomen.

This figure represents, not only the intercostal nerve from the sixth rib to the third vertebra of the os-sacrum, in the right side: and also, the sixth inferior costal, lumbar, and sacral nerves. The os-ili, ischium, and pubis are removed, that their parts, situated in the cavity of the pelvis, and the nerves passing to them may be seen.

6. 7. 8. 9. 10. 11. 12. Six inferior ribs, of which each is marked by its number.

VI. VII. VIII. IX. X. XI. XII. Six inferior dorsal vertebrae.

I. II. III. IV. V. The false vertebrae of the os-sacrum.

I. First false vertebra of the os-sacrum.

A. Lateral part of the first false, and second vertebra of the os-sacrum, cut with a saw almost to the foramina, from which the first and second sacral nerves go out.

B. Cartilage of the os-pubis of the left side s.

C. Transverse process of the first vertebra of the loins.

D. Transverse process of the second lumbar vertebra.

E. Transverse process of the third lumbar vertebra.

F. Transverse process of the fourth lumbar vertebra.

G. Transverse process of the fifth lumbar vertebra.

a. Inferior lobe of the right lung.

b b b. The remaining portion of the plura, forming the posterior mediastinum.

c c c c. Ductus thoracicus, drawn a little from its natural situation between the vena azygos and aorta.

d d. Pericardium, inclosing the heart.

f. Inferior vena cava, entering the cavity of the thorax, through the right foramen of the diaphragm.

g g g. Diaphragm, separated from the ribs.

h. External crus of the diaphragm.

i. Middle crus of the diaphragm.

k. Internal crus of the diaphragm.

ll. Right kidney, so removed from its natural situation as to be drawn upwards, and towards the left side.

m m m. The ureter.

n n n. Vesica urinaria, or bladder.

o o o. Intestinum rectum.

Δ Δ. Inferior portion of the colon, which terminates its flexure, called Roman, or Sigmoid.

p p. Levator ani muscle.

* * Spinoso-dexter, and spinoso-coccygeus muscles.

q. Ligamentum spinoso-sacrum.

r r. The uterus drawn up, and to the left.

s s s. The vagina.

t t t. The round ligament of the uterus.

v v v. The Fallopian tube.

w. The ovarium.

x x. Corpus cavernosum of the clitoris with the levator muscle of the clitoris adhering to it.

H H H H. Skin of the nates and perinaeum.

I I. Skin covering the internal surface of the thighs, and the external pudenda.

K. Skin of the mons veneris.

L L. Labia pudendorum majora.

M M M. Vena cava placed without its natural situation, viz. upwards, and on the left.

N. The right iliac vein cut off.

O. Left iliac vein.

P. Common trunk of the right renal vein, Q; and of the right spermatic vein, R.

S S S S. The aorta.

T T T T T. The intercostal arteries from the aorta.—The last of these runs under the eleventh rib.

V V V V V. Lumbar arteries. Six in this body arise from the aorta; but the last is omitted.

X X. Arteria renalis.

α α. Internal superior spermatic artery, between two renal arteries, viz. right and left, arising from the aorta.

β β. The internal inferior spermatic artery.

Y. Right iliac artery.

Z. Right crural artery cut off.

γ. Hypogastric artery.

δ. Ileo-lumbar artery.

ε. Posterior iliac artery.

ζ. The common trunk of the

η. Ischiatic arteries, and common

θ. Pudenda.

The remaining hypogastric rami, viz. The umbilical, uterine, vaginal, middle, and obturatory hæmorrhoid artery, on account of the situation of the hypogastric artery being altered, and especially on account of the number of nerves, could not be well demonstrated.

1. The phrenic nerve.

2. 3. 4. 5. 13. 14. 15. 16. Rami of the phrenic nerve, distributed in the convex surface of the diaphragm.

R

17. Ramus

17. Ramus anastomoticus of the phrenic nerve, with one or more phrenic ramuli coming from the celiac ganglion of the intercostal nerve. This anastomosing branch penetrates through the small foramen of the diaphragm to the right side of the foramen of the vena cava.
- Plate XXXVII. 50. 50. Exhibits the entrance into the cavity of the abdomen, and its further conjunction.
18. Sixth nervus intercostalis. It must be observed of this, and all the subsequent dorsal lumbar, and sacral nerves, that they are anterior branches.
19. Seventh intercostal nerve.
20. Eighth _____
21. Ninth _____
22. Tenth _____
23. Eleventh _____
24. Twelfth.
25. Anterior ramus of the first pair of lumbar nerves.
26. _____ second pair _____
27. _____ third pair _____
28. _____ fourth pair _____
29. _____ fifth pair _____
30. _____ first sacral nerve.
31. _____ second _____
32. _____ third _____
33. _____ fourth _____
34. _____ fifth sacral nerve going out of its foramen.
35. Trunk of the intercostal nerve, intercepted between the fifth and sixth dorsal ganglion.
36. Sixth thoracic ganglion of the great sympathetic nerve, or of the intercostal nerve, properly so called.
37. Radix simplex of this ganglion, arising from the anterior costal ramus.
38. Anastomosis of the fifth costal nerve with the sixth.
39. Seventh thoracic ganglion.
40. 41. Its radius, running into one before they compose the seventh ganglion.
42. An anastomosing nerve between the sixth and seventh thoracic ganglion, or trunk of the great sympathetic nerve.
43. Eighth thoracic ganglion.
44. 45. 46. Three radices, arising from the twentieth nerve, forming a ganglion.
47. Trunk of the intercostal nerve, or nervus anastomoticus, between the seventh and eighth ganglion.
48. Ninth thoracic ganglion.
49. 50. Two radices of this ganglion from nerve twenty-one.
51. Trunk of the intercostal nerve, or anastomosis, between the eighth and ninth thoracic ganglion.
52. Tenth thoracic ganglion.
53. Radix simplex of this ganglion, arising from the twenty-second costal nerve.
54. Trunk of the intercostal nerve, or nervus anastomoticus, between the ninth and tenth ganglion.
55. Eleventh thoracic ganglion.
56. Radix simplex, which nerve, 23, sends to this ganglion.
57. Trunk of the sympathetic nerve, or the nervus anastomoticus, between the eleventh and twelfth thoracic ganglion.
58. Surculus of the tenth intercostal ganglion, situated on the intercostal muscles.
59. Ramus, by which nerve, 22, which is bifid, is joined with the anterior costal nerve, 23.
60. Ramus muscularis, distributed on the intercostal muscles.
61. First lumbar ganglion of the great sympathetic nerve.
62. Trunk of the sympathetic nerve, or anastomosing nerve of this ganglion with the eleventh thoracic ganglion.
63. First radix.
64. Second radix, which also arises from the anterior ramus of the twenty-fourth nerve, and runs into the first lumbar ganglion.
65. 65. Third radix, terminated in the trunk of the sympathetic nerve, or in the anastomosis nerve, between the first and second lumbar ganglion.
66. Radix, running from the twenty-fifth nerve to the first lumbar ganglion, in its origin simplex, then bifid; but, of which
67. Interior surculus, partly terminates in the lumbar ganglion, partly by the following,
68. 68. Is distributed on the ligaments of the vertebræ.
69. 69. The anastomotus nerve, between the first and second lumbar ganglion, or the great sympathetic nerve, receives the exterior surculus, before it sends off
70. A surculus to the ligaments of the vertebræ.
70. Trunk of the great sympathetic nerve, or nervus anastomoticus between the first lumbar, 61, and second.
71. Anastomosis, by which nerve, 23, is joined with 24; from this anastomosis arise surculi,
72. & 73. Which are terminated in the transverse muscle of the abdomen.
74. Anastomosis, which joins the trunk of the nervus sympathicus magnus, 62, with nerve 24.
75. Surculus muscularis of muscular nerve, 24, terminated in the transverse muscle of the abdomen.
76. Posterior ramus of the last costal, or twelfth nerve, which runs to the dorsal muscles.
77. Anastomosis, between the last costal, and the first lumbar nerve.
78. Second lumbar ganglion.
79. First radix,
80. Second radix, which nerve 25 sends to this ganglion.
81. 81. Radix, arising from the anastomotus nerve, between the first lumbar nerve and ganglion singulare of the second lumbar





lumbar nerve, which, in its origin, is bicurated, then becomes single, and is inosculated into the trunk of the great sympathetic nerve.

82. 83. 84. Muscular rami, which run to the abdominal muscles.

85. Ramulus cutaneus, which is terminated in the supreme, and middle skin of the anterior surface of the femur, which covers the inguinal glands.

86. 87. External spermatic nerve, dividing into two ramuli, internal and external.

88. Ramus internus.

89. 90. Is bifid, and its surculi with the round ligament of the uterus, or rather the external, accompanying spermatic artery of the ligamentum rotundum, are carried to the uterus.

91. External ramus of the external spermatic nerve, is cutaneous, and runs with the ligamentum rotundum of the uterus through the ring of the abdomen, and dividing with many surculi,

92. 93. 94. 95. Is distributed in the cutis of the mons veneris.

96. Anastomosis of the first lumbar nerve with the ganglion, singulare of the second lumbar nerve.

97. 97. Surculus nervosus, terminating in the integuments of the vertebrae.

98. Third lumbar ganglion.

99. Trunk of the great sympathetic nerve, or nervus anastomoticus, between the second and third lumbar ganglion.

100. Radix, sent by the second lumbar nerve to the ganglion 98.

101. Anastomosing branch, between the ganglion, singulare of the second lumbar nerve, and trunk of the great sympathetic nerve.

102. 102. Anastomosing branch, between ganglion, singulare of the second lumbar nerve, and second lumbar ganglion.

103. Surculus of this radix anastomosis, which runs to the muscular coat of the intercostal artery.

104. Ganglion singulare of the second lumbar nerve, 26.

105. to 109. Surculi musculares, arising from this ganglion, running to the quadratus lumborum, posas major, minor, and to the abdominal muscles.

110. Posterior ramus of the second lumbar nerve, which goes to the dorsal muscles.

111. Anastomosis, between the second and third lumbar nerve.

112. Radix superior, coming from the lumbar nerve, 26.

113. Radix inferior, from the ganglion of the lumbar nerve, by which anastomosis, 111, is composed.

114. 115. Muscular ramuli, migrating to the psoas major.

116. Fourth lumbar ganglion.

117. Trunk of the great sympathetic nerve, or nervus anastomoticus, between the third, No. 27, and fourth, No. 28, lumbar nerves.

118. 119. Two radices, running into,

120. By which the trunk of the great sympathetic nerve, No. 117, is joined with the lumbar nerve, 27.

121. Anastomosing branch of nerve 27, with the trunk of nerve 117.

122. 123. A nervous surculus, passing to the ligaments of the vertebrae.

124. 125. Two anastomosing branches of nerve, 28, united almost in the middle of its course into the ganglion intermedium;

126. But then again

127. 128. Dividing into two radices, which are united with the fourth lumbar ganglion, 116.

129. 130. Trunk of the great sympathetic nerve, or anastomosing branch, between the fourth and fifth lumbar ganglion.

131. First radix anastomotica.

132. Second radix anastomotica of nerve, 28, with 129, and 130.

133. The crural nerve,

134. Origin, or first radix of the crural nerve from anastomosis, between the second and third, No. 111, lumbar nerve.

135. Origin, or second thick radix of the crural nerve, from the anterior ramus of the third, No. 27, lumbar nerve.

136. Posterior ramus of the third lumbar nerve.

137. Origin, or third radix of the crural nerve, from the fourth lumbar nerve.

138. Posterior ramus of the fourth lumbar nerve.

139. Anastomosis, between second and third radix of crural nerve.

140. 141. Cutaneous surculi of the crural nerve.

142. The obturator nerve.

143. Origin, or first radix of the obturator nerve, from nerve 111.

144. to 146. Origin, or second radix of the obturator nerve, composed of three raduli from the third lumbar nerve.

147. Third radix from the fourth pair of lumbar nerves.

148. Fifth lumbar ganglion.

149. A communicating trunk of the fourth lumbar nerve, 29, with the trunk of the great sympathetic nerve, 130.

150. Radix of the fifth lumbar nerve passing to the fourth lumbar ganglion.

151. to 154. Four anastomosing trunks, arising from the last lumbar ganglion, which coalesce

155. 156. Into the first radix, communicating with the first sacral nerve, 30, which perform the office of the trunk of the great sympathetic nerve, on the right side, 151, to 154.

157. Second sacral ganglion.

158. Trunk of the great sympathetic nerve, or anastomosing nerve, between the first and second sacral ganglion.

159. Second

159. Second thick radix of the first sacral nerve, communicating with the trunk of the great sympathetic nerve, 158. The first communicating radix, 155, and 156, must be considered only as the first sacral ganglion. The second figure shews the usual form and connections of the first sacral ganglion on the left side.
160. Anastomosis, between the first, 156, and second radix of the first sacral nerve.
161. 162. 163. Three radices, arising from the second sacral pair, and going to the second, 157, sacral ganglion.
164. Trunk of the great sympathetic nerve, or nervus anastomoticus, between the second sacral ganglion, No. 157, where it is simple, and the third sacral ganglion, which, in the first figure, could not be represented, but is well expressed in the second figure, 33, where the trunk of the sympathetic nerve, 164, is intercepted between 157, and 38. This anastomosing nerve is divided into two rami, inserted into the second sacral ganglion.
165. The internal, and
166. The external.
167. Radix of the second sacral nerve, communicating with nerve, 164, which almost represents the figure of the ganglion.
168. 168. First radix of the third sacral nerve, communicating with nerve, 166.
170. Surculus of ganglion, 36, of the great sympathetic nerve, which
171. Runs with the very minute ramulus to the ligaments of the vertebræ.
172. 173. Ramuli of surculus, 170, dispersed in the muscular, covering of the aorta.
174. to 177. Trunk of the visceral nerves.
178. 179. Origin, or radices of those nerves, from the thoracic ganglion, 36.
180. Surculus, which the visceral nerve distributes to the muscular membrane of the aorta.
181. 182. Origin, or radices of the latter nerve, of which one, 181, arises from the trunk of the great sympathetic. The other, No. 182, from ganglion 39.—After these radices have united into one trunk, they again divide into two, of which one
184. Is inserted into the visceral:
185. The other radix is inosculated into the third radix of that nerve.
186. 187. Third origin, or radix of the bicrural visceral nerve. They run into
188. One radix, which anastomosing with radix, 185, passes to the trunk of the visceral nerve.
189. 190. Two surculi.
191. to 194. Division of the trunk of the visceral nerve into 4 rami.—That takes place when the latter nerve penetrates with its trunk through the hiatus, between the crura of the diaphragm, lit. h and i, into the cavity of the abdomen. After this division, a ramus becomes radix of the semilunar ganglion, or plexus semilunaris, as we shall see in the following Plate.—In this figure, the elegant distribution of the visceral nerve, on account of the diaphragm with the abdominal part, drawn towards the upper and left side, could not be described in its natural situation.
195. Surculus of ganglion 48, passing to
196. 197. Ligaments of the vertebræ, and
198. To the intercostal artery.
199. 200. Surculi of the aortic ganglion, 48.
201. 202. Surculi of the aortic ganglion, 52, after having made frequent anastomoses with the aortic surculi, 199, 200, are all
203. Collected into one nerve, which
- 204 to 211. Send surculi to the muscular coat of the aorta.
212. First radix of the second visceral nerve, or accessorius coming from the thoracic ganglion, 48.
213. Second radix of that nerve, arising from the thoracic ganglion, 52.
214. 215. Trunk of the accessorius, which passes through the hiatus, between the crura of the diaphragm, h and i, a little more externally and inferiorly than the larger visceral nerve, No. 174 to 177, migrates to the cavity of the abdomen, and immediately divided into two rami, the superior and inferior.
216. Superior, is joined with ramus, 194, of the larger visceral.
217. Inferior migrates, not only to the semilunary ganglion of the great sympathetic nerve, but also is joined with surculus, coming from the second renal plexus, 233—as may be better seen from Plate XXXVII.
218. 219. The superior aortic surculus, arising from ganglion, 52.
220. 221. The inferior aortic surculus, arising from the same ganglion, 52.
222. Ramulus, of the superior surculus to the aorta.
223. Conjunction of the superior surculus with the inferior surculus. From this ramus arise
- 224 to 227. Ramuli, distributed on the aorta.
228. Ramus, joined with ramulus, 200.
- 229 to 231. Are anastomosing branches with ramuli coming from 62.
232. Surculus of ramulus, 230, migrating to the aorta.
233. 233. Superior radix of the posterior superior renal nerve, taking its origin from ganglion, 52.
234. 234. Inferior radix of the superior posterior renal nerve.
235. 235. 235. Ramus, which the trunk of the great sympathetic nerve, 62, sends to the muscular membrane of the aorta.
236. Anastomosis, with the inferior radix of the posterior superior renal nerve.
237. Anastomosis, with ramus, 229.
239. 239. 239. Trunk of the posterior superior renal nerve formed from radices, 233, 234.

240. Anastomosis of the posterior superior renal nerve, with nerve, 262, and nerve, 263.—We shall see this anastomosis better expressed in Plate XXXVII.
241. Anastomosis of nerve, 239, with the inferior posterior renal nerve, 239, coming from nervus anastomosis, 62.
242. 242. Posterior inferior renal nerve, arising from the trunk of the great sympathetic nerve, 62.
243. 243. Ramus anastomoticus of the inferior posterior renal nerve, with nerve 239, 241.
244. Anastomosis of the inferior posterior renal nerve with the first renal ganglion, 252.
245. 245. Conjunction of the posterior superior with the posterior inferior renal nerve into one common trunk.—This common trunk is joined with
246. 247. The second renal ganglion, 253, then disperses,
248. 248. Surculi, to the renal artery, in its further progress on the posterior surface of the artery.—The root is divided into three rami: viz.
249. 250. Two rami anastomotici with surculi, coming from the renal ganglion; and
251. 251. A third, which is terminated on the posterior surface of that renal artery in the muscular membrane.
252. First right renal ganglion.
253. Second.
254. Third.
255. Fourth.
256. Anastomosing nerve, between the first and second ganglion.
257. Anastomosing nerve, between the first and third ganglion.
259. Anastomosis, between the second and fourth renal ganglion.
260. Anastomosing nerve, between nerve 257, and 258.
261. Anastomosis of the third with the fourth renal ganglion.
262. Anastomosis of the third renal ganglion with nerve 240.
263. Anastomosis, between the fourth renal ganglion, and posterior renal ramus, 240.
264. Anastomosing ramus, between the second right renal ganglion, Plate XXXVII. 253; and first cœliac ganglion, Plate XXXVII. 1.—When the second renal ganglion gives the above-mentioned rami, it is changed into
265. A long, and sufficiently thick renal anterior nerve, from which arises
266. A bifid ramus; of this,
267. One surculus is distributed on the posterior surface of the renal artery.
268. The other is larger, and anastomosing with nerve 249.—The remaining trunk of the anterior renal nerve gives on the anterior surface of the renal artery.
269. An internal superior spermatic nerve, from which arise three rami.
270. 270. 270. The first ramus migrates to the renal artery, and immediately
271. 271. 272. Dividing into two, or other rami, passes to the posterior surface of the renal capsule, where
273. 273. 273. It terminates in the vascular substance of the kidney.
274. Second ramus, anastomosing with nerve, 250.
275. &c. &c. Third ramus of the superior spermatic nerve, is spermatic, strictly so called.—This ramus passes as rami, 273 and 274, before the renal artery, then descending a little is joined with
276. A ramus of the anterior renal nerve, sends
277. to 279. Surculi, which, after having anastomosed with 279, run with the renal arteries to the anterior surface of the capsule.—It also distributes
281. 281. 282. Superior ureteric nerves, which are terminated in the internal, or nervous membrane of the ureter.—Now the internal superior spermaticus
283. 283. Forms an elegant anastomosis, which running down in a transverse direction, before the vena cava enters the internal superior spermatic with the first inferior spermatic: at length the internal superior spermatic nerve, accompanied by the spermatic artery, runs down to the uterus; the further progress of which, on account of its minuteness, could not be represented.
284. 284. 284. Third ramus of the anterior renal nerve, 265, runs down before the renal artery, gives a ramus anastomosis with internal superior spermatic nerve, 276, exhibits
285. A surculus to the renal pelvis, and terminates with rami of the renal artery in the kidney.
286. Fourth ramus of the anterior renal nerve is divided into three.
287. to 289. Rami, which run with the rami of the renal artery to the kidney; of which the one that is marked, 288,
290. Anastomoses with 271.
291. 291. Fourth ramus of the posterior renal nerve, runs down as the others, with the rami of the renal artery.
292. First right spermatic ganglion.
293. Second —————
294. to 296. Nerve, anastomosing between the first renal ganglion, 252, and first right spermatic ganglion.—On account of the elegant figure of the laqueus, or nervous ansa, which comprehends the right inferior spermatic artery: it should be called Ansa Spermatica.
297. 297. First anastomosing branch of the great sympathetic nerve with the nervus anastomoticus.
298. 298. Second anastomosing branch, between the great sympathetic nerve, and ansa spermatica.
299. 299. Conjunction of the second lumbar ganglion, 78, of the sympathetic nerve with nerve 298.
300. 301. Third radix anastomotica of the great sympathetic nerve, with the ansa spermatica.
302. Conjunction of nerve, 299, with 300.
- S
303. 303.

303. 303. *Ramus aorticus* of the second lumbar ganglion of the great sympathetic nerve, 78.
304. 304. First right internal inferior spermatic nerve, arising from the second spermatic ganglion, and joining with the right internal superior spermatic nerve, 283.
305. &c. Second inferior internal spermatic nerve, arising from the second spermatic ganglion, and running down to the uterus, accompanied by the internal spermatic artery.
306. Anastomosing nerve, cut off with the spermatic renal ganglion of the left side.
307. 307. Anastomosing nerve, sent out by the first right spermatic ganglion, 292, with rami of the first superior mesenteric plexus.
308. First anastomosis, between the first and second spermatic ganglion.
309. Second anastomosis, between the first and second spermatic ganglion.
310. 310. Conjunction of nerve, 308, with the nerve which composes the hypogastric plexus, 329, &c.
311. 312. 313. Inferior mesenteric rami, which
314. Compose the inferior mesenteric plexus.
315. Ramus of the third radix coming from nerves 301, and 310, increases the mesenteric plexus.
316. First accessory lumbar ganglion.
317. Second —————
318. Anastomosis of the first accessory lumbar ganglion, with ganglion, 78.
319. Interlumbar ramus of ganglion, 316, to the muscular tunic of the artery.
320. *Ramus aorticus* of ganglion, 316.
321. 321. Anastomosis of the first accessory lumbar ganglion, with the third lumbar ganglion, 98.
- 322, &c. *Ramus hypogastricus* of the first lumbar accessory ganglion, which composes the hypogastric plexus.
3. *Ramus*, which *nervus*, 322, anastomoticus sends off, by which the sympathetic nerve of the right side, behind the aorta, a little above the origin of the inferior mesenteric artery, is joined with the sympathetic nerve of the left side, as Plate XXXVIII. will more clearly elucidate.
323. *Surculus* of the hypogastric ramus, passing into the interlumbar artery.
324. 324. Anastomosis of the hypogastric ramus, with nerve, 117.—From this anastomosis, arises
325. A *surculus*, running to the muscular tunic of the interlumbar artery.
326. 326. Anastomosis of the second accessory lumbar ganglion with nerve 300.
327. 327. Anastomosis of the second accessory lumbar ganglion, with the trunk of the great sympathetic nerve, 99.
328. *Ramus hypogastricus* of the second accessory lumbar ganglion.
- 329, &c. &c. *Ramus hypogastricus* of the third radix of the sympathetic nerve, 300, which forms the hypogastric plexus.
330. Internal ramus of the hypogastric nerve.
331. Anastomosis of it, with nerve 329.
332. Anastomosis of the internal ramus, 330, with 315.—We shall see the further progress of this nerve better represented in Plate XXXVII.
333. External ramus of nerve, 328.
334. to 336. Anastomosis of the external ramus with nerve, 329.
337. Ramus cut off, which anastomoses with rami, constituting the inferior mesenteric and hypogastric plexus, as Plate XXXVII. will demonstrate.
338. *Ramus hypogastricus* of the third lumbar ganglion, 98.
339. 339. Anastomosis of this nerve, with nerve, 333.
340. *Surculus arteriosus* of nerve, 338, passing into membrane of the iliac artery.
341. Arterial, or anterior ramus of the hypogastric nerve, 338.
342. Ramus, migrating to the muscular membrane of the crural artery.
343. Ramus, going to the muscular membrane of the hypogastric artery.
344. Posterior, or anastomotus ramus of nerve, 338, with the trunk of the great sympathetic nerve.
345. 345. Radices, arising from the trunk of the great sympathetic nerve, 129, 130, which compose
346. 347. The communicating nerve, which the sympathetic nerve of the right side, between the fourth and fifth vertebra of loins behind the iliac arteries, is joined with the great sympathetic nerve of the left side, as we shall see better in Plate XXXVII. and Plate XXXVIII.
348. to 350. Radices, arising from the fifth lumbar ganglion, which
351. Run into one nerve, anastomosing with the trunk of the great sympathetic nerve of the left side, and which is joined by an elegant anastomosis, with the trunk of the great sympathetic nerve of the left side.—Plate XXXVI. Fig. II. 3.—and Plate XXXVIII. 351.
352. *Ramus anastomotus* of nerve, 159,
353. 353. Dividing into two rami; at length is joined into one trunk, from which
354. 355. Two anastomoses run out with nerve, 358.
356. The remaining trunk of nerve, 352, cut off: it is inserted into the first sacral ganglion of the left side.
357. Ramus, arising from nerve, 154, which disperses *surculi* to the muscular membrane of the rami of the hypogastric artery.
358. 358. Anastomosis, between nerves, 348, 349, 350, and 354, 355.—From this anastomosis, runs
359. A *surculus*, communicating with nerve, 154.
360. Bifurcated *surculus* of nerve, 358, of which
361. The first crus is inserted into nerve, 154; 36. the other inosculated into nerve, 155.
363. 363. Ramus, arising from nerve 358, and anastomotus, with the first sacral ganglion of the left side, Fig. II.
364. 364.

364. 364. Nervus, communicating with the first sacral ganglion of the left side, sent out by ganglion, 157.
365. 365. Ramulus, distributed in the intestinum rectum; and on account of the reclinatation of the intestinum rectum, cut off on the left side of the body.
366. 366. Ramus, of the second sacral ganglion, 157, migrating to that surface of the intestinum rectum, which looks towards the os-sacrum.
367. Anostomosis, between ramus, 364, and 366.
368. 368. Surculus, arising from nerve, 164, and inserted into nerve, 366.
369. 369. Ramus, arising from nerve, 165, which forms an union with the trunk of the great sympathetic nerve of the left side.—This inosculatation is well expressed in Figure II.
370. Anastomosis, between nerve, 368, and 369.
371. Conjunction of nerve, 165, and 370.
372. —————, 165, and 369.
373. 374. 376. Radices of the fourth and fifth lumbar nerves, which compose
377. Nervus muscularis, running to the gluteus medius; especially to the gluteus minimus, and tensor of the fascia lata.
378. Ramus muscularis, running to the musculus pyramidalis.
379. Ramus muscularis to the gluteus medius.
380. 380. Nervus cutaneus gluteus inferior, which descends to the knee, even to the suræ, or calves of the legs.
381. Ramus muscularis, which sends rami to the musculus geminus superior, obturator internus, geminus inferior, and quadratus femoris.
382. 383. 384. Rami, inserted into the musculus gluteus maximus.
385. Inferior trunk of the nervus cutaneus of the nates, dividing into two rami.
386. Superior ramus of the inferior cutaneous nerve of the nates, after giving many surculi to the cutis natiæ, is terminated in that region of the cutis, where the gluteus maximus is inserted into the os-femoris.
387. Inferior ramus of nerve, 385, is terminated in almost the same region of the cutis, as the superior, after sending out very numerous surculi.
388. 389. 390. Trunk, or plexus, so called, of the ischiatic nerve, composed of the first, second, third, fourth, and fifth sacral nerve.
391. Ramus major of the ischiatic nerve.
392. Ramus minor of the ischiatic nerve.
393. 393. First anastomosis, between the second and third sacral nerve.
394. 394. Second anastomosis, between the second and third sacral nerve.
395. 395. Third anastomosis, and
396. 396. First radix, which the ischiatic nerves receive from the second sacral nerve.
397. and to 398. Second and third radix of the second sacral nerve, which
399. Run into one thick one, and are terminated in the trunk of the ischiatic nerve, 388.
400. &c. &c. Nervus cutaneus medius of the nates, arising from the second radix of the ischiatic nerve, 397, and terminating in the middle cutis of the nates.
401. and 402. Radices, arising from nerve, 396, 396, which,
403. With the accompanying surculus, coming from nerve, 400, constitute
404. 404. 404. The nervus cutaneus superior of the nates, distributed on the cutis, covering the glutæi muscles.
405. &c. &c. First ramus hypogastricus, which gives the third pair of sacral nerves to compose the hypogastric plexus, from which arise the nerves of the vesica, vagina, uterus, and intestinum rectum.
406. &c. &c. Second ramus hypogastricus of the third sacral nerve.
407. 407. Third ramus hypogastricus.
408. 409. Fourth and fifth ramus hypogastricus, which
410. Run into one nerve.
411. Sixth ramus hypogastricus, of the sixth ramus hypogastricus intestinalis, running to the intestinum rectum.
412. 412. &c. Seventh ramus hypogastricus of the third sacral nerve, which disperses
413. 414. 415. The lateral ramus, going to the vagina and vesica urinaria, and communicating with a ramus of plexus, Σ .
416. Eighth ramus hypogastricus.
417. 418. Ninth and tenth ramus hypogastricus of the third sacral nerve, joined into one nerve; they sent three surculi.
419. A ramus to plexus Σ .
420. Intestinal surculus to the rectum.
421. 421. 421. An elegant ramus, communicating with the uterine nerve; also with plexus Σ .
422. 422. Trunk of the fourth pair of sacral nerves.
423. 423. Ramus hypogastricus of the fourth sacral pair.
424. 424. Ramus intestinalis of nerve, 422, going to the intestinum rectum.
425. 426. 426. Ramus of the fourth vaginal sacral nerve.
427. 427. Ramus of the third sacral nerve, making many anastomoses with the fourth sacral nerve.
- Σ . A remarkable, and the largest of all, or first plexus hypogastricus, composed from rami of the third and fourth sacral nerve.
- Ω . Minor, or second plexus hypogastricus.
- ϕ . Third plexus hypogastricus, formed like a net-work.
- ψ . Fourth plexus hypogastricus; also reticular.
428. to 437. Are nerves, arising from the hypogastric plexus, Σ , of the vesica urinaria.
438. &c. &c. Ramus of the plexus, Σ , of the urinary bladder.
439. Ramus of plexus Σ , which sends
440. to 442. Surculi to the vagina, is divided into two rami,
443. Into

443. Into the anastomosing branch, and
444. 445. Into the ramus vesicalis, which is distributed on the vesica urinaria.
446. A small plexus, is composed of plexus, Σ , and from rami, 421, and 415, from which
447. A ramus runs to the vagina.
448. Another, forming an island.
449. Both thus united, emit
450. 450. 450. Vaginal ramuli, and
451. to 454. Vesical rami, of which the one, 453, is joined by an elegant anastomosis with 443.
455. to 460. Nerves of the uterus, arising from plexus, Ψ . These very minute nerves run to the cervix and os-uterus, where they disappear.—Between the two plexus, Σ and Ψ , is the intermedius, &c. Now the hypogastric plexus, 88, ascends to the side of the intestinum rectum: in this course the hypogastric plexus, emits few surculi, unless
461. A surculus, distributed on the intestinum rectum, and
462. to 464. Surculi to the ureter.—When the hypogastric plexus, 8, arrives at between the last vertebræ of the loins, and first of the os-sacrum ramuli,
465. to 469. Forming a net-work, in a surprising manner, o.
470. 471. They meet the hypogastric rami of the great sympathetic nerve, as we shall see better in Plate XXXVII.
472. &c. &c. &c. Nervus uterinus, runs with the artery to the uterus, and
473. 473. Disappears with rami in the fundus uteri.—On account of the tension of the uterus, and all the parts contained in the pelvis, by which they are elongated on the left side, the nerves do not appear to ascend so high to the uterus: besides, the rami running to the uterus, the nervus uterinus gives
474. &c. &c. &c. Rami to the vesica urinaria, which are superior vesical nerves.
375. Anastomosis, with ramus, 421.
476. 476. Ramus, arising from the third sacral pair, which is joined to a
477. 477. Ramus, arising from the fourth pair of sacral nerves, and thus
478. Compose the muscular ramus, which
479. to 483. Is distributed by ramifications on the levator intestini recti.
484. Is an elegant trunk of the nerve of the fourth sacral pair, from which three perforating nerves arise.
485. Truncus communis of the second nervus perforans, 490; and, third, 493.
486. &c. &c. Is the internal ramus of the first perforating nerve, or nervus hæmorrhoidalis externus.—From this arise
487. 488. Surculus of the intestinum rectum, which is there terminated.
489. 489. Is the external ramus of the first nervus perforans.—After both rami, 486, and 489, have perforated the musculus spinoso-coccygæus, and ligamentum spinoso-
- sacrum, they run to the sphincter internus, sphincter externus ani, and are terminated in the superior, middle, and exterior circumference of the cutis about the anus, whence these rami should be justly called *Nervi Hæmorrhoidales*; and very acute pain is felt, if leeches be applied, an hæmorrhoidal tumour is derived from hence.
490. Second perforans, immediately is divided into two rami.
491. 491. 491. Ramus cutaneus, which perforates the ligamentum, and musculus spinoso-sacer, and disappears in the skin of the os-coccygis.—Second ramus of nerve, 490, is
492. 492. Ramus musculo-ligamentosus, which disappears in the muscle and ligamentum spinoso-sacrum.
493. 493. Third nervus perforans, which,
494. &c. &c. In like manner, perforates the muscle, and ligamentum spino-sacrum, becomes cutaneous, and disappears a little higher, and more outward, in the cutis of the os-coccygis, as nerve 491.
495. 496. Anastomosis, between the nerves, 491, and 494.
497. Muscular ramus of nerve, 493, going to the musculus spinoso-sacer, and spinoso-coccygæus.
498. 498. First radix of the fourth nervus perforans, coming from the third sacral pair.
499. 499. Second radix of the nervus perforans, arising from the fourth sacral pair.
500. Conjunction of radices.
501. &c. &c. Inferior ramus of the nervus perforans, which is terminated in the cutis which covers the lateral part of the musculus gluteus maximus, where it adheres to the os-coccygis.
502. &c. &c. Superior ramus of the nervus perforans, ascends; and is terminated on every side in the cutis which covers the gluteus maximus, where it adheres to the third and fifth spurious vertebræ of the os-sacrum.
503. 503. Trunk of the fifth sacral nerve.
504. 505. Surculi of the fifth sacral nerve, terminated in the muscle, and ligamentum spinoso-sacrum.
506. Muscular nerve, coming from the third sacral nerve, has two rami, viz.
507. 507. Ramus musculo-ligamentosus; it goes to the musculus spinoso-sacer, and ligamentum spinoso-coccygæum.—Another ramus of nerve, 506, is
508. 508. Proceeding in the same way as 507.
509. Anastomosis of the second ramus, 508, with nerve, 491.
510. &c. &c. Rami musculo-ligamentosi, which disappear in the musculus spinoso-sacer, and ligamentum spinoso, and tuberoso-sacer.
512. Nervus pudendalis clytorideus, or superior
513. to 515. Radices of nervus clytorideus, from the third sacral nerve.
516. to 518. Nervus clytorideus, divided into three rami, then there

519. 520. Run into two, and

521. to 525. At length nervus clytorideus is divided into five rami.—From these

526. to 529. They run to the anterior surface of the labia majora pudendorum, to the nymphæ, external aperture of the urethra, where the anterior myrtiform-caruncles are placed, and to the inferior part of the mons veneris.—After sending out these rami, the nervus clytorideus, with all its five rami,

530. Runs into one nerve, which passes to the clytoric glans, prepuce of the clytoris, upper part of the nymphæ, and to the mons veneris.

531. Trunk of the internal hæmorrhoidal nerves, arising from the third sacral nerve, and

532. to 534. Dividing into three rami.—The first ramus of the hæmorrhoidal nerve, 531, is divided into five surculi minores, viz.

535. 535. 535.

536. 536.

537. 537.

538. 538. 538.

539. 539. 539.

Those marked 535, 536, 537, are rather superficial, and are terminated in the musculus sphincter externus, sphincter internus, and cutis of the orifice of the anus.—The remaining rami, distinguished by the figures, are deeper, and distributed on the external sphincter muscle of the anus, internal and external, or nervous coat of the intestinum rectum. Second ramus of the hæmorrhoidal nerve, 531, divides into two rami: of these,

540. &c. The first is that which is terminated in the internal sphincter ani, and cutis of the anus.

541. 541. The other ramifications of nerve, 533.—This immediately divides into two cutaneous rami.

542. 542. 542. The cutaneous nerve of the perineum, and

543. 543. 543. Into the nervus cutaneus of the anus, which terminates in the cutis, a little more remote from the orifice of anus.—Third ramus, 534, of the hæmorrhoidal nerve, 531, is divided into three ramuli.

544. &c. &c. The first ramus of the cutaneous, 534, nerve of the anus, and perinæum.

545. &c. &c. Second nerve, 534, is terminated in the skin of the perinæum.

546. &c. Third of nerve, 534, divaricates into two surculi.

547. 547. Cutaneous ramulus, which disappears in the lowest part of the labia majora pudendorum.

548. &c. Another surculus of nerve, 546, immediately divides into

549. 549. 549. Several surculi, which disappear in the upper part of the labia majora pudendorum;

550. But the last ramus, 548, ascends into the mons veneris.

Nervus ligamentosus, disappearing in the ligamentum tuberoso-sacrum.

Besides the ramifications just mentioned, they run from the third pair of sacral nerves,

551. to 553. Nervi pudendales: when the pudendalis, 551, unites with nervus pudendalis, 553, then

555. Is terminated in the lowest extremity of the labia pudendorum.—Nervus pudendalis, 552, dividing into

556. to 557. Many ramuli, disappear in the lateral part of the cutis perinæi, and lowest region of the labia pudendorum.

558. &c. &c. Is the first cutaneous ramus, or branch of the perinæum, and labia pudendorum of nerve, 553.

559. 559. Second cutaneous ramus of the perinæum, and pudenda externa of nerve, 553, which

560. 560. Are lost in minute branches on the lateral part of the skin of the nates, towards the pudenda.

561. to 565. The other cutaneous surculus of ramus, 559, is that of the anus, perinæum, and circumference of the pudenda.

566. Ramulus, anastomosing with nerve, 558.

567. Surculus, anastomosing with ramus, 587.

568. &c. &c. Third ramus of nerve, 553, which is terminated in the lowest and lateral part of the skin of the nates, where it continues towards the anus.

569. 569. Anastomosis of the trunk of the third sacral nerve with nerve, 558.

570. Inferior longus pudendalis,

571. to 573. Arising by three radices from the origin of the ischiatic nerve.

574. &c. &c. Rami of the nervus pudendalis longus, terminating in the cutis of the nates, and region of the anus.

575. Second ramus of nerve, 570, which

576. to 583. Are distributed by surculi, on the cutis of the anus, perinæum, and lateral part of the labia pudendorum.

584. Third ramus of nerve, 570, which runs into two ramuli.

585. A cutaneous nerve of the anus, and

586. Ramulus, which again is divided into three surculi: of these, the first

587. Is muscular, which is terminated in the levator of the corpus cavernosum of the clitoris.

588. to 590. Second cutaneous surculus, extending towards the lowest part of the cutis of the labia pudendorum.

591. to 597. Third ramus is of nerve, 586, which is lost in the skin of the middle and superior part of the labia pudendorum.

598. to 608. Fourth ramus of the nervus pudendalis inferior, distributed on the cutis of the anus, and perinæum.

609. Fifth ramus of nerve, 570, which divides into two rami,

610. 611. 611. 612. 613. 614. Which terminate in the lowest and interior cutis of the nates.

Figure II.

This Second Figure represents the narrow vinculum of the great sympathetic nerve of the right side with the sympathetic nerve of the left side, and the true, or last termination of the arbores.

I have retained the same numbers in the Second Figure, which were applied to the former Plate.

V. Fifth vertebra of the loins.

I. II. III. IV. V. Five spurious vertebræ of the os-sacrum.

I. II. Spurious vertebræ of the os-coccygis.—Yet it must be observed, that in this subject the os-coccygis is not formed by two, but consists of four spurious vertebræ. Thus the number II. comprehends the second, third, and fourth vertebræ, because the spino-coccygeus muscle, and ligament, adhere to the lateral margin of the os-coccygis, the third, and fourth cannot be well distinguished from the second.

A. Lateral part of the first and second spurious vertebræ of the os-sacrum, almost to the foramina, from which the first and second sacral nerve go out here, cut off.

B. Portion of the ligamentum tuberoso-sacrum.

C. Ligamentum spinoso-coccygæum.

D. D. D. Intestinum rectum, cut away near the muscles with the sphincter.

129. 130. Trunk of the great sympathetic nerve, or nervus anastomosus, between the fourth and fifth lumbar ganglion.

131. The first anastomosing branch.

132. The second of nerve, 28, with nerve, 129, and 130.

133. The crural nerve.

137. Origin, or third radix of the crural nerve from the fourth lumbar nerve.

139. Anastomosis, between the second and third origin of the crural nerve.

141. Surculi of the cutaneous crural nerve.

142. The obturator nerve.

147. Third radix coming from the fourth pair of lumbar nerves.

149. The communicating root of the fourth lumbar nerve, 29, with the trunk of the great sympathetic nerve.

345. Radices, arising from the trunk of the great sympathetic nerve, 129, 130, which compose the

346. Nervus communicans, by which the great sympathetic nerve of the right side is joined between the fourth and fifth vertebra of the loins behind the iliac arteries with the great sympathetic nerve of the left side.

347. Nerve, composed of radices.

348. 349. 350. Which preserve a conjunction with the trunk of the great sympathetic nerve of the left side, Plate XXXVIII.

356. The remaining trunk of nerve, 352, cut off, inserted into the first sacral ganglion of the left side.

373. to 376. Radices of the fourth and fifth lumbar nerves, which compose

377. The muscular nerve, running to the gluteus medius, especially to the gluteus minimus, and tensor fasciæ latæ.

378. Muscular ramus, going to the musculus pyramidalis.

379. A muscular branch to the gluteus medius.

380. Nervus cutaneus gluteus inferior.

381. Ramus muscularis, which sends rami to the geminus superior obturator internus, geminus inferior, and quadratus femoris.

382. to 384. Rami, inserted into the muscular gluteus maximus.

385. Inferior trunk of the nervus cutaneus of the nates, dividing into two rami.

386. Superior ramus of the inferior cutaneous nerve of the nates.

387. Ramus inferior of nerve, 383.

388. to 390. Trunk, or plexus, so called, of the ischiatic nerve.

391. Ramus major of the ischiatic nerve.

392. Ramus minor of the same.

393. First anastomosis, between the second and third sacral nerve.

394. Second anastomosis, between the second and third sacral nerve.

395. Third anastomosis, between the second and third sacral nerve.

396. First radix which the ischiatic nerve receives from the second sacral nerve.

397. 398. Second and third radix of the second sacral nerve, which

399. Run into one thick radix, and terminate in the trunk of the ischiatic nerve, 388.

400. Nervus cutaneus medius of the nates.

404. ————— superior of the same.

405. The first hypogastric branch.

406. The second.

407. The third.

408. 409. The fourth and fifth.

411. The sixth.

412. The seventh.

415. Surculus, running to the bladder and vagina.

417. 418. Ninth and tenth ramus hypogastricus.

427. Ramus of the third sacral nerve, making many anastomoses with the fourth sacral nerve.

472. A nerve of the uterus.

476. Ramus, arising from the third sacral pair, which

474. Is joined to ramus, arising from the fourth sacral pair.

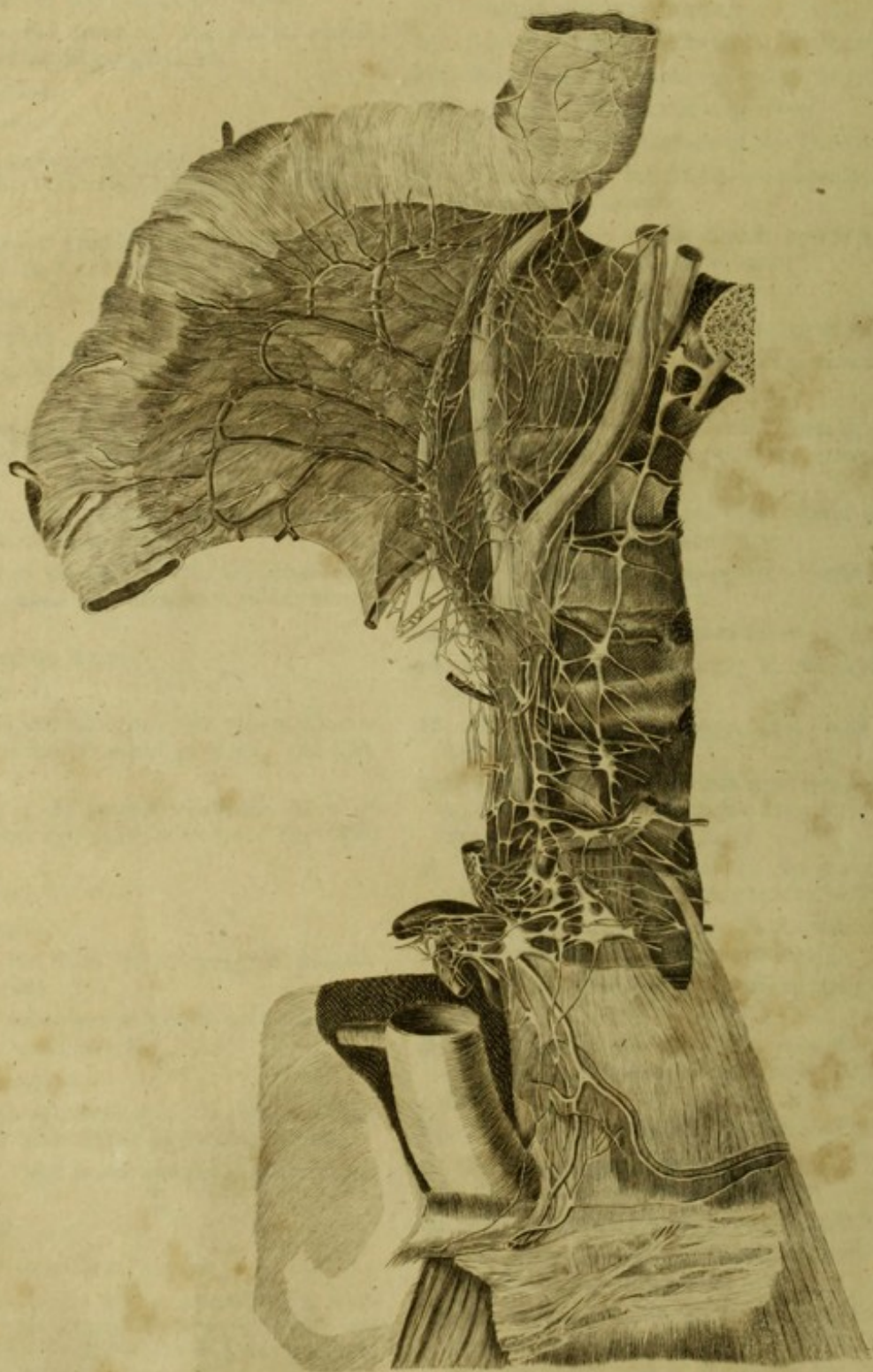
485. A common trunk of the second, 490, and third, 493, the perforating nerve.

596. A muscular branch, coming from the third sacral nerve.

513. to 515. The nerve of the clitoris.
531. Trunk of the internal hæmorrhoidal nerves, arising from the third sacral nerve, and
532. 533. Dividing into three rami.
560. Ramulus cutaneus of the nates.
570. Nervus pudendalis inferior longus.
571. to 573. arising by three radices from the origin of the ischiatic nerve.
592. Ramus of nerve, 586, terminated in the skin of the middle, and uppermost part of the loins about the pudenda.
29. Fifth lumbar nerve.
150. Radix of the fifth lumbar nerve going to the fifth lumbar ganglion.
148. Fifth lumbar ganglion.
30. The first sacral nerve.
155. 156. First radix communicans of the first sacral nerve, which must be considered as the first sacral ganglion.
1. Ganglion of the first left sacral nerve.
2. First left sacral nerve.
3. Trunk of the great sympathetic nerve of the left side, or nerve, communicating between the first sacral, and fifth left lumbar ganglion.
4. 5. 6. Rami, dispersed by the sympathetic nerve to the parts about the hypogastric artery. Besides the arterious rami, which nerve 5, exhibits, there are three others, which run from the left lumbar nerve to this nerve, as the Plate XXXVIII. shews; where it must be well observed, nerve five comes under the number 389, which, in this Figure, are rami cut off, and marked in Plate XXXVIII. by the numbers 386, to 393.
348. to 350. Radices, arising from the fifth lumbar ganglion.
351. Running into one, which anastomose with the trunk of the great sympathetic nerve of the left side, 3, 3.
151. to 154. Four nerves of the last lumbar ganglion, which, uniting with nerve, 30, represent the trunk of the great sympathetic nerve.
357. Ramus of nerve, 154, migrating to the muscular membrane of the rami of the hypogastric artery.
358. 358. Anastomosis, between nerves, 348, to 350, and 354, to 355.
359. Surculus, communicating with nerve, 154.
360. Surculus of nerve, 358, bifurcated, of which
361. The first crus is inserted in nerve, 154;
362. The other inosculated into nerve, 155.
363. 363. The anastomosing branch of nerve,
358. 358. With the first left sacral ganglion.
159. Second radix of the first sacral nerve, communicating with the trunk of the sympathetic nerve, 158.
160. Anastomosis, between nerve, 156, and 159.
352. Ramus of nerve, 159, which,
353. 353. Dividing into two rami; at length unite into one ramus, from which
354. 355. Two anastomoses, run with nerve, 358.
7. Anastomosis of the first left lumbar ganglion, with nerve, 352, of the right side: hence, the first left sacral ganglion anastomoses with the second radix of the first right sacral nerve, performing the office of the first sacral ganglion, by the medium of nerves, 352, 353, 353, and 356.
31. Second right sacral nerve.
161. 162. 163. Three radices, arising from the second sacral nerve, and going to
157. The second sacral ganglion
158. Trunk of the great sympathetic nerve, or nervus anastomoticus, between the first and second right sacral ganglion.
365. 365. Surculus, running to the intestinum rectum; but on account of the drawing back of the intestinum rectum to the left side of the body, is cut off.
8. Anastomosis of the first left sacral ganglion,
364. 364. With a ramus, coming from the second right sacral ganglion, 157.
9. Anastomosis between nerve, 8, and 7.
10. 10. Ramulus of nerve, 8, migrating to the intestinum rectum.
366. 366. 366. Ramus of the second right sacral ganglion, going to the posterior surface of the intestinum rectum.
367. Anastomosis, between nerve, 364, and 366.
164. Trunk of the great sympathetic nerve, or nervus anastomoticus, between the second, 157, and third, 38, right sacral ganglion.
165. 165. Internal ramus of nerve, 164.
166. External ramus of nerve, 164.
167. Radix of the second sacral nerve, communicating with nerve, 164.
168. 168. First radix of the third sacral nerve, communicating with nerve, 166.
169. Second bifurcated radix of the third sacral nerve, communicating with nerve, 166.
368. 368. Surculus, arising from nerve, 164, and inserted into nerve, 366.
369. 369. Ramus, arising from nerve, 165, which unites with the trunk of the great sympathetic of the left side, or with the anastomosing nerve, between the second and third sacral ganglion of the left side.
370. 370. Anastomosis, between nerve, 368, and 369.
371. Conjunction of nerve, 165, with 370.
372. Conjunction nerve, 165, with 369.
11. Second left sacral nerve.
12. Second left sacral ganglion.
13. Trunk of the great sympathetic nerve, or nerve anastomosing between the first and second left sacral ganglion, No. 12.

14. Arterious surculi of the second left sacral ganglion, which migrate to the rami of the hypogastric artery.
15. Radix, running from the trunk of the second sacral nerve, 11, to the second sacral ganglion, 12.
16. Third left sacral ganglion.
17. —————
18. to 21. Trunk of the great sympathetic nerve, or ramus, anastomosing between the third and second sacral ganglion of the left side.
22. Radix of the third sacral ganglion, 17, by which it is joined with the trunk of the third left sacral nerve, 13.
23. Fourth left sacral nerve.
24. ————— ganglion.
- $\beta. \beta.$ Two radices, running from the fourth left sacral nerve to the fourth ganglion.
25. Trunk of the left sympathetic nerve, or nerve, anastomosing between the third and fourth left sacral ganglion of the left side.
26. Anastomosing branch of the trunk of the great sympathetic nerve with the third left sacral nerve.
27. Anastomosing branch of the trunk of the left great sympathetic nerve, which is joined with the fourth sacral nerve, 23, of the left side.
28. Trunk of three perforating nerves.
35. Fifth left sacral nerve.
36. Trunk of the left sympathetic nerve, or nervus anastomoticus, between the fourth left sacral ganglion, and fifth left sacral nerve.
37. End and conjunction of the great sympathetic nerve of the left side with the great sympathetic nerve of the right side.
22. Third right sacral nerve.
38. Third right sacral ganglion.
39. 40. Radices, which the third sacral ganglion receives from the third sacral trunk, 32.
41. Anastomosis of the third sacral ganglion of the right side with the third left sacral ganglion, 17.
42. Fourth right sacral ganglion.
43. 44. Trunk of the right sympathetic nerve, or anastomotic nerves, between the third and fourth sacral ganglion.
45. Radix of the fourth right sacral ganglion, which it receives from
33. The third right sacral nerve.
422. Trunk of the fourth sacral pair, cut off.
484. Is an elegant trunk of the fourth sacral nerve, from which, not only three perforating nerves are given off, but also anastomotic branches with the fourth sacral ganglion, and with the fifth, or last sacral nerve.
486. 486. 486. Internal ramus of the first perforating nerve.
487. 488. Ramus of the first perforans, distributed on the extremity of the intestinum rectum.
489. 489. 489. External ramus of the first perforans.
490. Second nervus perforans.
491. Cutaneus ramus of the second perforans.
492. Ramus musculo-ligamentosus of the second perforans.
493. 493. The third perforating nerve.
497. 497. Ramus muscularis of the third nervus perforans.
498. First radix of the fourth nervus perforans, coming from the third right sacral.
499. Second radix of the fourth nervus perforans, arising from the fourth right sacral nerve.
500. Conjunction of the radices.
501. Inferior ramus of the fourth nervus perforans.
502. Superior ramus of the nervus perforans.
510. &c. &c. &c.
511. Rami musculo-ligamentosi, running to the musculus spinoso-sacrum, and ligamentum, spinoso, and tuberoso-sacrum.
46. Radix, which the fourth right sacral ganglion, receives from the fourth right sacral nerve.
47. 47. Anastomosis, between the fourth right, and fourth left sacral ganglion.
34. Fifth, and last right sacral nerve.
48. 49. Surculus, disappearing in the ligamentum spinoso-sacrum.
50. 50. Anastomosis of nerve, 484, with the fifth sacral nerve of the right side.
503. to 56. Ramuli of the fifth right sacral nerve, terminated by very minute surculi in the musculus, and ligamentum spinoso coccygeum.
57. The fifth small ganglion of the great sympathetic, to which the fifth sacral nerve sends in the right side.
58. Surculum communicans.—In the left side, the same unequal sacral small ganglion receives
59. A ramulus communicans, arising from the sacral nerve, 35.
60. 60. Trunk of the right great sympathetic nerve, or nerve anastomosing, between the fourth and fifth sacral ganglion.
61. Anastomosis, between nerve 60, and 47.
62. Surculus, arising from ganglion, 57, and disappearing in the spinoso-coccygaeus ligament.
63. The ultimate termination of the right sympathetic nerve.
64. Ganglion coccygæum, in which the left and right sympathetic nerves are united.
65. to 68. Last surculi, emitted by ganglion, 64, and which, very minute, disappear in the last termination of the spinoso-coccygaeus muscle and ligament.
69. 70. Surculus, implanted into the lowest part of the intestinum rectum.

TABULA XXXVII.



Schola et historia Medicinæ a Gul. Bowley.

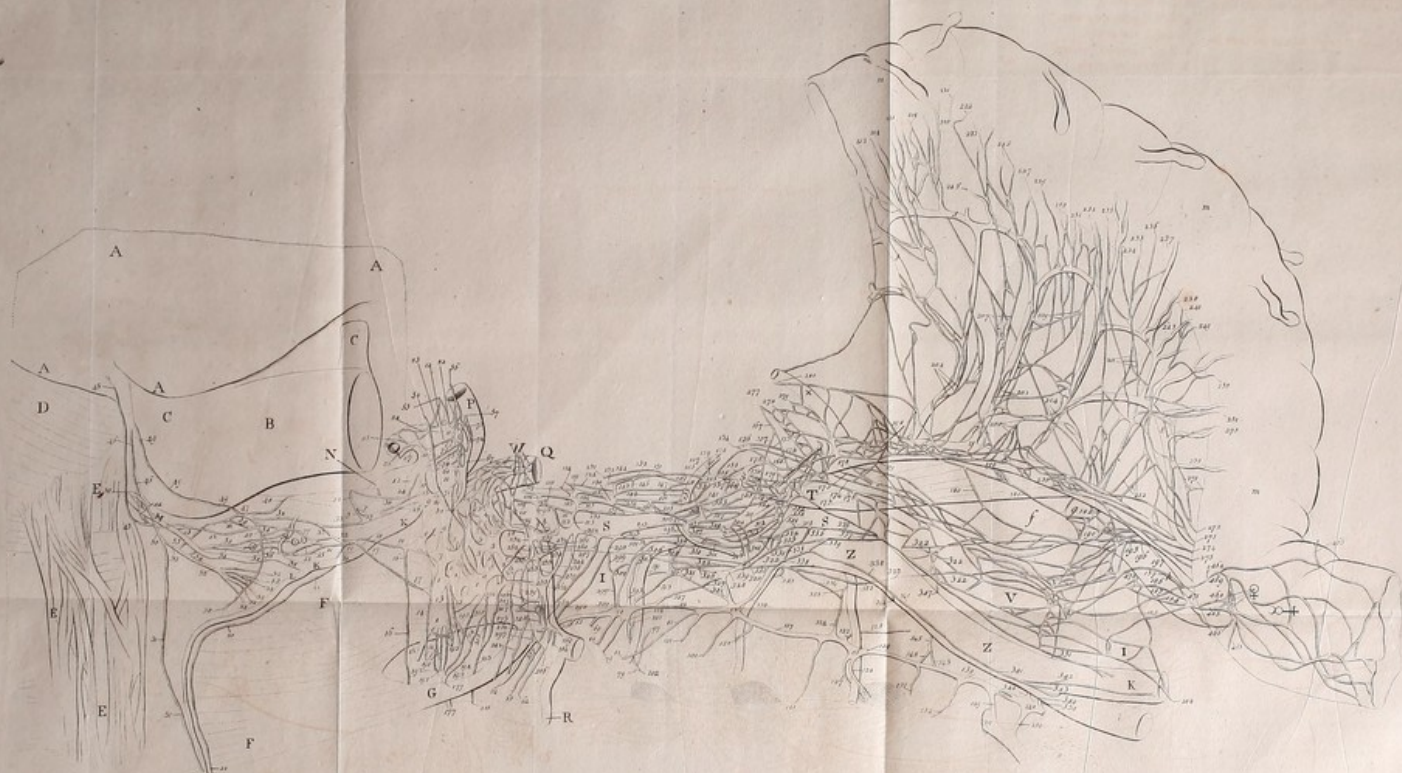


PLATE XXXVII.

Explains the origin, and distribution of the ganglion, called Semilunar; or, rather of the cœliac ganglions of the right side—exhibits the renal, and spermatic ganglion of the right side; and anastomosis of the same, with the ganglia of the left side; the origin of the superior mesenteric plexus, and the inferior mesenteric plexus, and right hypogastric nerves.

A. A. A. A. Inferior surface of the right lobe of the liver reclined.

B. Vena cava.

C. C. Rami of the vena cava entering the liver.

D. D. Part of the costal diaphragm.

E. E. E. Right ala of the diaphragm.

F. F. Part of the lumbar diaphragm.

G. External crus of the diaphragm.

H. Middle crus of the diaphragm.

I. Internal crus of the diaphragm.

K. K. Right phrenic artery.

L. L. Right ramus of the right phrenic artery.

M. M. Left ramus of the same artery.

N. Common trunk of the superior, left coronary artery of the ventricle, and of the left hepatic artery.

O. Right hepatic artery.

P. The splenic artery.

Q. Superior mesenteric artery.

R. R. Right renal artery, cut off; and artery of the right renal capsule, arising from the right renal artery.

S. S. Aorta.

I. First vertebra of the loins.

II. The second.

III. The third.

IV. The fourth.

V. The fifth.

I. First spurious vertebra of the os sacrum.

a. Lateral part of the first and second spurious vertebra of the os sacrum, almost to the foramina, from which the first and second sacral ramus go out, cut off.

b. The right superior spermatic artery.

c. The right inferior spermatic artery.

d. The left spermatic artery.

T. Trunk of the inferior mesenteric artery.

V. V. V. Lumbar arteries, corresponding to their vertebra.

X. Ramus ascendens of the inferior mesenteric artery.

Y. Ramus descendens of the same.

d. d. d. d. d. Rami of the descending inferior mesenteric artery.

e. e. Rami, migrating to the colon.

z. z. Right iliac artery.

f. Left iliac artery.

g. Left hypogastric artery.

h. Left crural artery.

i. Right hypogastric artery.

k. Right crural artery.

m. m. m. Portion of the intestinum colon, forming its sigmoid flexure, so called.

29. Anterior ramus of the fifth pair of lumbar nerves.

62. Trunk of the sympathetic nerve, or anastomosing nerve of this ganglion with the eleventh thoracic ganglion.

63. First radix.

64. Second radix, which also arises from the anterior ramus of nerve 24, Plate XXXVI. Fig. I. and runs into the first lumbar ganglion.

65. Third radix, terminated in the trunk of the nervus sympathicus, or into nervus anastomoticus, between the first and second lumbar ganglion.

69. Exterior surculus of nerve 66, Plate XXXVI. Fig. I. inserted into the great sympathetic nerve, or nervus anastomoticus, between the first and second lumbar ganglion.

70. Trunk of the nervus sympathetic magnus, or nervus anastomoticus, between the first, 61, and second ganglion, 78, Plate XXXVI. Fig. I.

78. Second lumbar ganglion.

79. First radix, sent by the anterior ramus of the first pair of lumbar nerves, 25, Plate XXXVI, Fig. I. to the second lumbar ganglion.

80. Second radix, which the second lumbar ganglion receives from the anterior ramus of the first pair of lumbar nerves.

81. 81. Radix from anastomosing nerve, between the first lumbar nerve, and the ganglion singulare of the second lumbar nerve, 104, Plate XXXVI. Fig. I. which, at its origin, is bicrural, then simple, and is inosculated into the trunk of the nervus sympathicus magnus.

97. 97. Surculus nervosus, arising from anastomosis, between the first lumbar nerve, 26, Plate XXXVI. Fig. I. and ganglion singulare, 104, Plate XXXVI. Fig. I. of the anterior branch of the second lumbar nerve, 26, Plate XXXVI. Fig. I. which is terminated in the ligaments of the vertebrae.

98. Third lumbar ganglion.

99. Trunk of the great sympathetic, or anastomosing nerve between the second and third lumbar ganglion.

U

100. Radix,

100. Radix, which the second lumbar nerve sends to ganglion, 98.
101. Radix, anastomotica, between the ganglion singulare of the second lumbar nerve of the second lumbar ganglion.
102. 102. Radix anastomotica, between ganglion singulare of the right second lumbar nerve, and second right lumbar ganglion.
103. Surculus of radix anastomotica, 102, which runs to the muscular tunic of the interlumbar artery.
116. Fourth right lumbar ganglion.
117. Trunk of the nervus sympathicus magnus, or nervus anastomosis.
120. Radix, by which the trunk of the nervus sympathicus magnus, 117, is joined with the trunk of the lumbar nerve, 27, Plate XXXVI. Fig. I.
121. Radix anastomotica of nerve, 27, with trunk of nerve, 117.
122. 123. Surculus nervosus, passing to the ligaments of the vertebræ.
127. 128. Two anastomosing branches of nerve 28, with the fourth lumbar ganglion, 116, Plate XXXVI. Fig. I.
129. 130. Trunk of the great sympathetic nerve, anastomosing between the fourth and fifth right lumbar ganglion.
131. First anastomosing branch.
132. The second of nerve 28, anastomosing with trunk of the great sympathetic nerve.
148. Fifth right lumbar ganglion.
149. A branch of the fourth lumbar nerve, No. 29, communicating with trunk of the great sympathetic.
150. Radix of the fifth lumbar nerve to the fifth right lumbar ganglion.
177. Trunk of the splenic nerve.
191. to 194. Division of the splenic trunk into the fourth rami
215. 215. Trunk of the accessory visceral nerve, which passes through the hiatus, between the crura of the diaphragm: external, h; middle, i—(Plate XXXVI. Fig. I.) a little more externally, and below the larger visceral, 174, to 177, into the cavity of the abdomen, and is immediately divided into two rami, the superior and inferior.
216. Ramus superior of the accessory visceral nerve, which is joined with ramus, 194, of the larger visceral nerve.
217. Ramus inferior of the accessory visceral nerve which passes, not only to the ganglion, called Semilunar of the great sympathetic nerve, but also is joined with a surculus from the second renal plexus, 253.
239. 239. 239. Trunk of the posterior superior renal nerve, formed from the radices, 233, 234.
240. Anastomosis of the posterior superior renal nerve with nerve, 262, and 263.
242. Right posterior inferior renal nerve, arising from the trunk of the great sympathetic, 62.
244. Anastomosis of the posterior right inferior renal nerve, with the first right renal ganglion, 252.
245. Conjunction of the superior posterior renal nerve, and of the posterior inferior renal nerve, into one common trunk, cut off in this Plate, where it runs further in the posterior surface of the renal artery.—From this common trunk arise
246. 247. Surculi, communicating with the second right renal ganglion, 253; then it distributes two arterious surculi, of which
248. One is expanded on the anterior, and superior surface of the renal artery: the other, which passes to the posterior surface of the renal artery, is omitted in this Plate, but very well exhibited in Plate XXXVI. Fig. I.
252. First right renal ganglion.
253. The second.
254. The third.
255. The fourth.
256. A nerve, anastomosing between the first and second renal ganglion.
257. A nerve, anastomosing between the first and third renal ganglion.
258. Between the first and fourth renal ganglion.
259. Between the second and fourth renal ganglion.
260. Between nerve, 257, and 258.
261. Between the third and fourth renal ganglion.
262. A nerve, communicating between nerve, 240, and third renal ganglion, 254.
263. An anastomosis, between the fourth renal ganglion, and posterior renal ramus, 240.
264. The anastomosing branch, between the second right renal ganglion, 253, and the first celiac ganglion.
265. Anterior renal nerve.
266. Bifid ramus of the anterior renal nerve.
267. Surculus of the latter, expanded on the posterior surface of the renal artery.
268. The other is larger, and anastomoses with nerve, 249.
269. Trunk of the superior internal spermatic nerve.
284. Third ramus of the anterior renal nerve, 265, and runs before the renal artery.
286. Fourth ramus of the anterior renal nerve.
292. First right spermatic ganglion.
293. The second ————
294. 295. 296. Nerve, anastomosing between the first right renal ganglion, 252, and first right spermatic ganglion.
297. First radix, anastomotica of the great sympathetic with nerve, 294.
298. Second radix anastomotica, between the great sympathetic and ansa spermatica, 295.
299. Conjunction of the second lumbar ganglion, 78, with nerve, 298.
300. 301. Third radix anastomotica of the great sympathetic, with the ansa spermatica.
302. Conjunction of nerve, 299, with 300.

303. 304. The internal inferior spermatic nerve on the right side, arising from the second spermatic ganglion, and joined with the superior internal right spermatic nerve, 283.
305. Second inferior internal right spermatic nerve.
306. 306. 306. Nerve, arising from the first right spermatic ganglion, and anastomosing with the second and third left renal ganglion, and with the first and third left spermatic ganglion.
307. 307. 307. Nerves, which the first right spermatic ganglion, 292, emits, anastomosing with the rami of the superior mesenteric plexus.
308. First anastomosis, between the first and second right spermatic ganglion.
309. Second anastomosis, between the first and second right spermatic ganglion.
310. 310. Conjunction of nerve, 308, with the nerve which composes the hypogastric plexus.
311. 312. 313. *Inferior* mesenteric rami, arising from the second right spermatic ganglion, 293.
314. The inferior mesenteric plexus.
315. Ramus, coming from nerves, 301, and 310, 310, increases the inferior mesenteric plexus.
316. The first accessory lumbar ganglion.
317. The second.
318. Anastomosis of the first accessory lumbar ganglion with the second, 78, Plate XXXVI. Fig. I.
319. Ramus of ganglion, 316, to the muscular tunic of the interlumbar artery.
320. Ramus aorticus of ganglion, 316.
321. 321. Anastomosis of the first accessory lumbar ganglion with the third lumbar ganglion, 98, Plate XXXVI. Fig. I.
322. &c. &c. Ramus hypogastricus of the first lumbar accessory ganglion, 316, which, after composing the hypogastric plexus, unites with the fourth lumbar ganglion of the left side, Plate XXXVIII.
323. Ramus, from the anastomosing nerve, 322, by which the great sympathetic of the right side behind the aorta, a little above the origin of the inferior mesenteric artery, is joined with the great sympathetic nerve of the left side, as Plate XXXVIII. will more clearly demonstrate.
324. Surculus arteriosus of the hypogastric ramus, distributed on the inter-lumbar artery.
325. 324. Anastomosis of the hypogastric branch with nerve 117, Plate XXXVI. Fig. I.—From this ramulus anastomoticus, arise
326. A surculus, running to the muscular tunic of the inter-lumbar artery.
327. 327. Anastomosis of the second accessory lumbar ganglion with nerve 300.
328. 327. Anastomosis of the second accessory lumbar ganglion with the trunk of the great sympathetic, 99.
328. Ramus hypogastricus of the second lumbar accessory ganglion.
329. Another ramus hypogastricus of the third radix of the sympathetic nerve, 310, which forms the plexus, called Hypogastric.
330. Ramus internus of the hypogastric nerve.
331. Anastomosis of the internal ramus with nerve 329.
332. Anastomosis of ramus internus, 330, with nerve, 315.
333. Ramus of the external nerve, 328.
334. 335. 336. Anastomosis of the external ramus with nerve 329.
337. Ramus, which anastomoses with ramuli, constituting the inferior mesenteric, and hypogastric plexus.
338. &c. &c. Ramus hypogastricus of the third lumbar ganglion, 98.
339. 339. Anastomoses of this nerve with nerve 333.
340. Surculus arteriosus of nerve 338, passing into the muscular membrane of the iliac artery.
341. 341. Anterior, or arterious ramus of the hypogastric nerve, 338.
342. Ramus, running to the muscular membrane of the crural artery.
343. Ramus, running to the muscular membrane of the hypogastric artery.
344. Posterior, or anastomotoc nerve, 338, with the trunk of the great sympathetic nerve.
345. 345. Radices, arising from the trunk of the great sympathetic of the right side, 129, 130, which compose
346. 347. The nervus communicans, by which the great sympathetic of the right side, between the fourth and fifth vertebra of the loins, behind the iliac arteries, is joined with the great sympathetic, of the left side, as is evident from Plate XXXVII.—And yet better from Plate XXXVIII. 60.
348. 349. 350. Radices, arising from the right lumbar ganglion, Plate XXXVI. Fig. I. which
351. Run into one anastomotoc nerve, with trunk of the great sympathetic of the left side, which then is joined by an elegant anastomosis, with the trunk of the sympathetic of the left side.—Plate XXXVI. Fig. I. and Plate XXXVIII. 351.
463. 464. Surculi, going to the urethra, arising from the hypogastric plexus, 8, Plate XXXVI. Fig. I.
465. to 469. These are ramuli, which, by different decussations, form a reticulon, or net-work, o.
470. 471. Rami, which meet the hypogastric, and mesenteric nerves, coming from the great sympathetic.—Thus, from the radices of the great visceral, No. 177, and of the accessory visceral nerve, in the right side of the body, arises the assemblage of ganglions, uncertain in number and size of the ganglion, to which antiquity has affixed the name of Semilunar Ganglion.—This denomination is improper. There are more ganglions in the right and left side of the body, which are disseminated in that region of the aorta, where the cœliaca arises from it, and where ganglions of the right side are connected with those of the left side.—Hence, this numerous body may be, with more propriety, called Ganglia Cœliaca.

1. 1. 1. 1. Is the first right celiac ganglion.
2. The second.
3. 3. The third.
4. The fourth.
5. 5. The fifth.
6. The sixth.
7. The seventh.
8. 8. The eighth.
9. 9. 9. The ninth.
10. 10. The tenth.
11. 11. The eleventh.
12. Nervi anastomotici, between the tenth and eleventh right lumbar ganglions, and the fifth, 254, and 255, left celiac, and ninth and tenth, 256, left ganglions, 256, Plate XXXVIII.—Thus, by this anastomosis, which is the largest, the celiac ganglia of the right intercostal nerve, is elegantly connected with those of the left side.
13. First nerve of the capsule of the right kidney.
14. 14. The second nerve.
15. The third.
16. 16. The fourth.
17. 17. First radix of the right phrenic ganglion.
18. 18. Second radix of the phrenic ganglion.
19. Phrenic ganglion, into which the radices run.
20. The phrenic nerve of the right phrenic artery, accompanying the right ramus.
21. 22. Rami, arising from the phrenic ganglion, which, forming an island,
23. Swell into a small ganglion.
24. First radix of the phrenico-hepatic ganglion.
25. The second.
26. The third.
27. This phrenico-hepatic ganglion divides into two surculi,
- β. γ. Which immediately run into one.
28. The trunk.
30. 30. Ramus, arising from radius, 24, which afterwards sends
31. A surculus to the nervous plexus of the coronary, and left hepatic arteries, comprehending the common trunk, like a net, unites with nerve 28, and then exhibits very elegant rami to the liver, and left renal capsule.—Plate XXXVIII. and XXXIX.
32. 32. Second principal nerve of ganglion, 27.
33. Conjunction of this ramus with surculus, 22.—From ganglion, 23, two rami run; of which
34. The first meets
35. A surculus, coming from nerve 21; and thus
36. A ramulus is formed, united with the phrenic nerve, strictly so called, by anastomosing.
37. Second ramulus, arising from ganglion, 23.
38. 38. Sends a ramulus to the fleshy part of the diaphragm, near the loins.
39. Sends a surculus, which migrates to the third, or supreme phrenic ganglion, 47, and from which arises
40. A surculus, running to the lumbar part of the diaphragm.—The third ramus of nerve, 37, divaricates into two surculi: of which
41. The first is smaller, shorter, and anastomoses with the phrenic nerve.
42. The second is larger, longer, and forms
43. 43. 44. Ansæ, which comprehend the left ramus of the right phrenic artery.
45. 45. 46. 46. The ultimate expansion of nerve,
47. Which is distributed on the extremity of the inferior surface of the liver.
48. Ramus of the third phrenic ganglion, disappearing in the lumbar part of the diaphragm.
49. &c. Ramus of the third phrenic ganglion, terminated in the posterior part of the fossa of the vena cava hepatica.
50. 50. Nervus phrenicus, the entrance of which into the cavity of the abdomen, 17, we have represented in Plate XXXVI. Fig. I.
51. &c. &c. Right ramus of the phrenic nerve, accompanied by a ramus of the right phrenic artery, is expanded in the uppermost part of the lumbar diaphragm.
52. &c. Left ramus of the phrenic nerve surculi, of which, for the most part, are distributed in the lumbar portion of the diaphragm.
53. Superior ramus, anastomosing with the third phrenic ganglion, 47, and with nerve, 41.
54. &c. Second inferior ramus, anastomosing with nerve 32, and with nerve, 36; but one
- ε. ε. Surculus is terminated in the fleshy portion of the lumbar part of the diaphragm.

In all the dissections of dead bodies of both sexes, and all ages, I know that the thoracic phrenic nerve frequently anastomoses in the right side of the body with the celiac ganglions of the great sympathetic nerve; yet there are not wanting examples, although they seldom occur, where no connexion subsists between the phrenic and great sympathetic nerve: In the left side, it is otherwise. How frequently is a conjunction of the phrenic thoracic nerve with the great sympathetic nerve deficient; and this should seem to be a natural state. Nor is the union of the phrenic thoracic, in the cavity of the abdomen, with the nerve of the eighth pair.—I will mention only three examples, out of the vast number of Observations which I have made, lest I be troublesome to the Reader.

FIRST OBSERVATION

IS TAKEN FROM A MAN ABOVE TWENTY YEARS OLD.

The course of the phrenic nerve, in the right side, yet included in the cavity of the abdomen, was divided into internal and external thoracic rami.

The

The internal rami run to the convex surface of the diaphragm above, and to the internal side of the quadrilateral foramen, through which the vena cava is carried from the abdomen to the right auricle.

I have seen some internal ramuli terminated in the convex surface of the diaphragm; but their principal ramus perforated the diaphragm to the external side of the quadrilateral foramen, and the ramus thus becomes the phrenicus abdominalis, which was immediately divided into external and internal surculi.

The external rami, migrating to the lumbar part of the diaphragm, send one long ramulus to the vena cava, which, in passing to the lobulus spigelii of the liver, was joined with a surculus of the great sympathetic nerve from the cœliac ganglions.

I have seen three remarkable rami of the internal branches: the first, to the side of the phrenic artery, formed the conspicuous ganglion, above the right renal capsule, from which three surculi arise, of which one was distributed in the right capsule; the other, rather external, was joined with ramuli, arising from the right cœliac ganglions of the great sympathetic nerve. The third ramus, after giving many surculi to the lumbar part of the diaphragm, was joined by three remarkable anastomoses with the cœliac ganglions of the right great sympathetic nerve.

COURSE OF THE PHRENIC NERVE, ON THE LEFT SIDE,

It distributes both internal and external rami, whilst in the thorax. Some of the internal ramuli disappear, partly in the convex surface of the diaphragm; some perforate the muscular part of the diaphragm, so that they are lost in its concave surface. The external ramus perforated those fleshy parts of the diaphragm, which constitute the spineter of the œsophagus, then passed on its concave surface, accompanied by the left phrenic artery, and gave off the following three rami:—

First, Surculi, going to the left lumbar part of the diaphragm.

Second, A branch, which, running down to the left renal capsule, anastomosed with ramuli, arising from the left cœliac ganglions of the great sympathetic nerve.

Third, A ramus, anastomosing with that ramus of the great sympathetic nerve, which is joined before the cardia with the œsophageal anterior plexus of the eighth pair.

SECOND OBSERVATION.

ON A WOMAN SIXTY YEARS OLD.

Both in the right and left side of the body, the phrenic nerve was the same as in the example of the last subject. On the right side, that ganglion, which the phrenic nerve entering, the cavity of the abdomen usually forms, was present on the left side, as in the First Observation there was nothing but the simple conjunction of the phrenic nerve, made with surculi, arising from the left cœliac ganglion.

THIRD OBSERVATION.

ON A MALE SUBJECT, FIFTY YEARS OLD, ON THE RIGHT SIDE.

The phrenic nerve, not far distant from the foramen of the vena cava, having given many ramuli to the convex surface of the diaphragm; and after passing through its substance, several ramifications are found on its concave surface: two going to that part near the loins, which, after running about an inch, unite, and form two ganglions; one, superior; the other, inferior.

FROM THE SUPERIOR GANGLION.

First, The external branch, anastomosing with the right cœliac ganglions,

Secondly, From the superior ganglion surculi arise, which run partly to the right supra-renal glandula, partly towards the vena cava, where they are joined with surculi, coming from the right cœliac ganglions of the great sympathetic to the lobus spigelii. The inferior ganglion sends off two external surculi, anastomosing with the right cœliac ganglions; internal was divided into several rami, distributed on the left renal capsule.

ON THE LEFT SIDE.

The phrenic nerve, after dividing into 2 rami, external and internal, in the left cavity of the thorax; and having perforated the diaphragm, is distributed on its concave surface, so that it becomes the external, shorter branch, and is terminated in the costal part of the diaphragm. The internal long ramus, without making any anastomosis with the left cœliac ganglion, descended near the orifice, through which the œsophagus passes, and was expanded on the lumbar part of the diaphragm by many surculi. Thus, there was no anastomosis in this subject; either with the eighth pair, or with the great sympathetic nerve.

From the ganglions above-mentioned, arise

55. 56. 57. Three elegant hepatic trunks, which, as the Plate shews, run to the right region of the liver.

58. 58. Fourth hepatic nerve, arising between the aorta and vena cava, is covered a little on the left side of the vena cava, where, after ascending, it so proceeds to the liver; that, after being joined to the hepatic ramus, composed from nerve, 55, and 57, it migrates on the posterior surface of the hepatic artery to the liver.—Plate XXXIX. 58.

59. Radix, by which the ramus hepaticus, 58, arises from the seventh right cœliac ganglion.

60. 61. Radices of nerve, 58, from the first right cœliac ganglion.

66. 67. Radix, sent by the ninth cœliac ganglion to the hepatic nerve, 57.

68. 71. Radix of the eleventh cœliac ganglion, which goes to the nerve, 66, 67.

72. 73. Ramus of nerve, 66, 67, which constitutes the hepatic plexus, or that admirable arterious net-work, in which the right hepatic artery is involved.

74. to 77. Radices, which nerves, 56, and 57, receive from the celiac ganglion.
82. Radix of the eleventh right celiac ganglion, running to the hepatic nerve.
83. to 87. Nerves, arising from the right celiac ganglions, which, in different ways, join with nerves from the left celiac ganglions, and compose an elegant hepatic plexus, which we find very elegantly delineated in Plate XXXIX.
88. Anastomosis, between the third right renal ganglion, 254, and the third, fourth, and fifth right celiac ganglions.
89. Anastomosis, between the renal ganglion. 284, and the fourth right celiac ganglion.
90. Radix of the third right renal ganglion, going to the superior mesenteric plexus.
91. Radix, which the superior mesenteric plexus receives from nerve, 88.
92. Radix, sent by the fifth right celiac ganglion to the superior mesenteric plexus.
93. Radix, which the fourth right celiac ganglion disperses to the superior mesenteric plexus.
94. Radix of the superior mesenteric plexus, which the third right celiac ganglion emits.
- W. The celebrated, and very elegant superior mesenteric plexus, formed almost of the single right celiac ganglions, which, like net-work, involves the trunk of the superior mesenteric artery, and from which the intestinum jejunum, ileum, cæcum, and colon, receive nerves, and which at length anastomose with rami of the inferior mesenteric plexus.
95. First left renal ganglion.
96. 96. Anastomosis of the first left renal ganglion, with the third right renal ganglion, 254, Plate XXXVI. Fig. II.
104. Second left renal ganglion.
105. Third.
106. 107. A nerve of communication between the second left renal ganglion, 104, and the eleventh left celiac ganglion, 257, Plate XXXVIII.
108. Anastomosis of the latter nerve, with the first left renal ganglion, 95.
109. Anastomosis, between the first left renal ganglion, 95, and the eleventh left celiac ganglion, 257, Plate XXXVIII.
110. 111. Anastomosis, between the first left renal ganglion, 95, and the second, 104.
112. Anastomosis, between the first right renal ganglion, 254, and nerve, 110, and 111.
113. Anastomosis, between nerve, 294, and nerve, 110, and 111.
114. Nerve, anastomosing between the second left renal ganglion, 104, and the fourth left renal ganglion, 342, Plate XXXVIII.
115. A nerve, anastomosing between the second left renal ganglion, 104, and the third renal ganglion, 105.
118. Second anastomosis, between ganglion, 104, and 105.
119. Nerve, anastomosing between the second left renal, and fourth renal ganglion, 342, Plate XXXVIII.
124. Nerve, anastomosing between the third left renal, and fourth renal ganglion, 342, Plate XXXVIII.
125. First left spermatic ganglion.
126. Second.
133. 134. Nerve, anastomosing between the first left spermatic, and the third left renal ganglion.
135. The first spermatic nerve, arising from the nervus anastomoticus, running to the uterus.
136. Second left spermatic nerve, arising from the first left spermatic ganglion.
137. Third left spermatic nerve, arising from the left spermatic ganglion by a simple origin, and immediately
138. 139. Is divided into two rami.—Of these three spermatic nerves, it should be carefully observed, that with the accompanying left internal spermatic artery, they run to the uterus, dividing into the very minute surculi, are distributed in its substance.
- But as often as the second spermatic arteries go to the uterus, for the most part, the superior spermatic nerve is present, emitted by one or other of the left renal ganglions, and which is carried with the other spermatic artery to the uterus.
140. Third spermatic ganglion.
141. 142. Nerve, anastomosing between the first right spermatic, 292, and third left renal ganglion, 105.
143. 144. Nerve, anastomosing between the first left spermatic, 125, and fourth left renal ganglion, 343, Plate XXXVIII.
145. Anastomosis of nerve, 143, and 144, with the third left renal ganglion, 105.
146. Anastomosis of nerve, 143, with nerve, 141, 142.
147. Nerve, anastomosing between the first left spermatic ganglion, 125, and the first left lumbar ganglion, Plate XXXVIII.
151. &c. &c. Nervi anastomotici, arising by a common origin from the first left spermatic ganglion, 125, and inserted into the fifth left renal ganglion, 343, Plate XXXVIII.
153. Anastomosis of the first left spermatic ganglion, with the second left spermatic ganglion, 126.
154. Anastomosis of the second left spermatic, with the second left lumbar ganglion, Plate XXXVIII.
155. to 157. Three radices, by which the first left spermatic ganglion, 125, is joined with the third spermatic ganglion, 140.
158. Anastomosis of nerve, 306, arising from the first right spermatic, with the second left renal, 104, ganglion.
159. First anastomosis of nerve, 306, with the third left renal ganglion, 105.
160. Second anastomosis of nerve, 306, with the third left renal ganglion.
161. Anastomosis of nerve, 306, with nerve, 134.
162. Ana-

162. Anastomosis of the first left spermatic ganglion, with nerve, 306.
163. Anastomosis of the third left spermatic ganglion, with nerve, 306.
164. Nerve, which the third left spermatic ganglion distributes, and
165. Nerve, which nerve, 306, exhibits: they compose
166. A nerve, which joins with nerve, 307.—Thus, from the conjunction of nerve, 166, and 307, arise
167. A nerve, which the ascending rami of the inferior mesenteric artery sends to the superior mesenteric plexus.
168. to 172. Nerves, arising from the second right spermatic ganglion, 126, and third, 140, are those which contribute to compose the inferior mesenteric plexus of the great sympathetic nerve on the left side.
173. to 174. Rami hypogastrici, arising from the second left spermatic ganglion, 126.
175. Nervus hypogastricus, for the most part composed of rami, 315, 352, 166.
176. Nervus hypogastricus, arising from rami of the inferior mesenteric plexus.
178. to 182. Rami hypogastrici of the inferior mesenteric plexus.
- Thus, from rami of the great sympathetic nerve of the right and left side, this is from nerves 322, 337, 329, 175, 176, 178, 179, 180, 181, 182, the rami hypogastrici are composed, which, by various anastomoses, like net-work, at length, dividing into two fasciculi, they, by the following,

183, 184, to 187, are carried to the right side of the lowest part of the colon and rectum, to meet rami coming from the hypogastric plexus, o, 8, Plate XXXVI. Fig. I.

188. A nerve of the ureter, which runs to the preter.

189. to 197. Are those rami which run to the left side of the lowest part of the colon and rectum, as in a similar manner with the right rami, they contribute to form the plexus hypogastricus.

From all, and almost every single spermatic ganglion of the right and left side, a reticular nervous structure is formed.

9. 9. 9. The inferior mesenteric plexus, the elegance of which cannot be described: it is an immense number of nerves, which

198. to 201. Arise from the rete nervosum, which continually surrounds the continued trunk of the inferior mesenteric artery.

202. to 205. Elegant nerves follow, and in a kind of space between two branches of the inferior mesenteric artery.

206. to 212. The nerves are placed very numerous, which, at length, from 213, to 276, are carried, in general, to the colon.—Hence, it is evident, how much nervous influence is possessed by the colon.

Among the other nerves sent from the inferior mesenteric plexus, the following

277. to 28. Branches should be mentioned: the nerves which anastomosing with the superior mesenteric surculi, contribute to form the celebrated superior mesenteric plexus.

How wonderful is the structure of the Nervous System!!—How satisfactory do the various minute ramifications, anastomosing connections, account for the diversity and extent of all the symptoms of disease, that afflict human beings! Without this Science, it would be impossible to conceive the prototype form of symptoms; without knowing that all the trunks, branches, minute ramifications, and minutest surculi, or nervous twigs, communicate with one another: and, lastly, with the sensorium commune, from which all sensations originate—we could neither feel the pain of disease, nor could we have sense to seek for remedies.

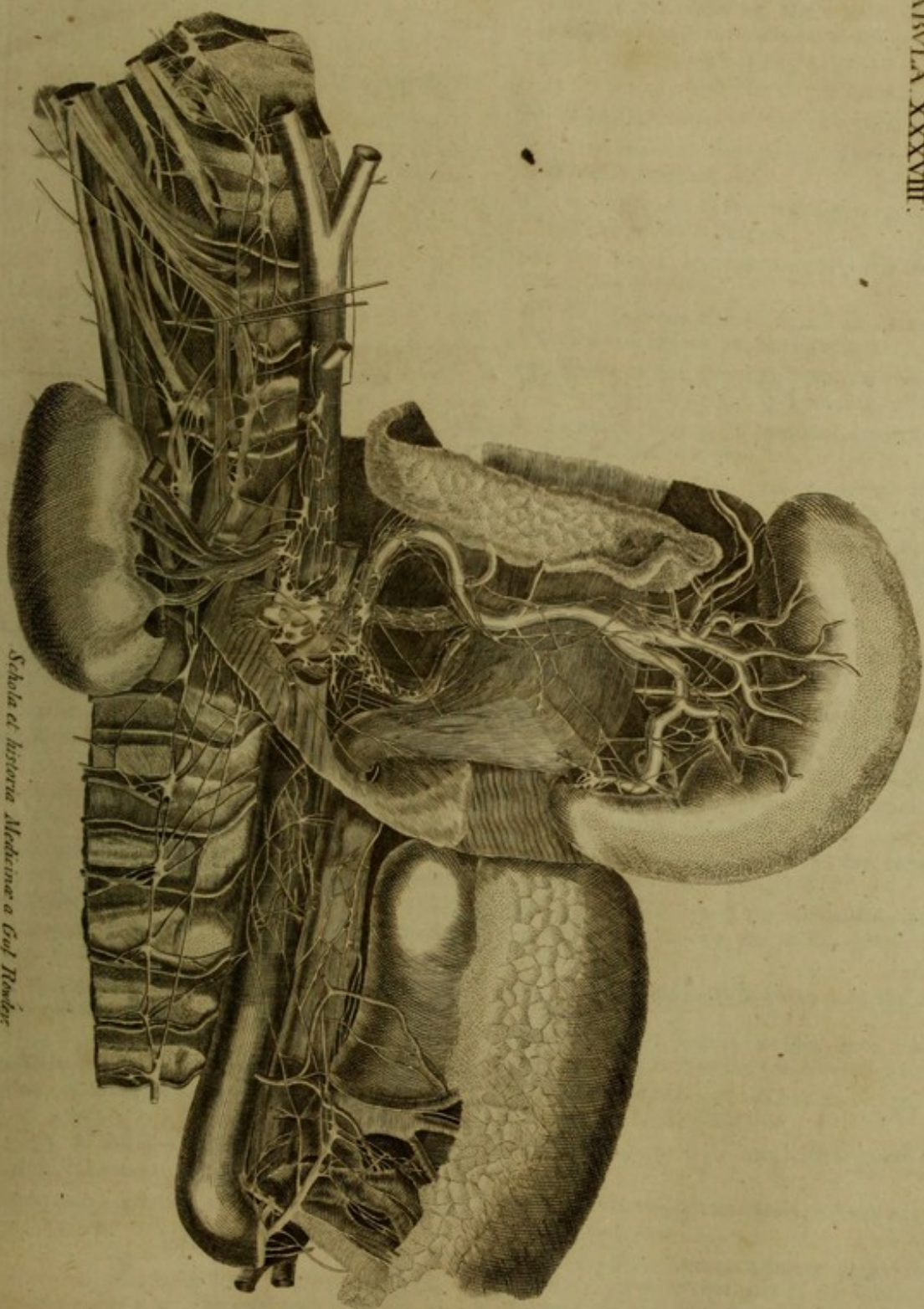
PLATE XXXVIII.

This Plate represents the great sympathetic nerve, and par octavum, or nervus vagus, on the left side of the body.—The course of the intercostal nerve begins beneath the sixth rib, and its further progress in the first spurious vertebra of the os-sacrum is cut off.

1. Seventh rib.
2. Eighth.
3. Ninth.
4. Tenth.
5. Eleventh.
6. Twelfth.
7. Ninth vertebra of the back.
8. Tenth.
9. Eleventh.
10. Twelfth.
- II. Second vertebra of the loins.
- III. Third.
- IV. Fourth.
- V. Fifth.
- I. First spurious vertebra of the os-sacrum.
- A. A. A. A. Left lung.
- B. B. B. Pericardium, and heart enclosed in it.
- C. C. C. Œsophagus.
- D. Cardia.
- E. E. E. E. The stomach.
- F. F. F. The pancreas.
- G. G. G. The spleen.
- H. H. H. The left kidney.
- I. Pelvis of the kidney.
- K. Ureter cut off.
- L. L. Left bronchus.
- M. M. M. M. Part of the lumbar diaphragm.
- N. Crus, or left external appendix of the diaphragm.
- O. Crus, or internal appendix of the diaphragm.
- P. P. &c. &c. The psoas major muscle, cut at the end to shew the exits of the lumbar nerves, and the origin of the lumbar ganglia.
- Δ. A. Δ. Musculus psoas minor.
- Q. Q. Q. Aorta.
- R. Left subclavian artery.
- S. Left carotid artery.
- T. T. Ductus arteriosus of botallus.
- V. Left superior bronchial artery.
- X. The œsophageal artery, from which runs

- Y. The left inferior bronchial artery, which is cut off.
- Z. Z. Left bronchial artery, cut off at its origin from artery Y, running down to the left bronchus.
- a. a. Anastomosis, between the left superior, and left inferior bronchial artery.
- b. b. b. Left pulmonary artery.
- c. c. Sac of the pulmonary veins.
- d. d. d. d. d. Pulmonary veins.
- f. Trunk of the cœliac artery.
- g. g. Left phrenic artery.
- h. Truncus communis of the left hepatic artery, and of the left superior coronary of the ventricle.
- k. Left hepatic artery.
- l. Right hepatic artery.
- m. m. m. The splenic artery.
- n. n. The pancreatic arteries.
- o. o. o. Arteria gastro-epiplocia, or left inferior coronary artery.
- p. p. Pancreatic arteries, which arteriæ, o, o, o.
- q. q. q. q. Rami lienales.
- r. r. r. r. Arteriæ breves of the stomach.
- s. Trunk of the superior mesenteric artery.
- v. v. v. Left renal artery.
- π. Left spermatic artery.
- x. Inferior mesenteric artery.
- y. Right iliac artery.
- z. Left iliac artery.
11. Fourth aortic intercostal artery.
12. Fifth.
13. Sixth.
14. Seventh.
15. Eighth.
16. Ninth.
17. Third lumbar artery.
18. Fourth.
19. Fifth.
20. Sixth left intercostal nerve.
21. Seventh.
22. Eighth.
23. Ninth.
33. Tenth.
34. Eleventh.
35. Twelfth.





36. First left lumbar nerve.
 37. Second.
 38. Third.
 39. Fourth.
 40. Fifth.
 41. Sixth left thoracic ganglion of the great sympathetic nerve, or *nervus intercostalis*.
 42. Seventh.
 43. Eighth.
 44. Ninth.
 45. Tenth.
 46. Eleventh.
 47. First left lumbar ganglion.
 48. 48. Second.
 49. Fourth.
 50. Fifth.
 51. *Nervus inastomoticus*, between the sixth and fifth left thoracic ganglion, or left trunk of the great sympathetic, or intercostal nerve.
 52. *Nervus anastomoticus*, between the sixth and seventh thoracic ganglion, or trunk of the great sympathetic nerve.
 53. Nerve, anastomosing between the seventh and eighth left thoracic ganglion, or trunk of the *nervus sympatheticus magnus*.
 54. Nerve, anastomosing between the seventh and eighth left thoracic ganglion, or trunk of the great sympathetic.
 55. 55. Nerve, anastomosing between the left ninth and tenth thoracic ganglion, or trunk of the great sympathetic bifid.
 56. Nerve, anastomosing between the left tenth and eleventh thoracic ganglion, or trunk of the great sympathetic.
 57. 57. Nerve, anastomosing between the left eleventh thoracic ganglion, and first left lumbar ganglion, or trunk of the great sympathetic.
 58. Nerve, anastomosing between the first and second lumbar ganglion, or trunk of the great sympathetic.
 59. 59. Nerve, anastomosing between the second and fourth left lumbar ganglion, or the trunk of the great sympathetic.
 60. Nerve, anastomosing between the fourth and fifth left lumbar ganglion, or trunk of the great sympathetic nerve, which
 61. 62. 63. 64. 65. Is divided into five *surculi*, but are united in the fifth left lumbar ganglion, 50.
 66. Nerve, anastomosing between the fifth left lumbar, and first left sacral ganglion, or trunk of the great sympathetic nerve cut off.
 67. 68. Two radices, by which the sixth left thoracic ganglion is formed, 41, arising from the intercostal nerve, viz. its anterior ramus, which takes place in all the thoracic, dorsal, and lumbar nerves, as hath already been shewn in Plate XXXVI.
 69. Radix simplex of the seventh intercostal nerve, running to the seventh thoracic ganglion.
 70. 71. Two radices of the eighth intercostal nerve, like a rope, comprehending the aortic intercostal artery, 13, which compose the thoracic ganglion.
 72. 73. 74. Three radices, arising from the ninth left thoracic nerve, which run to the ninth ganglion, 44.
 75. Posterior ramus of the intercostal nerve.
 76. First radix of the intercostal nerve, running to the tenth thoracic ganglion, 45.
 77. Second radix of the tenth intercostal nerve, by which the tenth ganglion is formed.
 78. 79. Nerve, anastomosing between the tenth and eleventh intercostal nerve.
 80. 81. Nervous *surculi*, which this anastomosis sends to the transverse muscle of the abdomen.
 82. Radix of the eleventh intercostal nerve, which this nerve gives to the eleventh left thoracic ganglion, 46.
 83. *Surculus*, which the twelfth thoracic nerve sends to the eleventh thoracic ganglion.
 83. 83. 84. 84. Two radices, which the twelfth thoracic nerve, 35, sends to the first left lumbar ganglion, 47.
- From Plate XXXVI. and XXXVIII. it is evident that the right and left twelfth thoracic ganglion is wanting, which is not always observed to be the case.
85. Radix of the first lumbar nerve.
 86. 87. Divided into two rami, which run to the trunk of the great sympathetic nerve, 58.
 88. 89. 90. Nerve, anastomosing between the first left, and second left lumbar nerve.—From this nerve arises the
 91. 91. First radix, which, after it has given
 92. A *surculus* to the *psaos major* muscle, runs to the left second lumbar ganglion.
 93. 93. Second radix, which the second lumbar nerve sends to the lumbar ganglion.
 94. 97. Two radices of the second lumbar nerve, which, at first, are united into one trunk, which there again is divided
 98. 99. Into two *surculi*, composing the first lumbar ganglion.
 100. 100. 100. Ramus, arising from the first left lumbar nerve that passed to the *transversalis abdominis*.
 101. Ramus of the first lumbar nerve, passing to *musculus quadratus* of the loins.
 102. Ramus, which the first lumbar nerve sends to the *psaos minor*.
 103. 106. Nerve, anastomosing between the first and second lumbar nerve.
 117. 120. 122. Ramus cutaneus of the first lumbar nerve, which expands in that part of the skin which covers the supreme and exterior region of the femur, where the tensor adheres to the fascia lata of the os-iliun, and is extended into the broad expansion of the femur.
 - Y 123. Ramus

123. Ramus of the first lumbar nerve, migrating to the first lumbar artery, which is expressly left out.
127. 128. 129. 130. 131. Nervus spermaticus externus of the left side, which, as in Plate XXXVI. Fig. I. 86, to 95, runs partly to the uterus with the ligamentum rotundum; another part carried through the abdominal ring, disappears in the skin of the mons veneris.
132. 140. 148. 149. 150. Nerve, anastomosing between the first and second left lumbar nerve.
162. 163. Rami of the second left lumbar nerve in the quadratus lumborum.
164. 165. Ramus of the second left lumbar nerve, going to the quadratus of the loins.
166. 167. A cutaneous branch of the two left lumbar nerve. It runs obliquely under the external crus of the descendens muscle of the abdomen, externally; disappears in the cutis which covers the inguinal glands.
168. 169. 170. Muscular rami, which the second lumbar nerve sends to the major and minor psoas muscle.
171. 172. The external cutaneous nerve of the knee, arising from the second left lumbar nerve.
175. 176. 177. Rami of the second lumbar nerve, consumed in the psoas major.
178. The obturator nerve.
179. 180. First radix of the obturator nerve which the second lumbar nerve exhibits.
181. 182. Second radix of the obturator nerve, arising from the third lumbar nerve.
183. Third radix, which the obturator nerve receives from the fourth lumbar nerve.
184. The crural nerve.
185. First radix of the crural nerve, which the second lumbar nerve sends.
186. Second radix of the crural nerve, arising from the third lumbar nerve.
187. 187. Third radix, arising from the fourth lumbar nerve.
188. 189. A branch of the crural nerve, migrating to the external iliac muscle.
190. 191. Anastomosis, between the third and fourth lumbar nerve.
192. Nerve, arising from the seventh thoracic ganglion, implanted in the fifth intercostal artery.
193. 194. Two nervous surculi, arising from the seventh thoracic ganglion, immediately
195. Are united into one trunk, which now
196. 197. Is expanded on the muscular coat of the aorta.
198. Ramus, which the thoracic ganglion sends partly
199. To the sixth intercostal artery, partly
200. To the aorta.
201. 202. An aortic branch, arising from the ninth thoracic ganglion.
203. Ramus aorticus, arising from the ninth thoracic ganglion, which immediately is divided into two rami.

204. First, migrates to the aorta.
205. Second, is joined with
206. 206. Nerve, which arises from the twelfth thoracic ganglion; therefore, from the conjunction of these rami,
207. 208. 209. Arise three surculi, of which two, 207, and 208, are terminated in the muscular tunic of the aorta; but the third, 209, forms a beautiful anastomosis with the fourth left celiac ganglion.
210. 211. Anastomosis, between the tenth thoracic ganglion, and the eleventh intercostal nerve.
212. 213. Two surculi from the trunk of the great sympathetic, which
214. Uniting into one nerve, going to the ninth intercostal artery.
215. 216. 217. 218. Principal trunk of the thoracic nerve.
219. First radix of the principal visceral nerve, spring up from the trunk, 52, of the nervus sympathetic.
220. Second radix, which the principal visceral nerve receives from the eighth thoracic ganglion, 43.
221. Third, which the ninth thoracic ganglion sends to the principal visceral nerve, 44.

The visceral nerve now descends from the thorax into the abdomen, whether its passage be between the external and middle appendix of the diaphragm, or between the middle and internal appendix, or as often as there are only two appendices of the diaphragm between the external and internal appendix.

222. 222. to 226. Is divided into many rami, (in this body into five) which soon after unite, and swell into one of the celiac ganglia.
227. 228. Trunk of the accessory sympathetic nerve, arising from the tenth thoracic ganglion.
229. Anastomosis, between the principal splanchnic and accessory nerve.
- When the trunk of the accessory visceral nerve migrates from the cavity of the thorax, into the cavity of the abdomen, in the same manner as in this subject.
230. to 235. It separates into six surculi, which, like principal visceral nerves, are formed into one or other celiac ganglion.
236. 236. Radix singularis, which the eleventh thoracic ganglion sends to the second left celiac ganglion, 245.
237. 237. Posterior renal nerve, which is divided into two rami.
238. The first forms an anastomosis, as under:
239. With the first left celiac ganglion, 244;
240. With the renal ganglion;
241. With the renal ganglion.
242. 243. Second ramus of the posterior renal nerve, contributes to form the left renal ganglion.—Thus, from the visceral nerves, the principal,
216. 217. 218. The secondary, 227,

228. With nerve, 236, and, at length, from the left renal nerve, are formed, in the left side of the body, those which are called left cœliac ganglion, uncertain in number and size.
244. First left cœliac ganglion.
245. Second.
246. Third.
247. 247. Fourth.
248. 248. Fifth.
249. Sixth.
250. Seventh.
251. Eighth.
252. 252. Ninth.
253. Tenth.
254. First nervus anastomoticus, Plate XXXVII. 12, between the tenth right, and fifth left ganglion, 248.
255. Second anastomosing nerve, Plate XXXVII. 12, between the tenth right, and fifth left, 248.
256. Anastomosis, between the right eleventh ganglion, Plate XXXVII. 12, and the ninth left ganglion, 252, and tenth, 253.
257. Eleventh left cœliac ganglion.
258. Twelfth left cœliac ganglion.
259. Left, and posterior portion of the ninth and tenth right cœliac ganglion; from which arise
24. The first radix of the phrenico-hepatic ganglion, Plate XXXVII.
25. Second radix of the latter ganglion.
- 26 Third radix.
27. Ganglion phrenico-hepaticum, which
3. γ. Divides into two surculi; these immediately run into one trunk, 28.
30. 30. Ramus, arising from radix, 24, which afterwards sends
11. A surculus to the nervous plexus, surrounding the common trunk of the coronary, and left hepatic artery, like a net, joins itself with nerve 28, into
160. One ramus, which is divided into two rami, viz. into one left supra-renal, and right hepatic.
261. 261. 261. 261. The supra-renal branch, carried on the left before the cardia, so as to terminate in the left supra-renal gland.
- Second right hepatic ramus in this Plate XXXVIII. could not be well described: on that account we have subjoined a better view of the same, in Plate XXXIX. marked 262, 263, 264.
2. Second principal ramus of the phrenico-hepatic ganglion, Plate XXXVII.
62. 263. Surculi, arising from the sixth left cœliac ganglion, 249, running to the left supra-renal glandula.
64. 265. 266. Three surculi, cut off, sent to the supra-renal glandula by the third left cœliac ganglion.
267. Nerve, anastomosing between the fourth left, and seventh cœliac ganglion.
268. Phrenic surculus, sent by nerve, 267, to the lumbar part of the diaphragm.
269. 269. Nerve, anastomosing between the fourth left cœliac ganglion, and nerve, 209.
270. Phrenic nerve of the fourth cœliac ganglion, terminated by many surculi in the concave surface of the lumbar part of the diaphragm, but cut off.
271. 272. Anastomosis, between the fourth and fifth left cœliac ganglion.
273. Phrenic nerve, arising from the fourth left cœliac ganglion.
274. 274. The hepatico-gastric nerve is elegant, and generates the fifth left cœliac ganglion.—From this nerve arise
275. 276. 277. 278. Four nervi phrenici, distributed on the concave surface of the diaphragm.—The nerve, 274, is divided into
279. 280. to 283. Five gastric and hepatic rami, which may be seen beautifully delineated in Plate XXXIX.
284. Phrenic nerve of the fifth left cœliac ganglion.
285. Nerve, anastomosing between the cœliac ganglion of the right and left side.
- ψ. The gastric plexus is wonderfully composed from the concourse, principally of the left cœliac ganglia, and of the eighth pair.
8. Plexus, hepaticus, formed from the cœliac ganglia, on the left side.
- ο. The splenic plexus is constructed with greater simplicity, from which four lienai, or splenic surculi are sent off,
- π. θ. λ. μ. Which are distinguished by the same numbers in Plate XXXIX. although the situation of the vessels.—Hence, also, the situation of the plexus is a little disturbed; yet it must be observed, that these plexuses adhere very firmly to the arteries, and that they cannot be prepared but with the greatest care and patience.
286. Radix of the left eighth cœliac ganglion, migrating to the splenic plexus.
287. First radix of the splenic plexus, which the fifth and sixth left cœliac ganglia exhibit.
288. First radix of the splenic plexus, arising from the fifth cœliac ganglion.
289. Second radix of the splenic plexus, which the fifth left cœliac ganglion sends off.
290. Third radix of the splenic plexus, arising from the fifth cœliac ganglion.
291. Radix, which the left and posterior part of the ninth and tenth right cœliac ganglion, 259, sends off.
292. 293. Two radices of the splenic plexus, which arise from the tenth left cœliac ganglion.
294. to 299. Pancreatic nerves on the right side from the splenic plexus.
300. to 313. Splenic nerves, accompanying the splenic artery.

314. Nervus pancreaticus.

315. to 320. Rami of the splenic nerves, following the course of the left inferior coronary, and gastro-epiploic arteries.

321. to 337. Nerves of the splenic plexus, which, with the rami, strictly so called, enter the splenic hilum.

338. to 341. Nerves, which run to the fundus ventriculi, with the arteria brevis.

α. Plexus mesentericus superior, interwoven from the left celiac ganglia.

95. First left renal ganglion.

96. Anastomosis of the first left renal ganglion, with the third right renal ganglion.—Plate XXXVI. Figure I.—Plate XXXVII.

104. Second left renal ganglion.

105. Third.

342. Fourth.

343. Fifth.

344. Sixth.

352. Seventh.

From the structure of the sixth and left seventh renal ganglia, arise

353. 353. The first anterior left renal nerve: this, and all the other anterior renal nerves, with rami of the renal artery, run to the hilum, and thus to the anterior substance of the kidney.

354. Surculus, running from the sixth left renal ganglion to the renal capsule.

355. 355. 355. Second anterior renal nerve of the sixth renal ganglion.

356. 356. 356. 356. Third anterior renal nerve of the sixth renal ganglion.

357. to 360. Three surculi, arising from the fifth left renal ganglion, which constitute one nerve, which is

361. 361. 361. 361. The fourth anterior renal nerve.

362. 362. 362. The fifth anterior renal nerve.

363. Anastomosis, between the first left lumbar ganglion, and the fifth left renal ganglion.

106. 107. A nerve of communication between the second renal ganglion, 104, and the eleventh left celiac ganglion.

108. Anastomosis of this nerve, communicating with the left first renal ganglion.

109. Anastomosis, between the first left renal ganglion, 95, and the eleventh left celiac ganglion, 257.

110. 111. Anastomosis, between the first left renal ganglion, 95, and the second, 104.

112. Anastomosis, between the first right renal ganglion, 254, and nerve, 110, 111.—Plate XXXVII.

113. Anastomosis, between nerve, 294, and nerve, 110, 111.—Plate XXXVII.

114. Nerve, anastomosing between the second left renal ganglion, and fourth, 342.

115. Nerve, anastomosing between the second left renal ganglion, 104, and third, 105.

118. Second anastomosis, between ganglion, 104 and 105.

119. Nerve, anastomosing between the second left renal, and fourth renal ganglion.

124. Nerve, anastomosing between the third left renal ganglion, and fourth left renal ganglion.

125. First left spermatic ganglion.

126. The second left spermatic ganglion.

133. 134. Nerve, anastomosing between the first left spermatic ganglion, and third left renal ganglion.

135. Nervus spermaticus primus, arising from nervus anastomoticus.

136. Second left spermatic nerve, arising from the first left spermatic ganglion.

137. Third left spermatic nerve, arising from the left spermatic ganglion; immediately

138. 139. It is divided into two rami.

141. 142. Nerve, anastomosing between the first right spermatic ganglion, 292, and third left renal ganglion, 105.

143. 144. Nerve, anastomosing between the first left spermatic, 125, and fifth left renal ganglion, 343.

145. Anastomosis of nerve, 143, 144, with the third left renal ganglion, 105.

146. Anastomosis, 143, with nerve, 141, 142.

147. 147. Nerve, anastomosing between the first left spermatic, 125, and first left lumbar ganglion.

151. 152. Anastomotoc nerves, arising by a common origin from the first left spermatic ganglion, 125, and terminated in the fifth left renal ganglion, 343.

153. Anastomosis of the first left spermatic ganglion, with the second left spermatic ganglion, 126.

154. Anastomosis of the second spermatic ganglion, with the second left lumbar ganglion.

155. 156. 157. Three radices, by which the first left spermatic ganglion, 128, is joined with the third spermatic ganglion, 140, Plate XXXVII.

158. Anastomosis of nerve, 306, arising from the first right spermatic ganglion, 292, Plate XXXVII. with the second left renal ganglion, 104.

159. First anastomosis of nerve, 306, with the third left renal ganglion, 105.

160. Second anastomosis of nerve, 306, with the third left renal ganglion.

161. Anastomosis of nerve, 306, with nerve, 134, Plate XXXVII.

364. Ramus, which contributes to form the inferior mesenteric plexus.—Plate XXXVII.

173. 174. Rami hypogastrici, which the second left spermatic ganglion, 176, sends off.

365. 365. Anastomosis, between the first and second left lumbar ganglion; from this anastomosis is given

366. A surculus

366. A surculus to the aorta.
367. Second surculus of nerve, 365, distributed in the muscular membrane of the third lumbar artery.
368. Radix, by the third lumbar nerve, to form
369. 370. Anastomosis, with the second lumbar ganglion, and
371. 371. With the fourth lumbar ganglion.
- From nerve, 371, 372, 373. two surculi, running to the aorta.
374. 374. Nervus anastomosis, between the fourth left lumbar ganglion, and nerve, 190, 191.
375. Nerve of the fourth left lumbar ganglion, which accompanies the fifth lumbar artery.
376. Radix, which the fourth lumbar sends to the fourth lumbar ganglion.
377. Radix, arising from the fourth lumbar nerve, running to the trunk of the great sympathetic nerve, 60.
378. 379. 380. 381. Four radices collected into
382. One, which runs to the trunk of the great sympathetic nerve.
383. 384. Two radices, which run from the fifth left lumbar nerve, and unite together, forming the following,
385. Which constitutes the fifth left lumbar ganglion.
386. 387. 388. Three radices of the fifth left lumbar nerve, which,
389. Running into one, Plate XXXVI. Fig. II. 5, form the fifth left lumbar ganglion.
390. Anastomosis, between nerve 387, and 61.
391. 392. 393. Arterious surculi, migrating to rami of the hypogastric artery.
- * Surculus, proceeding to rami of the hypogastric artery.—Plate XXXVI. Fig. II. 4.
322. &c. &c. Ramus hypogastricus of the first lumbar accessory ganglion, 316, Plate XXXVII. which, after forming the plexus, called Hypogastric, joins with the fourth left lumbar ganglion, 49.
- §. Ramus anastomosis of nerve, 322, by which the nervus sympathetic magnus of the right side behind the aorta, a little above the origin of the inferior mesenteric artery, is joined with the great sympathetic of the left side.
323. Arterious surculus of the hypogastric ramus, implanted in the inter-lumbar artery.—Plate XXXVI. Fig. I.
324. Anastomosis of hypogastric branch, with nerve, 117, Plate XXXVI. Fig. I.
345. 345. Radices, arising from the trunk of the great sympathetic nerve of the right side. 179, 130, Plate XXXVI. Fig. I. which compose
346. 347. 347. The communicating nerve, by which the great sympathetic of the right side, between the fourth and fifth vertebra of the loins, behind the iliac arteries, is joined with the sympathetic of the left side, No. 60.
348. 349. 350. Radices, arising from the fifth right lumbar ganglion, Plate XXXVI. Fig. I. which
351. Flow into one nerve, anastomosing with the trunk of the

great sympathetic of the left side, which, then by an elegant anastomosis, is joined with the trunk of the great sympathetic of the left side.—Plate XXXVI. Fig. I. and Plate XXXVI. Fig. II.

358. Anastomosis, between nerves, 348, 349, 350, 354, 355, Plate XXXVI. Fig. I. and Plate XXXVI. Fig. II.

394. Trunk of the nerve of the eighth pair, or par vagum.

395. 395, Left recurrent nerve of the eighth pair.

396. 397. 398. 400. Rami of the left cardiac nerve of the eighth pair.

401. to 405. Rami œsophagei superiores of the eighth pair.

406. First pulmonary nerve.

407. to 409. Divided into three surculi.

410. Second pulmonary nerve,

415. 416. Divided into two rami.

417. Anastomosis, between the second and third pulmonary nerve.

418. Fourth pulmonary nerve,

419. to 423. Divided into five surculi.

424. Fifth pulmonary nerve.

425. Anastomosis, between the fifth and third pulmonary nerves.

426. Sixth pulmonary nerve.

427. Seventh pulmonary nerve,

428. 429. Dividing into two rami.

These seven pulmonary nerves also come under the denomination of the pulmonary plexus.

When the eighth pair emits these pulmonary nerves, it is divided into many rami, in this subject.

430. to 432. Three remarkable rami are reckoned.

433. Œsophageal branch of nerve, 432.

Ramus of the eighth pair, 432, is the largest, which must be reckoned as a trunk of the left par vagum.

434. First anastomoses with ramus, 431, it passes before the œsophagus, and then unites with ramus, 431, and rami of the par vagum, of the right side.

435. to 436. Two surculi, rather anterior of the eighth pair, drawn to the right side before the œsophagus.

437. First anastomosis of ramus, 435, of the right par vagum, with ramus, 432, of the left eighth pair.

438. Second anastomosis of ramus, 435, with ramus, 432.

439. Anastomosis of a ramus of the right par vagum, 436, with a nerve of the right par vagum, 435.

440. Anastomosis of ramus, 436, with ramus, 432.

441. Gangliolum œsophageum, which is formed by ramus, 435, from which run

442. to 445. Four surculi œsophagei.

446. Ramus œsophageus of nerve, 432.

447. 448. Rami œsophagei of a nerve of the right eighth pair, 456.

Z

449. Second

449. Second anastomosis of nerve, 432, with nerve, 431.

450. Third anastomosis of nerve, 432, with nerve, 431.

451. Fourth anastomosis of nerve, 432, with nerve, 431.

452. to 455. Surculi œsophagei of nerve, 431.

When nerve, 32, as the trunk of the left par vagum has made so many anastomoses with the par vagum of the right side, and with the other rami of the left par vagum; then it passes through the sphincter œsophagei, from the thorax into the abdomen, and becomes

456. The anterior trunk of a plexus of nerves of the stomach and liver.

457. First anastomosis of nerve, 431, with 430, from which run

458. A surculus on the œsophagus.

459. Second anastomosis of nerve, 431, with nerve, 430.

460. 460. Rami œsophagei of nerve 431.

461. 461. Ramus of the right par vagum, conveyed down from the right cavity of the thorax into the left.

462. 462. 463. Two surculi of the right par vagum,

464. 464. &c. Running into one large branch, which, behind the œsophagus, as trunk of the right par vagum, is carried from the right cavity into the left, where this, and nerve, 461, form various anastomoses with rami of the left par vagum.

Nerve, 461, is divided into two rami:

465. The first is almost aortic; for it distributes

466. &c. The first surculus to the membrane of the aorta.

467. Second aortic surculus.

468. Third.

469. Fourth.

470. Fifth.

Besides the aortic rami,

471. A surculus runs from nerve, 462, which

472. Forms an anastomosis, with 431.

473. Disappears in the œsophagus.

474. The second ramus of nerve, 461, is bifid, of which

475. One part separates into two anastomotic sureuli,

476. 476. With a trunk of nerve, 464, and

477. With nerve, 430.

478. Another migrates to the ganglion œsophageum,

479. Having before made an anastomosis with nerve, 430.

480. 48. Anastomosis, between nerve, 430, and 464.

481. Ramus of nerve, 430, running to the ganglion œsophageum.

Thus, from three rami, 431, 478, and 481, is composed

482. The ganglion œsophageum, which

483. 484. 485. Gives three rami to the œsophagus.

When nerve, 430, has sent out the rami, mentioned above, it is joined with the trunk of the right eighth pair, 464; so that after it has penetrated through the sphincter of the diaphragm, it becomes

486. The posterior trunk of the rami of the stomach and liver; or, as we usually say, the posterior trunk of the plexus of the ventriculus and liver.—The trunk, thus formed, is divided into two principal rami.

487. The first ramus immediately divides into two surculi.

488. &c. The former is inserted into the left tenth cœliac ganglion, 253, and emits

489. The gastric anastomosing branch.

490. The other ramus of nerve, 487, is gastric.

491. 492. Which divides into two surculi, of which the one, marked 492, anastomoses with nerve, 490.—At length one of the rami

493. to 496. Is terminated in the posterior surface of the cardia.

497. Second ramus of the posterior trunk, 486, is subdivided into five rami.

498. The first is gastric; this, after anastomosing

499. With nerve, 490, is finished

500. 501. In the posterior surface by two surculi.

502. Second anterior ramus of nerve, 497, is gastric, which is distributed in the anterior surface of the cardia.

503. 503. Third ramus of the second branch of the posterior trunk, 486, is divided into

504. The posterior gastric ramus, terminated in the posterior surface of the superior curvature of the ventricle, and into

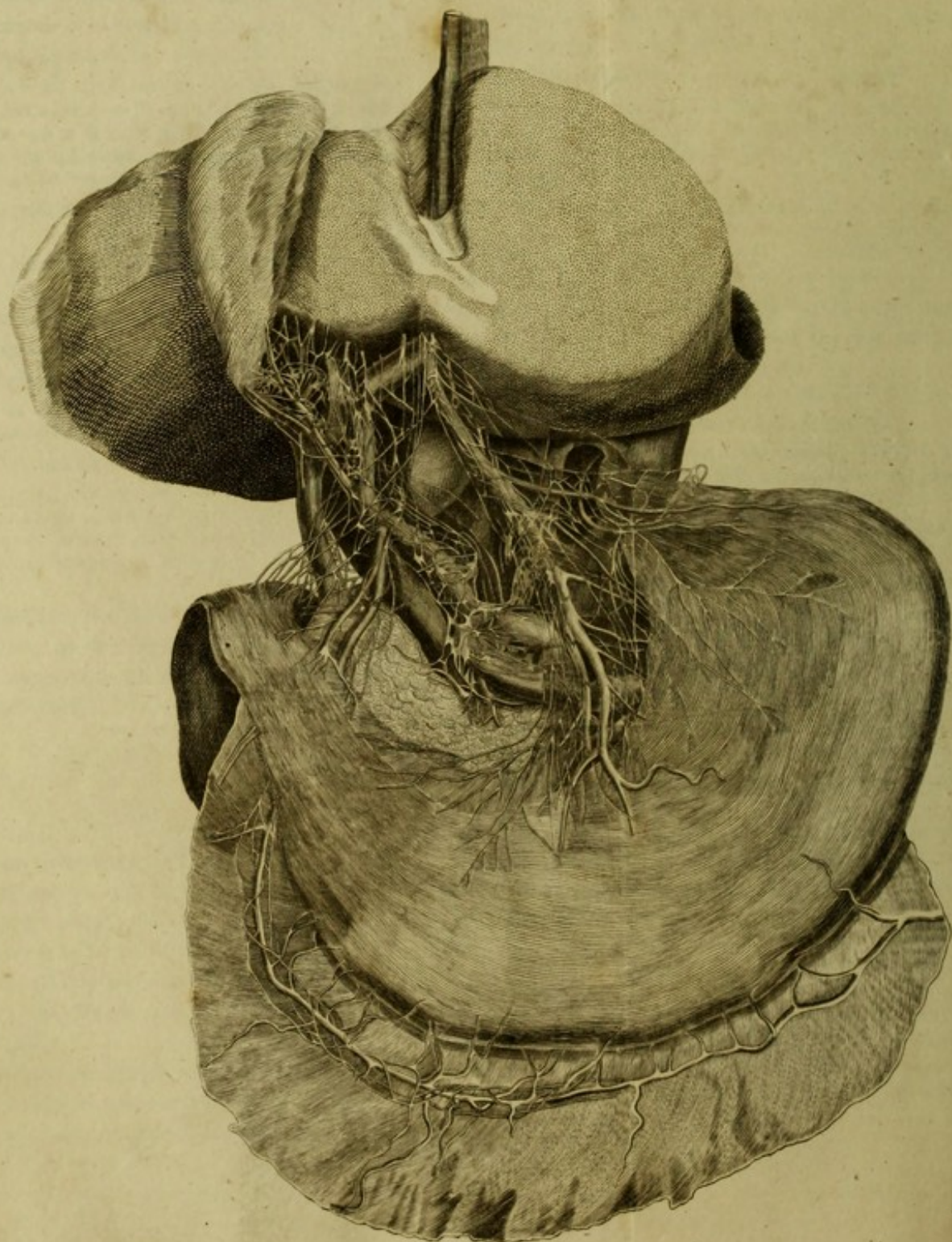
505. Ramus hepatico-gastricus.—The ramus hepatico-gastricus is divided into

506. 506. The ascending hepatic ramus, which, as Plate XXXIX. demonstrates, is terminated in the hepatic plexus, and

507. 507. Descending gastricus, which accompanying the left superior coronary artery, runs to the superior ora of the ventricle.

508. 509. Fourth and fifth ramus of nerve, 497, contribute to form the gastric plexus.

TABVLA XXXIX.



Schola et historia Medicinæ a Gul Rowley

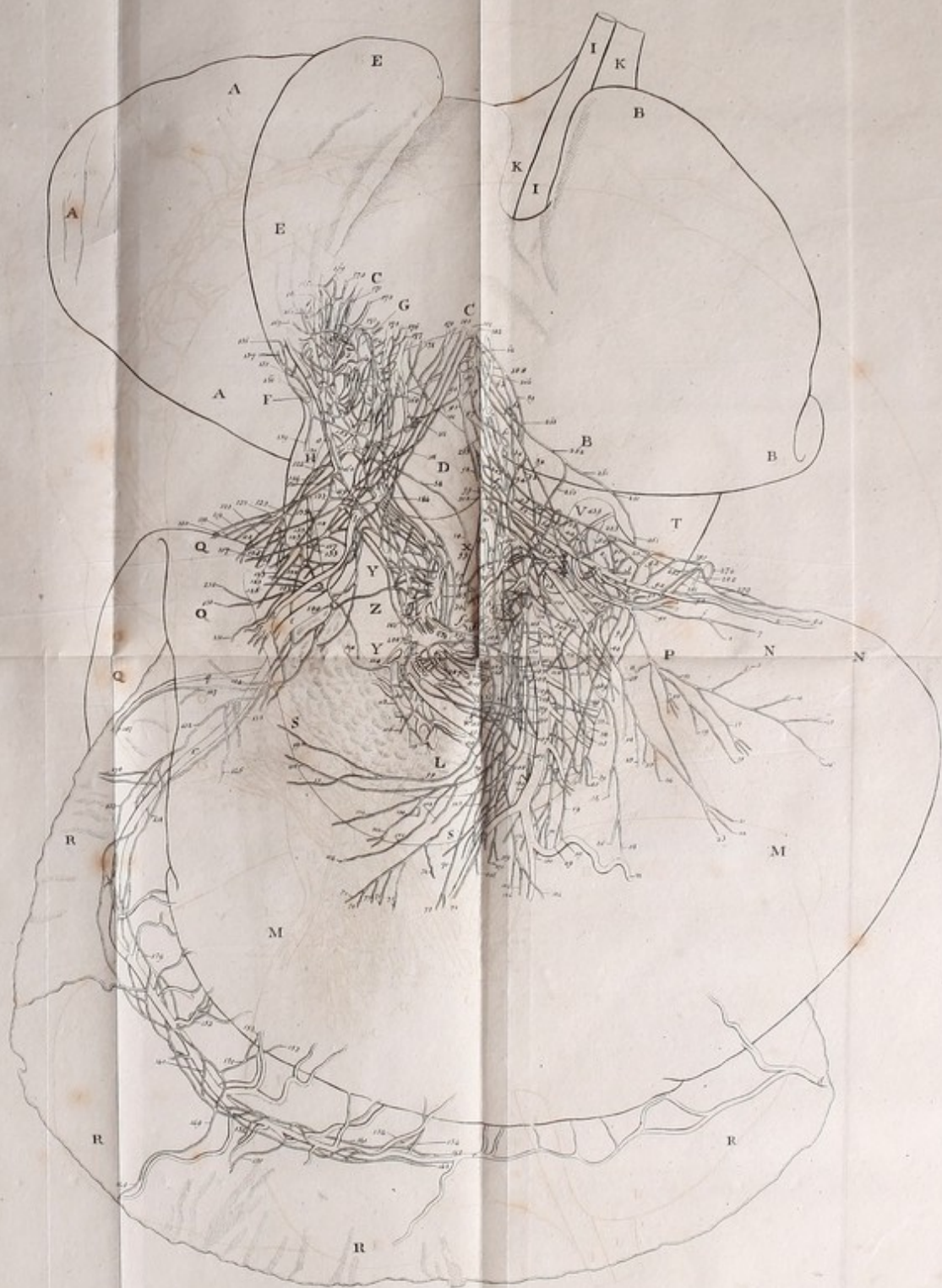


PLATE XXXIX.

Plate XXXIX. represents the Nerves of the Liver and Stomach, composed by the conflux of the right and left cœliac ganglia, which could not be so well expressed in Plate XXXVI. XXXVII. & XXXVIII.

- A. A. A. Inferior surface of the right lobe of the liver.
- B. B. B. Inferior surface of the left lobe of the liver, drawn upwards, and a little backwards.
- C. C. C. Lobus quadratus of the liver.
- D. Posterior, or spigelian lobe of the liver.
- E. E. The gall-bladder.
- F. Ductus cysticus.
- G. Ductus hepaticus.
- H. Ductus choloductus.
- I. I. Ligamentum rotundum, or round ligament of the liver.
- K. K. The broad ligament of the liver.
- L. L. The pancreas.
- M. M. The stomach.
- N. N. Fundus ventriculi.
- O. Pylorus.
- P. Cardia.
- Q. Q. Intestinum duodenum.
- R. R. R. R. Portion of the omentum majus.
- S. S. Portion of the omentum minus.
- T. T. T. Part of the lumbar diaphragm.
- V. Left superior orifice of the diaphragm, or sphincter of the œsophagus.
- X. Vena cava.
- Y. Y. Trunk of the vena portarum.
- Z. Right hepatic artery, which almost always arises from the aorta in a trunk, common with the left hepatic artery.
- a. a. a. The cystic artery.
- b. b. Right superior coronary artery.
- c. c. c. c. Right inferior coronary artery, or arteria gastro-epiploica dextra.
- d. Trunk of the left arteria gastro epiploica, cut off.
- f. Truncus communis of the left hepatic, and left superior coronary arteries.
- g. g. The left hepatic artery.
- h. h. The cardiac artery, arising from the left hepatic.
- i. Ramus stomachicus, which the left hepatic artery sends off.
- k. Arteria coronaria sinistra superior.

- l. l. l. Rami of the left coronary artery, which tend to the posterior surface of the stomach.
- m. m. m. m. Branches, distributed in the anterior surface of the stomach.
- o. o. The splenic artery.
- p. The pancreatic artery.
- q. The mesenteric artery.
- 247. Fourth, and left cœliac ganglion.
- 248 Fifth left cœliac ganglion.
- 249. The sixth.
- 250. The seventh.
- 252. &c.
- 253. &c.
- 26. Third radix of the ganglion phrenico-hepaticum.—Plate XXXVII. & XXXVIII.
- 2. Trunculus communis, 24, and 25, of the radices of the ganglion phrenico-hepaticum.—Plate XXXVII. and XXXVIII.
- 27. Ganglion phrenico-hepaticum, which
- β. γ. Divides into two surculi.—Plate XXXVII. and XXXVIII.
- 30. 30. Ramus, arising from radices, 24, which afterwards sends
- 31. A surculus to the nervous plexus, comprehending the truncus communis of the coronary, and left hepatic artery like a net, and joins itself with nerve, 28, Plate XXXVIII. into
- 260. 260. One ramus, which is divided into two rami, viz. the left supra-renal, and right hepatic ramus.
- 261. 261. 261. Ramus supra-renal, running to the left before the cardia, so that it is at length terminated in the left supra-renal glandula.—Plate XXXVIII.
- 262. 263. 264. Second right hepatic ramus, carried to the left side of the liver, with the left hepatic artery.
- 32. Second principal ramus of the ganglion phrenico-hepaticum.—Plate XXXVII.

The nerves of the liver are best divided into the right and left; but the nerves of the ventricle are not so, for this receives its principal nerves, in the left side, from the left cœliac nerve, and the eighth pair.

First, therefore, I will explain the left hepatic, and stomachic nerves; then the hepatic and right stomachic nerves will be explained.—Most of the nerves of the liver and stomach arise from the gastric and hepatic plexus; yet there are some solitary trunks, which very frequently anastomose

- mose with the above-mentioned plexus, but are in a peculiar situation with respect to the liver and stomach.
456. 456. Anterior trunk of the left nerve of the eighth pair, 32, Plate XXXVIII. is the principal nerve of the left nerves of the liver and stomach. Their rami may be best divided into the ascending hepatic, and descending stomachic rami.
1. 2. 3. Cardiac nerves, arising from the trunk, 256.
4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. Rami of a nerve of the eighth pair, 256, which run to the fundus ventriculi.
21. 22. 23. 24. 25. 26. to 41. Rami of the eighth pair, 456, which migrates to the body, and superior arch of the stomach.
42. First ramus ascendens, or hepaticus of the nerve of the eighth pair, 456, is divided into two surculi, of which
43. One disappears in the nervous plexus, which embraces the left hepatic artery.
44. 44. The other hepatic ramus of nerve, 42, forms an anastomosis with the third ramus, and ascendens hepaticus.
45. Second ramus ascendens, or hepaticus of the par vagum, 456, sends off
46. 47. 48. 49. Four nerves; the first nerve, 46, afterwards makes two.
50. 51. Anastomoses with the ramus of the left great sympathetic nerve, 283, and divides into two surculi.
52. The first surculus, in running upwards to the liver, is increased
53. 54. 54. By ramus, which the nervus plexus sends off, comprehending the left hepatic artery.
59. 60. 61. 62. 63. Unite in the hepatic plexus by many surculi, and are thus terminated in the liver.
64. 65. Second ramus of nerve, 46, descends, anastomosing with nerve,
66. Becomes the stomachic, and
67. 68. to 79. Is terminated in the ventricle.
- The second nerve, 47, of the second ramus ascendens, or hepaticus, 45.
80. Anastomoses with nerve, 64, 65; and makes
81. 81. Another anastomosis with the stomachic nerve:
82. 82. It has a third anastomosis with nerve 53, 54.
- The third, 48, and fourth, 49, nerve of the second ramus ascendens, or hepaticus, 45, partly
83. Increase the left plexus nervosus hepaticus,
84. Are inserted into the stomachic nerve.
85. Third nervus ascendens, or of nerves of the eighth pair, 456,
86. 87. Is inserted into nerve, 281, 282, and
88. Into nerve, 283.
274. Trunk of the nervus hepatico-gastricus, which the fifth left cœliac ganglion forms, 248, Plate XXXVIII.
279. 279. First ramus of the nervus hepatico-gastric, terminated in the superior part of the fundus ventriculi.
280. Second ramus of the nervus hepatico-gastricus cardiac
281. 282. Third and fourth ramus of nervus hepatico-gastricus, 274, and immediately run into
89. One nerve, which
90. Sends to the cardiac
91. 91. The first ramus anastomoticus with nerve, 283.
92. Second ramus anastomoticus; at length nerve, 89,
93. Is inserted into the nervous plexus, which increases the left hepatic artery.
283. 283. 283. 283. Fifth ramus of nervus hepatico-gastricus, 274. This nerve exhibits various rami, viz.
94. 94. 94. 94. The gastric nerve that is lost in the fundus ventriculi.
95. 95. The nerve, anastomosing with the anterior trunk of the left eighth pair, 456; nerve, anastomosing with 92 88, 50, 51,—After these conjunctions, the nerve, 283, sends off
96. 97. Rami, inserted into the left hepatic plexus: at length, nervus, 283, is inserted
98. 98. 98. Into the descending hepatico-gastric ramus; but this arises from the left hepatic plexus.
99. 99. 99. &c. &c. 100. 100. &c. &c. It is terminated in the superior arch of the stomach, after it has sent off
101. 101. 101. The nerve, communicating with the left hepatic plexus, and makes anastomosis with the nerves, 81, 64, 65.
- From the plexus gastricus, the following gastric nerves arise:
102. The first gastric nerve, which is augmented by a remarkable surculus, coming from nerve 81,
104. 104. &c. &c. &c. &c. Finishes in the superior arch, and anterior surface of the stomach.
105. &c. &c. &c. Second nervus stomachicus, formed by the gastric plexus.
106. 106. 106. 106. Third nervus stomachicus, tending to the posterior surface of the stomach, which the plexus stomachicus sends off.
107. 107. 107. Fourth nervus stomachicus, migrating to its posterior surface of the
108. &c. &c. 109. &c. &c. Fifth stomachic nerve, arising from the stomachic plexus.
505. Ramus hepatico-gastric, from the posterior trunk of the plexus ventriculi, 486, Plate XXXVIII.
506. 110. 111. Ramus ascendens hepaticus of nerve, 505, terminating in the left hepatic plexus.
507. 112. 113. 113. 113. Ramus descendens, which is joined by anastomosis, with ramus, 109, and thus running to the superior arch of the stomach, is terminated on both sides of the stomach.
488. 488. Ramus prior of the first branch of the trunk of the

the eighth pair, 486, Plate XXXVI. inserted into the tenth left celiac ganglion, 253.

489. 489. 489. Another anastomotic gastric branch of the ramus, prior of the trunk of the eighth pair, 486, Plate XXXVIII.

287. Radix of the splenic plexus, which the fifth and sixth left celiac plexuses forms.—Plate XXXVIII.

288. First radix of the splenic plexus, arising from the left celiac ganglion.—Plate XXXVIII.

289. Second radix of the splenic plexus, which the fifth left celiac ganglion sends forth.—Plate XXXVIII.

290. Third radix of the lienal plexus, arising from the left celiac ganglion.

291. Radix, which the left posterior part of the ninth and tenth right celiac ganglion sends.—Plate XXXVIII.

o. o. Plexus splenicus, from which

γ. θ. λ. μ. Four lienal surculi pass off.—Plate XXXVIII.

114. &c. to 16. Anterior pancreatic nerves, arising from the splenic plexus.

8. 8. 8. The right hepatic plexus, formed by ganglions of the right and left side; from this the liver, gall-bladder, stomach duodenum, and pancreas, receive nerves.

The duodenal nerves of the pancreas, and stomach, are descending rami of the hepatic plexus; the hepatic nerves, and those of the gall-bladder, are ascending rami.

117. 117. First duodenal ramus, which the right hepatic plexus exhibits.

118. 118. The second duodenal ramus of the right hepatic plexus.

119. 119. 119. The third duodenal ramus of the right hepatic plexus.

120. 120. 120. 120. The fourth duodenal ramus of the right hepatic plexus.

121. 121. Two surculi, arising from the hepatic plexus, which are

123. 123. Contracted into one nerve, and thus create the single fifth duodenal nerve.

124. 124. Sixth duodenal nerve of the right hepatic plexus.

125. 125. 125. 125. First right pancreatic nerve, arising from the right hepatic plexus.

126. 126. Second right pancreatic nerve of the right hepatic plexus.

127. 128. Third and fourth right pancreatic nerve.

129. A nerve, which, with the superior right coronary artery, runs partly

130. 130. To the commencement of the duodenum, and partly by No. 131, towards the pylorus.

132. to 143. The right nervi gastro-epiploici, arising from the right hepatic plexus.—These nerves follow the course of the coronary artery, and in various ways, form anastomoses.

144. 145. Posterior, and inferior pyloric nerves.

146. A nerve, arising from the gastro-epiploici nerves, and distributed in the anterior surface of the antrum pylori.

147. 147. First omental nerve.

148. The second.

149. 149. Third.

150. Fourth.

151. Fifth omental nerve.—All these nerves spread over the greatest part of the omentum, accompanied by the omental arteries; yet they send off a very minute surculus to the omentum, strictly so called; but they all disappear in the coat of the omental arteries.

152. to 154. Rami of the gastro-epiploicus nerve, which are terminated in the inferior margin of the stomach.

55. 56. 57. Three elegant trunks, arising from the right celiac ganglia, Plate XXXVII. which augment the hepatic plexus.

58. 58. Fourth hepatic nerve, Plate XXXVII. arising between the aorta and vena cava, a little from the left by the vena cava, it is covered, then ascending, it so proceeds to the liver, that, after uniting with the hepatic ramus, composed of the 55, and 57 ramus, it is terminated in the hepatic plexus.

From this hepatic plexus the nerves arise, which migrate to the ductus choledochus, to the ductus cysticus, to the gall-bladder, to the hepatic ductus, and even to the liver itself.

155. 155. 155. Nerves, implanted in the ductus choledochus.

156. to 159. Nerves, which are distributed on the cystic duct.

160. 160. Nervus cysticus, which disappears in the muscular coat of the arteria cystica, which it accompanies.

161. to 166. Nervi cystici, consumed in the gall-bladder.

167. 168. Nerves, disappearing in the hepatic duct.

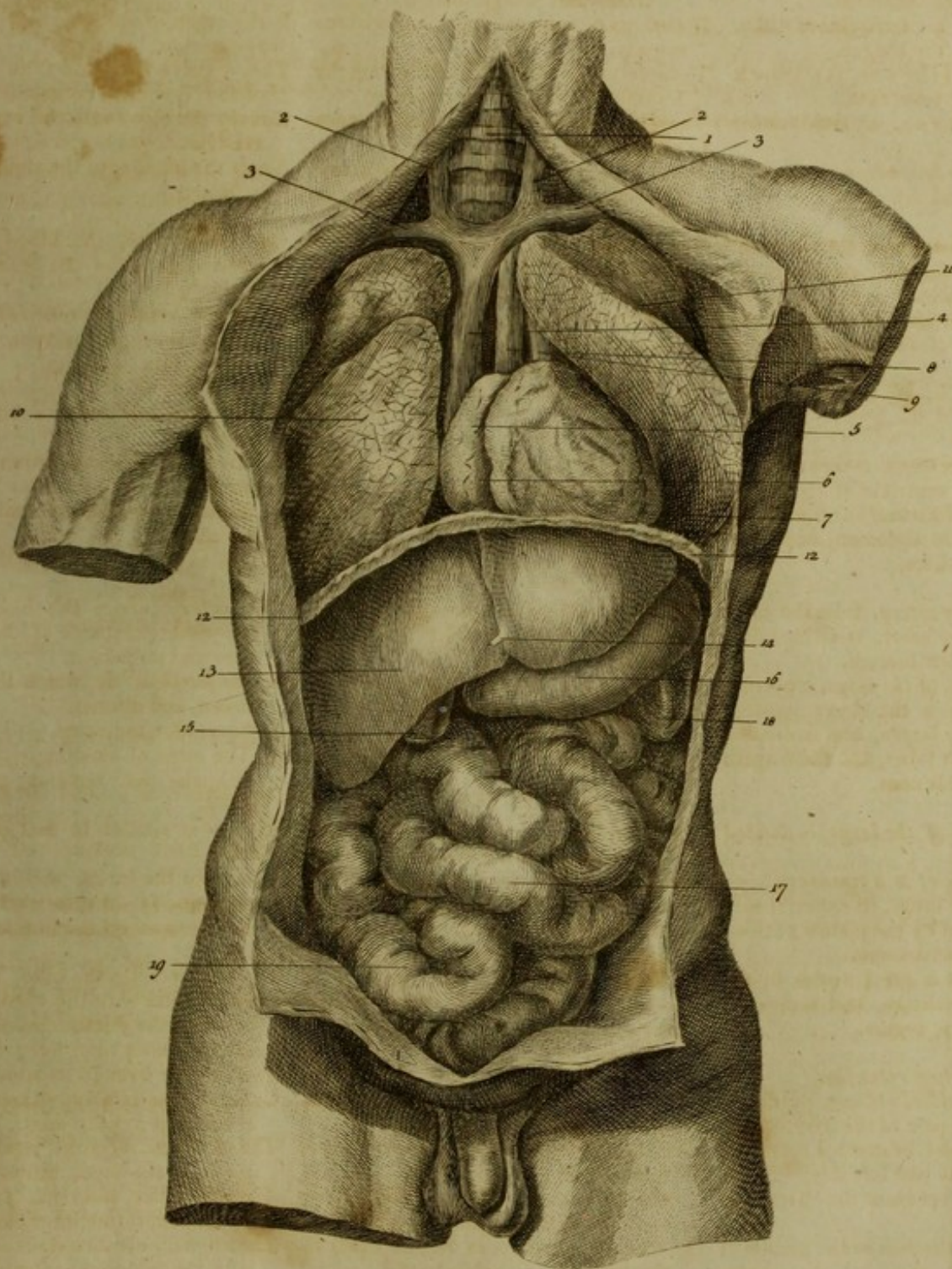
169. 170. to 182. Hepatic nerves, accompanied, partly by the arteria hepatica, partly by the vena portarum to the substance of the liver; and the name of posterior hepatic nerves is mostly given to those nervous surculi, which go to the liver with the vena portarum.

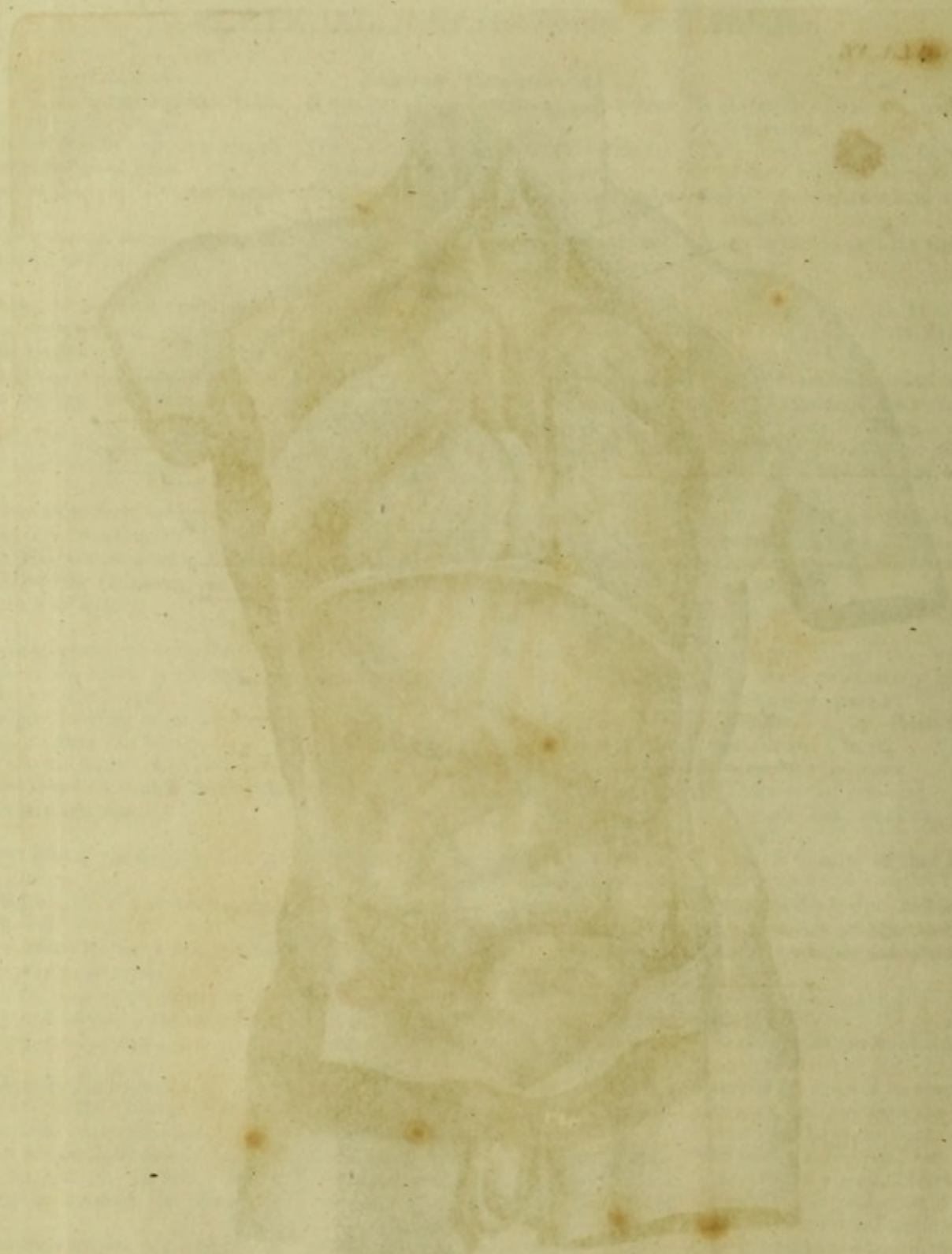
In the right and left hepatic plexus, and in its anterior and posterior rami.

183. 184. 185. to 188. Hepatic ganglia are observable, of uncertain form, size, and number.

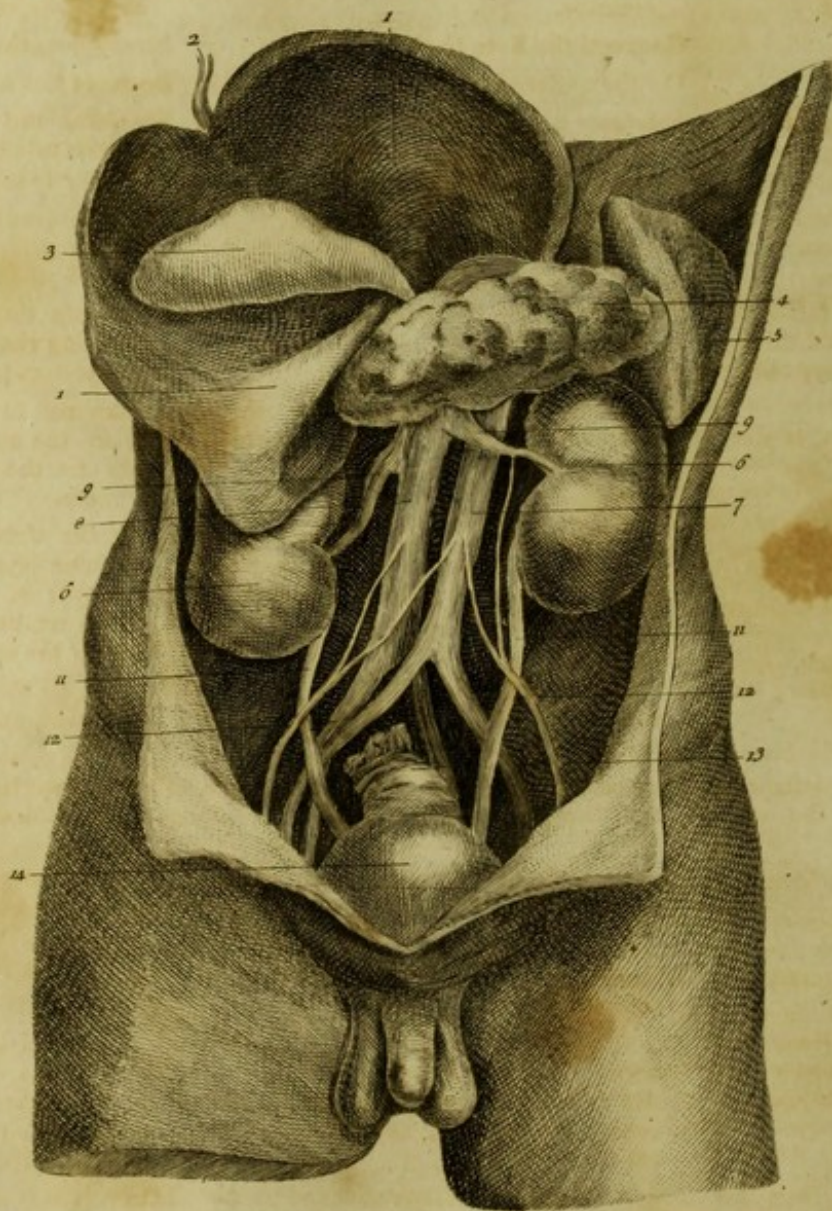
PLATE XL. *Of the Thorax and Abdomen.*

| <i>Name and Situation.</i> | <i>Structure, Connection, &c.</i> | <i>Use.</i> |
|---|---|---|
| 1. The <i>larynx</i> , is a cartilaginous tube, situated behind the tongue. | It consists of five cartilages, and various muscles. | Is the organ of speech, and serves for respiration. |
| 2. The <i>internal jugular vein</i> , is a branch of the superior vena cava. | The internal jugular veins begin from the foramina lacerata of the cranium. | They receive the blood from the sinuses of the cerebrum, cerebellum, &c. |
| 3. The <i>subclavian vein</i> , situated under the clavicles. | They terminate in the superior vena cava. | Convey the blood into the vena cava ascendens. |
| 4. The <i>vena cava descendens</i> , is divided into superior and inferior. | Receives the subclavian, external, and internal jugular veins, and the vena azygos. | Sends the blood into the right auricle of the heart. |
| 5. The <i>right, or anterior auricle of the heart</i> , a muscular sac, opening into the right ventricle. | The structure is membranous; there are two valves, called Mitral Valves, annexed to it. | By this auricle, the blood enters the right ventricle of the heart. |
| 6. The <i>right ventricle of the heart</i> , is the anterior cavity of the heart. | The heart is divided into right and left ventricle by a carneous substance, called the <i>Septum</i> . | The right ventricle receives the blood carried through the vena cava, and sends it into the lungs. |
| 7. A portion of the <i>left ventricle</i> , in the posterior part of the heart. | This ventricle is stronger than the right. | From it the blood is propelled through the aorta and arteries all over the body. |
| 8. The <i>aorta descendens</i> , makes an arch from the right ventricle of the heart, towards the vertebræ of the back, descends into the abdomen, and is divided into the iliaes. | The arch of the aorta gives off:
1. The arteria innominata.
2. The left carotid.
3. The left subclavian. | 1. Gives off the subclavian and right carotid.
2. From thence the external and internal carotids.
3. The subclavian gives off the submaxillary. |
| 9. The <i>pulmonary artery</i> , from the right ventricle of the heart, is divided into the right and left branch. | Is distributed into innumerable branches and ramuli of a net-like figure into the pulmonary vesicles. | This artery carries the blood through the whole substance of the lungs, to alter and prepare it. |
| 10. The <i>right lobe of the lungs</i> , a portion of it off, to shew the larger vessels; the right is the larger, and is divided into three lesser lobes, and these again into innumerable ones. | The lungs are connected with the sternum and vertebra, by means of the mediastinum, with the heart by the pulmonary vessels, with the arteria aspera. | 1. Respiration, by which the blood is mixed, and altered.
2. Serves for the voice.
3. The sense of smelling.
4. Expels the noxious particles of blood. |
| 11. The <i>left lobe of the lungs</i> , is divided into two lobes. | The substance consists merely of small vesicles, and various vessels. | Its use is similar to that of the right lobe. |
| 12. The <i>diaphragm</i> , is a transverse septum below the lungs, its superior surface is covered by the pleura; its inferior by the peritoneum. | Its substance is muscular, tendinous; it is connected with the sternum, spurious ribs, pericardium, mediastinum, liver, and lumbar vertebræ. | It sustains the lungs, and is essential to respiration; it also excites motion and pressure on the intestines. |
| 13. The <i>liver</i> , is a great viscus in the right hypochondrium, and somewhat in the epigastric region. | The substance is vascular; the interior membrane of the liver, which invests the whole substance, is from the peritoneum. | The liver secretes the bile. The hepatic duct unites with the cystic duct, and becomes the ductus choledochus. |
| 14. The <i>ligamentum rotundum</i> . | Becomes tendinous in the adult. | Sustains the liver in its situation. |
| 15. The <i>gall-bladder</i> , oblong, pyriform, in the inferior part of the liver: | Consists of several coats, <i>common, vascular, muscular, and nervous</i> . | Collects the bile into the duodenum, through the cystic duct. |
| 16. The <i>ventriculus, or stomach</i> , is pressed by the liver to the left side. It is a large cavity between the liver and spleen. | Is connected with the œsophagus, omentum, spleen, the left orifice, called <i>Cardia</i> , is annexed to the diaphragm; the right <i>pylorus</i> to the duodenum. | The stomach receives, retains, digests, prepares the food, dilutes it with the gastric juice, and sends it through the duodenum to the intestines. |
| 17. The <i>small intestines</i> in the middle of the abdomen: they are the duodenum, jejunum, ileum; all which are connected and regulated by the mesentery: the large intestines are the cæcum, colon, and rectum. | 1. The duodenum is in length equal to the breadth of twelve fingers.
2. The jejunum fifteen spans, situated in the umbilical region.
3. The ileum twenty spans long, in the hypogastric region. | The aliments are mixed in the duodenum with the bile and pancreatic juice.
2. This is mostly empty, on account of the vivid action of the lacteals.
3. Contains an infinite number of lacteals, absorbs the chyle, and sends it off to the mesenteric glands. |
| 18. The <i>spleen</i> , | | |





TABVLA XLI



Schola et historia Medicinae a Gul Rowley

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PLATE XLI. *On the Abdomen.**Name and Situation.**Structure, Connection, &c.**Use.*

- | | | |
|---|---|--|
| 1. The inferior part of the liver: covers the duodenum, pancreas, &c. | Its <i>superior surface</i> is convex; <i>inferior concave</i> . | Receives the blood of the <i>vena portarum</i> , and separates the bile from it. |
| 2. The round ligament. | Connects the liver to the umbilicus. | Strengthens the liver in the adult. |
| 3. <i>Vesicula bilis</i> , or gall-bladder. | On the under side of the liver. | Receives the bile. |
| 4. <i>Pancreas</i> is a great smooth gland, behind the stomach, extending from the duodenum towards the lien, or spleen. | <i>Substance</i> is glandulous. It is connected with the duodenum, mesentery, splenic vessels, and spleen. | Separates the pancreatic juice, which serves to attenuate the chyle, being similar to saliva. |
| 5. <i>Lien</i> , spleen, is a viscus in the left hypochondrium, near the bottom of the stomach, covered by the ribs. | <i>Substance</i> : cellulous, vascular.
<i>Connexion</i> with the stomach, pancreas, diaphragm, and left kidney. | It receives much blood, as is evident by its vessels: authors, as yet, are not agreed on its use. |
| 6. <i>Renes</i> , kidneys; behind the sac of the peritoneum, in the loins, round the bodies of the superior lumbar vertebræ. | <i>Substance</i> is firm and hard.
1. Exterior, <i>cortical</i> .
2. Interior, <i>tubulous</i> . | To secrete the urine in its pelvis for depurating the blood, and to convey it by the ureters to the bladder. |
| 7. The aorta.
From the arch to the diaphragm, it gives the following branches: | 1. Bronchial; 2. œsophageal; 3. eight inferior intercostal; 4. four diaphragmatic arteries. | 1. They run to the <i>vesiculæ pulmonales</i> ; 2. to the œsophagus; 3. to the eight ribs to the sternum; 4. to the diaphragm. |
| In the abdomen, and below it, gives | 1. Cœliac artery; 2. superior mesenteric; 3. renal; 4. spermatic; 5. inferior mesaraica; 6. lumbar; 7. sacral; 8. iliac. The branches pass | 1. To the stomach, liver, spleen; 2. intestinum jejunum, cœcum, colon; 3. kidneys; 4. testicles; 5. colon, intestinum rectum; 6. loins and abdomen; 7. near the os sacrum; 8. to the legs. |
| 8. <i>Vena cava ascendens</i> , vel <i>inferior</i> ; the rami, or branches, are: | 1. Hepatic; 2. renal; 3. right spermatic; 4. lumbar; 5. sacral; 6. iliac veins. | Receive all the blood returning from the abdomen, and inferior extremities. |
| 9. <i>Vena emulgens</i> ; right and left; are inserted into the trunk of the vena cava. | They are divided near the kidneys into two, three, four, or five rami. | They return the blood from the kidneys to the vena cava. |
| 10. The <i>spermatic arteries</i> arise from the aorta; the right vein is emptied into the vena cava. | They pass down into the testes, divide into many small branches, terminating in tubuli testis, and spermatic veins. | They carry the blood to the testes. The left vein flows into the emulgent. |
| 11. <i>Ureters</i> ; two canals, which terminate in the vesica urinaria. | <i>Substance</i> is membranous. The size of a large quill. | They carry the secreted urine to the vesica urinaria, or bladder. |
| 12. The iliac vessels; arise from the aorta, and about the last vertebra of the loins, are divided into two rami. | 1. Internal, commonly called <i>Hypogastrica</i> , and <i>Hæmorrhoidalis Externa</i> .
2. External, whence <i>epigastric</i> ; 2. <i>pudenda</i> ; 3. <i>external</i> , and <i>internal cruralis</i> . | They proceed towards the bladder, rectum, parts of generation, nates, &c.
1. Goes through the musculus rectus to the mammæ; 2. to the pudenda; 3. to the crura, and feet. |
| 13. <i>Intestinum rectum</i> ; begins from the colon to the lowest vertebra of the loins; and terminates in ano. | The intestinum rectum is annexed to the os sacrum, coccygix, and bladder in men; but in women, to the vagina uteri. | The rectum is surrounded with much fat, that in the excretion of the fæces, it may be easily dilated. |
| 14. <i>Vesica urinaria</i> , or urine bladder; situated in the pelvis; the two ureters carry the urine from the kidneys; but the bladder discharges it at proper periods through the penis. | 1. It is connected with the os pubis by the peritonæum; 2. with the parts of generation by the urethra; 3. with the umbilicus by the urachus and umbilical arteries; 4. in the males, it coheres with the intestinum rectum; in women, with the vagina uteri. | Destined to collect and expel the urine;
1. by its retaining, and 2. by its muscular expulsive powers, through the urethra; which action is called, voiding of urine. |

P L A T E XLII.

Figure I.

THE THREE TUNICS OF THE EYE TAKEN AWAY FROM THE ONE SIDE, TO SHEW THE HUMORS IN THEIR NATURAL SITUATION.

a. The optic nerve. *b.* The three tunics of the eye reflected. *c.* The vitreous humour. *d.* The crystalline lens. *e.* The retina lying under the vitreous humour. *f.* The anterior termination of the retina. *g.* The posterior striated part of the ciliary body. *h.* Folds of the ciliary processes, resembling white rays. *i.* A place where, from both sides of the lens, white rays appear distant from the lens. *k.* The pupil conspicuous through the pellucid lens.

Figure II. ARTERIES OF THE EYE.

A. The superior palpebra. *B.* The superior oblique muscle with the trochlea. *C.* The adducent muscle. *D.* The depressor muscle. *E.* The abducent muscle. *F.* The anterior part of the attollens muscle cut off. *G.* The lachrymal gland. *H.* The bulb of the eye. *I.* The circumference of the cornea. *K.* The optic nerve. *L.* The first branch of a nerve of the fifth pair cut off. *a.* The ophthalmic artery. *b.* Ramuli of the optic nerve to the dura mater in the foramen opticum. *c.* Small accessory arteries with the first branch of the fifth pair of nerves, arising from the meningeal, and inserted into the lachrymal branch. *d.* The lachrymal branch. *e.* Ramuli to the abducent muscle. *f.* Very thin ciliary arteries, arising from the lachrymal, and ending in the sclerotic. *g.* The inferior muscular branch. *h.* A larger branch of it, from which arises the central artery, covered by the optic nerve, &c. *i.* The interior, inferior ciliary. *k.* A branch of the adducent, and inferior oblique muscle. *l.* A branch of the depressor muscle. *m.* The exterior ciliary muscle. *n.* A thinner branch of it, which is principally dispersed over the surface of the sclerotic. *o.* Ciliary surculi, perforating the sclerotic. *p.* A surculus to the sclerotic. *q.* The arterial circle around the passage of the optic nerve, through the thick part of the sclerotic. *r.* A branch to the attollent muscle cut off. *s.* Ramuli of the optic nerve to the dura mater. *t.* The supra-orbital branch, accompanying the frontal nerve. *u.* The posterior ethmoid artery. *x.* A branch of the superior oblique muscle. *y.* A branch of the superior oblique muscle. *z.* The anterior ethmoid artery. *1.* A trunk below the trochlea, emerging from the orbit, and divided into palpebral, and other anterior rami. *2.* *2.* *2.* Ramuli, with the recti muscles of the eye, which go off near the cornea into *3.* *3.* *3.* anterior ciliary arteriola, perforating the sclerotic.

Figure III.

THE LONG AND SHORT CILIARY ARTERIES. CIRCLE OF THE IRIS.

a. Sclerotic reflected. *b. b.* Two long ciliary arteriola. *c. c.* Two large rami, into which every long arteriola is divaricated. *d. d. d.* Ramuli, springing out of each branch

of the bifurcation, and going to the interior circle. *e. e.* The interior circle. *f.* This is duplex in some places. *g. g. g.* The anterior ciliary arteries, inserted into the interior circle. *h. h. h.* Short ciliary arteries. *i. i. i.* A mutual anastomosis between them behind the ciliary orbiculus. *k. k.* Surculi, going into the circle of the iris. *l. l.* The small arteries of the iris. *m. m.* Arches, by which they are joined about the lesser annulus of the iris. *n.* Surculi, going from those arches towards the pupil.

Figure IV.

THE FABRIC OF THE IRIS, AND SMALL CILIARY NERVES.

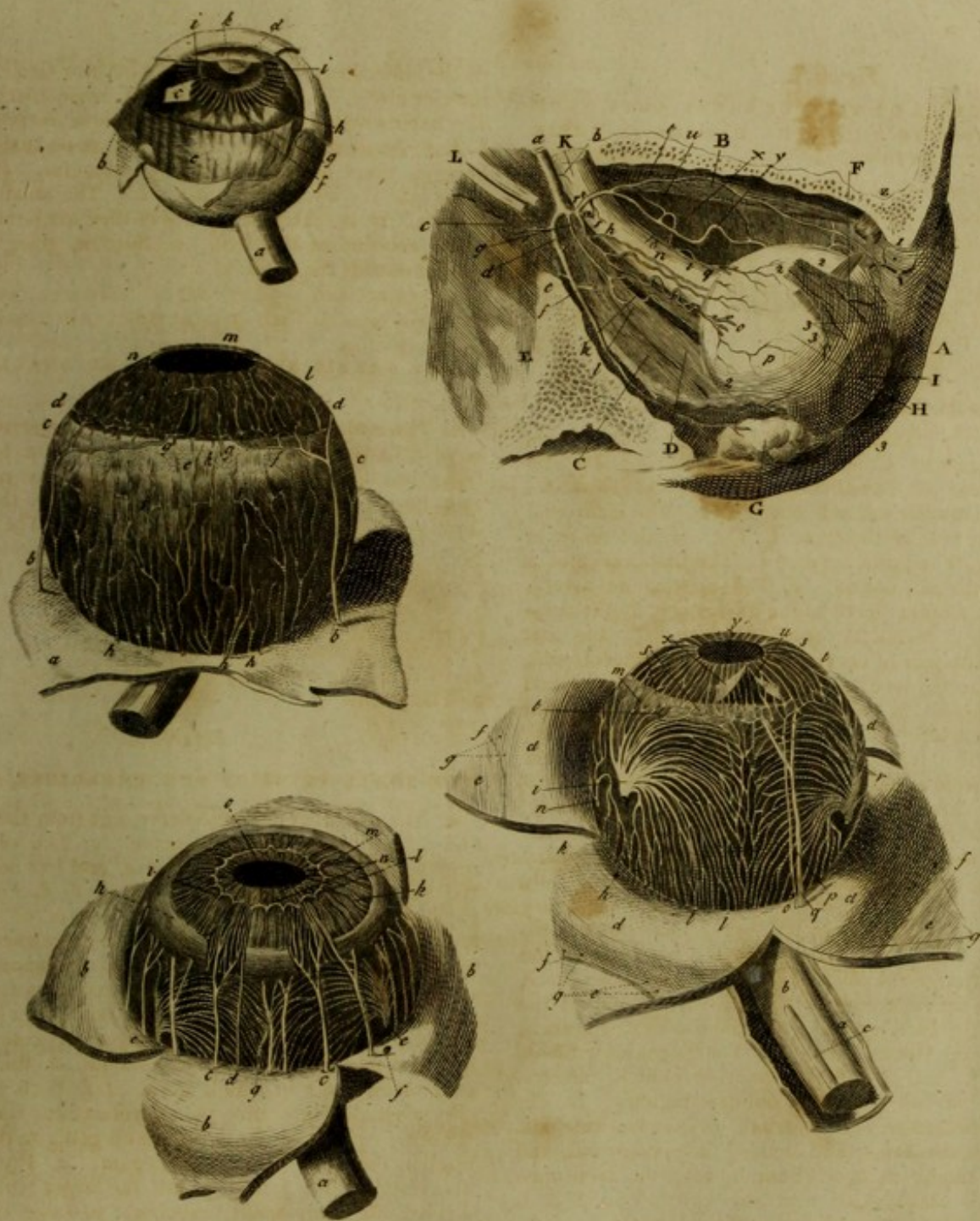
a. The optic nerve. *b.* The sclerotic, reflected. *c.* Other large ciliary nerves, anteriorly divided into branches. *d.* Other less branches, scarcely large enough to ramify. *e. e.* Two large venous vessels. *f.* A foramen in the sclerotic, through which passes the venous vessel. *g.* The least venous vessel. *h.* The ciliary orbiculus. *i.* The great annulus of the iris. *k.* The parallel serpentine fibres of the iris. *l.* Larger fibres, joined together by curvations, the greater number of which constitute the lesser circle of the iris. *m.* The interior smaller annulus of the iris. *n.* Straight fibres from the convexity of the arches going to the pupil. *o.* The pupil.

Figure V.

THE SMALL VEINS OF THE CHOROIDES, AND IRIS.

a. The vagina of the optic nerve, cut from the dura mater, and reflected. *b.* The optic nerve. *c.* The central venula running on the surface of the nerve, and lost near the eye in the substance of the nerve. *d. d. d. d.* Four reflected angles of the sclerotic. *e. e. e.* Angles of the cornea. *f. f. f.* The black circulus which distinguishes the cornea from the sclerotic. *g. g. g.* Small foramina of the sclerotic near the cornea, for the passage of the anterior ciliary vessels, arteries, and veins. *h.* Larger foramen, for the vorticosse vessel. *i. i.* Two larger vorticosse vessels from the other side, divided into many ramuli. *k.* Ramuli, running backwards, some of which meet. *l. l.* With the posterior ciliary venula perforating the sclerotic near the insertion of the optic nerve. *m.* Anterior ramuli going to the iris. *n.* A smaller vorticosse vessel, less elegant. *o.* The intermediate accessory venula, joined to both the larger vorticosse vessels, divided into many small branches. *p.* Long ciliar venula. *q.* The ciliar nerve, the constant companion of the venula longa. *r.* Two ramuli, into which the long ciliar venula is divaricated, under the callosity of the ciliar orbiculus. *s. s.* Three anterior ciliary small veins cut off. *t. t.* Lateral ramuli, with which the venula passing from the choroides into the iris communicate. *u.* Parallel serpentine venulae of the iris. *x.* The anterior lamella of the iris, reflected. *y.* The pupil.

TABVLA XIII.



Schola et historia Medicina a Gul Rowley.

Boyer sc.

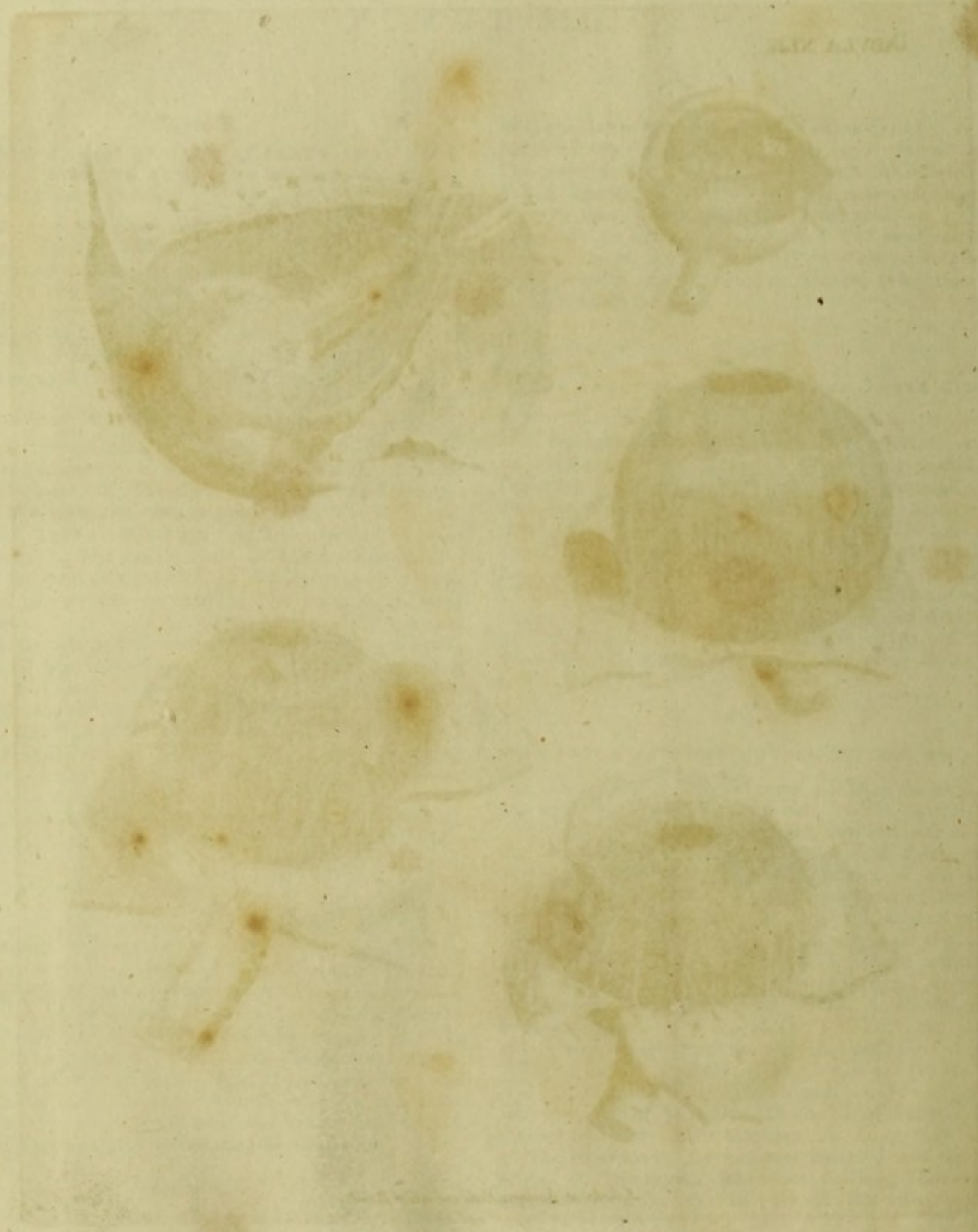


PLATE XLIII.

Figure I.

NERVES OF THE BULB, AND MUSCLES OF THE EYE.

- A. Bulb of the eye.
- B. Lachrymal gland.
- C. Musculus adducens.
- D. Musculus attollens.
- E. Levator palpebræ.
- F. Musculus deprimens.
- G. Musculus adducens.
- H. Obliquus superior.
- I. Trochlea.
- K. Part of the obliquus inferior.
- L. Course of the carotids.
- M. Carotid penetrating into the cavity of the cranium.
- N. Ophthalmic artery, arising from the carotid.
- a. Optic nerve, penetrating its foramen.
- b. Nerve of the fifth pair in the cavity of the cranium.
- c. Third branch of a nerve of the fifth pair.
- d. Second branch of the same.
- e. First branch.
- f. Frontal branches of the first ramus e. again divided into two branches.
- g. Nasal ramus of the first branch e.
- h, h. Ciliary ramuli of the branch g. running above the nerve.
- i. Lachrymal branch of the branch e.
- k. Nerve of the fifth pair.
- l. Double nerve of the sixth pair in receptaculo.
- m. Double radix of the intercostal nerve from the sixth pair.
- n. Insertion of the sixth pair into the abducent muscle.
- o. Trunk of the nerve of the fifth pair.
- p. Superior minor branch of the third pair.
- q. Ramuli of ramus p. to the attollent muscle.
- r. Ramulus of branch p. to the levator palpebræ.
- s. Inferior major ramus of the third pair.
- t. Branch of ramus s. to the adducent muscle.
- u. Branch of ramus s. to the depriment muscle.
- v. Branch of ramus s. to the obliq. inferior.
- y. Ophthalmic ganglion separated from the optic nerve, and pulled backward to shew the division of the third pair.
- z. Short radix of the ophthalmic ganglion from the nerve of the obliq. inferior.
- 1. Long root of the ganglion, from the nasal ramus of the fifth pair.
- 2. Superior fasciculus of the ciliary nerves, formed by four nervuli.
- 3. Fasciculus inferior.
- 4. A small branch of the inferior fasciculus, seceding outwardly from the others.

- 5. Ramulus, inserted into both surculi, h. h. arising from the nasal nerve, ascending to the external side of the optic nerve, beneath the superior fasciculus.
- 6. Interior inferior ciliary nerve of the inferior fasciculus.

Figure II.

OPHTHALMIC GANGLION, WITH CILIARY NERVES.

- A. The attollens muscle, pulled back a little to shew the inferior part to which the nerve is inserted.
- B. Levator palpebræ.
- C. Carneous portion of the trochleator.
- D. Tendon of the trochleator with trochlea.
- E. Portion of the adducent muscle, with a branch of the nerve of the third pair.
- F. Portion of the deprimens, with a nervous branch inserted into it.
- G. Internal view of the abducent muscle.
- H. Insertion of the obliquus inferior.
- I. Portion of the superior palpebra.
- a. Optic nerve.
- b. Nerve of the fourth pair cut off.
- c. Nerve of the sixth pair, inserted in its muscle.
- d. Nerve of the third pair.
- e. Superior ramus.
- f, f. Surculi of branch e. to the attollens muscle.
- g. A branch of ramus e. to the levator palpebræ.
- h. Inferior branch of a nerve of the third pair.
- i. Branch to the deprimens.
- k. Branch to the adducent.
- l. Branch to the inferior oblique muscle.
- m. Frontal branch of the fifth pair cut off.
- n. Nasal branch of the same.
- o, o. Two ciliary nervuli, arising from the nasal.
- p. Ophthalmic ganglion, annexed to the exterior side of the optic nerve.
- q. A long root from the nasal ramus of the fifth pair.
- r. Short radix from the nerve e. of the oblique inferior muscle.
- s. Superior fasciculus of ciliary nervuli, composed of three nervuli.
- t. Large inferior fasciculus.
- u. Surculus, always bent outwardly, and acceding to the bulb by a long circuitous course.
- x. Interior and inferior ramus of this fasciculi, inserted into the branch of either arising from the nasal.

P L A T E XLIV.

Figure I.

MEMBRANULA OF THE CILIAR CORONA, BY WHICH THE CRYSTALLINE LENS IS JOINED WITH THE VITREOUS, AND THE PETIT'S CANAL DISTENDED, WITH FLATUS.

- a. Vitreous humour.
- b. Crystalline lens.
- c. Serrated annulus conflated, formed from the nigrum pigmentum, lying on the anterior part of the vitreous humour, and the corona ciliaris.
- d. d. Bullulae, into which the fine membrane of the ciliary corona is elevated upon the admission of air.
- e. Puncture, by which the air is admitted.

Figure II. & III.

ARTERY OF THE CRYSTALLINE LENS, CONSPICUOUS ON ITS POSTERIOR VIEW.

In Fig. II. Its natural proportion; and

In Fig. III. Increased in magnitude by a microscope.

Figure IV. V. VI.

THREE FIGURES OF CRYSTALLINE LENS FROM MEN OF DIFFERENT AGES, AND PRINCIPALLY

Fig. IV. From a new-born infant.

Fig. V. From an infant some years old.

Fig. VI. From a grown-up man about twenty years old, to shew that the lens is always more convex the younger the person.

CRYSTALLINE LENS, BEGINNING TO FORM TRIANGULAR SQUAMOUS APPEARANCES, AFTER MACERATION IN WATER.

Figure VII.

Figure VIII.

SEBACEOUS GLANDS OF MEIBOMIUS, FROM THE POSTERIOR VIEW OF THE PALPEBRÆ.

- a. Tarsus of the superior palpebra.
- b. Tarsus of the inferior palpebra.
- c. Internal canthus.
- d. d. Glandular plexus, commonly called Meibomian Glands.
- e. e. Orifices of those plexus in the extreme margin of the palpebræ.

Figure IX.

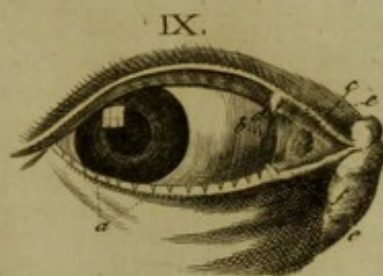
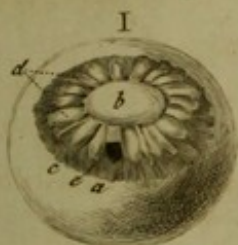
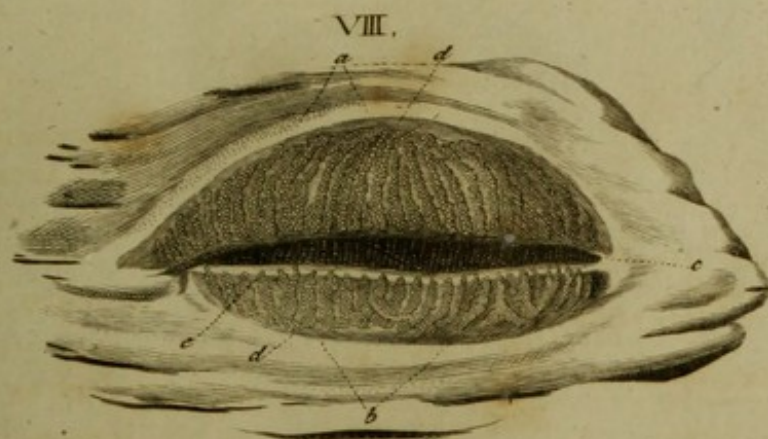
- a. Internal canthus of the eye.
- b. Inferior palpebra.
- c. Aponeurosis of the musculus levator palpebræ.
- d. Meibomian glands, conspicuous through the aponeurosis.

Figure X.

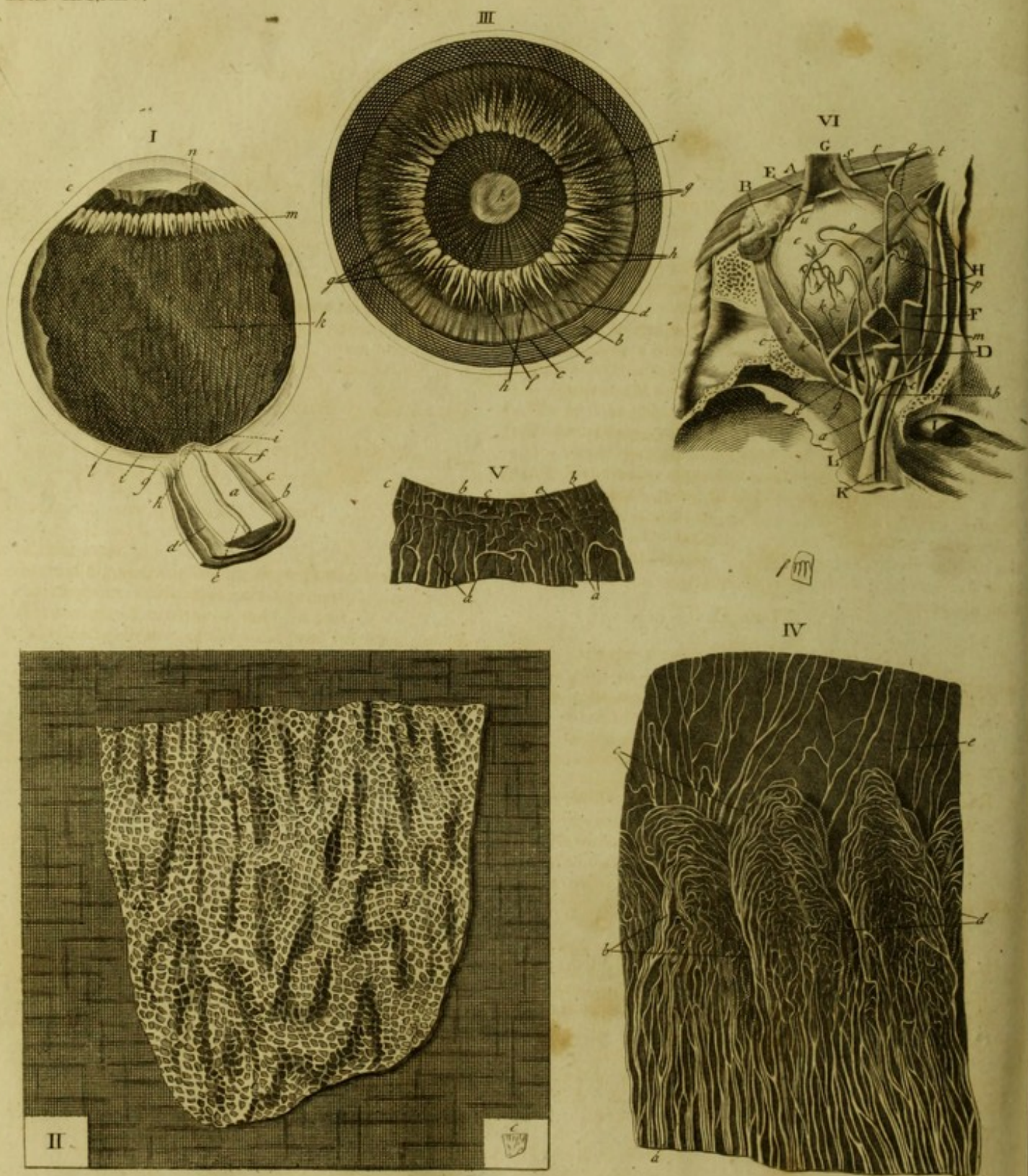
VIE LACHRYMARUM.

- a. Orifices of Meibomian glands.
- b. Semilunar membranula, before the caruncle lachrymalis.
- c. Caruncula lachrymalis.
- d. d. Puncta lachrymalia.
- e. e. Two small canals, joined together near the nasal sac.
- f. Lachrymal sac.

The great utility of these, and other minute anatomical demonstrations of the organ of vision, will appear to those who study the diseases of the eye, many of which disorders would be incomprehensible without such previous knowledge. In the third volume of the *Rational Practice of Physic*, after a short introduction on the doctrine of vision, and the defective modes of treating eye diseases: I have demonstrated, that there are 118 diseases of the eyes, eye-lids, &c. and it is hoped, many important improvements will be found in that work, worthy of the serious attention of Surgeons, and Practitioners of Medicine, in general.







P L A T E XLV.

Figure I.

ORIGIN OF THE TUNICS OF THE EYE; INTERNAL APPEARANCE OF THE CHOROIDES.

a. Optic nerve cut off. *b.* Exterior lamina of the vagina of the optic nerve. *c.* Interior lamina of the vagina of the optic nerve. *d.* Pia mater of the optic nerve. *e.* Central artery. *f.* Part of the cribrous lamina, through which the medullary substance of the optic nerve passes. *g.* The sclerotica posteriorly thick, where it is connected with the vagina of the nerve. *h.* A circle, surrounding the cribrous lamina, whence the pia mater of the optic nerve is reflected; and *i.* goes into the interior lamina of the sclerotica. *k.* Parallel arteries, apparent in the internal surface of choroides. *l.* Vascular reticulum, obscurely visible; by which the arteries of the choroides are covered. *m.* White folds of the ciliary processes. *n.* Iris. *o.* Connection of the sclerotica with the cornea.

Figure II.

RETICULUM LAID OVER THE CHOROIDES ONLY VISIBLE BY A VERY POWERFUL MICROSCOPE.

a. Arteriolæ of the internal surface of the choroides. *b.* Vascular reticulum. *c.* Natural magnitude of this portion of the choroides, of which this is the resemblance.

Figure III.

ANNULUS OF THE CILIARY PROCESSES, OBSCURELY SEEN A LITTLE ENLARGED.

a. Part of the sclerotica. *b.* Part of the choroides. *c.* Ora serrata, which distinguishes the annulus from the remaining choroides. *d.* Posterior part of the serrated annulus. *e.* Anterior part, composed of the folds of the ciliary processes. *f.* Anterior, broad, eminent part of the folds. *g. g.* Some folds terminated, in the extreme, bifid. *h.* Posterior part of the fold formed by many radiculæ. *i.* Posterior view of the iris, called Uvea, striated. *k.* Pupilla.

Figure IV.

THREE FOLDS OF THE CILIARY PROCESSES, WHOSE VASCULAR FABRIC IS OBSERVABLE BY A GOOD MICROSCOPE.

a. Innumerable parallel arteriolæ. conspicuous in the

internal surface of the choroides. *b.* Vasculum majusculum, running in the eminent margin. *c.* The arch, through which the vascula in the apex of the plica are joined together. *d.* Reticulum vasculosum. *e.* Posterior appearance of the iris. *f.* Natural magnitude of this portion, which is drawn a little increased.

Figure V.

A PORTION OF THE SMALLER RING OF THE IRIS, SEEN AND DELINEATED BY MEANS OF A MICROSCOPE.

a. a. The arch, which the arteriolæ of the iris form round the lesser annulus, designed in the preceding figure, *vid. m. m.* *b. b.* Ramuli, running from those arches towards the pupil. *c. c.* Ramuli, running transversely in the annulus minor of the iris, and led parallel with the ora pupillæ, which some seem to have taken for orbicular fibres.

Figure VI.

VEINS OF THE EYE.

A. A portion of the superior palpebra, delineated in its passing. *B.* Lachrynal gland. *C.* Abducent muscle. *D.* Posterior part of the attollens, muscle cut off. *E.* Anterior part. *F.* Posterior part of the levator palpebræ, cut off. *G.* Anterior part. *H.* Superior oblique muscle, with the trochlea. *I.* Optic nerve, entering the optic foramen. *K.* Nerve of the fourth pair. *L.* First branch of the nerve of the fifth pair. *a.* Trunk of the ophthalmic vein coming out of the receptaculum. *b.* Posterior ethmoid venula. *c.* Ramulus to the optic nerve. *d.* Superior ciliary venula. *e.* Three surculi, perforating the sclerotica. *f.* Ramuli, spread on the sclerotica. *g.* Inferior muscular ramus. *h.* Lachrymal branch. *i.* Anastomosing branch between the lachrymal and inferior. *k.* Trunk, running above the bulb. *l.* Ramulus to the attollent muscle. *m.* Interior ramus. *n.* Ramus from the trunk inserted. *o.* Into the anastomosing ramus, between the trunk and lachrymal. *p.* Interior ciliaris. *q.* Anterior ethmoid. *r.* Trunk, going out of the orbit, communicating with *s.* the superior palpebræ, and *t.* nasal. *u.* Anterior ciliary venula, arising from the muscular branch, *z. z.* perforating the sclerotica.

PLATE XLVI.

The Muscles of the Bulb of the Eye.

Figure I.

MUSCLES, WITH THE LEVATOR PALPEBRÆ SUPERIORIS.

- a. The bulb of the eye.
- b. The optic nerve in its cavity.
- c. The optic nerve cut off without the orbit.
- d. Portion of the dura mater, which leaves the optic nerve, and falls into the periosteum of the orbit.
- e. The levator palpebræ superioris, arising from an angle of the division of the dura mater, and terminating in a broad aponeurosis.
- f. The attollens, the greatest part covered by the levator palpebræ.
- g. The obliquus superior inflected through the trochlea.
- h. The insertion of the obliquus inferior.
- i. The depriment muscle.
- k. The abducent, arising by a double head.
- l. The lesser superior head.
- m. The inferior head.
- n. The interval between the heads, through which the nerves collected into a fasciculus are terminated.
- o. The first branch of a nerve of the fifth pair.
- p. From which first branch of the lachrymal branch is cut off.
- q. The frontal branch divided.
- r. The nasal branch.
- s. A surculus of the nasal branch, which constitutes the long root of the ophthalmic ganglion.
- t. A nerve of the third pair.
- u. A nerve of the sixth pair.

Figure II.

THE MUSCLES OF THE EYE, WITHOUT THE LEVATOR PALPEBRÆ.

- a. The bulb of the eye.
- b. The optic nerve within the orbit.
- c. The optic nerve without the orbit.
- d. Portion of the dura mater, which goes into the periosteum.
- e. The levator palpebræ cut away near its origin.
- f. The superior oblique muscle, inflected through the trochlea.
- g. The attollent muscle.
- h. Its tendon dilated near the insertion.
- i. The adducent muscle.
- k. Both the muscles, near their rise, are so connected with each other, that it should shew the levator palpebræ in its origin, not to pertain to the vagina of the optic nerve, but placed on both.
- l. The depriment muscle.
- m. The abducent muscle.
- n. The superior head connected with the attollent.
- o. The inferior head.
- p. The interval between each head.

Figure III.

THE COMMON TENDON, FROM WHICH THE ADDUCENT, ABDUCENT, AND DEPRIMENT MUSCLES ARISE.

- a. The optic nerve cut away near its entrance.
- b. The broken osseous septum between the optic for men, and round commencement of the sphenoid fissure.
- c. The dura mater cut away at its entrance into the periosteum of the orbit.
- d. The attollent muscle, arising from a division of the dura mater cut away.
- e. The levator palpebræ superioris cut away.
- f. The common tendon, from which the three muscles, viz. the adducent, abducent, and depriment arise.
- g. g. g. Tendinous expansions, arising from the ligamentum commune, going to their muscles.
- h. The abducent muscle.
- i. The depriment muscle.
- k. The adducent muscle.

Figure IV.

THE SUPERIOR OBLIQUE MUSCLE.

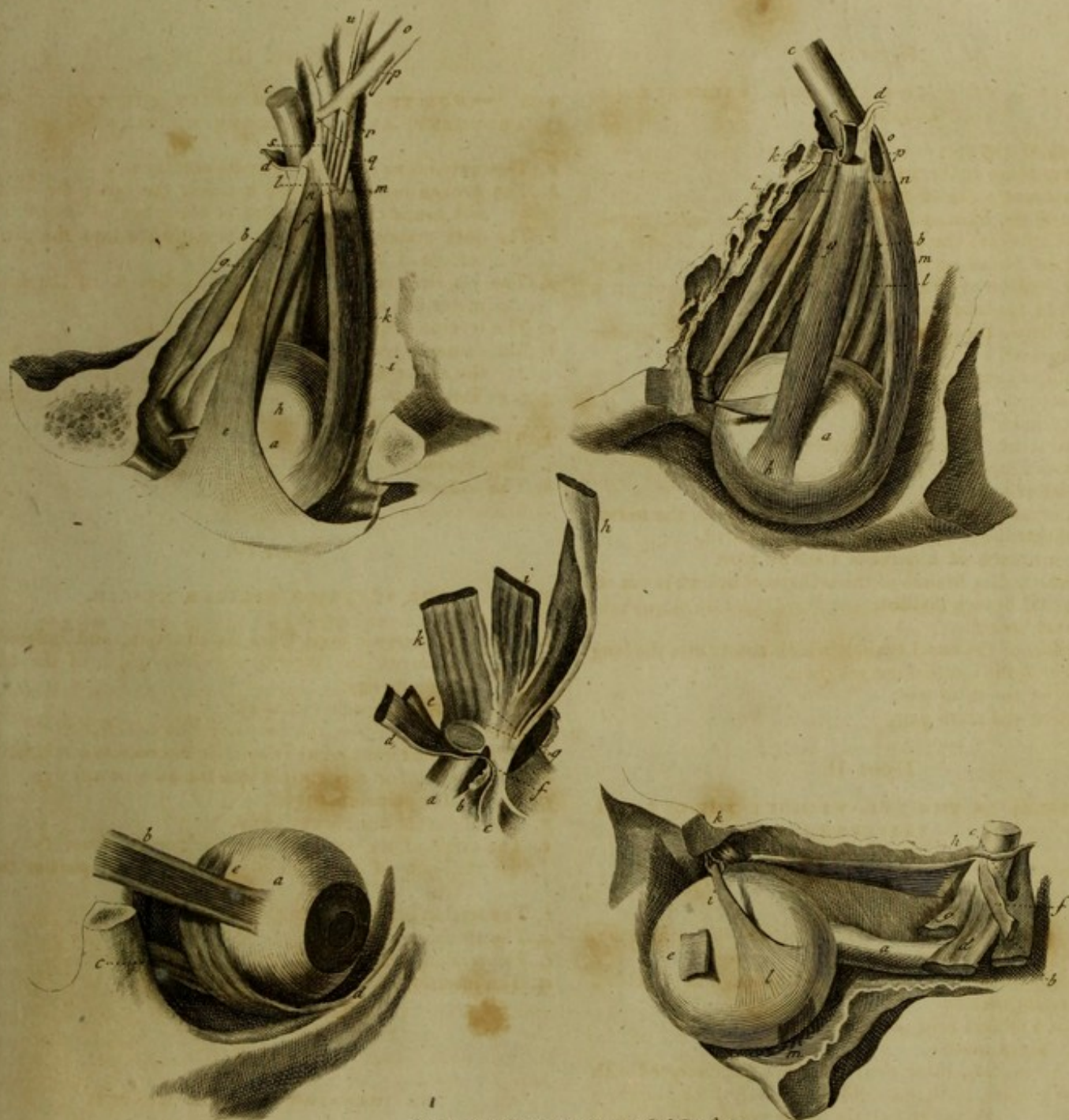
- a. The optic nerve moved from its situation, and inflected downwards, the better to shew the origin of the obliquus superior.
- b. The abducent muscle cut away.
- c. The interval between the heads of this muscle.
- d. The attollent muscle cut away near its commencement.
- e. The insertion of this muscle into the bulb of the eye.
- f. The levator palpebræ cut off.
- g. The adducent muscle cut away.
- h. The origin of the superior oblique muscle, from the periosteum of the parietes of the internal part of the orbit.
- i. The tendon inflected through the trochlea.
- k. The trochlea.
- l. The tendon, gradually dilated near its insertion.
- m. The insertion of the obliquus inferior.

Figure V.

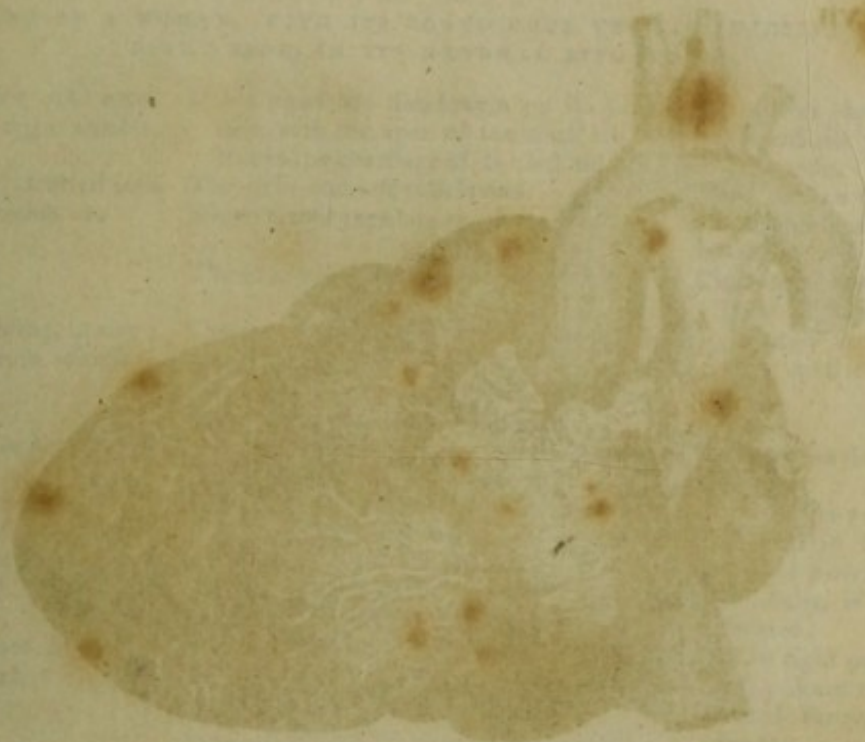
THE INFERIOR OBLIQUE MUSCLE.

- a. The bulb of the eye.
- b. The abducent muscle.
- c. The depriment muscle.
- d. The inferior oblique muscle, arising from the anterior ora of the orbit.
- e. The insertion of this muscle into the bulb of the eye.

TABVLA, XLVI.



Schola et historia Medicinæ a Gul Rowley



TABVLA XLVII

Fig. 1

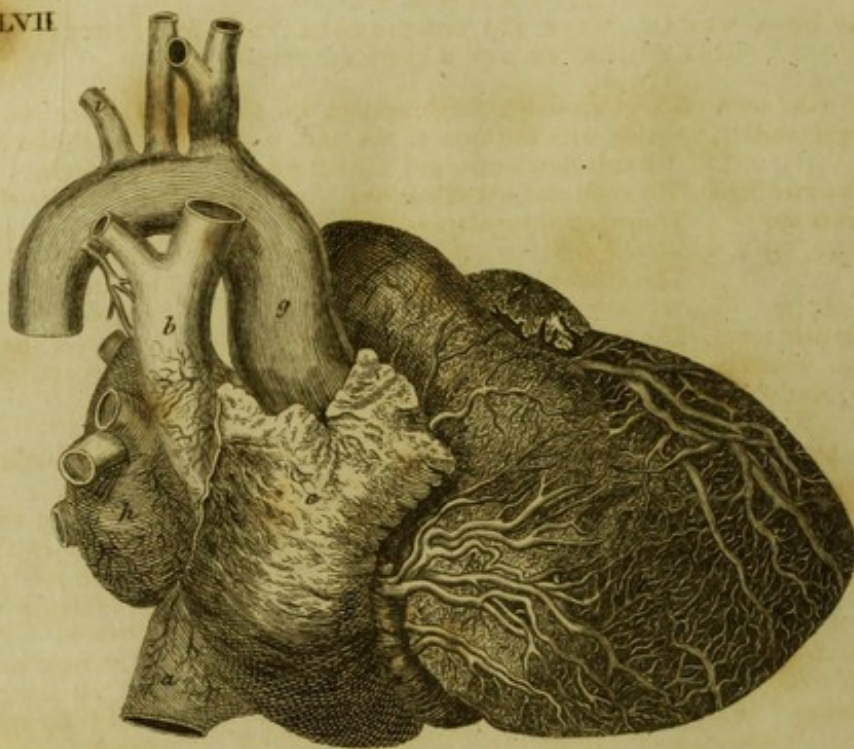
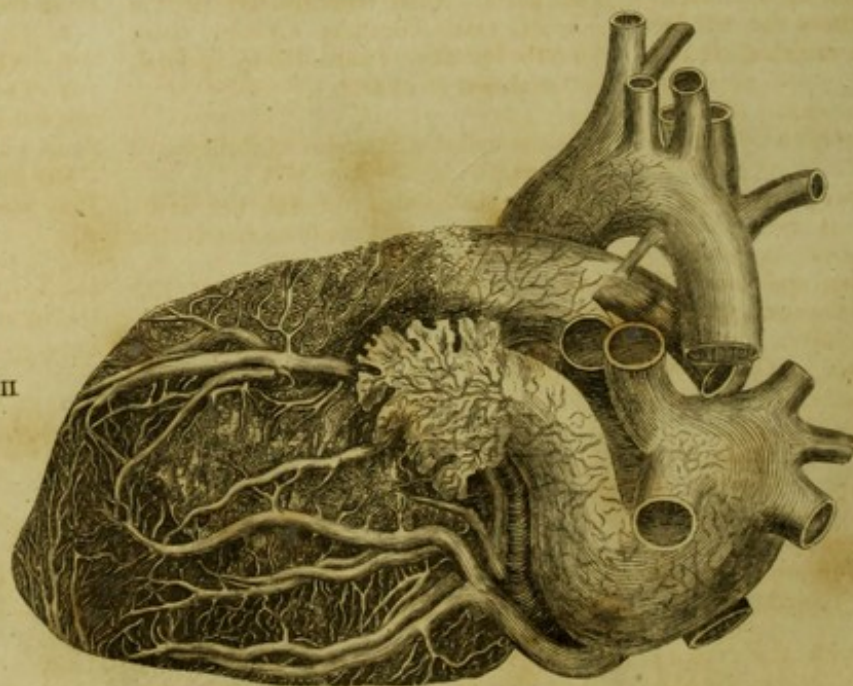


Fig. II



Schola et historia Medicinæ a Gul. Rowley

PLATE XLVII.

FIGURE I.

REPRESENTS THE HEART OF A WOMAN, WITH ITS CONTIGUOUS VESSELS INJECTED WITH WAX FROM THE RIGHT SIDE, IN ITS NATURAL SITUATION.

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| <p>A. The whole of the <i>inferior vena cava</i>, that is annexed to the right auricle, and diaphragm.</p> <p>B. The <i>superior vena cava</i>, inserted into the right auricle; its branches are</p> <p>C. The <i>right auricle</i>, resembling, in some degree, an horse's ear, from which it received its name.</p> <p>D. The <i>right ventricle of the heart</i>.</p> <p>E. A <i>portion of the right auricle</i>, to be seen in this situation of the heart, which, in form, somewhat resembles a dog's ear.</p> <p>F. The <i>pulmonary artery</i> arises from the right ventricle of the heart.</p> <p>G. The <i>aorta</i>, (or trunk of the arteries of the body) rising from the left ventricle, between both auricles, and the pulmonary arteries.</p> <p>H. The <i>posterior portion of the left auricle</i>.</p> <p>I. The <i>bronchial arteries of Ruysch</i>.</p> <p>K. The <i>coronary arteries, and veins of the heart</i>, arise from the trunk of the aorta above the semilunar valves.</p> | <p>It lies upon the diaphragm on its plane side, with the apex of the sixth rib towards the cartilage of the left side.</p> <p>The right and left subclavian.</p> <p>The external jugulars receive</p> <p>The internal jugulars receive</p> <p>The name of <i>auricula</i> is applied to the two caecal serrated sacs. To the remaining cavity of the atria, the denomination of <i>sinus</i> is applied.</p> <p>It is called, with propriety, the <i>Anterior</i>; it is much weaker than the other.</p> <p>The auricles are connected by the means of membranes, with the coronary veins to the heart.</p> <p>It is furnished with three semilunar valves arising from the heart; it divides into two branches.</p> <p>The aorta, when scarcely out of the heart, emits coronary arteries; then, on the left side, towards the spina dorsi, it makes a great arch.</p> <p>It is also called a Sacculus of Pulmonary Veins.</p> <p>They are distributed through the bronchial vesicles, and the branches of the <i>arteria aspera</i>.</p> <p>Arteries are disseminated through the substance of the heart, and at length go into the veins of the heart.</p> | <p>It receives the blood returning from all the inferior parts, after the secretions are made.</p> <p>They receive the blood of the thorax.</p> <p>The frontal, angular, temporal, auricular, ranine, and occipital veins.</p> <p>The lateral sinuses of the <i>dura mater</i>, the guttural, and maxillary veins.</p> <p>It empties the blood received from the <i>vena cava</i> into the right ventricle.</p> <p>It protrudes the blood into the pulmonary arteries.</p> <p>The auricles are separated by means of a septum in the <i>right</i>, or <i>anterior</i>, and <i>left</i>, or <i>posterior antrum</i>. The septum, in adults, is closed in the <i>fœtus</i>, perforated.</p> <p>1. The right pulmonary artery. 2. The left pulmonary ditto; they are distributed through the substance of the lungs.</p> <p>From the convex part of the arch come</p> <p>1. The <i>arteria innominata</i>, from which the <i>right carotid</i>, and <i>right subclavian</i>.</p> <p>2. The <i>left carotid</i>. 3. The <i>left subclavian</i>.</p> <p>Four pulmonary branches go into the left sinus of the heart.</p> <p>They serve to nourish the lungs.</p> <p>The veins bring back the venous blood from the substance of the heart into the right auricle.</p> |
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FIGURE II.

REPRESENTS THE SAME HEART FROM THE LEFT SIDE IN THE SAME SITUATION OF THE BODY, AS IF IT WERE BEHELD THROUGH THE RIBS.

- | | | |
|---|--|---|
| <p>A. The <i>aorta</i>, arising from the left ventricle.</p> <p>B. <i>Part of the right ventricle</i>, with the pulmonary artery.</p> <p>C. The <i>left ventricle</i>, with the arteries, and coronary veins.</p> <p>It is, with more propriety, called the <i>Posterior</i>.</p> <p>D. The auricular part of the <i>left auricle</i>.</p> <p>E. The greatest part of the <i>left auricle</i>.</p> <p>F. The <i>canalis arteriosus</i>, runs from the trunk of the pulmonary artery in the <i>fœtus</i> into the aorta.</p> <p>G. The greatest branch of the aorta.</p> | <p>The return of the blood prevented by the semilunar valves.</p> <p>The pulmonary artery passing under the arch of the aorta, divides into two branches.</p> <p>Constitutes the heart primitively, is less, but stronger, than the right ventricle.</p> <p>Adheres to the left side of the pulmonary artery.</p> <p>Is called a sacculus of pulmonary veins.</p> <p>Moves the blood from the trunk of the pulmonary artery to the aorta.</p> <p>Descends towards the lower parts.</p> | <p>Sends off arteries all over the human body.</p> <p>They proceed to the right and left lobes of the lungs.</p> <p>The orifice opening towards the atrium; has only two mitral valves.</p> <p>Is seated on the left ventricle.</p> <p>The four trunks of the pulmonary veins are inserted in this auricle.</p> <p>Is closed in adults, and becomes a ligament.</p> |
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PLATE XLVIII.

The Circulation of the Blood.

- The organs of the circulation of the blood.
- The *heart* of a man is of a conical figure.
- The *heart* (G) adheres by the *vena cava* to the diaphragm.
- The *heart* consists of four concave muscles, viz. *two auricles*, and *two ventricles*, which receive the blood, and immediately propel it.
- A. The *right auricle*, filled with blood, and irritated by its repletion, to contract, by constringing the ostia of both *venae cavae*.
- B. The *right ventricle*, filled with blood, and irritated to muscular contradiction, expands its *valvulae tricuspidales* (1.)
- C. The *pulmonary artery*, compresses the blood by its elastic resiliion, and stimulates tension, as well as by the relaxed capillary arteries.
- The *pulmonary veins*, convey the blood received from the arteries to the left auricle.
- D. The *left auricle*, filled, and irritated by its repletion to the instrumental motion, contracts itself.
- E. The *left ventricle*, filled with blood, and irritated by its repletion to contract, expands its *mitral valves* (3.)
- F. The *aorta*, and arteries of the body filled, and expanded with blood, and irritated to contract, collect all their power at that time, composed of elastic resiliion, and stimulated tension; and at once protrude the blood by the *semilunar valves*.
- G. The *inferior cava*; it joins the heart with the diaphragm.
- Are the heart and arteries.
- In birds, and brutes, it resembles almost a perfect cone.
- The whole of its flattened surface lies upon the diaphragm.
- The cavities stimulated by their repletion contract; the valves prevent the return of the blood, when received: the fibres being so disposed, that by their contractile power, they send out the blood with great violence.
- Then the muscular fibres, stretched from the parietes of the auricle, elliptically surround each *vena cava*, which so closes both as to prevent the return of the blood into the veins.
- The valves mutually compressed together, entirely prevent the return of blood into the right auricle.
- And, by its first impetus, compresses the *semilunar* (2.) valves, at that time relaxed.
- This takes place during the compression of the lungs in respiration.
- And so constringes the ostia of the *pulmonary veins*, as to prevent the return of the blood into them.
- (3.) The *mitral valves*, so expanded, and compressed with blood, prevent the return of the blood into the left auricle.
- The return of the blood into the ventricle is prevented by the valves being depressed.
- Receives the blood from all the parts below the diaphragm.
- By their power the blood is propelled into every part of the body.
- It is the primary organ of the circulation.
- During the motion of the diaphragm, the heart is either elevated, or depressed.
- The offices of the auricles are: that they should divide the blood, or its various particles, into just parts, by keeping its circulating course, &c.
- The contraction of the auricle protrudes the blood into the right ventricle, with a force sufficient to overcome the natural (not instrumental) contraction of the ventricle.
- The contraction of the ventricle throws the blood into the *pulmonary artery* with a force equal to overcome the elastic power of that artery.
- Thus the blood is prevented from returning into the ventricle, and is thrown into the *pulmonary veins*.
- The blood is impelled into the left auricle, then relaxed with a force superior to the natural (not instrumental) contraction of the auricle.
- The following contraction protrudes the blood into the left ventricle.
- The following contraction impels the blood into all the arteries of the body, with an impetus superior to the elastic power of the arteries.
- This protruding power throws almost an equal quantity of limpid, and gross blood, collected from every part of the body, through the *vena cava* into the right auricle, then relaxed.
- Joined with the superior cava; it sends the blood into the right auricle.

The circulation of the blood, briefly considered, is as follows:—The *vena cava* forces the blood into the *right auricle* of the heart, which discharges it into the *right ventricle*; from thence the blood is propelled to the *pulmonary artery*, and brought back by the *pulmonary veins* to the left auricle of the heart, which forces it into the left ventricle, and from thence it passes to the *aorta*, which, by branches, distributes the blood through the whole body. The blood is brought back to the *vena cava* from all parts by veins. All this has been indubitably proved. The exhalent arteries on all surfaces, the inhaling absorbents, &c. are very important, and should be well comprehended in medical practice.

TABVLA XLVIII.



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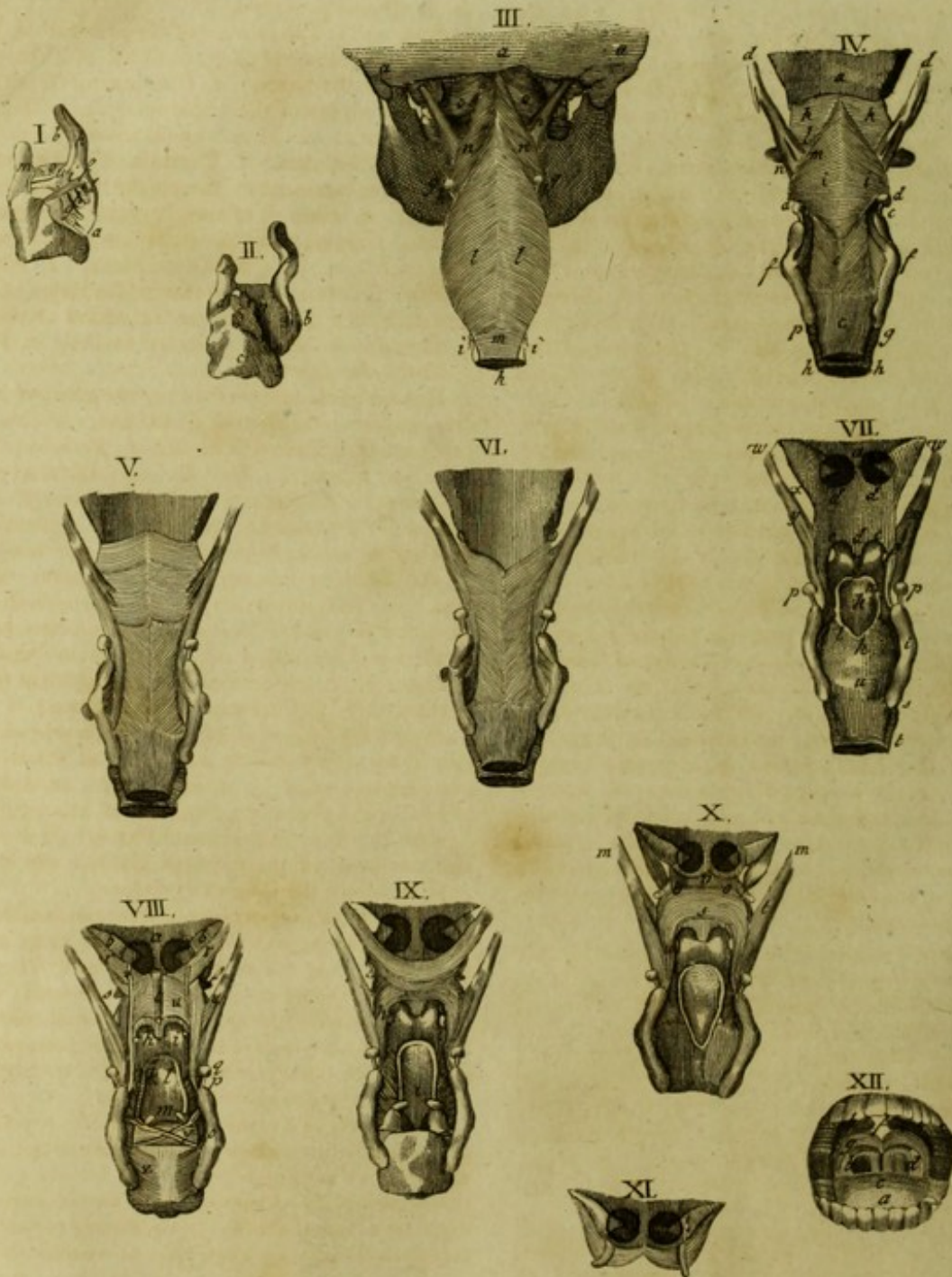


PLATE XLIX. *Of the Larynx and Pharynx.*

Figure I. Represents the remaining parts of the larynx, after cutting through the left side of the thyroid cartilage, with the muscles, which are placed on the thyroid side; also those which are placed in the posterior part of the larynx. *a.* Anterior crico-thyroid ligament. *b.* Membrane, which forms the lateral part of the glottis. *c.* Posterior crico-arytænoideus. *d.* Lateral crico-arytænoideus. *e. f.* A fasciculus, from the interior and superior part of the thyroidea, arising not far from its fissure, and inserted in the base of the arytenoidea. *f.* The commencement from the thyroidea cut away. *g.* Thyreo-arytænoideus. *h. i. k.* A thin texture of carneous fibres, which, arising from the thyroid cartilage, ascends near the exterior part of the origin of thyreo-arytænoideus. *h.* Through the exterior part of the thyreo-arytænoideus; then *i.* by the sides of the glottis to the epiglottis. *k.—l.* Depressor of the epiglottis. *m.* Left oblique arytenoideus. *n.* Right oblique arytenoideus. *o.* Transverse arytenoideus.

Figure II. Is the same texture of the cartilages of the larynx, which is naked in Fig. I. with the muscles and membranes removed. *a. b.* Right part of the thyroid cartilage, the left of which is removed. *b. c.* Cricoid cartilage. *d. e.* Arytænoïd cartilages. *e.* The little heads of the cartilages. *f.* Epiglottis.

Figure III. Represents the order of the muscles, situated around the pharynx, seen from the posterior part. In order to shew it better, besides the pharynx, the beginning of the œsophagus continued to it, and the neighbouring parts of the os hyoides, larynx, and aspera arteria, there is also added part of the head of the naked bone, to which the adjoining pharynx is added. *a.* Inferior part of the cranium. *b.* Styloform processes. *c.* Pterygoid processes. *d.* Os maxillare. *e.* Superiores molares. *f.* Inferiores molares. *g.* Extreme cornua of the os hyoides. *h.* Hyo-thyroid ligaments. *i.* Arteria aspera cut off. *k.* Oesophagus cut off. *l.* Constrictores inferiores of the pharynx. *m.* Interior fibres of the œsophagus. *n.* Constrictores medii of the pharynx. *o.* Constrictores superiores of the pharynx. *p.* Circumflexi of the palatum molle. *q.* Stylo-pharyngei.

Figure IV. Exhibits the nearest view, after removing the constrictor inferior of the pharynx. *a.* Naked membrane of the pharynx. *b.* Styloform processes. *c.* Naked membrane of the inferior part of the pharynx. *d.* Extreme cornua of the os hyoides. *e.* Hyo-thyroid ligaments. *f.* Thyroid cartilage. *g.* Cricoid cartilage. *h.* Aspera arteria cut off. *i.* Constrictores medii of the pharynx. *k.* Constrictores superiores of the pharynx. *l.* Levatores of the palatum molle. *m.* Circumflexi of the palatum molle. *n.* Stylo-pharyngei. *o.* Palato-pharyngei. *p.* Posterior crico-arytænoideus.

Figure V. Shews the nearest view, upon removing the constrictor medius of the pharynx.—*a. b. c. d. e. f. g. h. k. l. m. n. o. p.* as in the preceding figure.

Figure VI. Upon removing the superior constrictor of the

pharynx, is seen *a. c. d. e. f. g. h. l. m. n. o. p.—q.* Hamuli of the pterygoid processes.

Figure VII. The interior of the pharynx. *a.* Posterior part of the pharynx and œsophagus cut off. *b.* Tubæ eustachianæ. *c.* Septum of the nares. *d.* Palatum molle with the uvula. *e.* Posterior arches of the palatum molle. *f.* Tonsils. *g.* Tongue. *h.* Epiglottis. *i.* Membranous sides of the glottis. *k.* Rimula of the glottis. *l.* Capitula of the arytenoid cartilage. *m.* Lateral ligament of the epiglottis. *n.* Ventriculi of the larynx. *o.* Hamuli of the pterygoid processes. *p.* Extreme cornua of the os hyoides. *q.* Hyothyroid ligaments. *r.* Thyroid cartilage. *s.* Cricoid cartilage. *t.* Aspera arteria cut off. *u.* Posterior part of the fistula laryngis. *v.* Lateral ligament of the epiglottis. *w.* Levatores of the palatum molle. *x.* Circumflexi of the palatum molle. *y.* Palato-pharyngei. *z.* Stylo-pharyngei.

Figure VIII. After removing the greatest part of the membrane covering the interior of the pharynx, are: *a.* The posterior part of the larynx cut off. *b.* Tubæ eustachianæ, or eustachian tubes. *c.* The concave of the nares. *d.* Ossa spongiosa. *e.* Septum of the nares. *f.* Hamuli of the pterygoid processes. *g.* Uvula. *h.* Tonsils. *i.* Tongue. *k.* Epiglottis. *l.* Membranous sides of the glottis. *m.* Capitula, added to the arytenoid cartilages. *n.* Cricoid cartilage. *o.* Thyroid cartilage. *p.* Thyroid ligament. *q.* Extreme cornua of the os hyoides. *r.* Levatores of the palatum molle. *s.* Circumflexi of the palatum molle. *t.* Arygos uvulæ. *u.* Palato-pharyngei. *v.* Stylo-pharyngei. *x.* Oblique arytenoidei. *y.* Transverse arytenoideus.

Figure IX. Most of the parts in the preceding figure are removed, by which others are seen. *a.* Posterior part of the pharynx cut off. *b. c. d. e. f. g. h. i. k. l. m. n. o. p. q.* as above in the preceding Figure. *j.* The corpus teres, like a ligament. *l.* Tendinous membrane, which runs through the superior parts of the palatum molle, coming from the nares. *r. u. w.* As in the preceding Figure.

Figure X. Some parts which were represented in Figure VIII. are taken away, and those which are to be met with marked. *a. b. c. d. e. f. g. h. k. p. q. r.* as in Figure VII. *l.* External parietes of the pterygoid processes. *m.* The circumflexi of the palatum molle. *n.* Aponeuroses of the circumflexi. *o.* Parts of the constrictores superiores of the pharynx. *p.* Parts of the palatopharyngei. *q.* Stylopharyngei. *r.* Parts of the salpingo-pharyngei.

Figure XI. This follows behind the superior parts of the preceding, after removing some of the parts. *a. b. c. d. l. m.* as in the above Figure.

Figure XII. Represents the rectus, oris, and fauces, to shew the muscles, which, upon removing the investing membrane, belong to the palatum molle from this part. *a.* Gums. *b.* Tonsils. *c.* Posterior margins of the palatum molle. *d.* Fauces. *e.* Tongue. *f.* Constrictores isthmi of the fauces. *h.* Parts of the palato-pharyngei.

The Figures in this Plate clearly represent the mechanical structure, &c. of those curious parts which perform deglutition, or swallowing; a great part of the organs of speech and sounds. Singing, &c. with all the various inflexions, and delightful tones of the voice, as executed by the most excellent singers, is acquired by uncommon industry with apt organs. Musical sounds are received, and impressed on the mind by the organ of hearing; but the imitation, and performing various tones by the voice, is the power of the mind acting on, and putting into particular motion the larynx, its muscles, &c. assisted by the tongue, teeth, lips, &c. The excellence of some in the Divine art of singing, will convince reflecting men, amongst other things, that human beings are as unequal in their muscular powers and organs, as in their intellectual and acquired faculties. Those, whose organs have not an aptitude in receiving impressions, and an active disposition to improve, can never become excellent, in any art, or science.

PLATE L.

The Organ of Hearing.

Figure I. Represents the organ of hearing, rather larger than in its natural state.

The ear is the organ of hearing; in which three cavities are to be considered, viz. external, or outermost, middle, and inmost.

a. Auris externa; contains the auricle, and meatus auditorius. *b. The ala, or pinna*; is the highest arched part of the auricle. *c. Helix, capreolus*; external eminence of the margin. *d. Anthelix*; interior eminence, parallel to the former. *e. Scapha*; a furrow between the above-mentioned eminences. *f. Tragus*; an eminence next to the temples. *g. Antitragus*; a prominence, joined with a lobe. *h. Concha*; a cavity going towards the meatus auditorius. *i. Lobe*; a part of the auricle hanging downwards. *k. Part of the squamose temporal bone*. *l. Os petrosum*; contains the internal ear, or seat of hearing. *m. Extremity of the mastoid process*. *n. Styloid process*. *o. Sinus mastoideus*. The internal parts of the ear are contained in the petrous bone. *p. Meatus auditorius*; in it are hairs, and ceruminous glands, the canal is tortuous, anteriorly cartilaginous, posteriorly osseous. *q. Membrane of the tympanum*; it is contained in a kind of sulcus in the osseous annulus; it is constructed of four laminæ, viz. cuticle, and cutis of the meatus auditorius, periosteum of the meatus, and periosteum of the internal cavity; above by a short tela cellulosa placed between these laminæ. *r. The figure of the cavity of the tympanum* is irregular; the capacity of the cavity is increased by the cellulosa of the mastoid process: the interior parts are directly opposed to the membrane of the tympanum, in which there are two broad osseous foveæ, or depressions, called Fenestræ; anteriorly, the cavity extends by a declining orifice into the tuba Eustachii, which behind opens into the fauces, and infundibulum. *s. Chorda tympani*. *t. Ossicula auditus*; malleus, incus, os orbiculare, stapes. *u. Canales semilunares*; superior, middle, inferior, they open into the vestibulum. *w. Cochlea*. *x. Aqueduct of Fallopius*, a canal extending from the labyrinth, inflecting in the petrous bone, and patulous, between the styloid process, contains a nerve. *y. Tuba Eustachiana*; a canal, partly osseous, and partly cartilaginous, extending to the palatum, and there patulous behind the tonsils; it may be relaxed, or contracted by its muscles; it serves for the admission of air and sound; when it is closed, or obstructed, the hearing is diminished, or abolished. *z. Apertura of the Eustachian tube*.

Figure II. Malleus, much larger than in its natural state.

a. Malleus. *b. Its head*. *c. The neck*. *d. The long crus* runs out to the manubrium. *e. The short crus* goes to the mastoid cells. *f. The manubrium* runs between the laminæ of the membrane of the tympanum, and between the periosteum of the tympanum, and meatus auditorius, to the center of its membrane, which it elevates.

Figure III. Incus; consists of a body, and two crura; the os orbiculare is annexed to the longer crus.

a. Interior surface.

Figure IV. Os orbiculare; is connected on one side with the long crus of the incus, on the other with the stapes, which is situated anteriorly at almost a right angle.

Figure V. Stapes; it adheres by its basis to the fenestra ovalis, and closes it by means of the membrane drawn round it; it has a muscle, called Stapedius.

Figure VI. Ossicula, in their own situation with the membrane of the tympanum, as they appear within the cavity, and above, from the top of the left bone of the temple.

a. Malleus, its manubrium, inserted in the membrane of the tympanum; the head is connected upwards, with the incus by ginglimus; the short crus is connected to the membranous expansion to the cellulosa of the mastoid process. *b. Incus* adheres to the malleus, and os orbiculare. *c. Os orbiculare*, between the incus and stapes. *d. Stapes*.

Figure VII. Cochlea, twice as large as nature.

a. Cochlea: is a conical canal around the osseous cone, called *Mediolus*, two and half times convoluted; it is divided into two cavities, from the top to the bottom, by a kind of spiral, very friable lamina; hence the cavities are called *Scala*, of which the anterior, and rather narrow beginning, from the vestibulum, is called *Scala Vestibuli*; the other posterior, and large, commences from the fenestra rotunda, which is a little turned towards the tympanum, and is called *Scala Tympani*. The end of these scalæ is towards the apex of the mediolus just mentioned, in which place a slight sinus is excavated like an infundibulum. In that place it becomes a spiral lamina, not with bone, but with membrane; and the scalæ on both sides open into it, which appear to communicate together in this place. *b. Canales semicirculares superiores*. *c. Fenestra rotunda*, situated inferiorly, and posteriorly; above this fenestra, there is a membrane from the periosteum of the tympanum, and cochlea, and separates the cavity of the cochlea from that of the tympanum. *d. There is a superior and inferior fenestra ovalis*, which leads to the vestibulum, the stapes at its base lies upon this; the fenestra is closed by no peculiar membrane. *e. Foramen*, for the portion of the nervus durus. *f. Scala tympani*. *g. Scala vestibuli*.

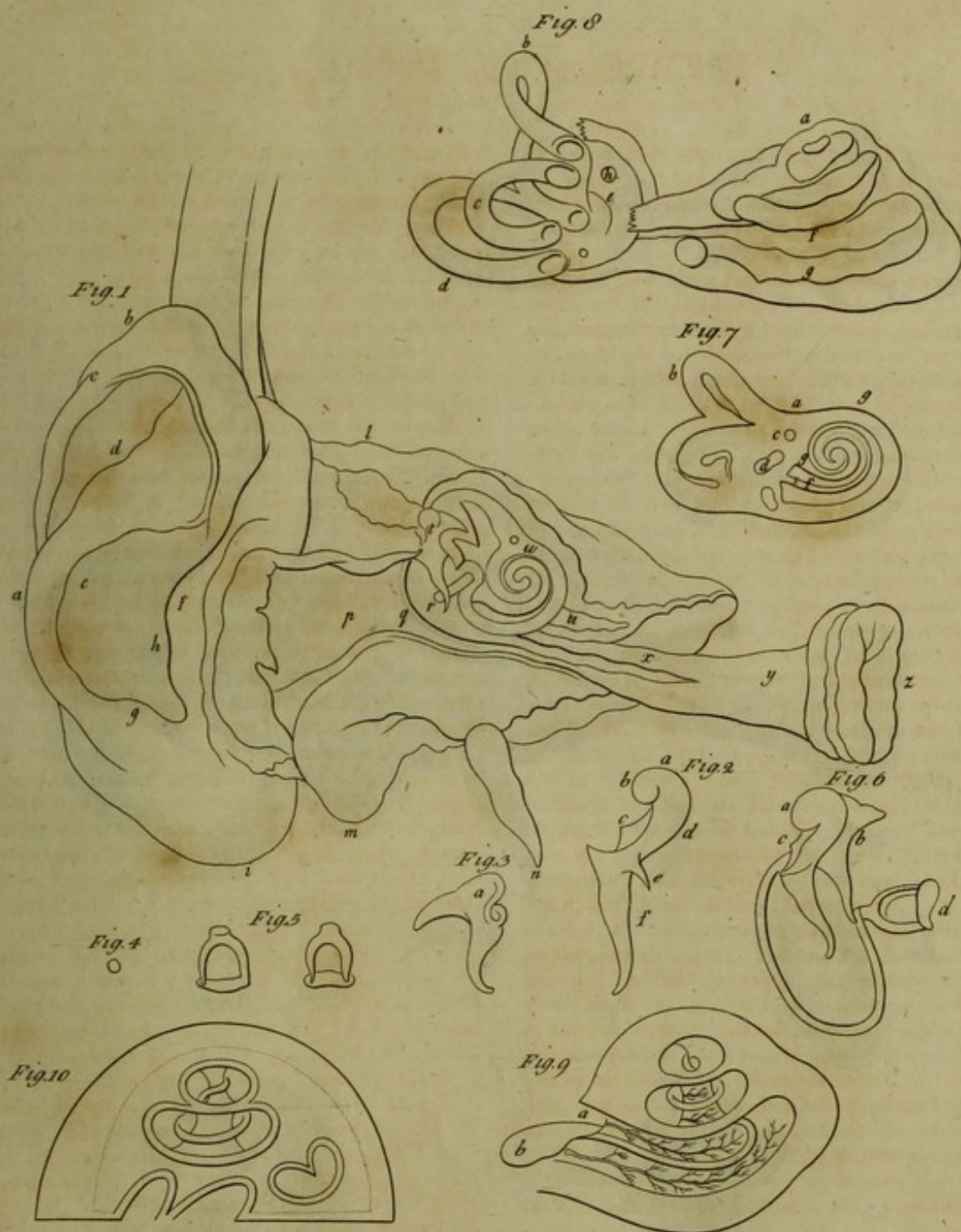
Figure VIII. The labyrinth; to this part belong the internal cavities of the petrous bone: *semicircular, canals, &c.*

a. Cochlea. *b. Labyrinth superior*. *c. Labyrinthus medius*. *d. Labyrinthus inferior*. *e. Vestibulum*; is the middle cavity between the cochlea and canals; the three semicircular canals open into the vestibulum by five different foramina. *f. Scala vestibuli*. *g. Scala tympani*. *h. The entrance of the portion of the soft nerves into the vestibulum*. The labyrinth reflects the sound, by which the nerves more strongly vibrate.

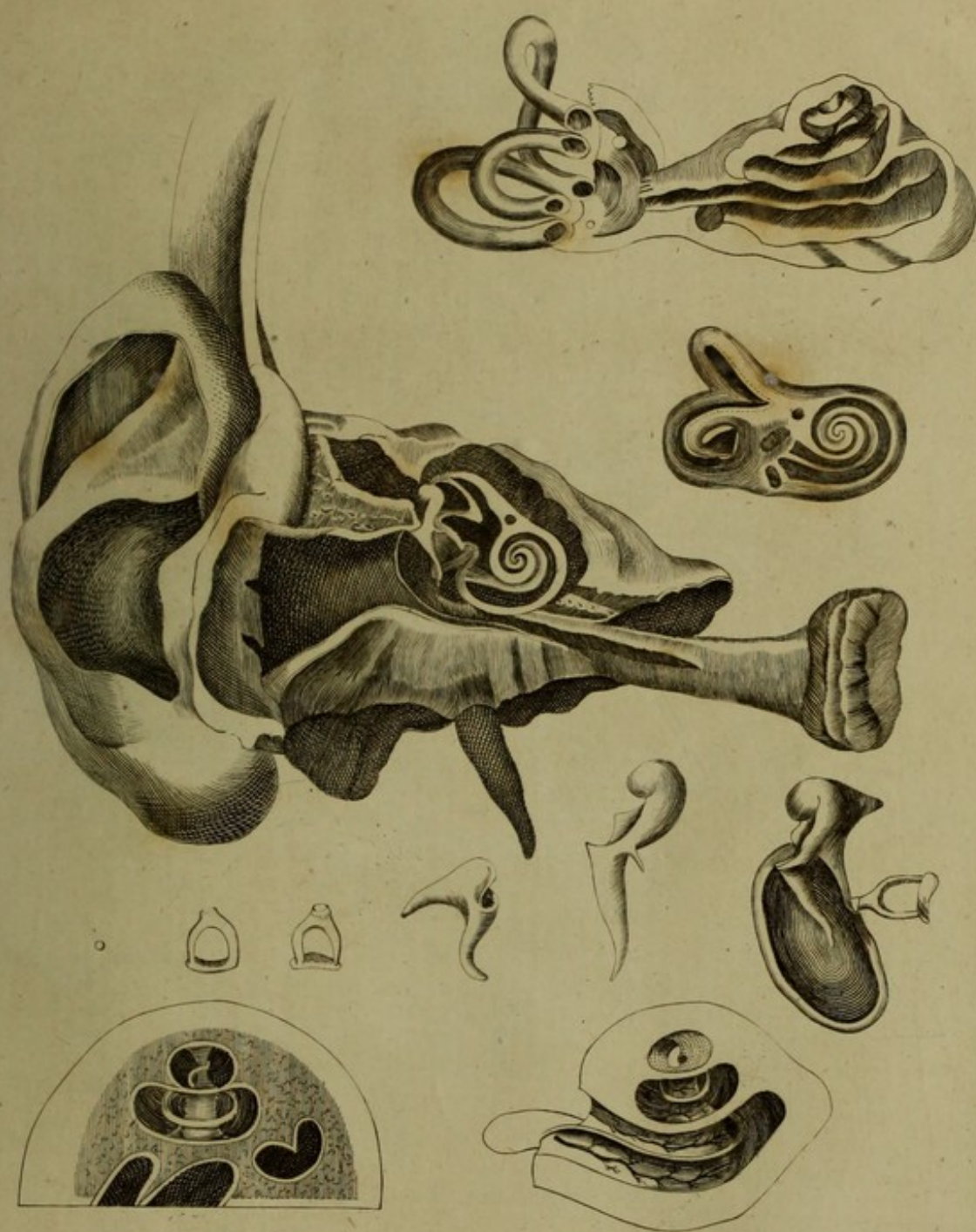
Figure IX. Section of the cochlea, with the vessels of the membrane of the spiral lamina, which are taken away, except the uppermost part.

a. Scala vestibuli. *b. Scala tympani*.

Figure X. Section of the cochlea, which contains the foramen of the auditory nerve.



TABVLA L.





TABVLA LI.



Schole et historia Medicinæ a Gul Rowley

PLATE LI. Omentum.

Figure I.

ince the figures of the *omentum majus* alone, and the gastro-colic part of it, are represented by the ancients, as in *Garengeot's Splanchnologia*, Tom. vi. which exhibits the *omentum minus*, or *little omentum*, without exact limits, and does not appear according to Nature; it will not be useless, therefore, to give another figure, as likewise another description.

A. The concave reclined part of the *liver*, so that the margin, which was inferior, is anterior; and the anterior, is now superior. B. *Vesicula fellea*, or gall-bladder, is commonly shorter, in young subjects, than the liver. C. *Vena et fossa umbilicalis*. D. *Lobulus*, improperly so called by *Spigelius*, the eminence of which is conspicuous through the little omentum. E. *Stomach*, the anterior curvature, of which appears, but covered with projections of the inflated omentum. F. *Arteria et vena gastro-epiploica dextra*. G. The seat of the *pylorus*. H. The apex of the spleen projecting anteriorly into the cavity of the omentum, placed between the stomach, and intestinum colon. I. *Ligament*, which sustains the spleen, different from the other, not attached to it, but moving freely, which is, for the most part, the superior situation of the left mesocolon, yet not unfrequently, rather of the transverse, annexed to the peritonæum to the seat of the tenth, eleventh, or twelfth rib; to this ligament, the omentum is connected, yet, for the greater part, it is white and firm, and the transverse situation of the spleen arises, principally from that connection. K. *Omentum majus*, commonly called *Gastro-colicum*, the terminations of it are: the superior, and anterior, from the whole curvature of the stomach, inferior, and posterior, from the greater part of the transverse colon: the inferior limit is, when the anterior gastric lamina meets with the posterior colica, s.—This, in children, is almost to the umbilicus, or navel; in adults, it descends much lower, the fatter the person is, even to the pubis. The left end, as well as the middle part of the spleen, receives vessels, as well as the ligament, I. into which the omentum degenerates, as well as the colon. The right termination is with difficulty expressed by the line L. For the omentum either terminates the middle of the stomach, near the pylorus, or from the pylorus, never more to the right side; and from the accession of the gastro-epiploic vessels, before the mesocolon, and runs to the colon by a descending right line, or one inclining obliquely to the left, and there the sac of the omentum terminates. L. The line of separation of the omentum from the mesocolon. M. The origin of the gastro-colic omentum from the anterior curvature of the stomach, from which the anterior lamina goes out. N. *Conglobate glands*, in this line adjacent to the origin of the omentum. O. The line of the origin of the *omentum magnum* from the intesti-

num colon: s. *lamina posterior*. P. Left end, or *finis cæcus* of the omentum. Q. *Omentum minus* of Winslow, or a more slender membrane, which beginning is formed from a fossa of the ductus venosus, to the transition, or passing of the hepatic artery, there continued to the membranes surrounding hepatic vessels, which I have said, are continued beyond the duodenum to the mesocolon, degenerating in the end a little into the ligamentum hepatico-oesophageum, and passing the lobe of the liver, it emits itself into the smaller curvature of the stomach. In the cavity it has the lobulum, or little lobe, and the nudated lumbar glands. R. *Omentum colicum*, the constant appendix of the great omentum, which, from the end of the colic line, L. to the end of the transverse mesocolon, and sometimes a little beyond, from the intestine colon, not having touched the stomach, from a double line, it proceeds, similar in magnitude, lying on both sides, loosely on the intestines, and, on the little lobe, it elegantly terminates. This portion is not seen, which cedes to the great, so that it is larger than the smaller portion. In the entrance of the omentum, which the representation hath not admitted, some things are to be added to Winslow's description. There is an *hiatus*, or interval, which, from a narrow beginning, and long tract, between the biliary vessels, and continued vena portarum, anteriorly situated, and between the posterior depressed lobe of the liver is received, which the hepatic vessels excavate, and which the ancients considered a right vena portarum. Besides, a farther continued lunated hiatus to this way, discovered by Winslow, through which air can be equally admitted to the cavity of the smaller omentum; the extreme porta of the liver, which I have said, from the opposite nearest, to the inferior part, but distinct, is the ultimate radix of the mesocolon, which passing the pancreas, goes immediately to the descending duodenum; anteriorly, it is a fasciculus of the hepatic vessels, behind, the nudated peritonæum, smooth, and equal. The vena cava lies a little to the right. S. Part of the mesocolon, between the right limit of the great omentum, and conjunction of the colon with the duodenum.

Figure II. PANCREAS.

- a. Glands, secrete a peculiar fluid. b. Excretory ducts, convey the fluid from every gland into a common duct, called Ductus Pancreaticus Communis. c. Ductus pancreaticus, from the small ducts running together through the middle of the pancreas, passes to the duodenum. d. The place where the pancreatic juice is mixed with the bile. e. Aperture, through which both liquors flow into the duodenum.

PLATE LII. *Of the Omentum, &c. Representation the Second.*

All the former parts are exhibited; but with the greater omentum on both sides collapsed, and the colon drawn a little downwards, that the way to the concealed omentum might appear.

A. A. The concave part of the liver reclined, that those parts which are anterior, should be superior, or uppermost. From whence it follows, the gall-bladder, naturally placed transversely, and its fundus anteriorly, its neck posteriorly, in a contrary manner to the common situation, is described.

B. B. The gall-bladder, or *vessicula fellea*.

C. The umbilical vein, or *vena umbilicalis*. Here I add in the fetus, a much larger umbilical vein than *ductus venosus*, that the ratio of the lumen will be 629 to 100; therefore, when the umbilical vein gives many branches to the liver, a great part of the umbilical blood is not immediately carried to the *ductus venosus*, but through the liver to the *vena cava*.

D. *Lobulus spigelii*, visible through the smaller omentum, as in the former Plate.

E. F. The stomach, almost empty, in the smaller curvature, of which the *lobulus spigelii* enters, but, its anterior surface towards the left part of the liver.

G. The pylorus, from which the first flexion of the duodenum ascends backwards.

K. K. The *gastrocolic omentum*, collapsed, appears in this to arise singly from the stomach, but not altogether; and not, therefore, from the duodenum, as many Authors have asserted.

O. O. The limits in the colon, from which the *gastrocolic omentum* come forth.

Q. Q. The smaller omentum, or *omentum minus*.

S. S. Parts of the mesocolon, to the left, part of the second transverse duodenum, appears more pellucid, the right mesocolon, from the top of the kidney, a little obliquely, ascends inwardly, covers the seat of the *vena cava*, and applies itself to the first duodenum, then to the pancreas, and rises anteriorly to the same duodenum again, and comes through to the porta of the omentum, where, from the fissure of the liver, with the vessels, it comes to another connecting root of the mesocolon, passing the duodenum, goes to the colon, and likewise from the pylorus, transversely under the stomach, through the whole latitude of the abdomen, and continued even to the spleen, an emerging lamina is more without, on its anterior part.

The inferior, and similar transverse, places itself to this,

free, and emerging to the duodenum, then a continuance of the external membrane of the rising jejunum, nearly joined to the mesentery.

Between these two laminae, and the entire pancreas, and all the duodenum, but more evidently the inferior part, the mesenteric artery, its veins, and the biliary ducts.

By inflation, it receives air, and swells into bubbles, not unlike the omentum,

T. T. T. Various parts of the colon.

Y. The second flexure of the duodenum, on which the gall-bladder is situated.

X. The third flexure of the duodenum, or the descending part into which the *ductus choledochus* passes.

Y. Ligament, or membranes, which go from the gall-bladder in a continued transverse sulcus, passing the duodenum, to which they adhere for an external membrane, &c. These are said, by Winslow, to arise from the liver, and gall-bladder, but to terminate in the duodenum; and Monro, senior, calls them a duplicature of the omentum: but it is, there, a simple, yellowish, and smooth membrane, continued to the capsula of Glisson, and to the omentum.

Z. a. The hepatic renal ligament, or of the peritonæum, from the kidney to the liver, ascending, a double plica, or fold; Winslow thinks it the pancreatic ligament for the other side of its foramen. But this is the ultimate root of the mesocolon, which contains the duodenum, as seen in the former Plate, R.

Z. The left termination.

a. The right termination of this ligament.

b. b. The right kidney covered with the peritonæum.

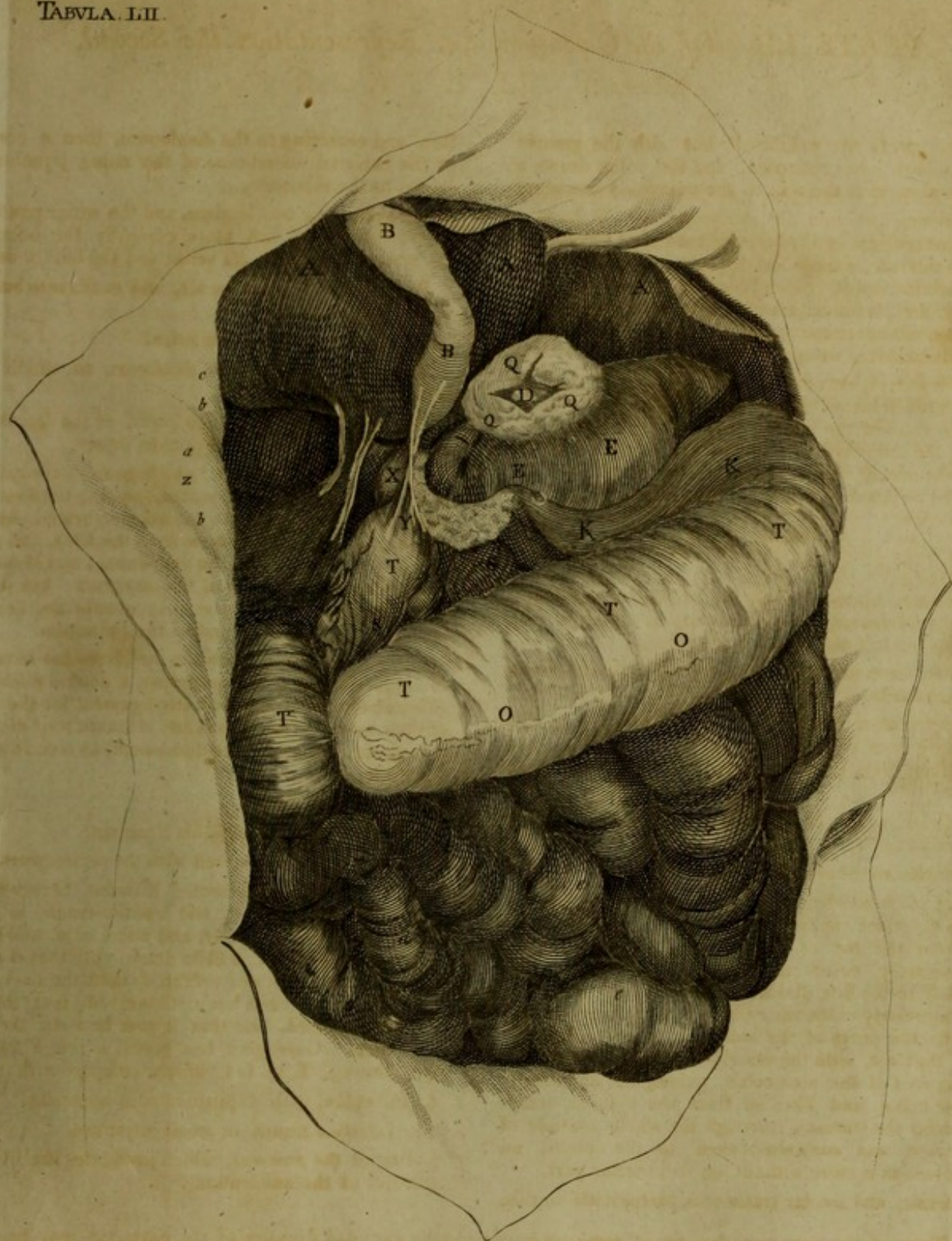
c. The *meatus* of the celebrated Winslow, between the *ligamentum hepatico-colicum*, and *hepatico-renal*, as well as between the lobe of the liver, and duodenum, and nearest the pancreas intercepted, a little drawn out, that it should appear to be lunated, and reflected about the liver. Winslow was right in this; but has not observed, that this *hiatus* is longer continued, and that it goes between the liver and bile ducts. Garengcot has given a rough Plate in his *Splanchnolog*, T. vi. f. 1. which, compare with ours,

d. d. The colon, with its pinguedinous appendix.

e. e. e. *Intestina tenuia*, or small intestines.

f. f. Part of the pancreas, which insinuates itself between the flexures of the duodenum.

The two Plates of the omentum, &c. are of some use in considering encysted dropsies of the parts, as may be seen in my Treatise on Swelled Legs, Dropsies, &c. The first Figure in Plate LI. gives a clear representation of the gall ducts, and pancreatic duct, opening in the duodenum. This demonstration may serve to correct an opinion, common in the mouths of uninformed mankind, and even some medical practitioners, of bile generating in the stomach. No bile is ever in the stomach, unless forced there by the inversion of the peristaltic motion of the duodenum, from whence bile may proceed into the stomach. When vomits are given by the ignorant, they frequently observe bile come up: but this bile, in general, is forced there from the duodenum by the vomit. On the injurious practice of giving vomits, in what are called Bilious Complaints—read my Treatise on Nervous Diseases, &c.





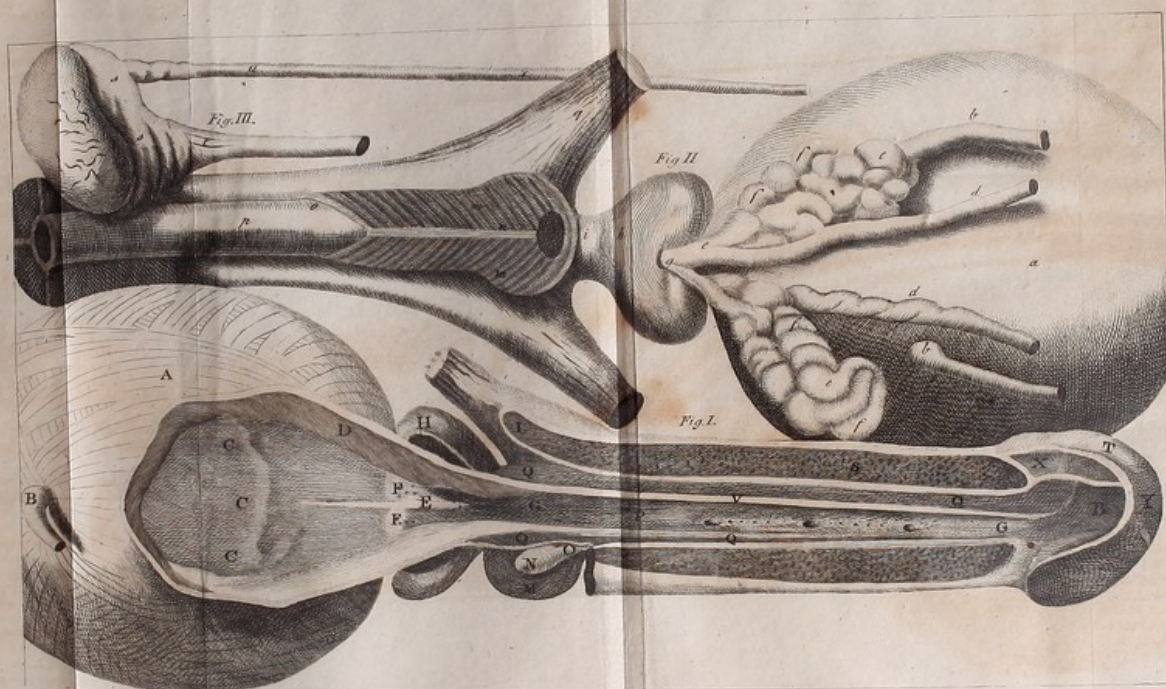


PLATE LIII. *Male Parts of Generation.*

FIGURE I. REPRESENTS THE BLADDER OPEN ON THE ANTERIOR PART; THE PROSTATE GLAND IS DIVIDED ABOVE THE CORPORA CAVERNOSA; AND THE URETHRA IS CUT THROUGH ALL ITS LENGTH.

| Name, situation, &c. | Connection, &c. | Termination, Use, &c. |
|--|---|---|
| a. The bladder, a membranaceous sac. | With the umbilicus, os pubis, intestinum rectum, and genitals. | Anterior in men, is situated to the intestinum rectum. |
| b. <i>Urachus</i> , above the bladder. | Is rarely hollow. | Goes to the liver. |
| c. <i>Aperture of the ureters</i> , with a duplicature of the internal membrane of the bladder. | Two membranous canals perforate the membrane of the bladder. | Carry the urine from the kidneys into the bladder. |
| d. Part of the bladder drawn to the side. | | |
| e. <i>Caput Gallinaginis</i> . There are two efferentia on each side. | With the prostatic part of the urethra, near the neck of the bladder. | They carry the semen from the vesiculæ seminales into the urethra <i>subcoitu</i> . |
| f. <i>Foramina</i> of the prostate ducts. | Situated near the bulbous part of the urethra. | To emit the mucus of the prostate into the urethra. |
| g. <i>Urethra</i> , opened longitudinally with the lacunæ. | Which lacunæ being irritated, a greater quantity of mucus flows out. | The matter of gonorrhœa comes from these lacunæ. |
| h. <i>Prostate</i> cut off at the beginning of the urethra. | The prostate is a cordiform, glandular, cavernous body. | Secreting the mucus to be mixed with the semen. |
| i. The beginning of the <i>corpus cavernosum</i> with the erector muscle. | Is gradually produced from the bulb of the penis. | Forms the largest part of the penis. |
| l. The <i>corpus cavernosum</i> of the other side. | From the blood remaining in the cellular texture. | The glans is distended; in this way erection of the penis is caused. |
| m. <i>Bulb</i> of the urethra. | Situated near the prostate. | From it the corpus cavernosum. |
| n. One of the glands of Cowper. | They are of the mucous kind. | Separate a lubricating humour. |
| o. Its excretory duct. | Opens into the urethra. | The mucus lubricates the urethra. |
| q. The spongy texture of the urethra. | Through its whole length. | The urethra is very sensible. |
| r. <i>Fossa navicularis</i> . | The same as the orifice of the urethra. | To discharge the semen and urine. |
| s. The <i>corpora cavernosa</i> laid open. | The blood propelled into these bodies. | Constitutes erection. |
| t. <i>Glans penis</i> , is the anterior part. v. Part of the urethra where the incision is made. | | x. Spongy texture of the glans penis. |

FIGURE II. SHEWS THE POSTERIOR PART OF THE BLADDER, AND INFERIOR PART OF THE PENIS.

| | | |
|--|--|---|
| a. The bladder, with the external membrane. | Receives the urine from the ureters. | And retains it. |
| b. <i>Ureters</i> , and their insertion. | | |
| c. <i>Insertion</i> of the vasa deferentia with the vesiculæ seminales. | c. <i>Vesiculæ seminales</i> .
The semen is preserved in these vessels, and partly in the vesiculæ. | d. <i>Vasa deferentia</i> .
Takes place from excessive profluvium of the semen. |
| f. <i>Gyri</i> of vesiculæ | The sperma is detained in them. | In them obstructions, &c. |
| g. <i>Ductus communis</i> to the vesiculæ, and vasa deferentia. | If the internal membrane of the urethra be inflamed, this ostium opens. | Upon this duct being obstructed, congestion of semen, tumors, &c. |
| h. <i>Prostate</i> , without any involucra, adheres under the neck of the bladder. | The mucus is eliminated into the urethra about the caput gallinaginis. | Tumors, and schirri of the prostate, impede the emission of urine. |
| i. Membranous part of the urethra is often injured by injections. | The semen is thrown from the urethra by the action of the muscles. | Contraction of the fibres, callosities, carunculæ, ulcers, fungi, take place. |
| l. <i>Acceleratores urinæ</i> , cut off to shew the spongy texture of the bulb. | <i>Insertions of the acceleratores</i> , terminating in the corpora cavernosa. | Incontinence of urine from the paralysis, or laxity of the muscles, impotence of the proper excretion, or only dropping <i>guttatim</i> . |
| m. <i>Acceleratores</i> above the bulb. | p. Posterior part of the urethra. | |
| n. <i>Tendon</i> of the acceleratores. | q. Beginning of the <i>corpora cavernosa</i> with the <i>erectores</i> . | |

FIGURE III. REPRESENTS THE TESTICLE, WITH THE MEMBRANE, CALLED ALBUGINEA.

| | | |
|--|---|--|
| r. Body of the testicle. | Secretes the sperma, or semen, is compressed by the cremaster. | Carries the sperma into the epididymis, which passes the semen into the vas deferens. |
| s. Epididymis lies upon the testes. | Receives the sperma from the testes. | |
| t. The spermatic chord, composed of artery, veins, nerves. | The spermatic artery, and nerves, descend through the abdominal ring. | To supply the testicle with blood, &c. for the secretion of semen. |
| u. Beginning of the vas deferens. | The vas deferens receives the semen from the epididymis. | And transmits it to the vesiculæ seminales, from whence it is thrown through the urethra in coition. |
| v. Vas deferens. | | |

P L A T E L I V.

The Female Parts of Generation.

Figure I.

- A. Inferior part of the abdomen, and mons veneris.
- B. B. *Labia pudenda* separated.
- C. *Clitoris*, and *præpuce*.
- F. *Fossa magna*, or os externum.
- G. *Meatus urinarius*.
- H. *Perinæum*.
- I. *Anus*.
- K. The part covering the extremity of the os coccygis.
- L. The parts covering the tuberosity of the os ischium.

Figure II.

SECTION OF THE UTERUS, AND OF THE VAGINA OF
A CHILD OF A FEW WEEKS OLD.

- A. *Uterus* opens through the posterior facies.
- B. *Ovaria*, and Fallopian tubes.
- C. *Vagina*, opening anteriorly.
- F. Its interior, nervous, rugous membrane.
- Δ. Its exterior, fibrous texture.
- D. Small circle of the dissected *hymen*.
- E. Crenated, and rough orifice of the uterus.
- F. *Septum* of the uterus, composed of three juga.
- G. Anterior column of the cervix uteri.
- H. Posterior,
- I. Small valves of the cervix uteri.
- K. Valvular part of the vagina, nearest to the uterus.
- L. The anterior, and larger column of the vagina.
- M. Posterior, and less column.
- N. Intermediate caruncula.
- O. The nearest part of the hymen, composed of circular valves.

The *mons veneris* is a fatty eminence, covered with hairy skin, lying on the pubis.

Labia majora are two fatty eminences, beginning under the *mons veneris*, covering the *labia minora*, and running by the sides of the orifice of the vagina to the *perinæum*, and there unite together by means of a transverse cutaneous fold, called *Frenulum Labiorum*.

Labia minora, also called *Nymphæ*, are two cutaneous folds like the gills of a cock, situated at the sides of the orifice of the vagina.

Clitoris is a glandiform body, which adheres under the anterior commissure of the *labia majora*.

Hymen is a membrane, mostly semilunar, which adheres to the orifice of the vagina in virgins.

Vagina uterina is a membranous tube, which begins within the *labia minora*, then ascends into the cavity of the pelvis, between the *ossa pubis*, and *intestinum rectum* to the neck of the uterus.

The *vagina* consists of three membranes.

The external is *cellular* from the *tela cellulosa*.

The middle *muscular*, which consists of fleshy fibres.

The internal, called *Rugous*. These *rugæ* are *transverse*.

Urethra is a membranous canal, larger than the *urethra* in men, and descending from the neck of the bladder within the *ossa pubis*, opens by its orifice under the *clitoris*, within the organ of the *nymphæ*.

Uterus, or womb, is that spongy *receptacle*, which is situated in the cavity of the pelvis above the vagina, between the urinary bladder, and *intestinum rectum*.

Its figure is like a compressed pear, hence

Its division into *bottom*, which is the highest and broadest part, *neck*, which is the lowest part, narrowed to a point, and into

the *orificium uterinum*, which is the transverse aperture in the neck of the uterus, that projects into the vagina.

Cavity of the uterus is small in a virgin, scarcely the size of an excorticated almond, with three apertures. Two are at the sides of the uterus, called the *Internal Orificia* of the fallopian tubes. The third aperture is below, viz. the *orificium uterinum*.

The broad ligaments of the uterus originate from the duplicature of the peritoneum, which gives the external membrane to the uterus. They are extended from the sides of the uterus to the *ossa ilia*; they sustain the uterus, *tubæ*, and *ovaria*.

The round ligaments of the uterus, arise from the sides of the uterus, near its fundus, go to the inguinal ring, and there terminate in fat.

Tubæ fallopianæ, are two membranous canals, which arise from the bottom of the uterus laterally, and run towards the *ovaria*, in the superior margin of the broad ligament.

The *ovaria* are two smooth bodies, situated in the cavity of the pelvis, at the sides of the uterus. Their exterior surface is *fibrous*, but their internal *vesicular*, at least, in virgins. These *vesiculæ* are called *Ovula Mulicra*, and disappear in the aged.

The glands of the genitals are:

1. *Glandulæ mucosæ vaginales*, which are situated under the rugous tunic of the vagina.
2. *Glandulæ odoriferae* of the labia, and *clitoris*.
3. *Glandulæ muciparæ urethræ*, which are found under its internal membrane.

The use of the parts of generation is for copulation.

conception.
nourishment of the
fetus.
parturition,
menstruation.

In the thirty-fourth Plate, the urine bladder, uterus, and rectum, are seen laterally, and shew the exact space they fill up in the pelvis. This view ought to be well recollected in the Practice of Midwifery, and in the treatment of many female complaints, to account for causes, symptoms, &c. in various diseases. *Patience* in hard labours cannot be too strongly inculcated; for instruments are rarely, very rarely necessary, and, when used, generally lacerate the parts, so as to render future life truly miserable!

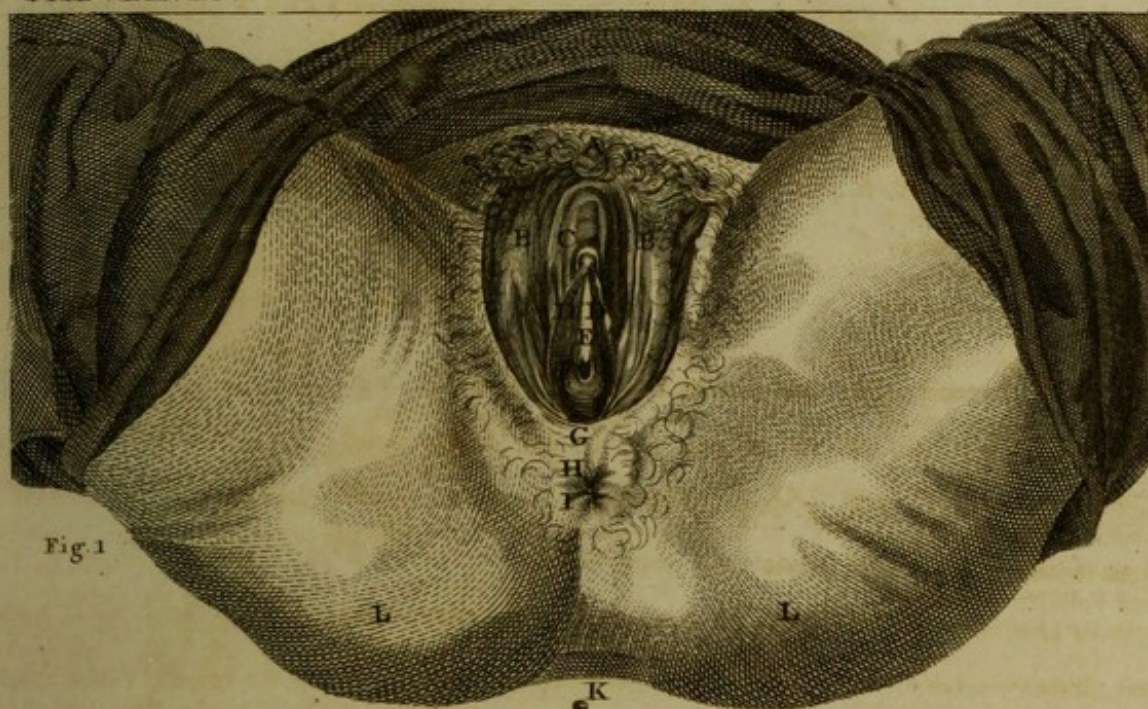
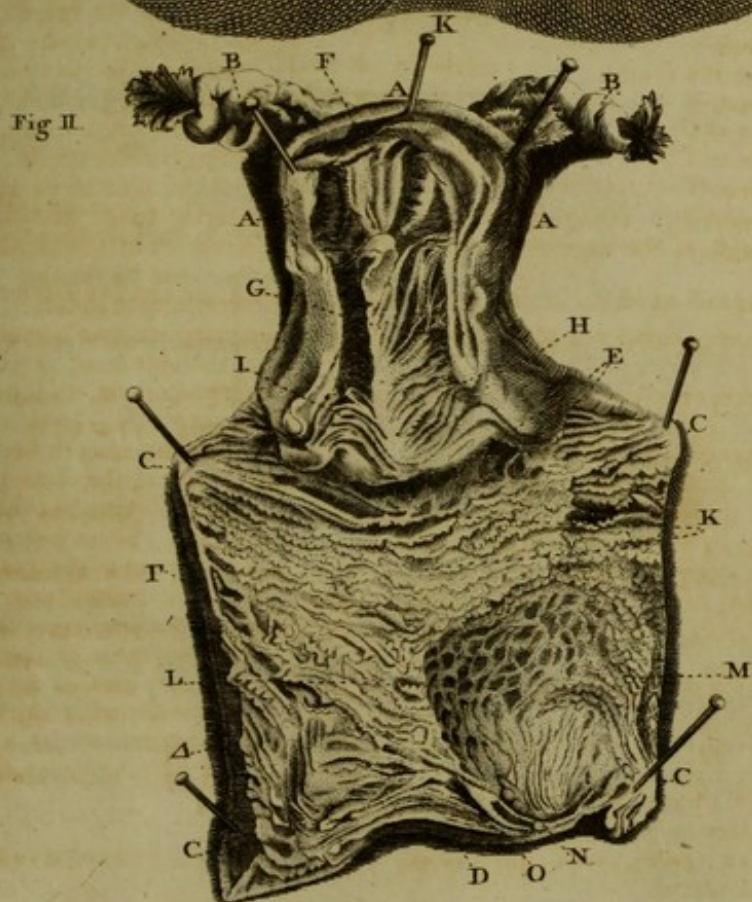


Fig. 1





COMPENDIUM OF ANATOMY,

EXTRACTED FROM

SCHOLA MEDICINÆ UNIVERSALIS NOVA,

AND

TRANSLATED INTO ENGLISH:

AFTER WHICH FOLLOWS

AN ABRIDGED PHYSIOLOGY, AND PATHOLOGY,

FOR THE USE OF STUDENTS;

CONTAINING WHAT PRINCIPALLY OUGHT TO BE WELL REMEMBERED IN THE

PRACTICE OF MEDICINE, SURGERY, &c.

OF ANATOMY IN GENERAL.

Anatomy is a Science, divided into seven doctrines:

1. Osteologia, treats of the Bones.
2. Syndesmologia, Ligaments.
3. Myologia, Muscles.
4. Splanchnologia, Viscera.
5. Angiologia, Vessels.
6. Neurologia, Nerves.
7. Adenologia, Glands.

OF THE SOLIDS IN GENERAL.

A human body consists of what have been called Solids and Fluids.*

The solids are divided into hard and soft. Bones, and cartilages, are called Hard, Muscles; and all the other parts are called Soft.

Every solid part is supposed to be formed of minute fibres; and these are what constitute tela cellulosa, which forms all other parts of the human body—very few excepted.

* What have been called Solids.—But it must be observed, that the parts, called Solids, are pervaded in every part with Fluids, in an animated Body; many of which congeal after death, and appear firm substances.

OSTEOLOGIA.

Bones are the hardest, most dry, and least sensible of the solid parts, except in a diseased state.

A junction of all the bones in their natural situation, is called a Skeleton.—It is nominated *natural*, when its ligaments are preserved; *artificial*, when articulated with small wires, screws, &c.

DIVISION OF THE SKELETON.

A skeleton is divided into Head,
Trunk, and
Extremities.

The head is divided into Skull, and
Face.

The face is sub-divided into
maxilla superior, or Upper Jaw,
And maxilla inferior, or Lower Jaw,

The trunk is divided into Spine.
Thorax.
Pelvis.

The extremities are divided
into Superior, and
Inferior.

The upper extremities are
divided into the top of
the Shoulder, and
Arm,
Into the Fore Arm, and
Hand.

The hand is sub-divided
into Carpus, or Wrist,
Metacarpus, or Hand, and
Digiti, or Fingers.

The lower extremities are
divided into femur, or Thigh,
Leg, and
Foot.

The foot is sub-divided into Foot, and
Toes.

THE NUMBER, AND NAME OF BONES.

The skeleton of a full grown person consists of two hundred and forty bones.

The skull is made up of eight; namely,

- 1 Frontal bone.
- 1 Occipital.
- 2 Parietal.
- 2 Temporal.
- 1 Sphenoid.
- 1 Ethmoid.

The maxilla superior, or upper jaw, consists of thirteen bones:

- 2 Superior maxillary.
- 2 Jugal.
- 2 Lachrymal.
- 2 Nasal.
- 2 Palatine.
- 2 Inferior, spongy.
- 1 Vomer.

The maxilla inferior, or lower jaw, has one bone only, except in the fetal state.

The cavity of the mouth has thirty-three bones; namely,
32 Teeth.

- 1 The os hyoides, or bone of the tongue.

The cavity of the ear has

- four bones, called
- Stapes,
 - Malleus,
 - Incus, and
 - Os orbiculare.

The spine consists of twenty-four vertebræ; namely,

- 7 Of the Neck.
- 12 Back.
- 5 Loins.

The thorax has twenty-five bones; namely,

- 24 Ribs.
- 1 Bone, called Sternum.

The pelvis consists of four bones, which are

- 2 Ossa innominata.
- 1 Os sacrum, or sacred bone.
- 1 Os coccygis.

The top of the shoulder has two bones; namely,

- Clavicle,
- Scapula, or Shoulder Bone.

The arm has one bone, called Humerus, or bone of the arm.

The fore arm has two bones; namely,

- Radius.
- Ulna.

The

The wrist consists of eight bones, which form two rows.

The hand consists of five bones; namely,

- 4 Metacarpal bones of the fingers.
- 1 Metacarpal bone of the thumb.

The fingers have fourteen small bones, called Phalanges :

- 2 In the thumb.
- 3 Compose each finger.

The thigh has one bone, called Femur, or bone of the thigh.

The leg consists of three bones :

- Tibia,
- Fibula,
- Patella, or *Knee pan*.

The *tarsus*, or *instep*, has seven bones.

The foot consists of five bones, one for each toe.

The toes have fourteen phalanges ; namely,

- 2 In the great toe.
- 3 In each of the others.

CONNECTION OF BONES.

There are three kinds of connection :

- 1. Moveable, called Articulation.
- 2. Immoveable, and
- 3. Mediate connection.

There are five species of articulation, or moveable connection ; namely,

- 1. Deep articulation, or Enarthrosis.
- 2. Superficial, Arthrodia.
- 3. Flexible, Ginglymus,
- 4. Rotatory, Trochoides.
- 5. Obscure, Amphyarthritis.

There are three species of immoveable connection ; namely,

- 1. Sutura, or suture.
- 2. Harmonia, or harmonic.
- 3. Gomphosis, or tooth-like indentation.

Mediate connection, or symphysis, has five species :

- 1. Synchronosis, or cartilaginous junction symphysis.
- 2. Syssarcosis, or muscular symphysis.
- 3. Syneurosis, or ligamentous symphysis.
- 4. Syndesmosis, or membranous symphysis.
- 5. Synostosis, or bony symphysis.

THE DIFFERENT SPECIES OF MOVEABLE CONNECTION MAY BE UNDERSTOOD AS FOLLOWS :

1. Enarthrosis, is an articulation, moveable in every direction, as the head of the thigh-bone in the deep cavity of the os innominatum, called Acetabulum.
2. Arthrodia, is an articulation in every direction, with the shallow cavity, as the head of the os humeri with the glenoid cavity of scapula, or the fore finger, with the metacarpal bone supporting it.
3. Ginglymus, is an articulation, admitting of flexion, and extension only, as the leg bends towards the thigh, or the arm upon the fore arm.
4. Trochoides, admits of rotatory motion only, as the *atlas*, or first vertebra of the neck, with the tooth-formed process of the *dentator* second.
5. Amphyarthritis, admits of a very obscure motion, scarcely perceptible, as the bones of the hand, and foot.

THE SPECIES OF IMMOVEABLE CONNECTION ARE THUS DISTINGUISHED :

1. Suture, is a connection of bones by means of tooth-like margins, as the bones of the skull.
2. Harmony, is a connection of bones by slight rugous margins, not dentiform, as in most bones of the face.
3. Gomphosis, is a connection of bones, in which one is fixed in the other like a nail in the wall, as the roots of the teeth in the *alveoli*, or sockets of the jaw.

THAT CONNECTION OF BONES, WITH ANOTHER BODY BETWEEN THEM, MAY BE THUS DESCRIBED :

1. Synchronosis, is a connection of bones by means of an intervening cartilage, as the bodies of the vertebræ, or bones of the pubis.
2. Syssarcosis, is a connection of bones by means of muscles, as the os hyoides, or bone of the tongue, is connected to several neighbouring parts.
3. Syndesmosis, is a connection of bones by an intermediate ligament, as the radius with the ulna, or the tibia with the fibula.
4. Syneurosis, is a connection of bones by means of membrane; thus in the *fœtus*, the parietal bones are connected with the *frontal bone*, or os frontis.
5. Synostosis, is a connection of bones, or rather concretion, by means of an intermediate bony substance; thus the lower jaw, which, in the *fœtus*, consists of two bones, afterwards becomes firmly united in the middle.

THE SUBSTANCE OF BONES IS THREE-FOLD.

Compact in the body of a bone ; spongy at the extremities ; reticular internally.

The compact substance consists of many broad laminae, or layers, lying closely on each other.

The spongy substance consists of short bony fibres in various directions, forming cells, which resemble sponge.

The reticular substance consists of minute bony filaments, interwoven together like net-work.

COLOUR OF BONES.

1. In the compact substance is white, inclining to red.
2. In the spongy structure is brown, inclining to red.
3. On the external tables of the skull is white, inclining to blue.

 USES OF THE BONES.

1. They support the body.
2. form its stature.
3. defend the viscera.
4. give adhesion, and situation to muscles.

OF THE SKULL IN GENERAL.

It is divided into the upper part, and base ; and is composed of eight bones, which are connected by suture.

The sutures of the skull are divided into

- 3 True, and
- 2 False.

THE TRUE SUTURES ARE,

First, *Coronal*, by which the frontal bone is joined to the parietal bones.

Second, *Sagittal*, which joins the parietal bones together.

Third, *Lambdoidal*, or occipital, which connects the occipital to the parietal, and temporal bones.

THE FALSE, OR SPURIOUS SUTURES, ARE

- 2 *Squamous*, or temporal, by which the upper part of the temporal bone is connected to the lower margin of the parietal bone, on each side.

SUBSTANCE OF THE SKULL.

The skull consists of an internal, and external table, which are compact ; and a spongy intermediate substance, called Diploe. The internal table, from its smooth brittle surface, is likewise distinguished by the name of Vitreous, or Glassy.

Those small bones, named after Wormius, are chiefly found in the lambdoidal suture,

THERE ARE EIGHT CAVITIES IN THE BASE, OR BOTTOM OF THE SKULL, ON WHICH THE CEREBRUM AND CEREBELLUM ARE SITUATED.

- 2 Anterior, formed by the frontal, and ethmoid bones.
- 2 Middle, formed by the sphæmoid, and temporal bones.
- 2 Superior occipital, formed by the occipital bone.
- 2 Inferior occipital formed by the occipital and temporal bones.

THE FORAMINA, OR PERFORATIONS IN THE BASE OF THE SKULL, ARE

Ten, in pairs.

Two, unlike each other.

THE PAIRS ARE THUS DISTINGUISHED.

1. *Cribrous* foramen in the occipital bone.
2. Optic foramen in the sphæmoid.
3. Superior orbital fissure.
4. Round foramen.
5. Oval foramen.
6. Spinous foramen.
7. Canal, or passage for the carotid artery in the petrous portion of the temporal bone.
8. Internal auditory foramen, near the latter.
9. Lacerated foramen, between the temporal, and occipital bones.
10. Anterior, condyloid foramen, in the occipital bone.

THOSE FORAMINA, WHICH ARE UNLIKE.

1. Obscure foramen, between the frontal, and ethmoid bones.
2. Great occipital foramen in the occipital bone.

USES OF THE FORAMINA IN PAIRS.

1. Receive the olfactory nerves, which are distributed on the cavity of the nose.
2. Give passage to the optic nerves, through each of which nerve there is a central artery.
3. By the superior orbital fissure, the third, fourth, first branch of the fifth, and the whole of the sixth pair of nerves pass ; likewise, the internal orbital artery.
4. The round foramina give passage to the second branch of the fifth pair of nerves.
5. The oval foramina receive the third branch of the fifth pair.
6. By the spinous foramen, the spinous artery runs into dura mater.
7. By the carotid canals the internal carotid artery enters, and the great intercostal nerve passes out.
8. By the auditory foramen, the hard and soft portion of the auditory nerve, and the internal auditory artery pass.
9. Through

9. Through the rugged, or lacerated foramen, the internal jugular vein, the eighth pair of nerves, and their accessories, pass out.
10. Through the anterior condyloid foramen, the lingual nerves, or of the tongue; as likewise the ninth pair, are sent out.

USES OF THE FORAMINA, WHICH ARE NOT DUPLICATE.

1. Through foramen cœcum, or the blind foramen, a small vein passes.
2. Through the great occipital foramen the spinal medulla passes down, and the vertebral arteries enter; likewise the accessory nerves of the medullary spine.

In the skull of an unborn infant, we should observe the fontanella, or that membranous part, at the top of the head, which is not yet ossified.

FRONTAL BONE, OR OS FRONTIS,

Is *situated* at the anterior part of the skull, in *shape* resembling a cockle-shell.

Division into external surface,
base, and
margin.

PROCESSES ON THE EXTERNAL SURFACE, ARE

1. Frontal tuberosities, which constitute the lateral external surface.
2. Superciliary arches, which are the superior margins of the orbital cavities.
3. External frontal spine, is an apophysis, upon which the bones of the nose are situated.
4. Two external orbital apophyses.
5. Two internal orbital apophyses, which constitute the corners of the eyes.
6. Internal frontal spine, which is in the base of this bone, on the internal surface before the obscure foramen.

CAVITIES ON THE EXTERNAL SURFACE, ARE

1. Two orbital cavities, which form the upper part of the orbit.
2. The fovea of the lachrymal gland in the external, and *upper* part of the orbit.
3. Fovea for the trochlea of the superior oblique muscle, going to the bulb of the eye, in the internal angle of the orbit.
4. Superciliary foramen, which gives passage to the frontal nerve.
5. Two pituitary frontal sinuses at the bottom of this bone, between the opening of the tables, of consequence to be considered in fractures of the cranium.

THE INTERNAL CAVITIES ARE,

1. A furrow in the middle for the longitudinal sinus of the dura mater.
2. The obscure foramen under the internal frontal spine.
3. The ethmoid cavity for the reception of the ethmoid bone.

CONNECTION WITH SEVEN BONES.

1. With the parietal bones,
2. nasal.
3. lachrymal.
4. maxillary.
5. jugal.
6. ethmoid bone.
7. sphenoid bone.

USES.

It forms the forehead, superior part of the orbits, and contains the anterior lobes of the brain.

PARIETAL BONES.

SITUATION.

They are connected to each other at the top of the head.

FIGURE.

Arched, and nearly quadrangular.

DIVISION.

Into external, and internal surface, and four margins; namely,

1. Superior, or sagittal margin.
2. Inferior, or temporal.
3. Anterior, or coronal.
4. *Posterior, or occipital,*

And four angles,

upper and lower.

Two anterior, superior and inferior.

Two posterior, superior and inferior.

EXTERNAL CAVITIES.

The parietal foramen in the posterior part of the sagittal suture, gives passage to a small artery of the dura mater.

INTERNAL CAVITIES.

The middle part of the furrow, or in the margin of the sagittal suture, for the longitudinal sinus of the dura mater.

A sulcus, or furrow for the spinous artery, at the anterior and inferior angle.

CONNECTION WITH FIVE BONES.

1. With its opposite parietal bone by sagittal suture.
2. temporal bone by squamous suture.
3. sphæpoid bone by squamous suture.
4. frontal bone by coronal suture.
5. occipital bone by lamdoidal suture.

USE.

These bones constitute the superior, or upper part of the head.

F f

OCCIPITAL

OCCIPITAL BONE.**SITUATION.**

At the back and inferior part of the skull.

FIGURE.

Oblong square.

DIVISION.

Into external and internal surfaces.

EXTERNAL PROTUBERANCES, ARE

1. Occipital tubercle in the middle of the bone.
2. Basillary process, which extends from the great occipital foramen to the sphenoid bone.
3. Condylloid processes, which are situated at the sides of the great occipital foramen, and are received into the articulating foveæ, or cavities of the first vertebra of the neck.

INTERNAL PROTUBERANCES, ARE

1. Crucial spine in the middle of the internal surface, which is divided into four rami, or processes.
Superior ramus for the scythe-like, or faciform process.
Two lateral rami for the tentorium of the cerebellum.
One inferior ramus, to which the septum of the cerebellum adheres.

THE INTERNAL CAVITIES ARE

1. Two excavations on the inferior margins, which form the rugged foramen.
2. The great occipital foramen, through which the spinal marrow passes, and the vertebral arteries, as well as the accessory spinal nerves enter.
3. Two anterior condylloid foramina before the condylloid processes, which give passage to the ninth pair of nerves, going to the tongue.
4. Two posterior condylloid foramina behind the condylloid processes, by which the occipital vein passes out.

THE EXTERNAL CAVITIES ARE

1. Two superior occipital fossæ, or cavities, which receive the posterior lobes of the brain.
2. Two inferior occipital fossæ, which receive the cerebellum.
3. A fossa, or cavity, for the medulla oblongata in the basillary process.
4. Superior furrow of the crucial spine, in which the superior longitudinal sinus is situated.
5. Two lateral furrows for the lateral sinuses of the dura mater.

CONNECTION WITH FOUR BONES.

1. With the parietal bones.
2. temporal bones.
3. sphenoid bone.
4. articulating foveæ of the first vertebra of the neck by its condyles.

USES.

Forms the posterior and inferior part of the skull, contains the posterior lobes of the cerebrum, all the cerebrum, and medulla oblongata, and is used in the articulation of the head.

TEMPORAL BONES.**SITUATION.**

At the sides, and inferior part of the skull.

FIGURE.

Irregular.

DIVISION.

Into three portions; namely,
squamous.
mamillary.
petrous.

EXTERNAL PROCESSES ARE

1. The zygomatic apophyses, which arise from the squamous portion.
2. The articulating tubercle, which are the origin of the zygomatic apophyses, and are situated before the articulating foveæ.
3. The styloid apophyses, arising from the petrous portions.
4. The mastoid apophyses, which are in the mamillary portion, to which the sterno-mastoideus muscle is affixed.

EXTERNAL CAVITIES ARE

1. The articulating foveæ to the inferior part.
2. The external opening of the auditory passage, which is on the external surface.
3. The stylo-mastoid foramen, through which the hard portion of the auditory nerve passes.
4. Carotid canal in the petrous portion, through which the great intercostal nerve passes out, and the internal carotid artery enters.
5. An excavation in the petrous portion, which, in conjunction with the occipital bone, forms the rugged foramen, or foramen lacerum.
6. The eustachian tube, which passes through a cavity of the tympanum, between the petrous and squamous portion of this bone.

INTERNAL CAVITIES ARE

1. The internal auditory passage in the back part of the petrous portion, through which the soft part of the auditory nerve passes.
2. The internal orifice of Fallopius's aquæduct, which is in the cavity of the internal auditory passage, and receives the harder portion of the auditory nerve.

CONNECTION WITH FIVE BONES.

1. With the parietal bones.
2. occipital.
3. sphenoid bones.
4. jugal bones.
5. inferior maxillary.

SUBSTANCE.

The squamous portion consists of an internal and external table, with diploe between them. The mamillary portion is cellular; and the petrous portion is firm and compact.

USES.

To contain the middle lobes of the brain; part of the cerebellum, and organ of hearing; likewise, to form the temples and base of the skull.

 THE SPHÆNOID BONE.

SITUATION.

In the middle of the base of the skull.

SHAPE.

Various: it is compared to a bat, with extended wings.

DIVISION.

Into body, and apophyses.

external surface, which is outside of the skull.

internal surface within the skull.

THE EXTERNAL PROTUBERANCES ARE

1. Sphænoïd spine, which is connected with that bone of the nose, called Vomer.
2. The greater wings, which are divided into the temporal and orbital portion.
3. The pterygoid apophysis, which is situated at the base of the superior part, and forms two smaller wings.
4. The little hook in the internal wing.
5. The spinous apophyses, which are near the spinous foramina.

INTERNAL PROTUBERANCES ARE

1. The less wings, which form the upper part of the internal orbital fissure.
2. Two anterior, and two posterior clinoid processes, which are the corners of the *sella Turcica*, or Turkish saddle.

EXTERNAL CAVITIES ARE

1. Sphænoïdal pituitary sinuses, which are in the body of this bone.
2. The foramina of the pterygoid canal, which are at the origin of the pterygoid apophyses, by which the recurrent branch of the fifth pair of nerves returns into the skull.

INTERNAL CAVITIES ARE

1. The sella turcica, which is a depression between the four clinoid apophyses.
2. The optic foramina, through which the optic nerves pass; and in the middle of each nerve there is a *central* artery.
3. The superior orbital fissures, through which the third, fourth, first branch of the fifth, and the whole of the sixth pair of nerves pass out; likewise, the internal orbital artery.
4. The round foramina, by which the superior maxillary nerves pass.
5. The oval foramina, giving passage to the inferior maxillary nerves.
6. The spinous foramina, by which the spinous artery enters into the cavity of the skull.

CONNECTION WITH NINE BONES.

1. With the frontal bone.
2. ethmoid.
3. parietal bones.
4. temporal.
5. jugal.
6. superior maxillary.
7. palatine.
8. vomer.
9. occipital bone by cartilage.

USES.

Forms the base of the skull; assists in the formation of the orbit, and pituitary sinus.

 ETHMOID BONE.

SITUATION.

Anteriorly in the base of the skull, and upper part of the nose.

SHAPE.

Cube-like.

DIVISION INTO SIX SURFACES.

Superior, toward the cavity of the skull.

Inferior, projects into the cavity of the nose.

Anterior, near the frontal sinuses.

Posterior, connected to the sphænoïd bone.

Two lateral, right and left, which form the internal part of the orbit.

THE EXTERNAL AND INTERNAL PROMINENCES ARE

1. The crista galli, which divides the internal surface into two parts, and forms a point of adhesion for the fauciform process of the dura mater.

2. The

2. The cribriform lamella, which forms the internal surface of this bone.
3. The perpendicular lamina, or ethmoid septum, divides the cavernous substances; and at its inferior part, is connected to the vomer.
4. The cavernous substance, on each side of the perpendicular lamina; consisting of bony cells, and forms the superior spongy bone.
5. The *paper-like*, or papyraceous surface, which covers the cavernous substance sideways, and forms the lateral, and internal part of the orbit.

THE EXTERNAL AND INTERNAL CAVITIES ARE

1. The cribrous foramina, most of which are near the crista galli, on the internal surface, and give passage to the small branches of olfactory nerves.

CONNECTION WITH SEVEN BONES.

1. With the frontal bone.
2. the *nasal*, or bones of the nose.
3. superior maxillary.
4. lachrymal.
5. palatine.
6. sphænoid.
7. vomer.

USES.

It constitutes the organ of smell, part of the nose, skull, and orbits.

THE BONES OF THE FACE IN PARTICULAR.

SUPERIOR MAXILLARY BONES.

SITUATION.

At the anterior, and middle part of the face.

SHAPE.

Irregular.

DIVISION.

Into the body, which is in the middle, and many apophyses.

EXTERNAL AND INTERNAL PROMINENCES ARE

1. The nasal apophysis, which forms the side of the nose.
2. The orbital apophysis, forming the inferior part of the orbit.
3. The jugal apophysis, which is rugged, and connected to the jugal bone.
4. The palatine apophysis, which forms the anterior part of the palate.
5. The alveolar arch, which consists of eight sockets in each bone.
6. The maxillary tuberosity, forming its posterior surface.

7. The nasal spine, which is internal in the cavity of the nose, formed by a connection of the maxillary bones.
8. The orbital margin, forming the inferior edge of the orbit.

EXTERNAL AND INTERNAL CAVITIES.

1. Lachrymal fossa, which is a cavity, at the superior and internal part of the nasal process, to receive the lachrymal sac.
2. The nasal canal, which descends a little obliquely from the lachrymal fossa into the cavity of the nose.
3. The inferior orbital canal, beginning at the lower part of the orbit, is covered by the inferior orbital apophysis, and terminates in the face: it gives passage to the inferior orbital nerve, which is a continuation of the superior maxillary.
4. The palatine foramen in the nasal spine, through which the anterior palatine artery passes.
5. The posterior palatine foramen, behind the last of those teeth, called Molares, or Grinders, in the maxillary tuberosity, by which the alveolar nerve passes in.
6. An aperture of the maxillary sinus, which is so covered by the ethmoid, lachrymal, palatine, and inferior spongy bones, that it will hardly admit a goose-quill.
7. The pituitary maxillary sinus; in the middle of this bone is called Antrum Highmori, or of Highmor, which is a deep cavity, with an aperture into the nose.

CONNECTION WITH ELEVEN BONES.

Partly by sutures, and partly by harmony.

1. With its companion on the other side.
2. the frontal bone.
3. nasal bones.
4. lachrymal.
5. ethmoid bone.
6. jugal bones.
7. palatine.
8. sphenoid bone.
9. inferior spongy bones.
10. vomer.
11. teeth.

USE.

They form part of the face, palate, nostrils, and orbit; and constitute the organ of mastication, or for chewing food.

JUGAL BONES.

SITUATION.

At the sides of the face.

FIGURE.

Almost square.

DIVISION

DIVISION.

Into internal and external surface, body, and four apophyses.

THE PROTUBERANCES ARE

1. The frontal apophysis, which is connected to the frontal bone at the external angle of the orbit.
2. The orbital apophysis, forming a part of the orbit.
3. The *check apophysis*, which is near the maxillary bone.

The zygomatic apophyses, which are connected to the zygomatic process of the temporal bone, and forms the zygoma.

THE CAVITIES ARE

1. The zygomatic cavity behind.

CONNECTION WITH FOUR BONES; NAMELY,

1. With the frontal.
2. maxillary.
3. sphenoid.
4. temporal.

BONES OF THE NOSE.

SITUATION.

In the superior part, and middle of the nose.

SHAPE.

Oblong square.

DIVISION.

Into external, and internal surface, and four margins:

1. Superior, near the frontal bone.
2. Inferior, connected with the cartilage of the nose.
3. Internal, by which it is united to its companion; and below, it rests upon the perpendicular apophysis of the ethmoid bone.
4. External, meets the nasal apophysis of the maxillary bone.

CONNECTION WITH FOUR BONES.

1. With its associate.
2. the frontal.
3. maxillary.
4. ethmoid.

USE.

To form the nose, and to defend and cover the organ of smelling.

LACHRYMAL BONES.

SITUATION.

In the internal corner of the orbit.

SHAPE.

Almost square.

DIVISION.

Into external and internal surface, and four margins:

1. The superior, connected with the frontal bone.
2. The inferior, joined to the maxillary.
3. The internal, joined to the papyraceous apophysis of the ethmoid bone.
4. The external, joined to the nasal apophysis of the maxillary bone.

CAVITY.

A middle furrow at the external margin, which, in conjunction with the middle groove of the nasal apophysis of the maxillary bone, forms the lachrymal fossa.

CONNECTION WITH FOUR BONES.

1. With the frontal.
2. maxillary.
3. ethmoid.
4. inferior, spongy.

USE.

Forms part of the orbit of the lachrymal duct, and defends the organ of hearing.

SOSA SPONGIOSA INFERIORA, OR INFERIOR SPONGY BONES.

SITUATION.

At the side, and inferior part of the nose.

SHAPE.

Spiral.

DIVISION.

Into external surface, which is *depressed* towards the maxillary sinus. The internal surface is convex, towards the nose. Two margins; the superior adheres to the transverse eminence of the maxillary bone. The inferior hangs *unconnected* in the cavity of the nose, and has an anterior and posterior extremity.

CONNECTION WITH THREE BONES, BY HARMONY; NAMELY,

1. With the maxillary bone.
2. palatine.
3. lachrymal.

USE.

To extend the surface of the organ of smelling, and diminish the extent of Highmor's antrum.

PALATINE BONES.

SITUATION.

In the posterior part of the nose, and extend literally as far as the orbit.

G g

SHAPE.

SHAPE.

Irregular.

DIVISION INTO THREE PARTS: NAMELY,

1. Palatine, which forms the palate.
2. Nasal, extending as far as the orbit.
3. Orbital, which projects into the orbit.

PROMINENCES.

1. Pterygoid apophysis, which, by means of a *depression*, is joined to the extremity of the pterygoid apophysis of the sphenoidal bone, and connected with the tuberosity of the maxillary bone.
2. A projecting line on the surface of the nasal part of this bone, upon which the posterior extremity of the inferior spongy bone lies.

CONNECTION WITH SIX BONES.

1. With its companion.
2. the maxillary.
3. sphenoid.
4. ethmoid.
5. inferior, spongy.
6. vomer.

USE.

To form the palate, cavity of the nose, and part of the orbit.

THE VOMER.

SITUATION.

In the middle of the cavity of the nose, which it divides into two parts.

SHAPE.

Resembles a *plough share*.

DIVISION.

Into two surfaces and four margins. The right and left surfaces are towards the cavity of the nose.

THE MARGINS ARE

1. Anterior, to which the cartilage of the septum narium of the ethmoid bone is affixed.
2. The posterior is toward the fauces.
3. Inferior, is received into grooves of the palatine, and maxillary bones.

The right and left surface are toward the cavities of the nose.

CONNECTION WITH FOUR BONES, AND ONE CARTILAGE; NAMELY,

1. With the sphenoid bone.
2. ethmoid.
3. superior maxillary.
4. palatine.
5. cartilage of the septum narium.

USE.

To support and divide the cavity of the nostrils.

THE LOWER JAW-BONE.

SITUATION.

In the anterior part of the face.

SHAPE.

Like a horse-shoe.

DIVISION.

Into an external and internal surface, superior and inferior margin, body, and extremities.

PROTUBERANCES.

1. The condyloid apophysis, which is received into the articulating fovea of the temporal bone.
2. The coronoid apophysis, which is pointed, and gives adhesion to the tendon of the temporal muscle.
3. The symphysis of this bone is a projecting line in the middle of its body.
4. The alveolar margin, which has sixteen teeth.
5. The inferior margin, which forms the external and internal lip.
6. The angles of the jaw, which are the extremities of the inferior margin on each side.

CAVITIES.

1. The semilunar notch, which is between the condyloid, and coronoid apophysis.
2. The posterior maxillary foramen, or the internal surface.
3. The anterior maxillary foramen in the external surface.
4. The mental canal in the substance of this bone under the teeth, leading from the posterior to the anterior foramen, and gives passage to the inferior maxillary nerve, the maxillary artery, and vein.
5. The sixteen alveoli, or sockets for the teeth, at the superior margin of this bone.

CONNECTION.

With the articulating fovea of the temporal bone; and with the os hyoides, by muscles.

USE.

It is the organ of mastication.

OF THE CAVITIES OF THE FACE, IN PARTICULAR.

Besides the cavity of the skull, there are five others in the head, formed by the bones of the skull and face; namely,

CAVITIES IN THE HEAD.

1. The orbits.
2. cavity of the nose.
3. mouth.
4. fauces.
5. ears.

THE

THE ORBITS.

SITUATION.

Under the forehead, at the sides of the root of the nose.

SHAPE.

Conoid.

DIVISION.

Into entrance, and fundus.

The entrance is divided into the superior margin.

inferior.

external angle, and

internal, which are likewise called canthi.

THE CAVITIES IN THE ORBIT ARE

1. A fovea for the lachrymal gland, at the external angle.
2. A fovea for the orbital trochlea, at the internal angle.
3. The lachrymal fossa for the lachrymal sac.
4. The nasal canal, which is a continuation of the lachrymal fossa, going, obliquely, into the nostrils, where it opens under the inferior spongy bone.
5. The superior orbital rima, or rim.
6. inferior.
7. superciliary foramen.
8. infra-orbital canal.
9. optic foramen.

THE ORBIT IS FORMED BY SEVEN BONES.

1. By the frontal, at its upper part.
2. maxillary, and jugal, at the inferior part.
3. lachrymal, ethmoid, and palatine inwardly.
4. sphæmoid outwardly, and at its fundus.

USE.

To contain and defend the eye, and its appendages.

CAVITY OF THE NOSE.

SITUATION.

Under the fore part of the skull, in the middle of the face.

DIVISION.

By a bony septum into a right and left cavity.

SHAPE.

Pyramidal.

THE PROTUBERANCES ARE

1. The septum narium, which is formed by the vomer, and a perpendicular lamina of the ethmoid bone.
2. Three pair of spongy bones; namely, superior, and middle, which are portions of the ethmoid bone; the inferior, which are separate.

THE CAVITIES ARE

1. Three pair of pituitary sinuses; namely, The frontal in the frontal bone.
The sphæmoid in the sphæmoid bone.
The maxillary, which are likewise called Highmor's *Antrum* in the maxillary bone.
2. The anterior nasal foramina, formed by the maxillary bones, and the vomer.
3. The posterior nasal foramina, formed by the palatine bones, and vomer.

COMPOSITION OF THE NOSE.

It is formed by thirteen bones:

1. By the frontal.
2. two maxillary.
3. two nasal.
4. two lachrymal.
5. two inferior, spongy.
6. the sphæmoid.
7. the vomer.
8. the ethmoid.
9. two palatine.

USE.

To form the organ of smell; and pituitary sinus of the nose.

CAVITY OF THE MOUTH.

SITUATION.

Between the superior and inferior maxillary bones.

SHAPE.

Anteriorly oval; posteriorly transversely semi-oval.

DIVISION.

Into upper and lower maxillary, or bones.

COMPOSITION.

It is formed from five bones, and thirty-two teeth: by two superior maxillary; by two palatine; and by the lower jaw.

USE.

For mastication, and other purposes.

THE TEETH.

They are small bones, fixed in the alveoli of the maxillary, or jaw-bones.

Number, commonly thirty-two are found, sixteen in each jaw.

DIVISION INTO THREE SPECIES.

The four middle are called incisores; one on each side of these, which are called canini; ten others, the molares, or grinders, which are situated beyond the canini.

DIVISION.

DIVISION.

Each tooth is divided into a corona, or crown, which is the upper part, projecting above the jaws; a neck, which is a circle under the crown; and a root, which is the inferior part of the tooth hid in the socket.

DIFFERENCES OF THE CORONÆ, OR CROWNS.

The crowns of incisores are broad, and have a sharp edge.

The crowns of canini are thick, and have a blunt point.

The crowns of molares have several eminences.

DIFFERENCES OF THE ROOTS.

The roots of the incisores, are single, and taper.

The roots of the canini, are likewise single, but longer, and thicker than the incisores.

The root of the first of the molares is single; but of all the others, is double, treble, or quadruple, which sometimes grow together.

CAVITY.

In the root of each tooth, there is a foramen, leading into a small cavity, which is in the internal substance of the tooth, through this foramen, the nerve, artery, alveolar vein, and internal periosteum of the tooth are carried.

SUBSTANCE OF THE TEETH.

At the root is compact; the external surface of the crown is surrounded by a very hard and white substance, called enamel.

CONNECTION.

The roots of the teeth are fixed in the alveoli, by gomphosis.

USE.

For mastication.

THE FORMATION OF TEETH.

A fœtus has two rows of teeth in each jaw, which are covered by the gums.

The time of the first dentition is about the sixth, or seventh month after birth; these are called primary, or milk-teeth.

The time of the second dentition is about the seventh year; the primary teeth then gradually decay, and are, in time, succeeded by new teeth, which are called secondary, or perennial teeth, because they continue through life.

The last grinders do not come out before puberty, and are, on that account, called dentes sapientie.

CAVITY OF THE FAUCES.**SITUATION.**

Under the basis of the cranium, between the superior bodies of the vertebræ of the neck, and the posterior part of the nose.

SHAPE.

At the top it is nearly square.

DIVISION INTO SIX PARTS.

1. The superior, which is from the basilar process of the occipital bone.

2. The anterior, formed by the pterygoid apophysis of the sphænoid bone, by the palatine bones and the vomer.

3. The posterior, formed by three superior vertebræ of the neck, and has two sides, formed by the petrous portions of the temporal bones.

COMPOSITION.

It is therefore made up of ten bones.

USE.

To contain the fauces, pharynx, larynx, and bone of the os hyoides, or bone of the tongue.

OS HYOIDES.**SITUATION.**

In the fauces, between the base of the tongue and larynx.

SHAPE.

It is semilunar.

DIVISION INTO BODY, AND FOUR HORNS; NAMELY,

Two larger horns, which go from the sides of the body, and are connected with the horns of the scutiform cartilage, by means of ligaments.

Two lesser horns, which project toward the origin of the larger horns.

CONNECTION WITH SIX PARTS, EITHER BY MUSCLES, OR LIGAMENTS.

1. It is connected with the tongue.
2. processes of the larynx.
3. With the styloid processes of the temporal bone.
4. lower jaw.
5. scapula.
6. sternum.

USE.

It serves as a point of adhesion for the tongue, and for deglutition.

THE CAVITY OF HEARING.**SITUATION.**

Internally in the petrous portion of the temporal bone.

DIVISION.

Into external and internal auditory passage; the cavity of the tympanum; the four small bones; and the labyrinth.

OF THE TRUNK.

The trunk of a skeleton is divided into spine,

thorax and

pelvis.

THE SPINE.

It is a bony column in the posterior part of the trunk, extending from the great occipital foramen to the os sacrum.

COMPOSITION.

Of twenty-four vertebræ.

DIVISION

Of each vertebra into a body, and seven apophyses; the body is thick, and forms the anterior part of the vertebræ.

THE SEVEN APOPHYSES ARE

1. The spinous, which projects at the posterior part.
2. Two superior oblique.
3. Two inferior oblique.
4. Two transverse, which are at the sides.

THE CAVITIES ARE

1. The cavity, containing the medulla spinalis, or spinal marrow, which extends from the occipital bone to the posterior surface of the os sacrum.
2. The lateral foramina, of which there are twenty-four, and through which the spinal nerves pass out.

CONNECTION

Of the vertebræ is double :

1. With the body of the next vertebra, by synchondrosis.
2. The oblique apophyses of one vertebra are connected with the apophyses of the next, by arthrodia.

USE OF THE SPINE

Is to support the body and head; to contain and defend from injury the spinal marrow.

THE FIRST VERTEBRÆ OF THE NECK.

This is likewise called Atlas.

1. It has neither body, nor spinous apophyses.
2. Instead of apophyses, it forms an anterior and posterior arch.
3. The anterior arch surrounds the dentiform process of the second vertebra.
4. Instead of oblique apophyses, it has two articulating sinuses, which receive the condyles of the occipital bone.
5. It is connected with the head superiorly, with the second vertebra by an oblique apophysis, and by the odontoid process of the second vertebra, or dentator.

SECOND CERVICAL VERTEBRÆ.

This is likewise called Axis, Epistropheus, or Dentator; its peculiarities are the odontoid, or tooth-like process on

the superior part of its body, which articulates in a small cavity of the anterior arch of the atlas, and is retained in its place by a transverse ligament; and is considerably strengthened by another ligament to the great occipital foramen.

THE CERVICAL VERTEBRÆ.

Each of the other cervical vertebræ have a foramen in their transverse apophyses, giving passage to the ascending vertebral arteries.

THE DORSAL VERTEBRÆ

Are distinguished by the following peculiarities:

1. At the side of the body of each, there is a fovea in the middle, which, when both bodies are joined, form a surface for the larger head of the rib.
2. At the top of the transverse apophyses, there is a superficial fovea for the lesser head of the rib.

THE LUMBAR VERTEBRÆ.

The most considerable motion of the spine is between the last vertebra of the back, and the first of the loins.

THE CAVITY OF THE CHEST.

COMPOSITION CONSISTS OF THIRTY-SEVEN BONES :

12 Dorsal vertebræ.

24 Ribs.

1 Sternum, or breast-bone.

USE.

To contain and protect the vital viscera, and the organs of respiration.

THE RIBS.

SITUATION IS OBLIQUE,

Going from the dorsal vertebræ to the sternum.

SHAPE,

Is semicircular.

NUMBER,

Is twenty-four; twelve on each side.

GENERAL DIVISION

Into seven true, which are connected with the sternum; and five false, which are not connected with it.

H h

PARTICULAR

PARTICULAR DIVISION

Of each rib into body and extremities; anterior and posterior, into external and internal surface; superior and inferior margins.

THE EMINENCES ARE

1. The greater head, which is connected to the articulating fovea of the dorsal vertebra.
2. The neck, which is that part adhering between the two heads.
3. The smaller head, which adheres to the transverse apophyses of the dorsal vertebra.
4. The angle, which is the posterior, and most convex part of the rib.

CAVITIES IN EACH ARE

1. The longitudinal furrow, at the inferior margin, which receives the intercostal artery: always to be remembered in the operation for the empyema.

SUBSTANCE.

The anterior part is cartilaginous; the posterior, and every other portion is bony and compact.

CONNECTION.

The anterior extremity of each true rib is connected with the sternum, by synchondrosis.

The posterior extremities of all the ribs, true, and false, are connected by ginglymus to the dorsal vertebræ, by means of the greater and smaller heads.

USE OF THE RIBS

Is to form the thorax, or chest; to assist respiration; defend the vital viscera; and give adhesion to the breasts, and muscles.

THE STERNUM.

SITUATION.

At the anterior part of the pelvis, between the true ribs.

SHAPE.

Like a stilleto, or dagger.

DIVISION,

Into internal and external surface; superior and inferior extremities; lateral margins; superior and inferior portions; appendix of the inferior part, called ensiform cartilage.

CAVITIES ARE

1. Jugular sinus, which is near the upper and middle part of the trachea.
2. Two clavicular sinuses at the sides of the upper part, to which the clavicles are joined.
3. Seven costal foveæ at the lateral margins for the ribs.

CONNECTION OF THE STERNUM.

1. With each clavicle, by arthrodia.
2. cartilages of the seven true ribs, by synchondrosis.

SUBSTANCE.

Is rather spongy.

USE.

To form the thorax; and to give adhesion to the anterior mediastinum.

CAVITY OF THE PELVIS.

SITUATION.

In the lower region of the trunk.

SHAPE.

Greatly resembles a barber's bason.

DIVISION.

Into wings, and cavity.

[THE CAVITY

Is sub-divided into entrance, and termination.

COMPOSITION.

It consists of four bones: two ossa innominata; the os sacrum; and the os coccygis.

CONNECTION.

The bones, forming the pelvis, are connected by synchondrosis.

USE.

To contain the organs of generation; the bladder; the intestine, called rectum; and to support the spine.

OSSA INNOMINATA.

SITUATION.

At the sides of the pelvis.

SHAPE.

Is irregular.

DIVISION OF EACH IN THE FOETUS INTO THREE PORTIONS; NAMELY,

1. Into the os ilei, forming the upper part.
2. os ichii, lower part.
3. os pubis, superior and fore part.

DIVISION

Of the bone into external and internal surface.

THE

THE EMINENCES ARE

1. The tuberosity of the ileum at the posterior part, where it is connected with the os sacrum.
2. The crista of the ileum, which forms its superior and thick margin.
3. The posterior spine of the ileum, which is the beginning of the crista, at the posterior part.
4. The anterior and superior spine of the ileum, which marks the termination of the crista, at its anterior part.
5. The anterior and inferior spine of the ileum, which is just under the last mentioned spine.
6. The crista of the bones of the pubis, forming the superior margin of these bones.
7. The arch of the pubis, at the anterior part of the ossa innominata.
8. The tuberosity of the ischium, forms the inferior margin of that bone on which we sit.
9. The spine of the ischium is behind its tuberosity.

THE CAVITIES ARE

1. The external iliac cavity, at the external surface of the ileum.
2. The internal iliac cavity, on the internal surface of this bone.
3. A notch, or excissura, between the anterior spines of the ileum.
4. The anterior ischiatic notch, which is before the spine of the ischium.
5. The posterior ischiatic notch behind the spine ischium.
6. The acetabulum, formed by three portions of the os innominatum, which receives the head of the os femoris.
7. The fovea of the acetabulum, which is at its most internal part, contains the synovial glands, and the ligamentum teres of the thigh bone.
8. The foramen avale, formed by the arch of the os pubis, and ischium.

CONNECTION OF THESE BONES WITH EACH OTHER.

The ossa pubis, by cartilaginous symphysis.

The ileum with the sacrum, by synchondrosis; and with the thigh bone, by enarthrosis.

USE.

To form the pelvis; to retain the gravid uterus in its situation; to contain the acetabulum, in which the head of the thigh bone is placed.

THE SACRUM.

SITUATION.

At the posterior part of the pelvis.

SHAPE.

Triangular, inclined forwards.

DIVISION.

Into anterior and posterior surfaces; into base or upper part; into sides and apex.

THE PROTUBERANCES ARE

1. Two superior oblique apophyses, projecting at the base of this bone.
2. Tubercles of the spinous apophyses.
3. oblique apophyses.
4. transverse apophyses, which are all on the posterior surface.
5. The appearances of the vertebral bodies on the anterior surface.

THE CAVITIES ARE

1. Four pair of external foramina on the external surface.
2. Four pair of internal foramina on the internal surface, through which the sacral nerves pass.
3. The longitudinal canal, containing the sacral nerves, visible on the posterior surface.

CONNECTION WITH FOUR BONES.

1. With the last lumbar vertebra.
2. os coccygis.
3. os innominatum.

SUBSTANCE.

Is entirely spongy, formed by the conjunction of the five spurious vertebræ.

USE.

To form the pelvis; and to support the dorsal spine.

OS COCCYGIS.

SITUATION.

At the apex of the os sacrum.

SHAPE.

Triangular.

DIVISION.

Into base, sides, and apex.

COMPOSITION.

It is formed by three small spurious vertebræ, joined together by cartilage.

CONNECTION.

It is connected with the apex of the os sacrum, by synchondrosis.

USE.

To form the pelvis; to support the rectum; and to prevent a laceration of the perineum, during child-birth.

THE CLAVICLE.

SITUATION.

Is oblique, at the superior and lateral part of the thorax, between the sternum and scapula.

SHAPE.

SHAPE.

It resembles the letter S.

DIVISION.

It is distinguished by anterior and posterior extremity; superior and inferior surface.

ITS CAVITIES ARE

A groove for the subclavian vessels on the inferior surface.

CONNECTION.

The anterior extremity is connected with the sternum, by synchondrosis; and the posterior with the scapula, by arthrodia.

USE.

To connect the scapula and humerus with the thorax; and to defend the subclavian vessels.

THE SCAPULA.**SITUATION.**

At the upper part, and side of the back.

DIVISION.

Into two surfaces, which are the posterior, or external; the anterior, or internal; three margins, namely, superior, external, internal; and three angles, the superior external; superior internal; inferior.

THE PROMINENCES ARE

1. Lips of the external margin, which are likewise called the base of the scapula.
2. The neck of the scapula, which forms the superior external angle, and is situated under the articulating cavity.
3. The spine is a process, dividing the posterior surface.
4. The acromion is the anterior part of the spine.
5. The coracoid apophysis, projects into the anterior and superior part of the articulating cavity.

THE CAVITIES ARE

1. The articulating cavity at the neck of the scapula, which receives the neck of the humerus.
2. The fovea of the acromion, which adheres to the clavicle.
3. The supra-spinal depression, which is above the spine.
4. The infra-spinal cavity below the spine.

The spine is at the posterior part.

CONNECTION WITH FOUR BONES.

With the clavicle, by arthrodia.

ribs, and
os hyoides, } by syssarcosis.
os humeri, by arthrodia.

USE.

To defend the back, and give articulation to the humerus.

THE OS HUMERI.**SITUATION.**

Between the scapula, and fore arm.

DIVISION.

Into body and extremities: one superior, the other inferior.

THE PROMINENCES ARE (AT THE SUPERIOR EXTREMITY.)

1. The head of this bone.
2. The neck, under the head.
3. The larger tuberculum behind.
4. The smaller ditto before, which are under the head of this bone.

AT THE INFERIOR EXTREMITY THERE ARE THREE CONDYLES:

1. The external.
 2. The internal, which are for the adhesion of the flexor, and extensor muscles.—All flexors arise from the external condyle, and all extensors from the internal.
 3. The headed condyle for articulation with the radius.
- A trochlea of the humerus for articulation with the forearm.

THE CAVITIES IN THE UPPER EXTREMITY ARE

A groove, or sulcus of the tubercles for one head of the biceps muscle.

AT THE INFERIOR EXTREMITY.

The posterior fossa for the aconoid process of the ulna.
The anterior fossa for the aconoid apophysis of the ulna.

CONNECTION WITH THREE BONES.

1. With the scapula, by arthrodia.
2. ulna, by ginglymus.
3. radius, by double ginglymus.

SUBSTANCE

Is *three-fold* compact in the body; spongy at each extremity; reticular internally.

USE.

To form the arm.

THE ULNA.**SITUATION.**

At the internal side of the fore-arm towards the little finger.

SHAPE

Is long, thicker at the upper than at the lower extremity.

DIVISION.

DIVISION.

Into body and extremities.

ITS PROMINENCES ARE SIX.

THOSE AT THE UPPER EXTREMITY ARE

1. The olecranon, or anconoid process, situated posteriorly.
2. The coronoid apophysis, which is forwards.

THOSE AT THE INFERIOR EXTREMITY ARE

4. The lower head, which is a little hallowed.
5. The neck of the lower head.
6. The styloid apophysis, near the lower head.

THE CAVITIES ARE

1. The sigmoid cavity, which is between the anconoid and coronoid processes, and receives the trochlea of the humerus.

CONNECTION WITH THREE BONES.

1. With the trochlea, by ginglymus.
2. bones of the wrist, by arthrodia.
3. radius, above and below, by trochoides.

THE RADIUS.**SITUATION.**

On the external side of the fore arm, towards the thumb.

SHAPE.

Is long.

DIVISION.

Into body; into superior, and into inferior extremity, which is thicker than the superior.

PROMINENCES IN THE SUPERIOR EXTREMITY ARE

1. The upper, or excavated head, which articulates with the headed condyle of the humerus.
2. A head for the biceps muscle, which is upwards, at the neck of the head.

AT THE INFERIOR EXTREMITY.

3. The styloid apophysis.

THE CAVITIES ARE

1. The glenoid cavity, at the inferior extremity, which articulates with the wrist.

CONNECTION.

1. With the headed condyle of the humerus.
2. With the ulna, at its upper and lower part.
3. With the bones of the hand.

USE.

To assist in constituting the fore-arm, to perform flexion, pronation, and supination.

THE WRIST.

The carpus, or wrist, is formed of eight bones, which are connected to each other, and lie in a double row.

SITUATION.

Between the fore-arm and hand.

DIVISION

Of the bones into a superior and an inferior row.

IN THE SUPERIOR,

From the thumb towards the little finger.

Os naviculare.

semilunare.

cuneiforme.

subrotundum, or orbiculare.

IN THE INFERIOR ROW,

From the thumb to the little finger.

Os trapezium.

multangulare majus.

trapezoides minus.

magnum.

capitatum.

unciforme.

THE METACARPUS, OR HAND.**SITUATION.**

Between the wrist and fingers.

COMPOSITION.

It is formed by five longitudinal bones:

One for the thumb.

Four others for the fingers.

CONNECTION IS DOUBLE.

1. With the wrist.

2. fingers.

USE.

To form the middle part of the hand.

THE FINGERS.**SITUATED**

At the inferior extremity of the hand.

COMPOSITION.

The thumb has two; and each finger three small bones, called phalanges.

DIVISION

Of the phalanges into superior, middle, and inferior.

USE.

To form the fingers, which are instruments of touch, defence, and labour.

THE FEMUR, OR THIGH BONE.**SITUATION.**

Between the pelvis and tibia.

SHAPE.

Is long.

DIVISION.

Into body, and two extremities; one superior; the other inferior.

PROJECTIONS AT THE SUPERIOR EXTREMITY ARE

1. The head, which is semi-circular.
2. The neck, which goes obliquely from the head to the trochanters.
3. The great trochanter, which is an external tuberosity.
4. The little trochanter, situated inwardly, and lower.

PROJECTIONS AT THE INFERIOR EXTREMITY ARE

5. The external condyle.
6. internal, which is rather larger.

CAVITIES AT THE SUPERIOR EXTREMITY.

1. A fovea at the head for the ligamentum teres.

CAVITIES AT THE INFERIOR EXTREMITY.

2. Sinus of the patella, between the condyles to receive the patella.
3. Posterior groove of the condyles, which contains the popliteal vessels.

CONNECTION WITH THREE BONES.

1. With the acetabulum, by anarthrosis.
2. head of the tibia; and
3. patella, by ginglymus.

SUBSTANCE.

Compact in the body; spongy at each extremity; reticular internally.

USE.

To form part of the lower extremity.

THE TIBIA.**SITUATION.**

At the inner part of the leg between the thigh and instep.

SHAPE.

Longitudinal.

DIVISION.

Into body, upper and lower extremities.

ITS PROMINENCES ARE

1. The head of the tibia, which is *formed into two articulating sinuses*.

2. The spine of the tibia, to which the ligament of the patella, and common tendon of the extensor muscles of the tibia adhere.
3. The crista of the tibia is a sharp anterior margin, descending from the spine.
4. The malleolus internus, or internal ankle, which is an inferior process of the tibia.

THE CAVITIES ARE

Two articulating sinuses at the head of the tibia, in which the condyles of the femur are situated.

An articulating cavity at the inferior extremity for articulation with the astragalus.

CONNECTION WITH FOUR BONES.

1. With the condyles of the femur, by ginglymus.
2. patella, } by syneurosis.
3. fibula, }
4. astragalus, by arthrodia.

USE.

To support the leg, and perform the flexion of the inferior extremity.

THE FIBULA.**SITUATION.**

At the exterior part of the leg, near the tibia.

SHAPE.

Longitudinal.

DIVISION.

Into body, superior and inferior extremities.

ITS PROMINENCES ARE

1. The head of the tibia, which is at its superior extremity.
2. The malleolus externus, or outer ankle, at the inferior extremity.

CONNECTION WITH TWO BONES.

The astragalus, and tibia.

USE.

To support the tibia, and assist in forming the leg.

THE PATELLA.**SITUATION.**

In the sinus, between the condyles of the femur, and above the tibia.

SHAPE.

Like a heart.

DIVISION.

Into external and internal surface; into base, apex, and sides.

CONNECTION

CONNECTION WITH TWO BONES.

1. With a sinus of the condyles of the femur.
2. With the spine of the tibia, by ligaments.

USE.

To give articulation to the knee, and to act as a common pulley for the tendons of the extensor muscles of the tibia.

THE TARSUS, OR INSTEP.**SITUATION.**

Between the leg and foot.

SHAPE.

The superior part headed; inferior, broad.

COMPOSITION

Is of seven bones, which are placed in a double row.

IN THE FIRST ROW.

The astragalus, which is the most superior; the os calcis, which is the most inferior.

IN THE SECOND ROW.

The os naviculare, near which, on the internal side, the os cubiforme.

There are three ossa cuneiformia, which are connected together.

THE PROMINENCES ARE

1. The head of the astragalus, between the malleoli, (ancles) joined to the head of the tibia.
2. The tuberosity of the os calcis, into which the tendo achillis is inserted, chiefly underneath.

USE.

To form the base of the foot, and assist in its motion.

THE METATARSUS, OR FOOT.**SITUATION.**

Between the tarsus and toes.

DIVISION.

Into superior and inferior surface.

COMPOSITION.

Is of five bones, called metatarsal.

USE.

To form the superior and inferior part, or sole of the foot.

THE TOES.**COMPOSITION.**

The great toe has two phalanges; and each of the others consist of three.

SESAMOID BONES.

These are minute bones, like peas, situated between the phalanges of the thumb and great toe.

**SYNDESMOLOGY, OR DOCTRINE OF THE
LIGAMENTS.****ON SYNDESMOLOGY IN GENERAL.****THE PARTS WHICH SYNDESMOLOGY TREATS OF ARE**

1. The external periosteum.
2. internal ditto.
3. medullary substance in bones.
4. cartilages.
5. articular glands.
6. synovia.
7. vessels of bones.
8. nerves of bones.
9. ligaments.

THE EXTERNAL PERIOSTEUM.

This is a membrane, covering the external surface of all bone, except the coronæ, or external part of the teeth.

THE DIFFERENT NAMES ARE

1. Pericranium, on the skull.
2. Periorbita, in the orbits.
3. Perichondrium, on cartilages.
4. Peridesmium, on ligaments.

SUBSTANCE.

Is a fibrous membrane, filled with arteries and veins.

COHESION.

The inferior surface, by means of its vessels, adheres to the pores of the bones.

The superior surface is connected with the cellular membrane and muscles.

USE.

To contain the calcareous, or other substance of the bone; and distribute vessels, as arteries, veins, nerves, &c. in their proper order for its growth and nourishment.

THE INTERNAL PERIOSTEUM.

This is a membrane, covering the internal surface of bones: very much like the external.

THE

THE MEDULLA OF BONES.

This is an oleous substance, contained in the medullary cavities of the large and long bones.

USE.

To prevent too great brittleness.

CARTILAGES.

These are *whitish* elastic substances, growing on the bones.

DIVISION.

1. Into obducent, at the extremities of bones, giving smooth covering to the heads, and articulating cavities.
2. Interarticular cartilages, adhering to bones which are not joined to each other; but situated between articulations, as in the maxilla, or jaw-bone; clavicle, and knee.
3. Into uniting cartilages, which join bones together by an immoveable connection, as the bones of the pubis, bodies of the vertebrae, &c.

USE.

Of obducent cartilages, is to render the articulations smooth; of the uniting cartilages to connect certain bones together.

SYNOVIA.

This is a humour resembling mucus, contained in the articulating cavities, and secreted by the synovial glands.

USE.

To tubricate the moveable extremities of bones, and to prevent concretion with others.

THE ARTICULATING GLANDS.

These are small glands, situated in articulating foveæ, and capsular ligaments.

THE VESSELS OF BONES.

The vessels going to bones are arteries and veins, which are distributed on the external and internal periosteum; also between the lamellæ of bones.

USE.

To afford nourishment for the bone, and to secrete the medulla.

THE NERVES OF BONES.

A few nerves enter through small foramina, to the medulla, and internal periosteum, which is sensible, though the calcareous substance of the bone is void of feeling.—Why should not nerves be distributed between the lamina of bones as well as arteries and veins, and produce sensibility in the internal periosteum?

LIGAMENTS.

These are elastic strong membranes, connecting the extremities of moveable bones.

DIVISION.

Into capsular, which surround the articulations, like a membranous sac; into connecting ligaments, which connect moveable bones together as a chord.

In the acetabulum of the os innominatum, there is the ligamentum teres; and in the knee, there is the crucial ligament: other articulations have no internal ligaments.

USE.

The capsular ligaments connect the heads of moveable bones, and prevent the synovia from escaping.

Connecting ligaments connect together, and strengthen the extremities of moveable bones.

A TABLE OF THE CONNECTIONS OF EVERY BONE OF THE HUMAN BODY.

The **FRONTAL BONE** is connected with

- | | | |
|----------------------------------|------|---------------------|
| 1. The parietal bones, | } by | The coronal suture. |
| 2. The bones of the nose, | | Harmony. |
| 3. The cheek bones, | | Harmony. |
| 4. The lachrymal bones, | | Harmony. |
| 5. The superior maxillary bones, | | Harmony. |
| 6. The ethmoid bone, | | Harmony. |
| 7. The sphæroid bone, | | Harmony. |

The **PARIETAL BONES** are connected with

- | | | |
|------------------------|------|-------------------------------------|
| 1. One another, | } by | The sagittal suture. |
| 2. The temporal bones, | | The squamous suture. |
| 3. The sphæroid bone, | | The squamous suture. |
| 4. The frontal bone, | | The coronal suture. |
| 5. The occipital bone, | | The occipital or lambdoidal suture. |

The **OCCIPITAL BONE** is connected with

- | | | |
|------------------------|------|------------------------|
| 1. The temporal bones, | } by | The lambdoidal suture. |
| 2. The parietal bones, | | The lambdoidal suture. |
| 3. The sphæroid bone, | | Synchondrosis. |
| 4. The atlas, | | Ginglymus. |
| 5. The epistropheus, | | Syndesmosis. |

The **SPHÆROID BONE** is connected with

- | | | |
|----------------------------|------|---------------------|
| 1. The frontal bone, | } by | Sphæroidal harmony. |
| 2. The ethmoid bone, | | Harmony. |
| 3. The vomer, | | Gomphosis. |
| 4. The occipital bone, | | Synchondrosis. |
| 5. The parietal bones, | | Squamous suture. |
| 6. The temporal bones, | | Sphæroidal harmony. |
| 7. The cheek bones, | | Sphæroidal harmony. |
| 8. The superior maxillary, | | Sphæroidal harmony. |
| 9. The palate bones, | | Sphæroidal harmony. |

The

The TEMPORAL BONES are connected with

- | | | |
|----------------------------|--------|------------------------|
| 1. The parietal bones, | } by { | The squamous suture. |
| 2. The cheek bones, | | Zygomatic harmony. |
| 3. The occipital bone, | | The lambdoidal suture. |
| 4. The sphænoïd bone, | | Sphænoïdal harmony. |
| 5. The inferior maxillary, | | Arthrodia. |

The OSSICULA AUDITUS are connected within the Tympanum in the following manner:

- | | | |
|------------------------------|---|-----------------|
| The manubrium of the malleus | { grows to the tympanum, by } | Syneurosis. |
| The head of the malleus | { is joined to the head of the incus, by } | Amphyarthrosis. |
| The incus | { is united to the os orbiculare, by } | Amphyarthrosis. |
| The os orbiculare | { is joined to the stapes, by } | Synchondrosis. |
| The stapes | { is connected to the fenestra ovalis, by } | Syneurosis. |

The ETHMOID BONE is connected with

- | | | |
|----------------------------|--------|----------------------------|
| 1. The frontal bone, | } by { | Harmony. |
| 2. The ossa nasi, | | Harmony. |
| 3. The superior maxillary, | | Harmony. |
| 4. The lachrymal bones, | | Harmony. |
| 5. The palatine bones, | | Harmony. |
| 6. The sphænoïd bone, | | Sphænoïdal harmony. |
| 7. The vomer, | | Harmony and synchondrosis. |

The SUPERIOR MAXILLARY BONES are connected with

- | | | |
|-------------------------------|--------|------------|
| 1. One another, | } by { | Suture. |
| 2. The frontal bone, | | Harmony. |
| 3. The ossa nasi, | | Harmony. |
| 4. The lachrymal bones, | | Harmony. |
| 5. The ethmoid bone, | | Harmony. |
| 6. The cheek bones, | | Suture. |
| 7. The palatine bones, | | Harmony. |
| 8. The sphænoïd bone, | | Harmony. |
| 9. The inferior spongy bones, | | Harmony. |
| 10. The vomer, | | Gomphosis. |
| 11. The teeth, | | Gomphosis. |

Each CHEEK BONE is connected with

- | | | |
|----------------------------|--------|---------------------|
| 1. The frontal bone, | } by { | Harmony. |
| 2. The superior maxillary, | | Suture. |
| 3. The sphænoïd bone, | | Sphænoïdal harmony. |
| 4. The temporal bone, | | Zygomatic harmony. |

The OSSA NASI are connected with

- | | | |
|----------------------------|--------|----------|
| 1. One another, | } by { | Harmony. |
| 2. The frontal bone, | | Harmony. |
| 2. The superior maxillary, | | Harmony. |
| 4. The ethmoid bone, | | Harmony. |

Each LACHRYMAL BONE is connected with

- | | | |
|------------------------------|--------|----------|
| 1. The superior maxillary, | } by { | Harmony. |
| 2. The frontal bone, | | Harmony. |
| 3. The ethmoid bone, | | Harmony. |
| 4. The inferior spongy bone, | | Harmony. |

Each INFERIOR SPONGY BONE is connected with

- | | | |
|----------------------------|--------|----------|
| 1. The superior maxillary, | } by { | Harmony. |
| 2. The palatine bone, | | Harmony. |
| 3. The lachrymal bone, | | Harmony. |
| 4. The ethmoid bone, | | Harmony. |

The PALATINE BONES are connected with

- | | | |
|------------------------------|--------|------------|
| 1. One another, | } by { | Suture. |
| 2. The superior maxillary, | | Harmony. |
| 3. The sphænoïd bone, | | Harmony. |
| 4. The ethmoid bone, | | Harmony. |
| 5. The inferior spongy bone, | | Harmony. |
| 6. The vomer, | | Gomphosis. |

The VOMER is connected with

- | | | |
|----------------------------|--------|------------|
| 1. The sphænoïd bone, | } by { | Gomphosis. |
| 2. The ethmoid bone, | | Harmony. |
| 3. The superior maxillary, | | Gomphosis. |
| 4. The palatine bones, | | Gomphosis. |

The LOWER JAW is connected with

- | | | |
|------------------------|--------|--------------|
| 1. The temporal bones, | } by { | Arthroïdia. |
| 2. The os hyoides, | | Syssarcosis. |

The OS HYOIDES is connected with

- | | | |
|------------------------|--------|------------------------------|
| 1. The tongue, | } by { | Syssarcosis and syndesmosis. |
| 2. The larynx, | | |
| 3. The temporal bones, | | |
| 4. The lower jaw, | | |
| 5. The scapula, | | |
| 6. The sternum, | | |

The ATLAS is connected with

- | | | |
|------------------------|--------|-------------------------------|
| 1. The occipital bone, | } by { | Arthroïdia. |
| 2. The epistropheus, | | Trochoides and synchondrosis. |

The EPISTROPHEUS is connected with

- | | | |
|------------------------|--------|----------------|
| 1. The occipital bone, | } by { | Synchondrosis. |
| 2. The atlas, | | Trochoides. |

The CERVICAL VERTEBRÆ are connected with

1. One another, by arthroïdia and synchondrosis.

The DORSAL VERTEBRÆ are united with

- | | | |
|-----------------|--------|--------------------------------|
| 1. One another, | } by { | Synchondrosis and syndesmosis. |
| 2. The ribs, | | Ginglymus. |

The LUMBAR VERTEBRÆ are connected with

- | | | |
|-------------------------------|--------|--------------------------------|
| 1. One another, | } by { | Synchondrosis and syndesmosis. |
| 2. The last, with the sacrum, | | Synchondrosis. |

The SACRUM is connected with

- | | | |
|------------------------------|--------|----------------|
| 1. The last lumbar vertebra, | } by { | Synchondrosis. |
| 2. The os coccygis, | | Synchondrosis. |
| 3. The ossa innominata, | | Synchondrosis. |

The OS COCCYGIS is connected with

- | | | |
|-------------------------|--------|----------------|
| 1. The sacrum, | } by { | Synchondrosis. |
| 2. The ossa innominata, | | Syndesmosis. |

The STERNUM is connected with

1. The clavicles, } by { Arthrodia.
2. The eight true ribs, } by { Synchrondrosis.

The RIBS are connected,

The eight superior with

1. The dorsal vertebræ, } by { Ginglymus.
2. The sternum, } by { Synchrondrosis.

The four inferior with

1. The dorsal vertebræ, } by { Ginglymus.
2. The sternum, } by { Syneurosis,

The OSSA INNOMINATA are connected with

1. One another, } by { Synchrondrosis.
2. The sacrum, } by { Synchrondrosis.
3. The os coccygis, } by { Syneurosis.
4. The thigh bone, } by { Enarthrosis.

The CLAVICLES are connected with

1. The sternum, } by { Synchrondrosis.
2. The scapula, } by { Arthrodia.

The SCAPULA is connected with

1. The clavicle, } by { Arthrodia.
2. The ribs, } by { Syssarcosis.
3. The os hyoides, } by { Syssarcosis.
4. The os humeri, } by { Arthrodia.

The OS HUMERI is connected with

1. The scapula, } by { Arthrodia.
2. The ulna, or cubit, } by { Ginglymus.
3. The radius, } by { Ginglymus.

The CUBIT, or ULNA, is connected with

1. The os humeri, } by { Ginglymus.
2. The radius, } by { Trochoides.
3. The bones of the carpus, } by { Arthrodia.

The RADIUS is connected with

1. The os humeri, } by { Ginglymus.
2. The cubit, or ulna, } by { Trochoides.
3. The bones of the carpus, } by { Arthrodia.

The BONES of the CARPUS are connected with

1. One another, } by { Amphyarthrosis.
2. The radius, } by { Arthrodia.
3. The cubit, or ulna, } by { Arthrodia.
4. The metacarpal bones, } by { Amphyarthrosis.

The METACARPAL BONES are connected with

1. The bones of the carpus, } by { Amphyarthrosis.
2. The first phalanx of the fingers, } by { Arthrodia.
3. That of the thumb with a bone of the carpus, } by { Arthrodia.

The PHALANGES of the FINGERS and TOES are thus connected:

1. The first phalanx { with the second, by ginglymus,
metacarpal bones, by arthrodia.
2. The second phalanx { with the first, by ginglymus,
with the last, by ginglymus.

The THIGH BONES are connected with

1. The ossa innominata, } by { Enarthrosis.
2. The tibiæ, } by { Ginglymus.
3. The patella, } by { Ginglymus.

The PATELLA is connected with

1. The os femoris, } by { Ginglymus.
2. The tibia, } by { Syndesmosis.

The TIBIA is connected with

1. The os femoris, } by { Ginglymus.
2. The fibula, } by { Syndesmosis.
3. The patella, } by { Syndesmosis.
4. The astragalus, } by { Arthrodia.

The FIBULA is connected with

1. The tibia, } by { Syndesmosis.
2. The astragalus, } by { Arthrodia.

The BONES of the TARSUS are thus connect ed :

1. With the tibia, } by { Arthrodia.
2. With the fibula, } by { Arthrodia.
3. The three cuneiform bones with the five metatarsal, } by { Amphyarthrosis.
4. With one another, } by { Amphyarthrosis.

The bones of the metatarsus and toes are connected in the same manner as those of the metacarpus and fingers.

MYOLOGY, OR A DOCTRINE OF THE MUSCLES.

OF MUSCLES IN GENERAL.

A muscle is a strong fibrous substance, used for motion.

DIVISION

Of a muscle into the head, which is its beginning,
belly, middle.
tail, extremity.

ADHESION.

The head and tail are most commonly connected with bones.

SUBSTANCE OF A MUSCLE IS OF TWO KINDS; NAMELY,

Fleshy at the belly.

Tendinous at each extremity.

Every muscle has many vessels and nerves.

Aponeuresis, is the expansion of a tendon into a broad tendinous membrane.

The action of a muscle consists in the contraction and relaxation of its fleshy fibres.

USE.

Muscles constitute the organ of motion, by which all the different parts of the body are moved.

MUSCLES

MUSCLES OF THE CRANIUM.

There are three pair of muscles covering the head.

The frontal muscles, reaching from the superciliary margins of the frontal bone to the roots of the hair, cover the forehead like an aponeurosis.

The occipital muscles, from the superior arches of the occipital bone, under the aponeurosis of the cranium.

The temporal muscles arise from the temporal region, and each ends in a tendon affixed to the coronoid process of the inferior maxillary bone.

ACTION.

It raises the inferior maxillary bone towards the superior, and shuts the mouth.

THE APONEUROSIS OF THE CRANIUM

Begins from the occipital tubercle; ascends, and covers the head entirely, as far as the root of the nose, and superciliary arches on the sides; it adheres to the zygomatic arch.

THE MUSCLES OF THE ABDOMEN.

The cavity of the abdomen is contracted in every direction by five pair of muscles; namely,

1. The external oblique, which arises from the crista of the ilium and os pubis, and is affixed to the eight lower ribs.
2. The internal oblique, from the crista of the ileum and os pubis, to the margins of all the false ribs, and to the ensiform cartilage of the sternum.
3. The rectus abdominis, from the os pubis, near the linea alba, to the ensiform cartilage, and to the three lower true ribs.
4. The pyramidalis, from the crista of the os pubis into the linea alba, towards the navel.
5. The transversalis, from the transverse spinous apophyses of the four superior lumbar vertebræ, going transversely to the linea alba: it is connected to the crista of the ileum, and to the pubis; and above, to the internal surface of the ribs.

USE OF THE ABDOMINAL MUSCLES.

1. To form the parietes, or covering of the abdomen.
2. To contain the abdominal viscera.
3. To constitute, with the assistance of the diaphragm, the abdominal pressure.
4. By the assistance of which the following actions are facilitated:

Digestion.

Expulsion of the excrements.

urine.

child, in labour.

THE PARTS WHICH FORM THE MUSCLES OF THE ABDOMEN ARE

1. The linea alba, which is a white tendinous line in the middle of the abdomen, descending from the ensiform cartilage to the symphysis of the pubis: it is formed by the junction of three pair of muscles; namely,

The external oblique.

internal ditto.

transversalis.

2. The semilunar line is also tendinous; and is formed at the sides of the linea alba: in form of a curve, in the oblique muscles.

3. The umbilical ring is a round tendinous aperture, in the middle of the linea alba, which, in the foetus, gives passage to the umbilical chord, but after birth it closes.

4. The inguinal, or abdominal rings, are two oblong tendinous openings: one at each groin, in the inferior margin of the external oblique muscle.

In males, the spermatic chord passes through this ring; but in females, the round ligament of the uterus.

5. Poupart's ligaments are the margins of the tendons of the external oblique muscles, one in each groin, extending from the anterior and inferior spine of the ileum, to the crista of the os pubis; under these ligaments, the crural vessels and nerves pass.

MUSCLES OF THAT INTESTINE, CALLED RECTUM.

The orifice of the anus can be contracted, or dilated.

It is contracted by the sphincter which surrounds the end of this intestine.

It is dilated by those muscles, called levatores ani, which arise from the internal surface of the pubis, ischium, and ileum, and terminate in the intestine.

SPLANCHNOLOGY, OR DOCTRINE OF THE VISCERA.

DIVISION OF THE HUMAN BODY.

The human body is divided into head,

trunk, and

extremities.

The head is subdivided into the part covered with hair

and face.

The part covered with hair is distinguished by the vertex, or top of the head.

sinciput, or fore part.

occiput, or back part; and

lateral parts.

The

The face is divided into the forehead.

temples.
nose.
eyes.
mouth.
cheeks.
chin.
ears.

The trunk is divided into the neck.

thorax, or chest.
abdomen.

The neck is subdivided into the larynx, at the anterior part.

posterior part, and
sides.

The thorax is subdivided into the anterior part, where the breasts are situated: there is a depression at the lower part of the thorax, which is called *scrobiculus cordis*, into a posterior part, which is called the back, and into the lateral parts, or sides.

The abdomen is divided into the anterior region.

posterior ditto, called
the loins, and
lateral regions.

The anterior region of the abdomen is subdivided into

1. The epigastric region, the sides of which, under the ribs, are called the *hypocondriac* regions.
2. The umbilical region, the sides of which are called the *lumbar* regions.
3. The hypogastric region, the sides of which are called *iliac*, or *inguinal* regions.

The pubis is a region, covered with hair at the bottom of the abdomen, the sides of which are called *groins*.

Under the pubis, the parts of generation are situated,

In men, the *scrotum* and *penis*.

In women, the *labia pudenda*, and orifice of the *vagina*.

That space, between the genital parts and the anus, is called the *perineum*,

The extremities are divided into superior and inferior:

The superior is sub-divided into the top of the arm, in which the arm-pit is placed.

Into the arm.

fore-arm.

hand, which is distinguished by the palm, and back of the hand.

The hand is sub-divided into the wrist,

hand, and
fingers.

The fingers are distinguished, the fore-finger, or index.

middle finger.
ring.
little, and
thumb.

The superior extremity is divided into the thigh,

leg, which includes
the knee, popliteal cavity, and calf of the leg, and
into the foot, in which there are the sole and back of
the foot, the internal and external ancle.

The foot is sub-divided into the instep,

foot, and
toes.

The internal part of the body is divided into three principal cavities; namely,

The cavity of the cranium, which contains the animal viscera—
thorax for the
vital viscera; and cavity of the abdomen for the natural viscera.

THE COMMON INTEGUMENTS OF THE BODY.

Under the name of common integuments are to be understood three membranes, which cover the external surface of the whole body; namely,

1. The epidermis,
2. cutis.
3. adipose membrane.

THE EPIDERMIS

Is a thin transparent membrane, covering the whole external surface of the body.

DIVISION.

Into external surface, which is dry.

internal surface, which is mucous: this is called the *malpighian mucus*, or *rete mucosum*.

CONNECTION.

The epidermis is connected with the skin by means of this mucus.

Thickness of the epidermis, on the face, is very inconsiderable; in the palm of the hand, and some part of the sole of the foot, it is much thicker.

COLOUR.

Depends on the *malpighian mucus*, which, in Europeans, is white.

Æthiopians, black.

Spaniards, yellow.

USE.

To cover the very sensible cutaneous papillæ, that the air may not cause them to be dry, and painful.

CUTIS.

The skin is a thick membrane, situated between the epidermis, and adipose membrane, covering the external surface of the whole body.

DIVISION.

DIVISION.

Into external surface, which adheres to the epidermis, and into the internal surface, which is connected with the cellular membrane.

SUBSTANCE.

It consists of a fibrous, vascular, and nervous structure.

The cutaneous arteries are continually exhaling a very subtile liquid, called arterial exhalation.

The cutaneous veins, and absorbent lymphatics, inhale, or absorb, what is applied to the skin, and convey the fluids, either to veins, communicating with the cava, or to the thoracic duct.

The cutaneous nerves, especially on the upper surface, form nervous papillæ, which constitute the organ of touch, or sense of feeling.

On the under surface of the skin, there are subcutaneous glands and bulbs, from which the hair shoots forth, in various parts.

USES OF THE SKIN ARE

The organ of external sensation.

exhalation.

inhalation, or absorption.

THE NAILS.

These are horny laminae growing at the ends of the fingers and toes.

DIVISION.

Into margin,
root, and
sides.

SUBSTANCE.

Is horny, without vessels, or nerves.

USES.

1. To defend the nervous papillæ from external violence.
2. To gather, or pick up minute things, to scratch, &c.

THE HAIR.

These are dry elastic filaments, growing out of the skin.

SUBSTANCE CONSISTS OF

1. A bulb, adhering to the under surface of the skin, which is a vascular and nervous vesicle.
2. A trunk, which perforates the skin and epidermis, or cuticle, which some say is hollow, and contains a medullary substance.

THE ADIPOSE MEMBRANE.

This is a membrane, formed by small membranaceous cells, and is also called the cellular membrane.

SITUATION.

Under the skin, between the muscles, and every other soft part.

SUBSTANCE.

Consists of a thin membrane, forming small cells, which are filled with *fat (oil)*: these cells are full of vesicles, and communicate with each other by peculiar apertures.

USE.

To cover the whole surface of the body; to facilitate motion; prevent painful attrition; and connect all the soft parts together.

OF THE HEAD IN GENERAL.

The parts forming the head are divided into external, and into internal.

THE EXTERNAL PARTS ARE

1. The common integuments with the hair.
2. A tendinous expansion.
3. Three pair of muscles, which cover the superior part of the head:
 - Two frontal muscles.
 - Two temporal muscles.
 - Two occipital muscles.
4. The pericranium, to which some add the *epicranium*.
5. The cranium, or skull, which consists of two tables, internal and external, with a spongy intermediate substance, called *diploe*.

THE INTERNAL PARTS ARE

1. Three integuments, or coverings of the brain:
 - The *dura mater*.
 - membrana arachnoides*.
 - pia mater*.
2. The cerebrum, or brain.
3. cerebellum, or smaller brain.
4. medulla oblongata.
5. Nine pair of nerves.
6. Four arteries, which are
 - Two internal carotids.
 - Two vertebral.
7. Twenty-two venal sinuses.

THE DURA MATER.

This is a thick membrane, closely adhering to the internal surface of the cranium, especially in the direction of the sutures.

THESE ARE THE EXTERNAL PROCESSES:

1. The falciform process, which begins at the crista galli of the ethmoid bone, and goes along the middle of the frontal bone; then, in the direction of the sagittal suture, to the middle of the occipital bone, terminating at the crucial spine of this bone: it is in shape like a scythe, and divides the brain into two hemispheres.
2. The tentorium is a membranous process, like a tent, extending from the middle of the occipital bone to the superior margins of the petrous portions of the temporal bones.
5. The septum of the cerebellum is a small process, adhering longitudinally to the inferior half of the occipital bone, and, in some measure, dividing the cerebellum.

SUBSTANCE CONSISTS OF A DOUBLE LAMINA.

The veins in the dura mater are called venous sinuses, twenty-two in number; three of which are particularly distinguished by Surgeons:

1. The superior longitudinal sinus, beginning above the foramen coecum of the frontal bone, and going towards the middle of the occipital bone, it terminates in two lateral branches, called two lateral sinuses, which take a course along the occipital bone, like an arch, towards the foramen lacerum, and terminate in the internal jugular veins.

USE.

To form the internal periosteum of the cranium.

THE MEMBRANA ARACHNOIDEA.

This is a thin membrane, resembling a spider's web, placed between the dura and pia mater, which not only covers the brain, but also the cerebellum, medulla oblongata, and medulla spinalis, or spinal marrow.

SUBSTANCE.

Consists of a very thin cellulous, or filamentous texture, without either vessels, or nerves, some say; but that is not the case: for vessels are frequently obvious in dissections.

USE.

Unknown; but, according to my opinion, it is to prevent *adhesion* of the dura and pia mater; and moderate attrition in the action of the brain.*

THE PIA MATER.

This is a thin membrane, intimately connected with the cerebrum, cerebellum, medulla oblongata, and medulla spinalis.

SUBSTANCE.

Is almost entirely vascular.

USE.

To surround, or contain the substance of the brain, and to send vessels into its very substance in all parts.

THE CEREBRUM, OR BRAIN.

Is that large viscus contained in the cavity of the cranium.

SHAPE.

Is almost oval.

DIVISION.

At the upper part, into two hemispheres, by the falciform process; at the lower part, by the base, or bottom of the cranium, into six lobes.

SUBSTANCE.

Is divided into cortical, and medullary.

The cortical substance is exterior, chiefly vascular, and of a brown colour.

The medullary substance is interior, forming the principal bulk of the brain, is chiefly nervous, and of a white colour.

THE PRINCIPAL CAVITIES ARE FOUR VENTRICLES OF THE BRAIN:

Two anterior, or lateral ventricles, are semilunar cavities, going from the middle to the first lobes, and are separated from each other by a thin transparent membrane, a small portion of aqueous fluid, and choroid plexus of the pia mater, are contained in them, made of two laminæ, of medullary substance, according to some Anatomists.

The third ventricle, is a space left between the thalami of the optic nerves.

The fourth ventricle, is a space between the cerebellum and the medulla oblongata.

THE PRINCIPAL PROMINENCES OF THE CEREBRUM ARE

1. The corpus callosum, an oblong medullary protuberance, visible, on separating the hemispheres of the brain.
2. The corpora striata, are two protuberances, of a brownish colour, situated forwards, one under each anterior ventricle.
3. The thalami nervorum opticorum, are two posterior protuberances of the ventricles of the cerebrum, of a whitish colour, terminating in the optic nerves.
4. The corpora quadrigemina, which are four medullary projections: the two anterior are also called nates; and the two posterior, testes.
5. The pineal gland is a small tubercle in the brain, resting upon the nates.

6. The

* See my Treatise on the Cure of the Hydrocephalus Membranarum of Infants, &c.

6. The pituitary gland is not a brain-like substance, but a real gland, situated in a duplicature of the dura mater in the cavity of the sella turcica.
7. Two crura of the cerebrum, are medullary substances, arising from the bottom of the brain, and terminating at the pons Varolii.

THE ARTERIES OF THE BRAIN ARE

Branches of the two internal carotids, and vertebral arteries.

NERVES.

The brain has no nerves, but sends off nine pair, and is the origin of nerves.

VEINS.

Returning from the cortical substance, empty themselves into the twenty-two sinuses of the dura mater.

USE.

Some say, the cortical substance, which is vascular, to secrete subtile invisible fluids, contained in the tubuli of the medullary substance, which excites the internal and external senses; also, the muscles to action. This is merely conjecture, and hath not been proved. —See *Treatise on Nervous Diseases*.

3. The corpora olivaria are similar, though external prominences, which four constitute the inferior surface, and termination of the medulla oblongata.

THE MEDULLA SPINALIS.

This is a continuation of the medulla oblongata, descending into the vertebral cavity, through the great occipital foramen, as far as the third lumbar vertebra.

SHAPE.

Is cylindrical, (at the end); it terminates in different nerves, which form the cauda equina.

COVERINGS.

Are a sheath from the dura mater, pia mater, and membrana arachnoides.

SUBSTANCE.

Externally, medullary; internally, cortical.

USE.

To send off thirty pair of spinal nerves, for the purposes of sensation, and nervous influence.

THE CEREBELLUM, OR SMALLER BRAIN,

Is situated in the inferior occipital fossa, under the tentorium.

SHAPE.

Somewhat round.

DIVISION.

Into right and left lobe, by the septum of the cerebellum.

SUBSTANCE.

Externally, cortical; internally, it is medullary, like the brain.

THE PROMINENCES ARE

Two crura of the cerebellum, going from the medullary substance, and terminating in the pons Varolii.

The cerebellum has no cavities, nor ventricles.

USE.

The same as the cerebrum.

THE MEDULLA OBLONGATA.

This is composed entirely of the medullary substance, lying upon the basilar process of the occipital bone, formed by the crura of the cerebrum, and of the cerebellum.

IN THIS WE OBSERVE

1. The pons Varolii, a convex body on the superior surface of the medulla oblongata.
2. The corpora pyramidalia are two internal medullary prominences.

THE EYE.

THE PARTS FORMING THE EYE ARE

Divided into those within the bulb, and without the bulb.

THE PARTS OUTSIDE OF THE BULB ARE

1. The supercilia, or eye-brows, are two arches of hair, situated above the orbit.
2. The cilia, or eye lashes, growing from the tarsus, or edge of the eye-lid.
3. The eye-lids, or palpebrae, one of which is superior; the other inferior.—These have cartilaginous margins, which are called tarsi.

At the margin of the tarsus there are some glands, called Meibomian.

4. The lachrymal gland, situated in a peculiar cavity of the frontal bone, above the external canthus, or corner of the eye: from this gland, six, or more small canals proceed, called lachrymal ducts, which open on the internal surface of the eye lid.
5. The lachrymal caruncle, which is situated at the internal corner, or angle of the eye.
6. The puncta lachrymalia, or lachrymal points, which are two cartilaginous callous openings, near the extremity of each tarsus, at the internal corner of the eye: one of which is on the superior; the other in the inferior eye-lid.
7. The lachrymal canals are two narrow tubes, leading from the lachrymal points to the lachrymal sac.

8. The

8. The lachrymal sac is a membranous inclosed cavity, situated at the internal corner of the eye.
9. The nasal duct is a membranous canal, which passes downwards, and a little backwards from the inferior part of the lachrymal sac, through a bony canal into the cavity of the nose, and opens just under the inferior spongy bone.
10. The tunica, or membrana conjunctiva, or conjunctive membrane, which is likewise called albuginea, or white of the eye, is a membrane, covering the internal surface of the eye-lids, and the anterior surface of the bulb.

THE BULB OF THE EYE CONSISTS OF EIGHT MEMBRANES:

Two chambers, and three humours.

THE MEMBRANES ARE FOUR AT THE POSTERIOR PART OF THE BULB; NAMELY,

The sclerotic.

choroid.

retina.

hyaloid.

FOUR AT THE ANTERIOR PART ARE

Transparent cornea.

Iris.

Uvea.

Capsula of the chrystalline lens.

1. The sclerotic membrane is the most external, beginning at the optic nerve, and forming a spherical cavity, ends at the edge of the cornea transparenens.

The anterior part of the sclerotic membrane is clear, and called the transparent cornea.

2. The choroid membrane is of a black colour, beginning at the optic nerve, on the internal surface of the sclerotic membrane, and ending at the margin of the cornea.

At this place it recedes from the cornea, going backwards, and transversely, and forms a floating membrane in the middle of the round perforated foramen.

This membranous circle of the choroid membrane, at the anterior part, is called the iris; but on the posterior part of the uvea, and that round foramen left in the middle, is the pupil, which can dilate and contract itself by the assistance of almost invisible muscular fibres.—See the Plates.

3. The retina is the most internal membrane of the bulb, of a whitish colour-like mucus, beginning at the optic nerve, of which it is an expansion, (of the medullary substance) and covering the inner surface of the choroid membrane as far as the margin of the chrystalline humour, where it ends.

THE CHAMBERS OF THE EYE ARE

1. The anterior chamber is an hollow space, beginning at its fore part, from the internal surface of the cornea, and

at its posterior part, it is formed by the surface of the iris, and pupil.

2. The posterior chamber is that small cavity, formed at its anterior part by the uvea and pupil; and at its posterior part by the anterior surface of the chrystalline lens: both these chambers are filled with an aqueous humour.

THE HUMOURS OF THE EYE ARE

1. An aqueous humour, which fills both chambers of the eye, supposed to be deposited, and renewed, if evacuated by the exhalent arteries of the cornea.
2. The chrystalline lens is a clear body; in size, resembling a lens, situated behind the pupil, in a peculiar depression of the vitreous humour: it is surrounded by a membranous covering, called the capsule of the chrystalline lens.
3. The vitreous humour is a pellucid body, which alone almost fills, and distends the cavity of the bulb as far as the uvea.

The whole external surface is covered with a strong pellucid membrane, called the hyaloid membrane, at the anterior part of which there is a depression to receive the chrystalline lens.

CONNECTION OF THE BULB, AT THE FORE PART,

Is by means of the conjunctive membrane with the eye-lids; at the posterior part, it is connected with the orbits by six muscles of the bulb, and by the optic nerve.

The optic nerve, at the posterior part of the bulb, perforates the sclerotic, and choroid membrane, then forms the retina.

USE.

It is the organ of vision.

THE EAR.

The soft parts, forming the ear, are divided into external and internal.

THE SOFT EXTERNAL PARTS ARE

1. The external ear.
2. meatus auditorius externus, or the external auditory passage.
3. The membrane of the tympanum.

THE INTERNAL SOFT PARTS ARE

1. The internal periosteum of the ear.
2. The common membrane of the internal ear.
3. The Eustachian tube.

The glands which secrete the cerumen, or wax of the ear, are under the skin of the meatus auditorius externus,

USE.

It is the organ of hearing.

THE

THE NOSE.

That prominence of the face, called the nose, is divided into the root,

back,

apex, or tip; and

alæ, or wings.

THE SOFT PARTS WHICH COVER THE NOSE, ARE

1. The common integuments.
2. muscles, which move the alæ of the nostrils.
3. The cartilages, forming the nose, which are the anterior part of the septum, and the alæ.

THE SOFT PARTS OF THE NOSTRILS, OR INTERNAL NOSE, ARE

1. The pituitary membrane, covered with mucus, and spreading over the whole internal surface of the nostrils, sinuses, and spongy bones.

USE.

It is the organ of smell, and partly of respiration.

THE CAVITY OF THE MOUTH.

The parts forming the cavity of the mouth are divided into external and internal.

THE EXTERNAL PARTS OF THE MOUTH ARE

1. The lips; in each of which there is a frenulum, connecting it to the gums.

THE INTERNAL PARTS OF THE MOUTH.

1. The palate, which is covered with a thick skin, and extends to the uvula.
2. Two alveolar arches, surrounded by the gums.
3. The gums, consisting of a vascular, and elastic substance.
4. The tongue, which divides the cavity of the mouth into a part above the tongue, and a part under it.
5. The cavity of the cheeks, in which the cheeks and teeth are placed.
6. Three pair of salivary glands:

The parotid,

sub-maxillary,

sub-lingual.

7. The bones which form the cavity of the mouth.

The common membrane of the mouth, which covers all the soft parts, is very nervous and vascular, and is a continuation of the cutis, or skin.

USE.

It is the organ of mastication; and assistant in speech.

THE TONGUE.

This is a muscular body, moveable in every direction, situated in the cavity of the mouth.

DIVISION

Into base,

body,

sides, and

apex.

CONNECTION.

At its base with the os hyoides, by means of muscles; the inferior surface adheres to the bottom of the infralingual cavity, by a duplicature of skin, called the frenulum.

SUBSTANCE.

It is fleshy, covered with a thick membrane.

ARTERIES OF THE TONGUE, (ONE ON EACH SIDE)

Are branches of the external carotid; and on the inferior surface of the tongue, are called ranine arteries.

USE.

It assists in speech.

mastication.

deglutition.

taste.

THE NECK.

The parts forming the neck, are divided into external and internal.

THE EXTERNAL PARTS ARE

1. The common integuments.
2. muscles.
3. Seven vertebræ of the neck.
4. The spinal marrow of the neck.
5. Eight pair of cervical nerves.
6. Two carotid arteries.
7. Two vertebral arteries.
8. Two external jugular veins.
9. Two internal.
10. The jugular glands.
11. The thyroid gland.
12. The eighth pair of nerves of the brain, and the great intercostal nerve.

THE INTERNAL PARTS ARE

1. The fauces.
 2. The œsophagus.
 3. The larynx.
 4. The trachea.
- M m

THE

THE FAUCES

Form a cavity behind the tongue and the velum palatinum.

THE UPPER PART

Is formed by the basilar process of the occipital bone.

THE ANTERIOR PART IS FORMED BY

1. The posterior foramina of the nostrils.
2. The uvula, which is a part resembling a gland, hanging down from the palatine bones.
3. The amygdalæ, or glandular parts, adhering to the sides of velum palatinum.
4. The velum pendulum, which is a membrane behind the uvula, like an arch, hanging from the palatine bones.

The posterior part of the fauces is formed by the bodies of the cervical vertebræ.

The inferior part is formed by the larynx and pharynx.

The sides are formed by the petrous process of the temporal bones, by which the Eustachian tubes go into the fauces, and open behind the amygdalæ.

USE.

To assist deglutition, or swallowing.
respiration.

THE PHARYNX

Is a muscular sac, like a funnel, adhering to the fauces behind the larynx, and terminates in the oesophagus.

THE OESOPHAGUS

Is a muscular tube, descending from the pharynx to the stomach.

SITUATION.

Is behind the trachea, and before the bodies of the cervical vertebræ, a little to the left; then, in the cavity of the posterior mediastinum, it goes through the left foramen of the diaphragm, and terminates in the cardia, leading into the stomach.

THE SUBSTANCE IS OF FOUR MEMBRANES:

1. A common membrane.
2. muscular.
3. nervous expansion.
4. villous.

USE.

For deglutition.

THE LARYNX

Is a cartilaginous cavity, situated behind the tongue, at the anterior part of the fauces, and consists of five cartilages; several muscles; internally, of a sensible membrane.

THE CARTILAGES ARE

1. The annular, or cricoid cartilage, forming the inferior part, on which the others rest.
2. The thyroid, or scutiform cartilage, which is broad, and situated upon the annular, or cricoid cartilage, forming the anterior part of the larynx.
3. The epiglottis, which is a membranous elastic cartilage, adhering to the superior part of the scutiform cartilage, and can be pressed backwards.
4. Two arytenoid cartilages, situated at the posterior and lateral margins of the annular, or cricoid cartilage, and bend forwards; by these means there is an opening between them, which is called the rima glottidis.

USE.

It is the organ of voice, and assists in respiration.

THE TRACHEA

Is a tube made of rings, partly cartilaginous, and partly fleshy, descending before the oesophagus from the larynx into the thorax, and there dividing into two branches, called the bronchia.

The bronchia, after having entered the substance of the lungs, divide into innumerable branches, which at last terminate in the air cells of the lungs.

The cartilaginous rings of the trachea and bronchia, are not entirely cartilaginous; but at their posterior part, muscular.

The internal surface of the larynx, trachea, bronchia, and vesicles of the lungs, are covered with a membrane full of glands, which secrete a mucus.

The anterior surface of the trachea is covered by the muscles, called sterno-hyoideus, and sterno thyroideus.

USE.

To assist respiration.
speech.

THE THORAX

Is a cavity, situated between the neck and abdomen: it is called thorax, breast, or chest.

SHAPE.

Resembles a bee-hive; at the lower part, it is broad and concave, from the convexity of the diaphragm: the upper part is much narrower.—Absurd fashions in dress, however, have changed all the intentions of original figure in the human body: tight whale-bone stays

stays have compressed the ribs, and contracted the pelvis, by which respiration has been impeded, and difficult labours in child-birth, introduced; at present, the easy *Greek* dress is adopted; and, hereafter, the narrow chest, and contracted ill-formed pelvis, will be less frequent.*

THE INTERNAL PART OF THE THORAX IS DIVIDED INTO FIVE CAVITIES; NAMELY, BY THE MEDIASTINUM:

It is distinguished into the right cavity of the thorax, and left.

cavity of the pericardium.

anterior mediastinum.

posterior mediastinum.

THE PARTS FORMING THE THORAX ARE

Divided into external and internal.

THE EXTERNAL PARTS ARE

1. The common integuments.
2. breasts, and papilla.
3. muscles, which are
 - Two pectorales majores.
 - Two pectorales minores.
 - Twenty-two intercostales externi.
 - Twenty-two intercostales interni.
4. The bones, which are
 - Twenty-four ribs.
 - Twelve dorsal vertebræ.
 - One sternum, composed of three bones.
5. The pleura, or interual covering.

THE INTERNAL PARTS, OR CONTENTS OF THE THORAX, ARE

1. The lungs, in both sides of the thorax.
2. The heart, in the cavity of the pericardium, with its auricles, sinuses, and beginning of the large vessels.
3. In the anterior space of the mediastinum, there are
 1. The oesophagus.
 2. thoracic duct.
 3. arch of the aorta.
 4. branches of the vena cava.
 5. vena aygos.
 6. eight pair of nerves.
 7. great intercostal nerves.

THE INFERIOR SURFACE OF THE THORAX

Is formed by the diaphragm, which divides the cavity of the chest from the cavity of the abdomen.

THE BREASTS

Are two soft semiglobular bodies, adhering to each lateral region of the thorax, more conspicuous in females.

In the middle of each the papilla projects, round which there is a circle of a darker colour, called discus papillæ.

SUBSTANCES FORMING THE BREAST, ARE

1. The common integuments.
2. adipose membrane, from which its softness, and size.
3. The lacteal glands, at its centre, which are collected into a mass.
4. The lacteal vessels, which are called galactiphora, or lacteferous, arising from the glands, and terminating to the papilla, or nipple, in which there are ten ex-orifices.

USE.

To give infants nutriment, and form a part of female beauty.

THE PLEURA

Is a membrane, covering the internal surface of the thorax, forming the cavities, which are separated by the mediastinum.

DIVISION.

Into an internal smooth surface, which is always moistened by exhalent arteries; into an external surface, which is cellular.

The plura forms a large process, called the mediastinum, which divides the thorax into two cavities, arising from the bodies of the dorsal vertebræ, and is carried forwards through the middle of the thorax, adhering to the internal surface of the sternum, a little to the left side.

In this duplicature of the mediastinum, at the fore-part under the sternum, and at the back part near the bodies of the dorsal vertebræ, there is a triangular space, one of which is called the anterior; the other, posterior space of the mediastinum.

The parts occupying these spaces have been noticed.

CONNECTION

With the intercostal muscles, the sternum, and bodies of the dorsal vertebræ, at the inferior part, with the pericardium, and diaphragm.

USE.

* See Specimens of this easy Dress in the Plate, descriptive of the *Apothesis of Homer*, sculptured before the Time of the Expeditions of Alexander the Great, at Priene, in Ionia, of which I have written a concise Description, in a Work on the Subject, from the circumstance of this extraordinary ancient Sculpture being in London, 1802, above 2100 Years old, and above 300 Years before CHRIST.—These facts are proved in the Investigation of the Sublime Antique Marble, representing the Apothesis, or Deification of the immortal, the divine Homer. This Marble has been lately conveyed from Rome, in which Place it graced the Palace of Colonna: and is considered one of the greatest Antiquarian Curiosities extant.

USE.

To make the inner surface of the thorax smooth; to divide the thorax; to cover the lungs and pericardium with their outer membrane; to secrete a fluid for the easy motion of the lungs; and to prevent attrition.

THE DIAPHRAGM.

This is a septum, dividing the cavity of the chest from the cavity of the abdomen.

SITUATION.

Is obliquely downwards, from the apex of the sternum to the bodies of the lumbar vertebræ.

DIVISION.

Into upper, or concave surface,
under, convex.
a middle tendinous part.
the remaining part, which is fleshy, or red muscular.

ADHESION.

At the anterior part, to the ensiform cartilage of the sternum, as well as to the two last true ribs, and to the cartilaginous margin of all the spurious ribs; at the posterior part, it forms two fleshy crura, which adhere to the bodies of the lumbar vertebræ.

SUBSTANCE.

Is tendinous in the centre; red, and fleshy, or carnosus, at its circumference; the superior surface is covered by the pleura; and the inferior, by peritoneum.

THE APERTURES ARE

1. The right foramen is tendinous, and situated at the right side, through which the vena cava passes from the abdomen into the thorax.
2. The left foramen is on the left side, and gives passage to the oesophagus, in passing from the thorax into the abdomen.
3. The posterior opening of the diaphragm, formed between the posterior crura, through which the aorta, vena azygos, and thoracic duct pass.

USE.

To assist in respiration.
expulsion of fæces.
parturition.
forming a proper situation for the heart.

THE LUNGS

Are two viscera, situated in the cavity of the thorax, by which we breathe.

DIVISION.

Into right and left lung, which are sub-divided on the right side into three lobes; and on the left, two lobes.

CONNECTION

With the neck, by means of the trachea; and with the heart, by the pulmonary vessels.

SUBSTANCE IS THREE-FOLD.

1. Vesicular, formed by the small cells.
2. Vascular, covering the cells like a net-work.
3. Bronchial, which terminates by small tubes in the minute cells.

The external membrane is from the pleura, and closely surrounds the outer surface of the lungs.

The internal membrane, covering the inner part of the bronchia, and air vesicles of the lungs, is very nervous, and formed by a continuation of the internal membrane of the trachea.

The vessels of the lungs are divided into common, or pulmonary, and proper, or bronchial.

The common are the pulmonary veins and arteries.

The proper are the bronchial arteries and veins.

USE

Of the lungs is for respiration.
voice, and
to effect a change in the crude blood brought by the right ventricle of the heart, &c.

THE HEART

Is a muscular viscus, situated in the cavity of the pericardium, which carries on the circulation of the blood.

DIVISION.

Externally, into base, and apex.

superior.

inferior surface.

anterior and

posterior margin.

Internally, it is distinguished into right and left ventricle.

SITUATION.

Is oblique, not transverse; its base is toward the bodies of the vertebræ, on the right side; and its apex towards the sixth rib of the left side; it is so obliquely situated, that the left ventricle is chiefly posterior; and the right, anterior: the inferior surface lies upon the diaphragm.

CAVITIES

CAVITIES ADHERING TO THE BASE OF THE HEART
ARE

1. The right auricle, which is a muscular sac ; its cavity is continued into the right ventricle.
2. The left auricle is also a muscular cavity, which is continued into the left ventricle.
3. The right venous sinus, formed by the vena cava, opens into the right auricle.
4. The left venous sinus, formed by the pulmonary veins, opens into the left auricle.

The cavities of the heart itself are called ventricles, which are divided into right and left, by a muscular substance, called the septum of the heart.

Each ventricle has two orifices at its base : one, called auricular, by which the blood enters ; the other, arterial, by which it goes out.

These openings have valves, which, in the arterial orifices, are called semilunar : in the right, auricle mitral ; and in the left, auricle : they are called tricuspidal.

SUBSTANCE

Of the heart is muscular.

The pericardium is a peculiar membranous sac, containing the heart, with its auricles, and sinuses.

The vessels of the heart are divided into common and proper. The common are the aorta, arising from the left ventricle.

The pulmonary artery, in a like manner, from the right ventricle.

The pulmonary veins, going into the left venous sinus.

The vena cava, emptying its blood into the right venous sinus.

The proper vessels are the coronary arteries of the heart, which are sent off from the aorta.

The coronary veins, returning the blood from the substance of the heart into the right auricle.

The nerves of the heart are branches from the eighth pair, and from the great intercostal nerve.

USE.

The heart is the principal agent in the circulation of the blood, without which life cannot exist.

THE ABDOMEN

Is a cavity, situated between the thorax and pelvis.

DIVISION INTO THREE CAVITIES :

1. The cavity of the peritoneum.
2. pelvis.
3. The lumbar cavity.

The parts which form the abdomen are divided into external and internal.

THE EXTERNAL ARE

1. The common integuments.
2. Five pair of abdominal muscles ; namely,
Two external oblique.
Two internal oblique.
Two recti, or strait muscles.
Two transverse.
Two pyramidal muscles, but sometimes wanting.
3. The bones of the abdomen are
Five lumbar vertebræ.
Four bones of the pelvis.
4. The peritoneum.

THE INTERNAL PARTS, OR CONTENTS OF THE ABDOMEN, COVERED BY THE PERITONEUM, ARE

1. The omentum.
2. stomach.
3. large and small intestines.
4. liver, and gall-bladder.
5. mysentery.
6. spleen.
7. pancreas.
8. lacteal vessels, or absorbents, situated between a duplicature of the mysentery.

In the lumbar cavity, outside of the peritoneum,

1. The kidneys.
2. suprarenal glands, or the renal capsules.
3. ureters.
4. receptaculum chyli.
5. descending aorta.
6. vena cava.

In the cavity of the pelvis, outside of the peritoneum, in men,

The urinary bladder.

intestine, called rectum.
vesiculæ seminales.

In women, besides the bladder and rectum,

The uterus.
Four ligaments of the uterus.
Two fallopian tubes.
Two ovaria.
The vagina.

THE PERITONEUM

Is a membrane, covering the internal surface of the abdomen, and is compared to a large sac.

DIVISION.

Into internal and external surface.

N n

SUBSTANCE.

SUBSTANCE.

It is a membranous, to which the cellular membrane adheres.

USE.

To contain the viscera of the abdomen in their situation; to form their external membrane and ligaments; and to moisten its surface by the vapour, exhaling from the exhalent arteries.

THE OMENTUM

Is an adipose membrane, lying on the anterior surface of the intestine.

DIVISION

Into a large and small one.

The large omentum is continued from the great arch of the stomach to the hypogastric region, covering the intestines.

The little omentum extends from the small arch of the stomach to the liver.

USE.

To lubricate the intestines; excite heat; and prevent concretion.

THE STOMACH

Is a membranous receptacle of the food from the oesophagus.

SITUATION.

In the epigastric region, and right hypocondriac.

DIVISION.

The stomach, when empty, hangs backwards, and is divided into an anterior, and posterior surface.

A great, or inferior curvature.

lesser, or superior curvature.

cardia, or the entrance from the oesophagus.

pylorus, or termination of the stomach into the duodenum.

fundus, which is a dilated part towards the spleen.

CONNECTION.

With the oesophagus, duodenum, great and less omentum, and pancreas.

SUBSTANCE.

Consists of four thin membranes, covered by the cellular membrane:

1. The external, from the peritoneum.
2. muscular coat.
3. nervous covering, consisting of vessels and nerves.
4. villous, or internal coat, which resembles the pile of velvet.

USE.

To receive the food from the oesophagus; to retain it for some time; to digest it; and to expel it through the pylorus into the duodenum.

THE INTESTINES

Form a membranous tube, or canal, in the cavity of the abdomen, variously contracted, from the stomach to the anus.

DIVISION.

Into great and small.

THE SMALL, LEADING FROM THE STOMACH, ARE

The duodenum.

jejunum, and
ileum.

THE GREAT INTESTINES ARE

The coecum.

colon.

rectum.

The duodenum, in length, is equal to the breadth of twelve fingers: it forms three flexions behind the stomach, in the epigastric region, between its first and second flexion; it is perforated by the ductus, communis, choledochus, and pancreatic duct, which most frequently are united into one canal.

The jejunum is about fifteen palms long, situated in the umbilical region.

The ileum is also about the same length, situated in the left iliac region and hypogastric, and ends at the valve of Tulpius.

The coecum, in length, is equal to the breadth of four fingers: it is situated in the right iliac region; in this intestine, there is a small separate cavity, called the vermiform process.

The colon begins from the coecum, in the right iliac region, and passes up to the liver, from which it makes a transverse arch under the stomach to the spleen, and terminates by its sigmoid flexure in the rectum, having descended into the pelvis.

It appears, therefore, that the colon can be distinguished by a descending, and an ascending part.

The rectum is rather more than a foot in length, descending from the last (lumbar) vertebra to the os sacrum and coccygis, terminating at the anus, where it is closed by a circular muscle, called the sphincter ani.

SUBSTANCE

Of the intestines is of four coats, like the stomach.

CONNECTION.

The intestines are chiefly kept in their proper situation by the mesentery.

USE.

USE.

To receive chyme from the stomach; to mix it with the enteric, and pancreatic juice, and the bile; for the absorption of chyle into the lacteals; and to discharge the fæces by the rectum.

THE MESENTERY

Is a duplicature of membranes, which surrounds all the intestines, except the duodenum and rectum.

DIVISION.

Into a thin, and a thicker part, or mesentery, and mesocolon.

CONNECTION

With the three superior bodies of the lumbar vertebræ.

SUBSTANCE

Is a continuation of peritoneum, forming a duplicature, within which, are placed arteries, veins, lacteals, or absorbents; nerves, the mesaraic glands, and cellular membrane.

USE.

To retain the intestines, their vessels, nerves, and glands in a proper situation; to effect some change upon the chyle, and carry it to the thoracic duct.

THE LIVER

Is the largest abdominal viscus, situated mostly in the right hypocondriac region, and partly in the epigastric.

DIVISION INTO THREE LOBES; NAMELY,

The great lobe to the right.

small lobe to the left.

Spigelian lobe.

superior, or convex surface.

inferior, or concave.

anterior, and

posterior margins.

CONNECTION.

It adheres to the diaphragm by means of ligaments.

The external membrane, covering its whole surface, is from the peritoneum.

SUBSTANCE.

Is vascular, the acini biliosi, or glands, called acini, which secrete the bile, are scattered in its substance.

The hepatic duct arises by very minute branches from each of the acini, which unite, and form one canal, passing towards the duodenum, and joining with the cystic duct, from the gall-bladder; these, when united, form the ductus communis choledochus, which empties its contents into the duodenum.

USE.

To secrete bile.

THE GALL-BLADDER

Is an oblong membranous bag, situated under the liver, in the right hypocondriac region.

DIVISION.

Into fundus,

body, and

neck.

The cystic duct, descending soon, unites itself to the hepatic duct; it is then called the ductus communis choledochus, into which the pancreatic duct is sometimes inserted: these are then continued into the duodenum by one orifice, between its first and second flexion.

SUBSTANCE.

Is membranous.

USE OF THE GALL-BLADDER.

To retain bile; regurgitating out of the hepatic duct; and to render it thicker, more acrid, and bitter.

THE SPLEEN

Is a viscus, situated in the left hypocondriac region, between the fundus of the stomach and the ribs.

SHAPE.

Oval.

DIVISION.

Into external, or convex surface; internal, or concave; superior and inferior extremities.

CONNECTION

With the diaphragm by means of the suspensory ligaments.

SUBSTANCE.

Totally vascular.

The external membrane is from the peritoneum.

USE.

Unknown; though, perhaps, it may serve to prepare the blood, for some purpose, for the liver.

THE PANCREAS

Is a glandular body under the stomach, in the epigastric region.

SHAPE.

Like a dog's tongue.

DIVISION.

Into superior and inferior surfaces.

right extremity, which is broad; and

left extremity, which is pointed.

anterior, and

posterior margins.

The

The small pancreas is that process of the pancreas, which adheres to the duodenum.

SUBSTANCE.

Is composed of innumerable glands.

The pancreatic duct arises from minute branches, forming one canal, which runs through the middle of the pancreas, and perforates the coats of the duodenum in conjunction with the ductus communis choledochus.

CONNECTION

With the stomach and spleen, by means of membranes; and with the duodenum, by the lesser spleen, and pancreatic duct.

USE.

To secrete a fluid, like saliva, which is carried into the duodenum.

THE LACTEAL VESSELS, OR CHYLEFEROUS ABSORBENTS.

The course by which the chyle is carried into the blood from the intestines, comprehends

1. The lacteal vessels.
2. receptaculum chyli.
3. thoracic duct.

The lacteals, or absorbents, are small vessels, arising, chiefly, from the internal membrane of the small intestines; very few from the larger.

They are divided into the lacteals of the first and second order.

Those of the first order are from their origin at the intestines, to the mesenteric glands.

Those of the second order are the continuation of the lacteals from the mesenteric glands, to the receptaculum chyli.

The receptaculum chyli is a narrow sac, resting upon the diaphragm at the two superior bodies of the lumbar vertebrae; but sometimes not existing.

The thoracic duct is a canal, passing from the receptaculum chyli through the posterior foramen of the diaphragm, and lying near the bodies of the dorsal vertebrae in the posterior mediastinum of the thorax, ascending to the left subclavian vein, into which it empties its contents of chyle, and coagulable lymph.

The thoracic duct, in its passage, receives the absorbents from almost every part of the body.

USE.

To carry the chyle, and coagulable lymph into the blood.

THE KIDNEYS

Are two viscera, which secrete the urine.

SITUATION.

In the lumbar region, behind the peritoneum, near the bodies of the superior lumbar vertebrae.

SHAPE.

Like a bean.

DIVISION.

Into anterior and posterior surfaces.
superior and inferior extremities.
external margin.

SUBSTANCE IS THREE-FOLD:

1. Cortical, or vascular, externally.
2. Tubular, more internally.
3. Papillous, at the most interior part.

THE COVERINGS OF THE KIDNEYS ARE

1. Adipose membrane, which is thick, loosely surrounding them.
2. A proper, or peculiar membrane.

The ureters are membranous canals, one in each kidney, descending into the urinary bladder, which it perforates obliquely; its origin, at the kidney, is larger, and called the renal pelvis.

The suprarenal glands are two large glands, situated above the kidneys, and covered by the same adipose membrane of the kidneys.

USE.

The kidneys secrete urine; and the ureters carry it from them into the bladder.

THE URINARY BLADDER

Is a membranous sac under the peritoneum, in the cavity of the pelvis.

SITUATION,

In men, between the bones of the pubis and intestine, called rectum; in women, between the pubis and uterus.

SHAPE.

Resembles a large pyriform bottle: and hence its

DIVISION.

Into superior, or fundus.
body, or middle.

neck, which arises from its inferior part, and is surrounded by a muscular sphincter.

SUBSTANCE.

Is of four membranes, like the intestines.

USE.

To receive the urine.
retain, and
expel it.

THE GENITAL PARTS OF MEN.

These consist of the penis.
testicles.
vesiculæ seminales.

THE PENIS

Is likewise called *membrum virile*.

DIVISION.

Into root,
body, and
head, called glans.

The glans has a broad base, called the crown of the glans; and an apex, which has an orifice of the urethra.

The *mons veneris* is a fatty protuberance, covered with hair, lying on the junction of the bones of the pubis.

THE SUBSTANCE OF THE PENIS IS FORMED

By common integuments.
two corpora cavernosa.
corpus spongiosum, and
urethra itself.

The extension of skin, covering the glans, is called the prepuce, which adheres to the glans, at the inferior part, by a membranous fold, called the *frænum*.

The two corpora cavernosa consist of a spongy structure; they arise, on each side, from the arch of the ischium, pass along the penis above the urethra, touching each other, and end, by obtuse apices, under the crown of the glans.

The cavernous, or spongy substance of the urethra, is thick at its origin before the neck of the bladder, which is called its bulb; it then surrounds the whole length of the urethra, as far as the apices, or terminations of the corpora cavernosa, then expands, to form the glans penis.

The urethra is a membranous canal, arising from the neck of the bladder, and passes under, and between the corpora cavernosa of the penis, to the apex of the glans, which it perforates, by a longitudinal fissure.

The *verumontanum* is a cutaneous prominence, situated in the cavity of the urethra, before the neck of the bladder.

THE GLANDS OF THE PENIS ARE

1. The muciparous glands of the urethra, situated under its internal coat.
2. The odoriferous glands, which are on, and about the corona of the glans penis.
3. The prostrate gland, which is single, surrounding the inferior neck of the bladder.

USE OF THE PENIS

Is to emit semen, and discharge urine.

THE TESTICLES.

Are two oval bodies, contained in the cavity of the scrotum. The epididymis, or accessory testicle, is an appendix to it, and lying on the testicle, in which a head, or anterior extremity; and a tail, or posterior extremity, may be observed.

THE INTEGUMENTS OF THE TESTICLE ARE

1. The scrotum is a membranous bag, divided in the middle by a membrane, called the septum, into two cavities: it consists of the epidermis, cutis, and a fibrous membrane, called darton.
2. The tunica vaginalis is of a cellular membrane, beginning at the abdominal ring, and enclosing the spermatic chord, as well as the testicle.
3. The tunica albuginea, or tunica vaginalis testis, is of a white colour, and firmly adheres to the substance of the testicle.

The substance of the testicle, and epididymis, consists of very fine white canals, finally terminating in the epididymis, which leads into the vas deferens.

The vas deferens, arising from the end of the epididymis, ascends with the spermatic chord through the inguinal, or abdominal ring, and terminates near the vesiculæ seminales, in the cavity of the pelvis.

The spermatic chord, therefore, consists of the vas deferens, spermatic artery, and vein; nerve, absorbents, and tunica vaginalis, which covers the cremaster muscle.

USE.

To secrete, and prepare semen.

THE VESICULÆ SEMINALES

Are two membranous receptacles, which receive the semen from the vasa deferentia, and retain it.

THEIR SITUATION.

Is upon the neck of the bladder, between it and the rectum. The excretory duct of each vesicula, goes into the cavity of the urethra, and opens by a peculiar aperture.

USE.

To receive the semen, and expel it into the urethra, in coition.

THE GENITAL PARTS OF WOMEN.

The parts of generation, in women, are divided into external and internal.

THE EXTERNAL ARE

The *mons veneris*.
labia majora.
minora.
clitoris.
hymen.

THE

THE INTERNAL ARE

The vagina.

uterus.

fallopian tubes.

ovaria.

broad and round ligaments of the uterus, and urethra.

The mons veneris is a round fatty protuberance, covered with hair, lying over the junction of the bones of the pubis.

The labia majora are two fatty projections, beginning under the mons veneris, covering the labia minora, and passing each side of the orifice of the vagina, go to the perineum, where they are united together by a transverse cutaneous fold, called the frenulum labiorum.

The labia minora, which are also called nymphæ, are two cutaneous folds, like the comb of a cock, situated at the orifice of the vagina.

The clitoris is a glandular part, placed under the anterior division of the labia majora.

The hymen is a membrane, mostly semilunar in shape, which adheres to the orifice of the vagina, during virginity.

The vagina is a membranous passage, beginning within the labia minora, and ascending to the neck of the uterus, between the bones of the pubis and the rectum.—It consists of three membranes:

1. The external one is cellular, from the cellular membrane of the peritoneum.
2. The middle is muscular, consisting of fleshy fibres.
3. The internal consists of transverse rugæ, or folds.

The urethra is a membranous canal, wider than in men, and descending straight from the urinary bladder, between the bones of the pubis and the vagina, terminating by an orifice under the clitoris, between the nymphæ, at their origin.

The uterus is a receptacle, situated in the cavity of the pelvis, above the vagina, between the bladder and rectum.

SHAPE.

Like a flattened pair.

DIVISION.

Into fundus, which is its superior and broadest part; body, or middle; neck, or inferior part, in which is a narrow orifice, and a transverse fissure at the neck of the uterus, projecting into the vagina.

Cavity of the uterus, in a virgin, is small, hardly sufficient to contain an almond: it has three openings; two at the sides, called the internal orifices of the fallopian tubes; and another at its cervix, or inferior part, called the uterine orifice.

The broad ligaments of the uterus are formed by a duplication of peritoneum, which gives an external covering to the uterus, and extending on its side to the ossa ilia: these ligaments support the uterus, fallopian tubes, and ovaria.

The round ligaments of the uterus arise from the sides of the uterus, going towards its fundus, pass to the inguinal, or abdominal rings, and terminate in the fat near those parts.

The fallopian tubes are two membranous canals, arising from the sides of the fundus of the uterus, and going towards the ovaria, at the superior margin of the broad ligaments.

The ovaria are two flattened bodies in the cavity of the pelvis, at the sides of the uterus.

SUBSTANCE.

On the exterior part, is fibrous; internally, vesicular, particularly in virgins.

These vesicles are called the female ovula, which, in old women, disappear.

THE GLANDS OF THE GENITAL PARTS ARE

1. The mucous glands of the vagina, situated under its internal, or rugous coat.
2. The odoriferous glands of the labia and clitoris.
3. The muciparous glands of the urethra, found under its internal membrane.

USE

Of the genitals is for coition.

conception.

nutriment

of the foetus.

parturition.

menstruation.

PARTS OF THE GRAVID UTERUS.

THE PARTS CONTAINED IN THE GRAVID UTERUS ARE

1. The uterine placenta.
2. umbilical chord.
3. ovum of the foetus.
4. liquor amnii.
5. foetus.

THE UTERINE PLACENTA

Is a spongy mass, like a cake, which mostly adheres to the fundus of the gravid uterus.

DIVISION.

Into the margin and middle, into which the umbilical chord is inserted, at its inferior surface; into a superior surface, which is rugged; and inferior, which is smooth.

SUBSTANCE.

Is cellular, like a sponge; and very vascular.

USE.

USE.

To receive the blood from the uterus; prepare it for the foetus; and propel it into the branches of the umbilical vein.

THE UMBILICAL CHORD

Is an intestinal-formed chord, going from the navel of the foetus to the middle of the placenta.

The length is frequently about three spans.

SUBSTANCE CONSISTS OF FOUR PARTS:

1. A cutaneous covering from the vagina.
2. A cellular one, filling up the umbilical vagina.
3. The umbilical vein, arising from the substance of the placenta, and going through the umbilical chord, and navel of the foetus, as far as the liver, evacuates its contents into the vena portæ.
4. Two umbilical arteries, arising in the foetus from the hypogastric arteries, near the sides of the urinary bladder, ascending to the navel, and going through the umbilical chord, divide into an innumerable number of branches in the substance of the placenta.

USE.

The umbilical vein carries blood to the foetus from the placenta; and the two umbilical arteries return it into the placenta.

THE MEMBRANOUS OVUM OF THE FOETUS.

The foetus, in the cavity of the uterus, is inclosed in a large membranous ovum, which consists of three membranes; namely,

The external is filamentous, where it adheres to the uterus and placenta.

The middle is the membrane, called chorion.

The internal membrane is named amnion.

USE.

To contain the liquor amnii, which, by flowing through the vagina; assists in dilating at the time of parturition; the inferior orifice.

THE LIQUOR OF THE AMNION

Is a limpid fluid in the cavity of the ovum with the foetus.

ORIGIN.

It is secreted by the exhalant arteries of the membranes of the ovum.

USE.

To defend the foetus from the pressure of the uterus.

THE FOETUS.

In the first month, the ovum is about the size of a pigeon's egg, filled with the liquor of the amnion, in the middle of which the foetus is swimming, and resembles a small mass.

THE INTERNAL PARTS, BY WHICH A FOETUS DIFFERS FROM AN ADULT, ARE

1. The foramen ovale, found in the septum of the auricles of the heart.
2. Botallis canal, which goes, obliquely, from the trunk of the pulmonary arteries to the aorta.
3. The lungs of the foetus are blackish, collapsed, and sink in water; but as soon as the infant breathes, they will swim.
4. All glands in the foetus are proportionally larger than in an adult.
5. The urachus is a thin membranous canal, ascending from the superior fundus of the bladder to the navel; sometimes it is found entirely empty.
6. The great intestines are filled with a green viscid matter, called meconium.

All canals and vessels, peculiar to the foetus, are closed, in general, after birth, and form a substance like a ligament.

Almost every process of bone, in the foetus, is cartilaginous, and are therefore called epiphyses.

ANGIOLOGIA, OR DOCTRINE OF THE VESSELS.

OF THE VESSELS IN GENERAL.

The vessels are long membranous canals, carrying blood, or any other fluid.

DIVISION.

Into arteries, veins, and lymphatics, or absorbents.

SITUATION.

In every part of the body, except, as some say, in the epidermis, membrana arachnoides, and nails; in the arachnoid membrane; however, they are sometimes visible.

OF THE ARTERIES IN GENERAL.

Arteries are those membranous canals which pulsate, and carry the blood from the heart to every part of the body, gradually becoming narrower in their passage.

The

The veins are also membranous canals, but do not pulsate, gradually becoming larger toward the heart, into which they return the blood.

The origin of all arteries is from the ventricles of the heart :

1. The pulmonary artery, from the right.
2. The aorta, from the left ventricle.

DIVISION

Of an artery is into a trunk, branches, smaller branches, and capillary vessels.

THE EXTREMITIES OF ARTERIES ARE OF THREE KINDS :

1. Ending in veins.
2. secreting vessels.
3. other arteries, by anastomosis.

SUBSTANCE OF AN ARTERY CONSISTS OF THREE MEMBRANES :

An outside, or cellular coat.

A middle, or muscular, with longitudinal, and circular fibres.

An internal, or smooth.

USE.

Arteries carry blood from the heart to every part of the body for nutrition; the preservation of life; animal heat; the secretion of various humours, or fluids.

SYSTEM OF THE AORTA.

The aorta, first, gives off two coronary arteries, then forms the arch, which gives off three branches :

1. The arteria innominata, from which the right carotid, and right subclavian arteries arise.
2. The left carotid.
3. The left subclavian.

The carotid arteries are divided into external and internal.

The external carotid gives off eight branches to the face.

The internal carotid goes to the brain.

The subclavian artery gives off four branches :

1. The mamma interna, or internal mammary artery.
2. cervical.
3. vertebral.
4. superior intercostal.

The subclavian, on passing out of the trunk, is called the axillary artery; when in the arm, it is called the brachial.

The brachial artery, at the flexure of the fore-arm, gives off three branches :

The cubital.
radial.
interosseal.

The descending aorta, whilst in the thorax, gives off four branches :

The bronchial.

oesophageal.

ten inferior intercostal.

inferior diaphragmatic.

The descending aorta, in the abdomen, gives off eight branches :

The cœliac.

superior mesenteric.

venal.

spermatic.

inferior mesaraic.

lumbar.

sacral, and terminates in the iliæc.

The iliac arteries are sub-divided into external and internal.

The internal iliac gives off five branches to the pelvis.

The external iliac gives off the epigastric artery, and, descending, becomes the inguinal; after which it is called the crural.

The crural, passing under the ham, is named the popliteal.

The popliteal gives off three branches :

The anterior tibial.

posterior tibial.

peroneal.

THE AORTA

Arises from the left ventricle of the heart, makes an arch towards the vertebræ of the back, then descending, passes through the diaphragm into the abdomen, where it is found resting on the left side of the spine, as far as the last lumbar vertebra, at which place it divides into the two iliæc.

From its origin to the iliac arteries, the following branches are sent off :

The coronary arteries arise at the arch of the aorta.

The arch of the aorta gives off three branches :

1. The arteria innominata.
2. left carotid.
3. subclavian.

The arteria innominata arises from the arch of the aorta, and soon divides into the right subclavian, and right carotid.

The carotid arteries ascend as far as the larynx, then divide into external and internal.

The external carotid passes up near the ear to the temporal region, during which passage it gives off eight branches to the neck and face.

The

SYSTEM OF THE PULMONARY ARTERIES AND VEINS.

The pulmonary artery arises from the right ventricle of the heart, going straight upwards, and, immediately after, passing out of the pericardium, is divided into two branches :

1. The right branch for the right lobe of the lungs.
2. The left branch for the left lobe of the lungs.

Both these branches, when in the substance of the lungs, are divided into innumerable small branches, like a network, distributed upon the air vesicles, and terminating in the pulmonary veins.

The pulmonary veins arise from the extremities of the pulmonary arteries, and finally terminate in four branches, which empty themselves into the left venous sinus of the heart, or left auricle.

OF VEINS IN GENERAL.

Veins are long membranous canals, which gradually widen, and carry the blood towards the heart; they do not pulsate.

THE ORIGIN OF VEINS IS DOUBLE:

1. From the extremities of arteries, by anastomosis.
2. From the external and internal surface of the whole body, by absorbent veins.

The termination of veins is into the sinuses of the heart, or

1. The vena cava, terminates in the right.
2. The pulmonary veins terminate in the left sinus of the heart.

THE SHAPE OF VEINS

Is like that of arteries, dividing into branches.

THE SUBSTANCE

Of veins consists of three membranes, which are thinner than the coats of arteries.—Some have asserted, that they have fine muscular tunic.

THE VALVES OF VEINS

Are semilunar membranes, which prevent the reflux of of blood into the arteries.

USE.

To return the blood from all parts of the body to the heart : and to convey those subtle fluids from the internal and external surface of the body, which are not absorbed by the lymphatic absorbent system.—For proofs of which, read Ab. Kaaw, Haller, and Meckell.

BRANCHES OF THE VENA CAVA.

The vena cava gives off the superior and inferior.

THE BRANCHES OF THE VENA CAVA, SUPERIOR, ARE

The subclavian veins.
external jugular.
internal.
vena azygos.

THE BRANCHES OF THE EXTERNAL JUGULAR ARE

The frontal.
angular.
temporal.
auricular.
sublingual.
occipital.

THE BRANCHES OF THE INTERNAL JUGULAR, ARE

The lateral sinuses of the dura mater.
laryngeal, and
pharyngeal veins.

THE BRANCHES OF THE VENA AZYGOS ARE

The vertebral.
intercostal.
bronchial.
diaphragmatic.

THE BRANCHES OF THE SUBCLAVIAN ARE

The mammary.
axillary.

THE BRANCHES OF THE AXILLARY ARE

The brachial.
cephalic.
basilic.
median.
salvatella.
cephalica pollicis.
digital.

THE BRANCHES OF THE INFERIOR VENA CAVA ARE

The hepatic.
renal.
right spermatic.
lumbar.
sacral.
iliac.

THE ILIAC VEINS ARE

Divided into the internal and external iliac.

THE BRANCHES OF THE INTERNAL ARE

The obturator.
pudendal.
external hæmorrhoidal.

THE

THE BRANCHES OF THE EXTERNAL ARE

The epigastric.
crural.

The crural, or femoral, continued downwards, becomes the popliteal:

THE BRANCHES OF WHICH ARE

The anterior tibial.
posterior tibial.
peroneal.
cephalic of the great toe.
Saphena.
dorsal of the foot.
plantar.
digital of the foot.

SYSTEM OF THE VENA CAVA.

The vena cava begins, or evacuates itself into the right venous sinus of the heart, and immediately divides into the vena cava, superior and inferior.

The vena cava, superior, receives all the blood returning from the head, neck, thorax, and upper extremities.

The vena cava, inferior, receives all the blood from the abdomen, and lower extremities.

VEINS OF THE HEAD.

The blood returns from the brain, face, and neck, by four veins; which are

Two external jugular.

Two internal jugular.

The internal jugulars begin at the foramen lacerum of the cranium, and return all the blood from the cerebrum and cerebellum into the subclavian veins.

The external jugulars are situated close under the common integuments of the neck; and also evacuate themselves into the subclavian veins, returning the blood from the external parts of the head and neck, therefore they receive blood from the frontal, angular, temporal, auricular, sublingual, and occipital veins.

VEINS OF THE SUPERIOR EXTREMITY.

The blood returns from the digital veins into the cephalic of the thumb, and salvetella veins; the latter is situated near the little finger.

At the bending of the fore-arm, there are three veins more particularly to be noticed; namely,

1. The basilic, on the inferior part of the fore-arm.

2. The cephalic, running on the superior part.

3. The median, which takes a course between the basilic and cephalic.

All these veins are continued into the brachial veins, which terminate in the axillary; and this empties itself into the subclavian vein.

THE SUPERIOR VENA CAVA.

The axillary veins run under the clavicles, and are called the subclavian, one on each side, which finally form one trunk, and takes the name of the superior vena cava.

THE INFERIOR VENA CAVA.

This ascends from the last vertebra of the loins on the right side of the spine, passing through the right foramen of the diaphragm, and unites with the superior vena cava, terminating with it in the right venous sinus of the heart: whilst in the cavity of the abdomen, it receives the hepatic, renal, right spermatic, lumbar, sacral, and iliac veins.

VEINS OF THE LOWER EXTREMITY.

The veins of the toes empty themselves into the cephalic of the great toe, saphena of the little toe, and dorsal, running on the back of the foot.

These, and the veins of the sole of the foot, empty themselves into the malleolar and sural veins, which terminate in the popliteal vein.

The popliteal vein ascends, and becomes the femoral, or crural vein, which passes under Poupart's ligament into the cavity of the pelvis, and forms a junction with the internal iliac vein; which latter receives the external hæmorrhoidal and hypogastric veins: both iliac veins, finally unite near the last lumbar vertebra, and form the vena cava inferior.

SYSTEM OF THE VENA PORTA.

That large vein, which carries the blood into the substance of the liver from the abdominal viscera, is called the vena portæ.

THE ABDOMINAL PART IS COMPOSED OF THREE BRANCHES; NAMELY,

The splenic vein.

mesariac, and

internal hæmorrhoidal.

CIRCULATION

CIRCULATION OF THE BLOOD IN A FOETUS.

A foetus receives its blood from the mother by the umbilical vein, and is returned to the mother by two umbilical arteries.

ON THE LYMPHATIC VESSELS.

These are fine vessels, carrying lymph from different parts. Their origin is from the larger cavities, or from the viscera. The termination of all the lymphatics of the neck, thorax, abdomen, superior and inferior extremities, is into the thoracic duct, and left subclavian vein.

NEUROLOGY, OR DOCTRINE OF THE NERVES.

ON NERVES IN GENERAL.

Nerves are long white chords, which cause sensation.

THE ORIGIN OF NERVES IS DOUBLE:

1. From the brain.
2. spinal marrow.

Their termination is at the organs of the senses; on the viscera; on vessels and muscles.

THE SHAPE OF NERVES

Is like branches.

THE SUBSTANCE OF NERVES IS DOUBLE:

1. The sheaths of nerves, arising from the dura and pia mater.
2. The nervous pulp, consisting of very fine particles, which contain the nervous influence.

THE USE OF NERVES IS

1. For the sensation of a sensible part.
2. For the five external senses, which are touch, sight, hearing, smell, and taste.
3. To excite muscular motion.

Anatomists have divided nerves into those of the head, and of the medulla spinalis, or spinal marrow.

Those are called cerebral, which, arising from the brain, pass out by the foramina of the cranium.

Those are called spinal, which arising from the spinal marrow, pass out through the lateral foramina of the vertebrae.

THE NUMBER OF NERVES IS

Nine pair of cerebral; or, from the brain,
Thirty pair of spinal.

THE CEREBRAL NERVES ARE

1. Pair, or olfactory nerves.
2. optic nerves.
3. motores oculi.
4. pathetic nerves.
5. trigemini.
6. abducent.
7. auditory.
8. vagi.
9. lingual.

THE THIRTY PAIR OF SPINAL NERVES ARE DIVIDED

1. Into eight pair of cervical.
2. twelve dorsal.
3. five lumbar.
4. five sacral.

ON NERVES OF THE HEAD, OR CEREBRAL IN PARTICULAR.

FIRST PAIR—OLFACTORY,

Arise from the corpora striata, and passing through the cribriform lamella of the ethmoid bone, go into the cavity of the nose, are distributed by several branches on the pituitary membrane of the nostrils, and convey smell.

SECOND PAIR.—OPTIC,

Arise from the thalami nervorum opticorum, pass through the optic foramina of the sphenoid bone into the orbit, there perforate the bulb of the eye, and form the retina, which is the organ of vision.—They have a central artery.

THIRD PAIR.—MOTORES OCULI,

Pass through the superior orbital fissure into the orbit, and are distributed on the muscles of the eye.

FOURTH PAIR.—PATHETIC,

Pass through the superior orbital fissure into the orbit, and are distributed on the superior oblique muscle of each eye.

FIFTH PAIR.—TRIGEMINI,

Whilst in the cranium, are divided into three branches:

1. Into the orbital branch.
2. superior maxillary.
3. inferior maxillary.

The orbital branch passes through the superior orbital fissure into the orbit, in which it is divided into three branches:

1. The frontal, passing through the superciliary foramen out of the orbit to the forehead.
2. The lachrymal branch, going to the lachrymal gland.
3. The nasal branch, passing into the cavity of the nostrils, through the orbital foramen of the nose.

The

The superior maxillary branch, passes out of the cranium through the round foramen, proceeds through the infra-orbital canal, and goes to the face through the anterior foramen of this canal, towards the superior maxillary bone.

The inferior maxillary branch goes through the oval foramen of the cranium, then gives off a branch to the tongue, and passes through the mental canal, to the inferior maxillary bone.

SIXTH PAIR.—ABDUCENT,

Pass through the superior orbital fissure into the orbit, and are distributed on the rectus externus muscle of the eye, or abducens.

SEVENTH PAIR.—AUDITORY,

Are divided into soft and hard branches; both pass into the orifice of the internal meatus auditorius.

The soft portion goes through the foramina of meatus auditorius into the labyrinth of the internal ear: is there distributed, and forms the primary organ of hearing.

The hard portion goes into the internal meatus auditorius of the aquæduct of Fallopius, and from thence through the stylo-mastoid foramen to the temporal foramen.

EIGHTH PAIR.—PAR VAGUM,

Descends through the foramen lacerum of the cranium into the neck, thorax, and abdomen, giving off branches to the different viscera in the neck, thorax, and abdomen.

NINTH PAIR.—LINGUAL,

Go to the tongue through the anterior condyloid foramina.

NERVES OF THE SPINAL MARROW.

The nerves which arise from the spinal marrow, are called spinal, and pass out through the lateral foramina of the vertebræ, and of the os sacrum.

THE CERVICAL NERVES.

There are eight pair of cervical nerves: the first are called occipital; these pass out between the occipital bone, and the first vertebra of the neck; and are distributed on the back of the head and neck.

The other seven pair are distributed on the muscles of the neck, and give origin to the following nerves:

1. The accessory nerve of Willis.
2. phrenic, or diaphragmatic.
3. brachial plexus.

The accessory nerves ascend through the great occipital foramen into the cavity of the cranium, and again pass out through the foramen lacerum to the trapezius muscle.

The phrenic nerves descend into the cavity of the thorax, and go to the diaphragm, near the pericardium.

The brachial plexus is formed by the five inferior pair of cervical, and first dorsal nerves, divided into six branches, going to the superior extremity; namely.

1. The articular nerve, distributed about the articulation of the humerus.
2. The median nerve, descending with the brachial artery into the palm of the hand; gives off two branches to the thumb, fore, and middle fingers; and one branch to the ring finger.
3. The ulnary nerve descends from the brachial plexus, near the internal condyl, going into the palm of the hand, where it gives off; one branch to the ring finger; and two branches to the little finger.
4. The radial nerve passes down near the external part of the fore-arm to the back of the hand, where it is distributed to the muscles.
5. The external cutaneous nerve passes down near the median vein, as far as the thumb.
6. The internal cutaneous nerve descends on the internal side of the fore-arm, as far as the little finger.

DORSAL NERVES.

There are twelve pair of dorsal nerves, which run under the inferior margin of the ribs to the sternum, and are called intercostal nerves; and distributed to the muscles and integuments of the back and thorax.

LUMBAR NERVES.

There are five pair of lumbar nerves, which are distributed on the muscles and integuments of the lumbar region and abdomen.

SACRAL NERVES.

There are also five pair of sacral nerves, arising from the cauda equina of the spinal marrow, which pass out through the internal foramina of the os sacrum, and get into the cavity of the pelvis, where they are distributed on the urinary bladder, vesiculæ seminales, penis, uterus, vagina, and intestine, called rectum.

The nerves of the inferior extremity are formed by the lumbar and sacral, and are three in number; namely,

1. The obturator nerve, passing through the superior fissure of the oval foramen, is distributed on the muscles about the pelvis.
2. The crural nerve (with the crural vessels) passes out of the cavity of the abdomen, under Poupart's ligament: and is distributed on the muscles and integuments of the thigh and leg, as far as the top of the foot.

3. The sciatic nerve passes out of the cavity of the pelvis through the great sciatic notch, descending between the tuberosity of the ischium and great trochanter, on the posterior and external part of the thigh, into the popliteal cavity, when it is divided into the tibial and peroneal branches.

The tibial nerve passes down into the sole of the foot, near the internal angle, and divides into the external and internal plantar nerves, from which the digital nerves arise.

The peroneal nerve is divided into many branches, and distributed on the muscles of the leg, and sole of the foot.

THE GREAT INTERCOSTAL NERVE.

The great intercostal nerve arises from the sixth pair, and a branch of the fifth pair of nerves in the brain, which unite, and form one trunk, passing out through the carotid canal, and descending near the sides of the bodies of the cervical, dorsal, and lumbar vertebrae, and os sacrum.

In its descent, it receives two branches from each of the thirty spinal nerves, and gives off the following branches:

In the neck it gives off three cervical ganglia; namely,

The superior,
middle, and
inferior.

From these the cardiac nerves arise, which go to the heart and lungs.

In the thorax, it gives off the anterior intercostal, which perforates the diaphragm, and forms the semilunar ganglion, near the kidneys, in the cavity of the abdomen; from which nerves go to all the abdominal viscera.—The nerves, their connections, dispersions, and terminations, are accurately demonstrated in the Plates.

The posterior intercostal descends near the spine of the back and loins; the os sacrum, and os coccygis, where it terminates.

ADENOLOGY, OR DOCTRINE OF THE GLANDS.

OF THE GLANDS IN GENERAL.

A gland is a small machine, used for the secretion of humors, fluids, or their alterations.

THE DIVISION OF GLANDS IS INTO THREE SPECIES:

1. Follicular, consisting of a follicular cavity.

2. Globate, which consists of a knot of lymphatic vessels, and have no excretory duct, and only alter the fluid.

3. Glomerate, consisting of a congeries of vessels, to which there is an excretory duct.

The excretory duct of a gland, is a fine canal, going from the gland, and conveying a fluid, or juice, secreted from it.

Glands are also distinguished by the kind of liquid they secrete,

Into sebraceous.

muciparous.

lymphatic.

lachrymal.

salivary.

biliary.

lacteal, &c.

THE USE OF GLANDS

Is to secrete, or alter any liquor; they are larger in infants than in adults.

GLANDS IN THE CAVITY OF THE CRANIUM.

The glands of the dura mater are situated near the longitudinal sinus.

The pituitary gland is on the sella turcica, the pineal gland.

GLANDS OF THE EYE.

Meibomius's glands are of the sebaceous kind, and situated near the tarsi, and internal surface of the lid.

The lachrymal gland is placed in a cavity, at the external angle of the orbit.

GLANDS OF THE MOUTH.

THERE ARE THREE PAIR OF SALIVARY GLANDS.

The parotid, situated under the ears; the excretory duct of which is called Stenonian, and, going from the ear, perforates the cheek, getting into the mouth at the third grinder tooth of the upper jaw, which should be well remembered in operating on the cheek, or an incurable fistula may happen.

The maxillary glands, lying under the angle of the inferior maxillary bone.

The sublingual, lying under the tongue.

The mucous glands of the mouth are found in the tonsils, uvula, and fauces.

GLANDS OF THE NOSTRILS.

The mucous glands are in the pituitary membrane of the nostrils.

GLANDS

GLANDS OF THE EARS.

The ceruminous glands of the external meatus auditorius are situated under the internal membrane of this passage, and secrete a wax-like substance.

GLANDS OF THE NECK.

These are the jugular glands on the side of the neck, and the submaxillary glands, situated under the integuments of the lower jaw.

GLANDS OF THE THORAX.

THE EXTERNAL ARE

The mammary glands, situated under the adipose membrane, or fat in the breasts.

THE INTERNAL ARE

The bronchial glands in the bronchia of the lungs, and of great consequence in considering pulmonic diseases.

The thymus gland in the anterior mediastinum.

GLANDS OF THE ABDOMEN.

The gastric glands in the stomach.

intestinal in the intestines.

mesenteric mesentery.

hepatic, which are also called acini biliosi, situated in the substance of the liver.

The supra-renal glands, which are large, and situated at the upper part of the kidneys.

GLANDS IN THE GENITAL PARTS OF MEN.

The mucous glands of the urethra, situated under its internal membrane.

The sebaceous of the prepuce, placed about the glans penis.

The prostate gland, situated near the neck of the bladder.

GLANDS IN THE GENITAL PARTS OF WOMEN.

The odoriferous glands of the labia under the skin of the labia.

The mucous glands of the urethra, under its internal membrane.

GLANDS OF THE EXTREMITIES.

The inguinal glands, under the skin at the groins, often the seat of venereal infection from vile astringent injections.*

The subaxillary, situated also under the skin at the axilla, or arm-pit.

GLANDS OF THE SKIN.

The subcutaneous glands, or those situated under the skin, secreting an oleaginous substance.

HYGROLOGY, OR DOCTRINE OF THE FLUIDS OF THE HUMAN BODY.

The liquid parts of our bodies are called humours: these are divided into those which are secreted; and those which are not secreted.

THE HUMOURS, NOT SECRETED, ARE

1. Chyle, a white fluid, like milk, coming from the food digested in the stomach; and small intestines, is carried into the blood through the receptaculum chyli, and thoracic duct.

2. The blood, which is a red fluid, contained in the heart, arteries, and veins.

Blood, drawn from the veins, is divided into crassamentum, or cruor, which consists of red globules and serum, consisting of gelatinous fluid, a little calcarious earth, salt, and a great proportion of water.

3. The lymph, which is a gelatinous fluid, contained in the lymphatic vessels.

4. A nutritive juice, which is a very subtile jelly, contained in every part, and in all the humours of our body, except in the excrements.

HUMOURS, OR FLUIDS SECRETED FROM THE BLOOD.

IN THE CAVITY OF THE CRANIUM, AND IN THE SPINE.

1. The nervous liquor, which is said to be a most subtile fluid, secreted by the cortical and medullary substance of the brain, and spinal marrow, from which it is conveyed into all the nerves of our body: but it has not yet been demonstrated, and therefore inadmissible.

The power of the nervous system, all over the moving powers and sensations of the body, I have called *Nervous Influence*.—See *Nervous Diseases*.

2. An aqueous vapour, contained in the four ventricles of the brain, and in the cavity of the spine, which is secreted by the exhalent arteries; a redundancy of which causes hydropo membranarum.—See *Treatise on the Watry Head, &c.*

IN THE CAVITY OF THE NOSTRILS.

The mucus of the nose, which is secreted by the glands of the pituitary membrane.

IN

* See my Treatise, called *Cogent Reasons—why astringent injections, caustic bougies, and violent salivations should be banished for ever from practice; with mild methods, and prescriptions for the treatment of every species of venereal infection, &c. &c.*

IN THE MOUTH.

The saliva, or spittle, which is secreted by the salivary glands, and carried into the mouth by an excretory duct from each, for the purposes of mastication.

IN THE FAUCES.

The mucus of the glands, fauces, and œsophagus, is secreted by muciparous glands of those parts, to render deglutition less difficult.

IN THE EYES.

THERE ARE THREE HUMOURS OF THE BULB:

1. The aqueous humour, contained in the anterior part of the bulb.
2. The chrystalline lens, in the anterior part of the vitreous humour, and
3. The vitreous humour, situated in the posterior part of the bulb.

OUTSIDE OF THE BULB ARE

1. The tears, which are secreted by the lachrymal gland, carried through its excretory ducts to the internal part of the upper eye-lid, and effused over the external surface of the bulb.
- The tears are afterwards absorbed by the puncta lachrymalia, carried by the lachrymal canals into the lachrymal sac, and thence through the nasal duct into the cavity of the nose.
2. The fluid of the Meibomian glands, secreted by the sebaceous glands in the tarsus of the eye-lids.

IN THE EARS.

1. The cerumen, or wax of the ears, which is secreted by the sebaceous glands in the external meatus auditorius.
2. The auditory fluid, contained in the vestibulum and semi-circular canals of the internal ear.

IN THE NECK.

The secretions of the submaxillary and jugular glands; also of the thyroid gland, which is gelatinous.

IN THE BREASTS.

The milk in the breasts of child-bearing women, is secreted by the glands of the breast, and passes through their excretory ducts into the papillæ.

IN THE THORAX.

The mucus of the larynx, trachea, bronchiæ, which is secreted by the glands of these parts, and frequently coughed up, when redundant, and irritating.

The juice of the thymus gland, which is white.

The vapour of the pericardium and cavity of the thorax, which is secreted by the exhalent arteries.

The perspirable fluid of the lungs, which exhales from their exhalent arteries.

IN THE ABDOMEN.

1. The gastric juice, secreted in the stomach by exhalents.
2. The enteric juice, secreted in the intestines by the exhalent arteries.
3. The pancreatic juice, secreted by the glands of the pancreas, and carried through its excretory duct into the duodenum for the purposes of digestion.
4. The bile, a yellow bitter juice, secreted in the substance of the liver, and partly goes through the hepatic duct into the duodenum, and partly regurgitates into the gall-bladder.

The bile in the gall-bladder becomes thicker and more acrid, and flows into the duodenum through the ductus choledochus, ———

5. The mucus of the stomach and intestines, secreted by their muciparous glands to lubricate them.
6. The chyme is a pultaceous mass, which is formed from food partly digested, and protruded into the duodenum; from this the chyle is formed.
7. The fœces of the intestines are a fœtid mass, remaining after the digestion of food, and absorption of chyle: they are contained in the large intestines, and finally ejected by the anus.

IN THE URINARY BLADDER.

1. The urine is an aqueous acrid humour, secreted in the kidneys, carried through the ureters into the bladder, and evacuated by the urethra: it consists of water, earth, and salt. Exhalent arteries, likewise, pour forth a vapourous fluid.

IN THE GENITALS OF MEN.

1. The semen, which is a liquor secreted in the testicles, by the spermatic arteries, and carried through the vas deferens of each into the vesiculæ seminales; and, at the time of coitus, is ejected into the urethra through the ductus ejaculatorius.
2. The mucus of the urethra, which is secreted by the glands of the urethra.

3. The

3. The liquor of the prostate gland, which is whitish, and mixes with the semen, at the time of coitus.
4. The liquor of the odoriferous glands of the corona glandis of the penis.
5. The vapor of the tunica vaginalis testis, which is aqueous.

IN THE GENITALS OF WOMEN.

1. The mucus of the vagina and urethra, secreted by the glands of these parts.
2. The liquor of the odoriferous glands, situated in the labia pudenda.
3. The menstrual blood, which is secreted by the arteries in the cavity of the uterus, monthly.
4. The lochia, which is effused from the cavity of the uterus for some days after delivery.
5. The liquor of the amnion, which, during the time of pregnancy, surrounds the foetus in a membranous ovum of the uterus.

IN THE FOETUS.

The meconium, or black fæces, which are contained in the great intestines.

IN THE ARTICULATIONS.

1. The synovia, which is secreted in the cavities of joints.

THE SUBSTANCES OF ANIMALS,

CONTAIN, IN DIFFERENT DEGREES,
ACCORDING TO CHEMICAL ANALYSES, &c.

Extracted from the recent and most excellent Chemists:

- | | | |
|--------------|-----------------|--------------|
| 1. Fibrina. | 6. Sugar. | 11. Acids. |
| 2. Albumen. | 7. Oils. | 12. Alcalis. |
| 3. Gelatine. | 8. Resins. | 13. Earths. |
| 4. Mucilage. | 9. Sulphur. | 14. Metals. |
| 5. Urea. | 10. Phosphorus. | |

These are all discoverable by different experiments; but as the substances which produce these results cannot, in general, be applied to the internal surface of the human stomach, or by other means, when living, to answer important purposes in the cure of diseases: the major part become respectable, as curious speculations, which may, at some future period, be converted to very important uses.

THE SIMPLE SUBSTANCES, FOUND IN ANIMALS,

CONSIST OF THE FOLLOWING, IN VARIOUS PROPORTIONS:

- | | | |
|----------------|-------------------|----------------|
| 1. Azot. | 6. Lime. | 11. Magnesia. |
| 2. Carbon. | 7. Sulphur. | 12. Silica. |
| 3. Hydrogen. | 8. Soda. | 13. Iron. |
| 4. Oxygen. | 9. Potass. | 14. Manganese. |
| 5. Phosphorus. | 10. Muratic acid. | |

BRAIN,

Contains phosphat of lime, of soda, and ammonia—but no oil, therefore not like soap, &c.

HUMAN BONES,

FROM A BURYING-GROUND, OUT OF 100 PARTS, CONTAIN,
Of gelatine, 16. Phosphat of lime, 67. Carbon of lime, 1-5. Lost, 15-5.

DRY, BUT NOT FROM UNDER THE EARTH:

23 Gelatine. 63 Phosphat of lime. 2 Carbon of lime. 2 Loss.

IN MUSCLES:

1. Are chiefly composed of fibrina, to which they owe their fibrous structure and form; also,

2. The liquor of the sheaths of tendons, or bursæ mucosæ, which is like a thin oleous mucus.

IN THE BONES.

1. The medulla, or marrow of bones, or fatty substance, contained in the middle, or cavity of cylindrical bones.
2. The medullary liquor, which is an oleous fluid in the cavernous substance of bones.

IN THE COMMON INTEGUMENTS.

1. The Malpighian mucus, in cellulæ, under the epidermis, which, in Europeans, is white; in Ethiopians, black, &c.
2. The liquor of the subcutaneous glands, which is oleous and enters the skin by the ducts of these glands.
3. The juice of the hair, which is contained in the cavity of the hair, from which it receives its colour.
4. The perspirable liquor, which, in form of an invisible vapour, is continually exhaling from the exhalent arteries of the whole surface of the skin.
5. The oil of the adipose membrane, which is secreted every where by the lateral pores of arteries in the tela cellulosa, or cellular membrane; and in the omentum, the veins return superfluity.

- | | |
|--------------|-------------------------------|
| 2. Albumen. | 5. Phosphat of soda. |
| 3. Gelatine. | 6. ammonia. |
| 4. Extract. | 7. lime, and carbon of ditto. |

MEMBRANES

Are composed chiefly, according to Hatchett, of coagulated albumen. Membranes and tendons make that strong cohesive substance, glue.

CUTICLE AND CUTIS

Are chiefly composed of galatine.

NAILS

Are similar, or possessing the quality of coagulated albumen.

HAIR

Resembles the preceding substances, with a little sulphur.

THE CRUOR OF THE BLOOD

Is one part to three of serum, but liable to variation in different subjects and conditions.

BLOOD CONTAINS, FROM ANALYSIS,

- | | |
|-------------------------------|--------------------------|
| 1. Water. | 6. Soda. |
| 2. Fibrina. | 7. Sub-phosphat of iron. |
| 3. Gelatine. | 8. Murat of soda. |
| 4. Albumen. | 9. Phosphat of soda. |
| 5. Hydrosulphuret of ammonia. | 10. lime. |

The states of diseased blood do not appear evident by chemical analysis; but blood undergoes numerous changes, which medical practice and inspection fully demonstrate, in various diseases, without chemical analysis.

BUFFY APPEARANCE, OR THE SURFACE OF BLOOD, ACCORDING TO DEYEUX AND PARMENTIER:

The buffy coat of inflammation, consists of the fibrina.

The cruor, deprived of this substance, is much softer than usual, and almost totally soluble in water.

The albumen of the serum is also altered, and does not coagulate as usual, when heated, but becomes milky, when mixed with hot water.

In putrid fever and scurvy, little was discovered.

In the diabetes, wherein, according to the ingenious Doctors Rollo and Dobson, sugar is present in the urine, the serum of blood is like whey.

DISSOLUTION OF BLOOD.

In the very vehement yellow, and other highly putrid fevers, of hot climates, I have seen the putrid dissolved blood, forced by arterial action through the exhalant arteries on the surface of the skin, in the form of a putrid sanies, horrid in odour.

Similar appearances of broken down blood from the mouth, gums, and other parts, I have seen, in inveterate scurvy, from long voyages, salt diet, confined air, and the absence of land air, fresh diet and vegetables, &c.

MILK

IS COMPOSED OF

- | | |
|-------------------|---|
| 1. Water. | 6. Muriat of soda. |
| 2. Oil. | 7. Muriat of potass. |
| 3. Albumen. | 8. Sulphur. |
| 4. Galatine. | 9. Phosphat of lime, in different proportions in different animals. |
| 5. Sugar of milk. | |

SALIVA

CONTAINS, BESIDES FOUR FIFTHS OF WATER:

- | | |
|--------------------|----------------------|
| 1. Mucilage. | 4. Phosphat of soda. |
| 2. Albumen. | 5. lime. |
| 3. Muriat of soda. | 6. ammonia. |

It is like all other fluids, changed by disease.

The tartarous crusts on teeth is phosphat of lime, according to *Fourcroy*.

PANCREATIC JUICE,

Similar to saliva.

BILE

CONTAINS

- | | |
|--------------------------|----------------------|
| 1. Water. | 6. A sweetish salt. |
| 2. Resin. | 7. Muriat of soda. |
| 3. Albumen. | 8. Phosphat of lime. |
| 4. Soda. | 9. soda. |
| 5. Sulphurated hydrogen. | 10. Iron. |

The proportion of these ingredients have not, as yet, been ascertained.

There are four species of gall-stones:—1. Resembles spermaceti. 2. Is inspissated bile. 3. Is a mixture of the two first.

These are soluble in *alkalies*. The fourth species, according to Haller and Dr. Saunders, are insoluble in *alcohol*, or *spirits of turpentine*.

THE CERUMEN, OR WAX OF THE EAR,

IS COMPOSED OF

- | | |
|--------------------------------|----------------------|
| 1. Albumen. | 4. Soda. |
| 2. An inspissated oil. | 5. Phosphat of lime. |
| 3. A darkish colouring matter. | |

TEARS AND MUCUS

CONTAIN

- | | | |
|--------------|--------------------|----------------------|
| 1. Water. | 3. Muriat of soda. | 5. Phosphat of lime. |
| 2. Mucilage. | 4. Soda. | 6. soda. |

MUCUS OF CAVITIES

Contains more mucilage, but less water; otherwise, as far as experiments have been made, is similar to tears.

SINOVIA OF CAPSULAR, LIGAMENT, &c.

CONTAINS, ACCORDING TO MARGUERON:

- | |
|-----------------------|
| 11.86 Fibrous matter. |
| 4.52 Albumen. |
| 1.75 Muriat of soda. |
| 71 Soda. |
| 70 Phosphat of lime. |
| 80.57 Water. |

100.00

The ingenious Dr. Pearson and Mr. Tenant, analysed *gout chalk-stones* and found them composed of urat of soda, which *Fourcroy* confirmed.

SEMEN

IS COMPOSED OF

- | | | | |
|-----------|---------------------|-------------|---------|
| 90 Water. | 3 Phosphat of lime. | 6 Mucilage. | 1 Soda. |
|-----------|---------------------|-------------|---------|

LIQUOR OF THE AMNION

IS COMPOSED OF

- | |
|---------------------|
| 98.8 Water. |
| 1.2 { Albumen. |
| { Muriat of soda. |
| { Phosphat of lime. |

URINE

CONTAINS

- | | | |
|----------------------|---------------------------|--------------------------|
| 1. Water. | 8. Rosaceous acid. | 14. Phosphat of soda. |
| 2. Phosphoric acid. | 9. Benzoic acid. | 15. Phosphat of ammonia. |
| 3. Phosphat of lime. | 10. Gelatine and albumen. | 16. Muriat of ammonia. |
| 4. magnesia. | 11. Urea. | 17. Sulphur. |
| 5. Carbonic acid. | 12. Resin. | |
| 6. Carbonat of lime. | 13. Muriat of soda. | |
| 7. Uric acid. | | |

URINARY CALCULI

CONTAIN

- | | | |
|----------------------|--------------------------------------|----------------------|
| 1. Uric acid. | 4. Phosphat of magnesia and ammonia. | 6. Silica. |
| 2. Urat of ammonia. | 5. Oxalat of lime. | 7. An animal matter. |
| 3. Phosphat of lime. | | |

But a more particular analysis, according to *Fourcroy* and *Vaquelin*, who examined more than six hundred calculi, and divided them into three genera, and twelve species, are as follows:

GENUS I. Calculi, composed of one ingredient.

- SPE. 1. Uric acid.—Colour of wood, yellow, red.
 — 2. Urat of ammonia.—Brownish white.
 — 3. Oxalat of lime.—Colour soot brown.

GENUS II. Composed of two ingredients.

- SPE. 1. Uric acid, and the phosphats in layers.—Like chalk.
 — 2. Ditto, mixed together.—Varies in appearance.
 — 3. Urat of ammonia, and phosphat in layers.
 — 4. Ditto, mixed together.—Both similar.
 — 5. The phosphats, mixed in layers.—Like chalk.
 — 6. Oxalat of lime, and uric acid in layers.
 — 7. Oxalat of lime, and phosphats in layers.

GENUS III. Containing more than three ingredients.

- SPE. 1. Urat of ammonia, or uric acid, the phosphats, and oxalat of lime.
 — 2. Uric, acid, urat of ammonia, the phosphats, silica.

As far as solvents are concerned, the calculi may be reduced to three heads:

SOLVENTS.

- | | |
|----------------------------|--|
| 1. Uric acid, and ammonia. | { A pure weak solution of potass and soda, which can be held in the mouth. |
| 2. The phosphats of lime, | |
| 3. Oxalat of lime. | { Quickly dissolved by nitric acid so weak, that it may be swallowed without inconvenience, and possessed of no greater acidity than urine itself.
{ By nitric acid, or by carbonat of potass or soda, weak enough not to irritate the bladder; but the action of these substances are slow, and scarcely complete. |

These weak solutions, a little warm, are injected into the bladder, after being emptied of urine, and suffered to remain in contact with the calculus, or stone, as long as bearable, without irritation or pain. It is difficult to ascertain, however, what species of stone may be in the bladder.

The composition of the tube, through which the liquid is introduced, should be well considered.—It appears to me, that the tubes, composed of elastic gum, are most proper; because, little or no effect is produced on that substance, either by acids or alkalies, which I demonstrated above thirty years ago.

The body might be supersaturated with those solutions, skilfully applied, in conjunction with an appropriate regimen: but, under such courses, extreme caution should be used, lest, instead of relief, mischief might ensue.

These various facts shew, what a complicated machine the Art of Medicine has to act on, in the different aberrations and mutations of the constituent principles, under a state of disease.

These compositions of inanimate matter, after death, and, in general, disease, might not have existed in animated nature: some are creatures of the fire; others of acids, alkalies, &c. therefore great caution is necessary in their application, during life, either in health, or disease.

PHYSIOLOGY,
OR THE
DOCTRINES OF THE ANIMAL, VITAL, AND NATURAL ACTIONS
OF THE
HUMAN BODY, DURING LIFE.

CONSPECTUS
OF
PHYSIOLOGY IN GENERAL.

OF THE NATURE AND POWERS OF AN ANIMATE
BODY.

OF THE ACTIONS OF AN ANIMATE BODY.

THE VITAL ACTIONS:

Circulation of the blood.
Action of the heart.
arteries.
veins.

Heat.
Respiration.

THE ANIMAL ACTIONS:

The soul.
Sensation, generally.

THE EXTERNAL SENSES:

Touch.
Taste.
Smell.
Hearing.
Sight.

THE INTERNAL SENSES:

Irritability.
Action of the muscles.
The voice and speech.
Watching.
Sleep.

THE NATURAL ACTIONS:

Hunger.
Thirst.
Mastication.
Deglutition.
Digestion.
Chylification.

Passage of the chyle into the blood,
Sanguification.

Nutrition, or increase and decrease of the body.

Secretion of humors.

Excretion, or passing out of excrementitious humours.

Expulsion of the fæces.

Excretion of the urine.

Transpiration.

Inhalation.

THE SEXUAL ACTIONS:

The secretion, and
excretion of the semen.

Menstruation.

Conception.

Evolution of the embryo.

Pregnancy.

Child-birth.

The ages of man.

Death.

OF

OF PHYSIOLOGY IN GENERAL.

PHYSIOLOGY IS A SCIENCE,

DESCRIBING THE ACTIONS AND POWERS OF AN
ANIMATE BODY, OR HUMAN BEING, DURING
LIFE.

A living man consists of body and soul.

The body is a machine, composed of solid, and fluid parts.

The soul is an incorporeal being, by which the living body thinks, and performs animal actions: the effects are evident; the causes, in a great measure, incomprehensible.

It may be necessary, in imitation of the great Haller, to commence Physiology with some ideas of the minute constituent parts of the human body.

FIBRES

Are composed of molecules, cohering together by the laws of attraction.

CONSTITUENT PARTS, OR FIRST PRINCIPLES, RADICALS, &c.

| | PRESENT DOCTRINES,
though still requiring future
research. |
|------------|--|
| HALLER, | |
| Terra. } | { Nitrogen. |
| | { Carbon. |
| Ferrum. | Hydrogen. |
| Gluten. | Phosphorus, and |
| Aer fixus. | Sulphate of lime, &c. &c. |

THE VISIBLE FIBRES ARE COMPOSED OF OTHERS
SMALLER:

The minutest fibres we see either by the eye, or microscope, are composed of others smaller, and easily conceived by the mind, though not demonstrable beyond a certain point.

FIBRES ARE ELASTIC, AND HEAVIER THAN WATER;

For, being stretched, when the distending powers cease, they recover their tone by contraction, descend in water, but deprived of the *fixed air*, or what is now called *carbonic acid gas*, by putrefaction: they are lighter than water, and swim on the surface.

Earthy particles, says the immortal Haller, that excellent Physiologist, adhering longitudinally, and connected by an intervening cohesive glue: compose, in the first place, one of the least, or most simple fibres, such as we understand, rather from reason than sense.

LAMINÆ, a second species, whose breadth are frequently larger than their length: these interwoven together, form *tela cellulosa*. The smallest parts then we see by the finest microscope, are either fibres, or an unorganised gelatinous concrete.

TELA CELLULOSA.

Of the first and second species, then of fibres and lamina, is constituted the *tela cellulosa*.

DISCOVERERS.

It was called, by the ancients, *tunica musculorum communis*, *membrana adiposa*, *vaginalis*, *darton*. By *Carolus Stephanus*, *vincula exigua*, by which he said all the vessels cohered.

After him *Spigellius*, *Veslingius*, *Marchettis*, *Vieussens*, *Malpighius*, and *Frederick Ruysch*, who first, by impelled air, demonstrated the proper tunics of the intestines, *scrotum*, &c.* Afterwards *Douglass*, *Winslow Boerhaave*, *Kaaw Boerhaave*, *Albinus*, *Bergen*, *Schobinger*, *Francis Thierry*, *J. Borden*: and the great *Haller* himself demonstrated, in 1747, the universality of the

TELA CELLULOSA,

Forming almost every part of the human body.

UTILITY.

The labours of all these discoverers, and improvers, have thrown new lights of infinite consequence, when applied in medical practice, as will hereafter appear in their proper place.

SEAT OF TELA CELLULOSA IN EVERY PART OF THE HUMAN BODY.

It forms membranes, coats of arteries, veins, lymphatics, is dispersed in nerves, and constitutes their vagina; is in all parts called tunics; in bones, receiving medulla: in short, every part of the body is cellulous, and vascular, almost without exception.

HOW

* See Dr. Rowley's Latin Edition of *Schola Medicinæ Universalis Nova*, Haller, &c.

HOW DEMONSTRATED.

By maceration and inflation, the cellular structure is demonstrable; but not in the dissolution of a recent brain, of the cornea, and lens, in water; the destruction of the epidermis, hairs, and nails; the structure of some part of bones, and cartilages, &c. render it probable that they do not fully consist of cellular texture alone.

CELLS OF TELA CELLULOSA.

They all mutually open themselves one into another, and communicate.

If air pervade the cells, the emphysema happens; sometimes to the whole body, as in some poisons, or from punctures, &c.

They can be artificially filled, by inflating the cells with air, in the manner butchers blow up their veal.

Water passes from cells, in one part, to others very remote; as in anasarca, and œdema, which disappear in the legs at night, in bed; and the fluid, that swelled in the day, is dispersed, *pro tempore*.

Punctures in the legs, below the knee, have emptied the bloated face, and with it the whole body, of gallons of water, which I have frequently demonstrated.*

The gradual dispersion of extravasated blood, after ecchymosis, contusions, &c. where we perceived dark livid effusions in the cellular structure, not only extend, change to a more natural colour, but likewise totally disappear, illustrating the powers of cellular communication, absorption, &c.

Suppurations of matter in the chest, have been discharged in the inferior extremities. Ulcers of the kidneys have communicated, and the matter has been evacuated from the thigh. From a suppurated parotid, pus has descended to the cubit, corroded the ligament, and an anchylosis has followed.

And, lastly, from almost every part, the collections of pus have changed their seat, and have been conveyed from behind the pleura, from the pancreas, mesentery, hepar, or liver, axilla, neck, inguen, &c. as hath been evidently proved by *J. Nicolaus Weiss*, and by numerous dissections, *post mortem*, made by myself, and others. By these evident facts, the seat of various diseases being transferred from one part to another, is satisfactorily accounted for, by means of the facile communication of the cellular structure.

THE USE OF TELA CELLULOSA.

- I. To act as a vinculum, and give firmness to the whole body.
- II. To receive fluids in its cells, whether adipose, or vaporous; to moisten the whole body, and facilitate action.
- III. To form all membranes; coats of vessels; the cellular structure of all parts; to combine the most minute muscular fibres; and preserve the muscular powers.
- IV. To define the figure of the human body, and determine form.
- V. To assist the cure of many diseases, by conveying the irritating causes from the more noble and important parts, to others ignoble or less dangerous.

MEMBRANES

Are all composed of tela cellulosa, as proved by inflation. Even the arachnoid membrane has, by the same mode, been shewn to consist of cellulous bubbles. Certainly, says the industrious learned Haller, all membranes, without exception; vessels, which are membranous tubes; the pharenchymatous structure of the viscera, ligaments, and even tendons, cartilages, bones, &c. either are, or have been, in a great part, tela cellulosa: which facts are now, in general, received, contrary to the opinion of several great men, that every part of the human body was entirely vascular.

ADEPS.

- I. The adeps, or fat, is collected in the more lax cellular texture, being deposited by the extremities, of arteries in the cells.
- II. It exsudes longitudinally through them.
- III. The same is resorbed, by the veins opening in the cells of the adipose cellular structure, as appears from the sudden effects which the exercise of the muscles has in consuming the oil of very fat animals; also, from the consumption of human fat in fevers: from the cure of anasarca dropsy, where the water transfused in the cellular substance, is evacuated by the intestinal canal; and, lastly, from the transuding of water and oil from various orifices, when injected by the syringe.†

Numerous experiments to be found in the erudite experimental work of the celebrated *Ab. Kaaw Boerhaave*, proving the absorption, and inhalation of the minute sanguiferous veins, which seem to attract those saline, or other

* See Treatise on Dropsy, &c.

† The facts exhibited by the great Haller, in his large Latin work, and even in his first lines of Physiology, ought to be perused by every studious Physician, with the greatest attention; there is an inexhaustible field for reflection, and unprejudiced experiment. I have endeavoured to abridge the whole in the Latin Edition of *Schola Medicina*, with what success, must be submitted to the learned, and candid; or, perhaps, to a discerning and liberal posterity, when the Author is no more!

other fine particles, which the lymphatics carrying strictly, coagulable lymph refuse. Each part to its peculiar office. The more tenacious particles are received by the lymphatic absorbents; but they cannot absorb what they do not contain: the very fine saline fluids, and others of a contrary nature, to coagulable lymph, are carried to the sanguiferous veins; and from the brain in particular, without the aid of lymphatic absorbents; for no lymphatic absorbents have yet been found in the human brain.

CONTRACTILITY OF THE CELLULAR STRUCTURE.

The cellular substance has a contractile power, different from that of irritability, which disposes the cellular fibre to shorten itself gradually, after it has been lengthened. This power, excited by cold, renders the skin rigid, raises the hair, draws up the scrotum, and after gestation, restores the skin of the abdomen and uterus to their former size: and to the breasts, after suckling, their agreeable form and beauty.

THE USES OF THE ADEPS, OR FAT.

- I. To facilitate the action of muscles in all parts; to lessen their attrition; and prevent rigidity.
- II. It fills up the interstices of muscles, or intermediate spaces betwixt the muscles and the cavities, about many of the viscera, in such a mode, that it readily yields to their motions, and yet supports them, when at rest.
- III. It principally constitutes the weight of the body; conducts and defends the vessels.
- IV. It gives an uniform extension to the skin; and serves as a cushion to ease the weight of the body, rendering the whole of an agreeable comely shape.
- V. Probably, by occasionally mixing with the fluids, it abates their acrimony.
- VI. It has a principal share in forming the bile; and by transuding through the cartilaginous incrustations of bones, it mixes with the articular liquid, and by re-absorption, it lubricates their fibres.
- VII. By exhaling through the pores of the skin, it resists the inclement drying quality of the air.
- VIII. By exhaling, in a living person, from the mesentery, mesocolon, omentum, round the kidneys; it lubricates the surface of the viscera, with an oleous emollient vapour; and by interposing itself between their integuments, prevents their concretion.

INCREASED BY REST, DIMINISHED BY HEMORRHAGE, &c.

The adeps, or fat, is deposited in the cells of the cellular structure by rest of body and mind, and a diminished force of circulation.

In too great a quantity, it proves injurious, by compressing the veins; and, by causing too great a resistance to the heart, it makes persons short breasted, and liable to apoplexy.

When lymph, or serum be deposited in the cells, instead of adeps, by the blood having been broken down, either by hemorrhages, or other debilitating causes, anasar-cous dropsy is the consequence; pallidity, and a diminution of the red sanguineous particles, which are amply demonstrated in my *Treatise on Dropsies*.

ON THE NATURE AND POWERS OF AN ANIMATE BODY.

Since man is not only a mechanico-hydraulic machine, but also animated: he exercises not only physical powers, common to every mechanico-hydraulic machine, but likewise animal powers, which are peculiar to living animals only.

THE PHYSICAL POWERS ARE

1. The *vis gravitatis*, by which bodies descend to the ground in a perpendicular line.
2. *Vis inertiae*, by which still bodies resist motion.
3. *Vis elasticitatis*, by which extended bodies voluntarily return to their former shape, on removing the extending cause.
4. *Vis motrix*, by which bodies are moved by a motion applied, until the power be no longer able to cause motion.
5. *Vis attractionis*, or *affinitatis*, by which two bodies are mutually brought nearer each other.
6. *Vis repulsionis*, by which two bodies mutually repel each other.

THE ANIMAL POWERS ARE

1. *Vis irritabilitatis*, by which the fibres of our bodies contract, on the application of a stimulus.
2. *Vis sensitivitatís*, by which certain fibres, irritated by a stimulus, cause sensation.
3. *Vis animæ*, by which a particular part moves according to volition, or will.
4. *Vis nervea*, by which some change is made in a part, even contrary to volition: as erection of the penis, or blushing, &c.
5. *Vis consolidans*, by which wounded parts are made firm.
6. *Vis fermentativa*, by which the animal humors are supposed to be changed in their qualities, through the intestine motion, &c.

An assemblage of all these powers, which an animated body exercises, is called the nature or functions of the human body.

ON THE ACTIONS OF AN ANIMATED BODY.

An animated body, by means of its own powers, which it has received from the CREATOR, and through the

the medium of the solids and fluids, of which the body is composed, performs various actions, which are called the functions of an animal body.

THESE ACTIONS ARE DIVIDED INTO

1. Vital actions, which carry on life.
2. Animal actions, which perform sense and motion.
3. Natural actions, which preserve the body.
4. Sexual actions, which propagate our own species.
5. Public actions, which are common to the whole body.
6. Private actions, which are peculiar to one part of the body only.
7. Foetal actions, which are peculiar to the foetus.

Physiology treats of all these actions; but those peculiar to any single part, are explained in Anatomy, Hygrology, &c.

It is necessary for Students, who are well acquainted with those Sciences, to understand Physiology.

ON THE VITAL ACTIONS GENERALLY.

Those actions are called vital, which carry on life in the body. The life of our body consists in the circulation of the blood; for when this ceases, life is at an end.

FOR THE CIRCULATION, THERE ARE REQUIRED

1. An action of the heart.
2. arteries.
3. veins.
4. Respiration, after-birth, and
5. Animal heat.

THE CIRCULATION.

THE BLOOD IS IN CONTINUAL MOTION:

1. From the arteries of the heart into the arteries.
2. From the arteries into the veins.
3. From the veins into the ventricles of the heart; for the blood returns from every part of the body, and is emptied into the heart by the *venæ cavæ*.
 1. Into the right venous sinus, and right auricle of the heart.
 2. From the right auricle into the right ventricle.
 3. From the right ventricle into the common trunk of the pulmonary artery.
 4. From the extremities of the pulmonary arteries into the pulmonary veins.

5. From the pulmonary veins into the left venous sinus, and left auricle.

6. From the left auricle it is propelled into the left ventricle; and

7. From the left ventricle into the aorta, by which it is carried to every part of the body.

The whole mass of blood, which is about fifty pounds, passes through all parts in the space of an hour.

THE USES OF THE CIRCULATION ARE

1. To give life and heat to every part.
2. For nourishment.
3. For the secretion of all the humours.
4. To keep the blood fluid, and to prevent putrefaction.
5. To convert the chyle into blood.

ACTION OF THE HEART.

The action of the heart consists in the alternate contraction and dilatation of its auricles, and ventricles.

The dilatation is called diastole; and the contraction, systole.

The heart is contracted by means of its muscular fibres.

THE CAUSE.

Disposing it to contraction, is its great irritability.

THE CAUSES, EXCITING IT TO CONTRACTION, ARE

1. The stimulus of the venous blood rushing in from the *venæ cavæ*.
2. Nervous influence of the cardiac nerves in the muscular fibres of the heart.

The heart pulsates four thousand five hundred times in an hour; therefore it is contracted and dilated one hundred and eight thousand times in twenty-four hours.

THE USE OF THE HEART

Is to receive the blood from the veins; to propel it into the arteries; and to keep the blood in motion.

ACTION OF THE ARTERIES.

Arteries, by the impulse of the blood, are dilated, and, at the same time, irritated; and, by the assistance of their muscular fibres, they contract, and thus propel the blood into the veins.

The dilatation and contraction of an artery, is called the pulse; hence the pulsation is found in trunks and branches; but, in capillary vessels, when free from inflammation, the pulse cannot be felt, nor even seen with a microscope.

THE

THE USE OF THE ARTERIES

Is therefore to propel the blood into the veins, secretory organs, and to convey and deposit diurnal nutriment.

ACTION OF THE VEINS.

The blood which flows into the veins by the contraction of the heart and arteries, returns by them into the auricles, then into the ventricles of the heart.

THE MEANS WHICH ASSIST THE RETURN OF THE BLOOD IN THE VEINS, ARE

1. The pressure of the arterial blood and arteries, upon the venal blood.
2. The contraction of the muscles.
3. The pressure of the atmosphere.
4. Respiration.

The valves of the veins prevent the blood from passing back again in the veins.

THE USE OF THE VEINS

Is to return the blood to the heart.

RESPIRATION.

The entrance of the air, into the lungs, is called inspiration; and its exit is known by the name of expiration.

RESPIRATION IS DIVIDED INTO

1. Spontaneous, which is going on during sleep; or, at times, when we are not sensible of it; and,
2. Voluntary, which can be increased, or diminished, at pleasure.

THE POWERS, BY WHICH THE CAVITY OF THE THORAX, AND OF THE LUNGS ARE DILATED, ARE

1. Contraction of the intercostal muscles and diaphragm, which dilate the cavity of the thorax.
2. The pressure of the elastic air, which expands the lungs.

THE POWERS, BY WHICH THE AIR IS EXPELLED FROM THE LUNGS, ARE

1. A cessation of action in the intercostal muscles and diaphragm.
2. The elasticity of the cartilages of the ribs, when the intercostal muscles cease to act.
3. Contraction of the abdominal muscles.

The cause exciting to inspiration is the rushing in of the atmospheric air into the lungs, irritating their nerves; thus, by a coincidence of action in the nerves of the diaphragm, and intercostal muscles, they are excited to contraction: but the inspired air, deprived of its element in the lungs, becomes unable to stimulate; hence the power of inspiration ceases, and expiration follows.

THE EFFECTS OF INSPIRATION ARE

1. Distention of the pulmonary vessels which were contorted and collapsed.
2. A more easy passage of the blood from the pulmonary arteries into the pulmonary veins, and thence into the heart.

The primary use of respiration seems to be the absorption of some element of the air, from that which is inhaled, by which the nervous power, and animal heat seem to be generated.

The element which is absorbed from the atmospheric air, is caloric and vital air; for the fixed air goes out of the lungs by expiration.

THE GOOD PURPOSES OF RESPIRATION ARE, FOR

1. To mix the chyle with the blood.
2. The attenuation of the blood.
3. The motion of the venous blood, chyle, and lymph.
4. Expulsion of the perspirable matter from the lungs.
5. The voice and speech.
6. Deglutition, or swallowing, and sucking.
7. Smelling.
8. Expulsion of the urine, fæces, and child-birth.

HEAT OF THE HUMAN BODY.

A living body is warm; a dead one cold.

The heat of the body, in good health, according to Fahrenheit's thermometer, is from ninety-four to an hundred degrees, and never exceeds an hundred and nine in the most burning fevers.—Dr. Baillie says, ninety eight; capable of being increased to one hundred.

In the foetus, the animal heat is less: it increases towards manhood; and decreases in old age.

Heat is increased by animal motion, but diminished by rest. The motion of caloric seems to be the proximate cause of heat.

The matter of heat is combined with an ignited air; which latter is absorbed by the lungs.

The matter of heat can not only be procured by friction, or attrition of the fluids and solids, but by other means—as fermentation, putrefaction, &c.

THE USE OF HEAT

Is to attenuate the fluids, and prevent their coagulation.

ON ANIMAL ACTIONS, GENERALLY.

THOSE ACTIONS ARE CALLED ANIMAL, WHICH ARE PERFORMED BY THE MIND, SUCH AS

1. The external senses.
2. internal senses.
3. voluntary actions of muscles.
4. voice and speech.
5. Watching, and sleep.

THE SOUL IS A BEING,

Which thinks and perceives within us.

The soul is incorporeal, and incomprehensible by man, except by its action and effects; it originates with the embryo, and leaves the body at the moment of death.

The seat of the soul is supposed to be in the medullary part of the brain; this is called the common sensorium.

The soul, or mind, acts upon the body; and the body upon the mind.

The instruments by which these actions are reciprocally performed, are the nerves and brain.

THE NERVES ARE DIVIDED INTO THREE CLASSES:

1. Into nerves of motion, which go to voluntary muscles.
2. Into nerves of sense, which form the sensitive organs.
3. Into vital nerves, which go to the heart and vessels.

The mind acts upon voluntary muscles, through the nerves of motion.

The body acts upon the mind, through the nerves of the senses.

The mind has no power over the vital nerves, nor those going to the viscera, which the ganglions of the vital nerves seem to be the cause of; but violent affections of the mind, produce action even beyond them.

OF SENSATION, GENERALLY.

Sensation is the perception of any thing which affects the nerves of sense.

No part of our body has feeling, except the pulp of nerves.

The parts of our body, which are least sensible, are those which have fewest nerves—as the epidermis, bones, cartilages, periosteum, tendinous aponeuroses, the cortical part of the brain, the pleura, periosteum, adipose membrane; but these, when diseased, are often sensible of acute pain.

The parts, having a blunt sensation, are those which possess few nerves—as the marrow of bones, glands, vessels, the most vascular part of the viscera—as the liver; and, in some parts, the cellular membrane.

The parts, possessing great sensibility, are those which have many nerves—as the skin, stomach, intestines, surface of the lungs, bladder, uterus, urethra, kidneys, and all the muscles.

The mind can perceive only one sensation at the same time: hence, a greater one obscures a smaller; on this account, also, with two eyes, we see but one object; and, with both ears, we distinguish one sound.

The mind, though situated in the brain, is acted upon by every nerve.

But how the mind perceives, by the assistance of nerves, is unknown; nor is it demonstrated, whether there be a subtile nervous fluid, generated by the atmospheric air, or in the brain, contained in the nerves, and flowing upwards, for the perception of the senses; and downwards, for muscular motion.

SENSATIONS

Are divided into pleasant, unpleasant, and indifferent.

THE USES, ARE

1. By the means of sensations—the internal and external senses are carried on.
2. The passions of the mind are excited.
3. Painful sensations convey to the mind a sense of danger, and instigate it to seek relief.

OF THE EXTERNAL SENSES, GENERALLY.

THERE ARE FIVE EXTERNAL SENSES; NAMELY,

1. The touch.
2. taste.
3. smell.
4. sight.
5. hearing.

THE TOUCH

Is a sensation the mind perceives, if any body touch the skin, particularly the ends of the fingers.

The primary organ of touch, therefore, is constituted by the nervous papillæ of the skin, at the tips of the fingers.

The skin possesses nerves, and the epidermis, by covering it, moderates the sensations, and defends the papillæ from becoming dry by the atmospheric air, the nails inform the papillæ of an approaching object.

T t

THE

THE USE.

By the touch, we perceive

1. The hardness, or softness.
2. heat, or cold.
3. shape.
4. magnitude.
5. distance.
6. number.
7. smoothness, or roughness.
8. weight.
9. motion, or rest of any body.

THE TASTE IS A SENSE,

By which we perceive the taste of sapid bodies.

A sense seems to comprehend the whole; and a sensation, only a peculiar modification of a sense, capable of infinite variety.—We find many sensations, therefore, in each sense,

The nervous papillæ at the apex, and on the margin of the tongue, constitute the primary organ of sense.

Every body which contains salt, or any acrid particles, soluble by the saliva, is an object of taste.

THE SPECIES OF TASTES ARE

Salt, acid, lixivious, urinous, sweet, bitter, acrid, earthy, metallic, rancid; hence, taste is simple, or compound, pleasant, unpleasant, or indifferent.

The diversity of taste depends on the various irritation of the saline particles.

THE PARTS, AUXILIARY TO TASTE, ARE

The tongue, which contains the nervous papillæ; and by its motion applies them to sapid bodies.

The epidermis of the tongue, which moderates the sensations of taste.

The saliva and mucus of the mouth, by which the savoury principle is dissolved; for all bodies are tasteless, unless, in a certain degree, soluble.

THE USE.

By the taste, we are induced

1. To eat and drink.
2. To distinguish wholesome from unwholesome things,
3. To know the flavour of various medicines.

THE SMELL IS A SENSE,

By which we perceive smells.

The nervous papillæ, distributed on the pituitary membrane of the nostrils, constitute the organ of smell.

Every body, which possesses a volatile principle, exhaling, and attracted by the nostrils, is an object of smell.

THE DIFFERENT KINDS OF SMELLS ARE

Aromatic, urinous, acid, putrid, cadaverous, stercoraceous.

The things which are auxiliary to smell, may be considered as follows:

1. The pituitary membrane, on which the nervous papillæ are distributed.
2. Inspiration, by which odours are attracted.
3. The pyramidal shape of the nostrils, by which the odorous particles are concentrated, retained, and prevented from going into the fauces.
4. The mucus of the nostrils, by which the nervous papillæ are kept moist.

USE OF SMELL.

To regulate the taste, and to perceive noxious and medical qualities.

THE SIGHT IS A SENSE,

By which we perceive the qualities of surrounding bodies, as far as can be known by inspection, or looking at them.

The retina of the optic nerve is the organ of sight.

The rays of light coming from a lucid or illuminated body, through the bulb of the eye, and falling upon the retina, constitute the object of sight.

Light is a subtil solid body, passing from the sun, or any lucid body, by a very rapid motion, in right lines, which being carried to our eyes, are called the rays of light.

THE PROPERTIES OF LIGHT ARE

1. The rays of light, which do not pass through an opaque body, but are reflected from it.
2. These rays pass through clear or transparent bodies; but are broken in the passage.
3. Rays of light, passing through a pellucid convex body, converge, and meet at a point, called the focus.
4. Rays of light, after passing through a concave body, diverge, and pass at a greater distance from each other, consequently have no focus.
5. Rays of light, reflected from coloured bodies, break into seven rays of different colours.

The sight, therefore, is present, under the following circumstances:

1. The rays of light, going from a visible object, pass into the transparent and convex cornea of the eye, by the density and convexity of which they are brought to a focus.

2. The

2. The focus of the rays passes through the aqueous humour and pupil of the iris, and is again concentrated in the chrystalline lens.
3. The focus thus concentrated, passes through the vitreous humour, almost unchanged to the retina, on which
4. The focus points or conveys the image of the external object, which is carried to the brain by the optic nerves.

THE PARTS AUXILIARY TO SIGHT ARE

1. The eye-brows and lashes, which prevent the perspiration from falling into the eyes.
2. The eye-lids, which keep dirt or extraneous bodies from the cornea, and exclude too great a quantity of light.
3. The tears, which preserve the transparency of the cornea.
4. The pupil, which is contracted in great light; and dilated, where less light is present.
5. The pigmentum nigrum of the choroid coat, which absorbs the focus of sight, and prevents it from going beyond the retina.

THE USE.

By the assistance of sight, we distinguish the following peculiarities of external objects; namely,

1. The presence.
2. size.
3. shape.
4. colour.
5. distance.
6. number.
7. motion or rest.
8. situation.

THE HEARING IS A SENSE,

By which we perceive the sound of sonorous bodies.

Sound is a vibrating motion of the air, caused by striking some elastic body.—Without air we cannot hear.

Elastic bodies only are sonorous, if struck by a sonorous body.

Sound is carried to an amazing distance in the atmosphere, in right lines, which are called rays of sound; but these do not travel so fast as rays of light.

Soft bodies diminish sound; but elastic ones increase it.

The soft portion of the auditory nerve, the pulp of which is distributed on the vestibulum, simicircular canals, and cochlea, constitutes the organ of hearing.

HEARING IS, THEREFORE, PERFORMED IN THE FOLLOWING MANNER:

1. The rays of sound, passing from a sonorous body, are carried to the ear, which, by its elasticity, increases them; and by its shape, collects them into a focus, if we may use that expression, the sound is then continued through the external auditory passage to the membranum tympani, which it causes to vibrate.
2. The tympanum vibrating, conveys its motion to the malleus, which is connected with it; this continues its motion to the incus; this puts the os orbiculare into motion, which being joined to the stapes, effects a similar change; and the stapes, adhering to the fenestra ovalis, sets it in motion.
3. The fenestra ovalis, to the auditory fluid, contained in the vestibulum and semicircular canals.
4. The gentle motion of the auditory fluid, causes a small motion of the nervous pulp, spread in the vestibulum and semicircular canals; these are carried to the common sensorium of the brain, by the nervous influence of the auditory nerve.

Besides, the vibration of the tympanum causes, not only motion of the ossicula auditus, but also of the air contained in the cavity of the tympanum; hence,

5. The vibration of the air of the tympanum causes the lamina, which surrounds the fenestra rotunda of the cochlea to be put into motion.
6. The motion of the lamina of the fenestra rotunda, causes an undulatory motion of the fluid, which fills the cavity of the cochlea.
7. The fluid of the cavity of the cochlea being in motion, effects the pulp of the auditory nerve in the cavity of the cochlea.

The mind, finally, judges of the presence and diversity of sound.

Sounds are divided into grave, sharp, increasing, weak, agreeable, disagreeable, harmonious, and disharmonious.

The gravity or acuteness of sound, depends on the number of vibrations given at the same time.

THE USE OF SOUND.

1. To learn speech, languages, and the discrimination between good and evil.
2. To enjoy the exquisite pleasure of music and singing.
3. To be informed of the noise proceeding from things we do not see.
4. To perceive the ideas of other men.

OF THE INTERNAL SENSES.

The internal senses are ideas, which the mind forms.

But

But ideas are perceptions of things in the mind, and arise

1. Either from the external senses, or reflection.
2. From an internal cause, affecting the common sensorium,
3. Or excited in the mind voluntarily, after the apprehension of a difference of things.

The proximate cause of the ideas, seems to consist in the motion of the nervous powers in a particular part of the common sensorium.

It is the mind, and not the brain, that thinks.

THERE ARE FIVE INTERNAL SENSES:

1. Memory, which represents the ideas received at some past time.
2. Imagination, which makes an object present, though absent.
3. The conscience, which makes us attentive to, and conscious of, ideas.
4. Passions of the mind, which produce an hatred, love, or desire of any thing.
5. Reason, which compares ideas with each other, and discerns those alike from unlike; true from false; good from evil, &c.

USE.

Man differs from the brute creation by the excellence of his internal senses.

ON IRRITABILITY.

Irritability is a power in every muscular fibre of contracting, on the application of a stimulus.

The cause of irritability is not known; it does not depend merely on elasticity, nor on the mind, nor nerves only, but, in a certain degree, is in the muscular fibres.

The parts of our body which have muscular fibres, are called irritable—as the heart, arteries, all muscles, the diaphragm, stomach, and intestines; bladder, uterus, vagina, and *viæ lacteæ*, or absorbents.

The parts which have no muscular fibres, are also void of irritability—as nerves, the common integuments, and all membranes that are not muscular.

The heart is the most irritable part; then the stomach and intestines: next follows the diaphragm, and other muscles in the scale of irritability.

The degree of irritability is also different, according to the age, sex, constitution, kind of life, state of health, and idiosyncrasia, or individual peculiarities.

The stimulus is also different, according to the part to which it is applied, and its own nature.

THE USE OF IRRITABILITY.

1. The motion of all muscles, voluntary and involuntary, depends upon it.
2. The action of the heart and vessels.
3. The peristaltic motion of the stomach and intestines, &c.

ACTION OF THE MUSCLES.

The action of the muscles consists in the contraction and relaxation of fleshy or muscular fibres.

The cause disposing it to motion, is the irritability of the muscular fibres.

The cause exciting it to contraction, is the influx of nervous power or energy, by an impulse of the mind, which the irritation of the nerves of a muscle, and a ligature upon a nerve, elucidate.

The contraction of a muscle ceases, if its nervous energy, and the will, or volition cease; the relaxation of the contracted fibres immediately follows.

THE MOTION OF MUSCLES IS DIVIDED INTO

1. Voluntary, which is acted on by volition.
2. Involuntary, which is not in the power of the will—as in the heart, vessels, stomach, and intestines.
3. Mixed, which is carried on by the means of volition, or without it; that is, capable of being varied at pleasure—as respiration.

The power of the mind is the cause which acts on voluntary muscles.

A peculiar stimulus is the cause acting on involuntary muscles.

The heart and vessels are stimulated to action, by the influx of blood; the stomach and intestines, by the food and bile; the bladder, by urine; and the inspiratory muscles, by the air we breathe.

THE USES OF MUSCULAR MOTION ARE

1. The action of all the moveable parts of the body.
2. The local motion of the body, as in walking, &c.
3. The acceleration of the motion of blood in the veins.
4. The attenuation of the blood and chyle.
5. To assist the secretion of humours, by arterial action.

THE VOICE.

The voice is an aerial sound coming from the opening of the larynx.

The

The object of the voice is, therefore, vibrating air; for the air striking against the larynx in its passage, outwards, causes that part to shake, which communicates its motion again to the air.

The larynx, more especially its fissure, is the organ of voice.

The grave or acute sounds, depend on the greater or less diameter of the fissure of the larynx, or glottis, or the size of the larynx, its elasticity, and force of expiration.

A whisper is the passage of the air through the larynx, without vibration.

THE USE OF THE VOICE

Is for speech and singing.

THE SPEECH.

Speech is the voice in the cavity of the nostrils, fauces, and mouth, variously modulated.

All speech consists in the pronunciation of letters, which are divided into vowels and consonants.

Vowels are letters pronounced by the voice only, without applying the tongue to any part of the mouth.

Consonants are formed by applying the tongue to any part of the mouth, teeth, or lips.

Letters are therefore distinguished into oral, nasal, guttural, lingual, dental, labial, palatine, or compound—as oronasal, &c. &c.

Singing is a kind of speech, in which the voice is modulated in the various degrees of grave and sharp sounds, the larynx being kept in a vibrating state.

Speech is given to man alone, in all the animal creation.

THE USES OF SPEECH ARE

1. To enable man to communicate his ideas and sensations to another.
2. That man may learn necessary arts, languages, and sciences; and be able to teach others.
3. To delight himself and others by singing.

WATCHING.

The aptitude of exercising the animal actions—as sense, and the voluntary use of muscles, is called watching, or being awake.

The proximate cause of watching, is a great quantity of nervous influence, passing easily through the medulla of the brain and nerves to the sensitive organs, and voluntary muscles.

The remote cause of this encrease of nervous influence, is any irritation of the external or internal senses.

SLEEP.

Sleep is a state of the body, during which there is an inability of exercising the internal and external senses, and voluntary motions.

The proximate cause of sleep, therefore, is a deficiency or tardy motion of the nervous influence, through the medulla of the brain and nerves, which go to the organs of sense, and voluntary muscles.

The remote causes inducing sleep, are continued watching and labour, by which the nervous power is considerably diminished; also, a defect of irritation, rest of the mind, particularly in a dark place.

The nervous energy or irritation, being restored by sleep, is the natural cause of the returning state of being awake.

THE PHENOMENA OF SLEEP COMING ON, ARE

The muscles keeping the body in an erect posture, become weaker.

The palpebræ of the eyes are closed, and the inferior maxillary bone falls; the head nods; gaping comes, and external objects, scarcely affect us; afterwards, the ideas are confused, and, at last, are lost, then sleep begins.

A doze is a state of imperfect sleep, in which a particular part of the common sensorium is irritated, producing a kind of watching.

A doze arises from some circumstance, which does not take place in a sound sleep—as a strong idea, irritation of the stomach by food, a stimulus in the intestines or bladder; and an uncomfortable posture.

The causes of the continued action of the heart and vessels, respiration and motion of the stomach and intestines, during sleep, is the great irritability of those parts; and the number of nerves and ganglions, to which may be added, the continual action of stimuli on them.

USE OF SLEEP.

1. Rest of the animal actions; that is, of the senses, and voluntary motions.
2. To moderate the vital actions, by which the body is not so much impaired.
3. To cause a more perfect exercise of the natural actions—as digestion, secretion, and nutrition.
4. To renew the nervous energy which is necessary to perform every action.

ON NATURAL ACTIONS, GENERALLY.

THOSE ACTIONS, BY WHICH OUR BODY IS PRESERVED, ARE CALLED NATURAL—AS

HUNGER

Is a sensation which causes a desire of taking food.

U u

The

The seat of this sensation is in the stomach.

The cause seems to be friction of the rugæ of the stomach, when empty; and irritation from the gastric juice.

THE EFFECTS OF LONG CONTINUED HUNGER, ARE

A very sharp acrimony of the humours, which produces fainting, sharp pains of the stomach, fœtid smell in the mouth, grinding of the teeth, convulsions, acute fever, delirium, and madness.

THE USE.

To remind men of eating which is necessary to support life.

THIRST IS A SENSATION,

Which creates a desire of drinking.

The seat of this sensation seems to be in the fauces, on the surface of the tongue or stomach.

The cause is a dryness of the fauces, or acrimony in the stomach.

The effect of long continued thirst, is a thickness and acrimony of the humours.

THE USE.

It instigates us to drink, by which the humours are diluted, and generated.

MASTICATION

Is the action of dividing the food between the teeth, or chewing.

The teeth, jaw-bones, tongue, cheeks, and lips, constitute this organ.

THE PARTS MOVING THIS ORGAN, ARE

1. The muscles, which open and shut the mouth.
2. The tongue, which continually puts the food between the teeth.
3. The cheeks and lips, which prevent the chewed victuals from escaping out of the mouth.

THE EFFECTS OF MASTICATION ARE

1. A division of the food into very small parts.
2. An effusion, or envelopement of the food in saliva, which dilates, resolves, excites to action, and forms it into a mass for swallowing; also, by moistening the fauces, allays thirst.
3. An admixture of the mucus of the mouth and fauces, which lubricates the masticated food for swallowing; prevents the air mixed with it, from being disengaged, and mixes the oleaginous particles with the watery.

4. The admixture of atmospheric air with the food, during mastication, which assists fermentation.

USE.

Mastication is necessary for deglutition and digestion; it may indeed be called the beginning of digestion.

DEGLUTITION

IS THE PASSAGE OF THE MASTICATED FOOD, FROM THE CAVITY OF THE MOUTH:

1. Into the cavity of the fauces.
2. From the fauces into the stomach.

The powers, which carry the food from the cavity of the mouth into the fauces, are

1. The closing of the jaws, to prevent the food from escaping.
2. The pressure of the tongue upon the palate of the mouth, by which the food resting upon the tongue, is thrust forwards into the cavity of the fauces.
3. The dilatation of the pharynx, which gives passage to the food.

The pharynx is dilated, not only by its own muscles; but the root of the tongue, os hyoides, and larynx, being brought into action by their muscles: at the same time contribute much to the ease of swallowing.

The powers which prevent the food from going out of the fauces into the posterior cavity of the nose; the orifices of the Eustachian tubes, or the fissure of the glottis may be reckoned:

1. The epiglottis, which closes the fissure of the glottis.
2. The muscles, which contract the posterior part of the glottis.
3. The muscles, which elevate the uvula, and velum pendulum palati, towards the posterior foramina of the nostrils.
4. The muscles, which close the orifice of the Eustachian tubes.

The mouthful of food in the dilated cavity of the pharynx is carried into the œsophagus:

1. By its own weight.
2. The compression of the distended pharynx, which contracts by the irritation of the food on passing into its cavity.

The food is carried from the œsophagus into the stomach, by the contractile power of the muscular fibres of the œsophagus.

When the act of swallowing is over, the cardia, or superior orifice of the stomach is closed by its own fibres.

The phenomena observed in swallowing liquids, are as follow:

1. A vessel, containing liquid, rests upon the upper lip, and the head is bent backward.

2. The

2. The upper lip is immersed in the liquid, that the atmospheric air may be prevented from getting into the cavity of the mouth.
3. The liquid is poured on the superior surface of the tongue.
4. The liquid being poured on the tongue, which is applied to the roof of the mouth, it is pressed on into the cavity of the fauces.
5. The fluid being carried into the fauces, and passing over the epiglottis, which projects, is divided into two streams, passing the fissure of the glottis at each side of the larynx, and meet again in the fauces, from which it passes into the œsophagus, by the action of which it is carried into the stomach.

THE USE OF DEGLUTITION

Is to carry food and drink into the stomach for digestion.

DIGESTION IN THE STOMACH.

Digestion is the act of changing the food into chyme, which is effected in the stomach.

THE INSTRUMENTS WHICH CHANGE THE FOOD INTO CHYME, ARE SIX; NAMELY,

1. The moist heat of the stomach, which softens and macerates the food.
2. The air, which is mixed with the food, during mastication, and swallowed, being expanded by heat, rarifies the expanded particles, and general mass.
3. The saliva, which is continually swallowed; and the gastric juice, secreted by the exhalent arteries of the stomach, continually delute and soften the food.
4. The mucus of the mouth, which is swallowed; and the mucus, secreted by the glands of the stomach, serve to combine the oleaginous particles of the food with the aqueous part of the gastric juice and saliva.
5. The peristaltic motion of the stomach, by which the various things contained are continually mixed and kept in motion.
6. The motion of the abdominal muscles and diaphragm, by which the food is constantly pressed a little.
7. The spontaneous effervescence of the food, which is excited by the saliva, gastric juice, heat, air, and intestine motion of the mixed foods, vegetable, facinaceous, and animal, from whence acid eructations, &c.

It is evident, therefore, that digestion, or the change of food into chyme by these means:

1. Trituration.
2. Solution.
3. Fermentation, which, by many, is doubted.*

The effect of digestion, therefore, is the changing of food into chyme, or a paltaceous, fermentative mass of an unpleasant smell and taste.

The softer part of this mass is gradually thrust from the stomach through the pylorus into the duodenum:

1. By its own weight.
2. By the peristaltic motion of the stomach, contracting itself
3. By the motion of the abdominal pressure.

But the more thick and hardened part is retained longer.

The foods which cannot be acted on by these means, are indigestible—as tough membranes, bones, the skins of some fruits, and parts of vegetables, which are expelled unchanged.

THE USE OF DIGESTION

Is the first change of food into chyme.

CHYLIFICATION.

Chylification is the changing of chyme into chyle.

The small intestines constitute the organ of chylification.

THE CAUSES WHICH CHANGE CHYME INTO CHYLE ARE

1. A continual action upon the chyme, by the peristaltic and antiperistaltic motion of the intestines, and abdominal pressure.
2. A considerable dilating of the chyme, by the saliva, gastric, pancreatic, and enteric juices.
3. An encreased fermentation, excited by the heat of the intestines, the air, and above-mentioned fluids.
4. The bile from the liver and gall-bladder being poured upon the chyme, by which the oil, united to the mucus by digestion in the stomach, and being united with the juices secreted, forms chyle.

The effects of chylification are to change the colour, taste, and smell of chyme into a white, sweetish, acescent inodorous humour, like milk.

Chylification is performed in less time than chymification: both are completed within three hours, in health.

THE USE OF CHYLIFICATION

Is to produce chyle.

PASSAGE OF CHYLE INTO THE BLOOD.

When chylification is completed, the chyle is absorbed into the lacteals; and that part of the chyme which cannot be changed into chyle, is expelled into the great intestines, and called the fæces.

But, part of the humours, secreted in the primæ viæ, goes through the meseraic veins into the liver.

THE

* From the experiments of Stevens, Reaumur, Spallanzani, Scopuli, Brugnatelli, Carimini, Mr. J. Hunter, and others, the chyme is produced by the power of the gastric juice; on which, however, I do not speak positively, from the difficulty, not only of procuring the pure gastric juice in man, but the ascertaining its precise qualities, &c. &c.

THE CAUSES WHICH PROPEL THE CHYLE INTO THE LACTEALS, ARE

1. The absorbent power of the lacteals.
2. The adhesive power of the chyle to the mouths of these vessels,
3. The peristaltic motion of the intestines and motion of the abdominal compression, by which the internal surface of the intestines is contracted, and become immersed in the chyle.

The chief absorption of the chyle happens in the jejunum and ileum, very little in the duodenum and great intestines.

THE PASSAGE OF THE CHYLE FROM THE INTESTINES IS

1. Into the lacteals.
2. receptaculum chyli.
3. Through the thoracic duct into the left subclavian vein, drop by drop.

THE POWERS WHICH MOVE THE CHYLE THROUGH THE LACTEALS ARE

1. Pressure of the lacteals by the contraction of the abdominal press.
2. The pulsation of the meseraic arteries which lie near the lacteals.
3. The contractile force of the lacteals and thoracic duct, which is considerable; also, the pressure of the chyle from behind.
4. The motion of the respiratory organs.

The return of the chyle in a retrograde direction; namely, toward the intestines, or back again into the thoracic duct, is prevented:

1. By the frequent valves of the lacteals and thoracic duct.
2. By the diameter of the lacteals continually increasing.
3. By the pressure of the chyle from behind.

At the time when the chyle is absent, the humours secreted in the primæ viæ pass through the lacteals.

The passage of the blood from the subclavian vein into the thoracic duct, is prevented by the valve at the entrance of this duct.

There is a change made upon the chyle in its passage towards the blood, by

1. A diluting of the chyle by the lymph of the lymphatic, or absorbent vessels, which evacuate themselves into the receptaculum chyli and thoracic duct, from almost every part of the body.
2. An impregnation of the chyle with a nutritious jelly, which the mesenteric glands and lymphatics mix with it.
3. A greater animalisation of chyle by this mixture, and through which its crudity is changed.

THE USE OF CHYLE.

1. By chyle, the constituent principles are carried to the blood; from which, the blood, other humours and solid parts consist—such as a great quantity of water, some oil, salts, jelly, mucus, fixed air, or carbonic acid gas, and a small portion of earth.
2. The putrid tendency of the blood, and other humours, is restrained by the mixture of recent and acescent chyle with it.

SANGUIFICATION.

Sanguification is the changing of chyle into blood.

The chyle, after having been mixed with the blood for twelve hours, has not intirely lost its peculiarities, though it shall have circulated through the lungs and over the body some hundreds of times.

IN ITS PASSAGE OVER THE BODY,

1. The adeps of the chyle seems to be changed, partly into red globules of blood, and partly to be deposited in the cellular structure.
2. The gelatinous and watery part of the chyle becomes the serum of the blood.
3. The aqueous part dilutes the blood and all the humours.
4. The earthy portion is converted into nutriment of the bones and solid parts.

Sanguification requires that the globules, which are white, lighter, and larger than the globules of blood, become red, more dense, heavier, and smaller.

Redness seems to be effected by the globules of chyle being mixed with a portion of iron earth and fixed alkali in the small vessels of the lungs and muscles, by long attrition.

The greater density of globules of chyle arises from a continued compression in the small vessels.

The greater gravity depends on their increased density, and admixture of martial earth.

The diminution of size seems to depend on the attrition and compression of the globules in the small vessels.

THE USE OF SANGUIFICATION

Is to generate blood, which serves to fill the blood-vessels; irritate the heart and arteries; generate heat; also, for the secretion of all the humours, and exercise of the vital actions.

NUTRITION,

NUTRITION, THE INCREASE AND DECREASE OF THE BODY.

Nutrition is the application of a nutritious juice to those wasted parts of the solids, which daily require reparation.

The solid parts of our body, by the continual actions of life, are gradually destroyed, and the fluids excreted.

THE CAUSES WHICH DESTROY THE SOLIDS ARE

1. Violent motion of the humours through the large and small vessels, by which their internal surface is destroyed.
2. The continual motion of the muscles, by which the cellular membrane and vessels are constantly suffering waste.
3. The constant motion of all the viscera.
4. The friction of the cloaths, and of the air surrounding the body.
5. Finally, the frequent cutting of the hair and nails.

By these means, the earthy element of fibres and glut, by which they are united, is worn away, mixed with the fluids, by which they are surrounded and carried out of the body with the excretions.

THE CAUSES WHICH CARRY OUT OF THE BODY THE SOLID PARTS, MIXED WITH THE FLUIDS, ARE

1. Transpiration and sweat.
2. The urine.
3. The excrements from the intestines.
4. The saliva and mucus of the nose.
5. The menses and semen may be reckoned as occasional causes.

By these evacuations, the humours are deprived of their saline aqueous principles; hence, they become thick, putrid, and acrimonious.*

By these means, unless the quantity and quality of those parts which are destroyed, be daily renewed, our machine would soon perish—as long abstinence from food sufficiently convinces us.

The parts which were lost being solids and fluids, we have

Nutrition of the solids, and
fluids.

Nutrition, or reparation of the fluids, is easily renewed:

1. The butyraceous part of the chyle, united to the martial earth, constitutes cruor.
2. The watery part of the chyle forms an aqueous vehicle of the blood and serum.
3. The glutinous part of the chyle, which is most nutritious, is united to the gelatinous part of the serum and lymph.
4. The superabundant oleaginous parts of the chyle, which cannot be united to the martial earth, is deposited in the cellular membrane, and restores or increases the adeps of the body.

5. Since the chyle contains not only elementary earth, but also fixed air and salts of every kind, it can furnish the constituent principles of the mass of blood, and for the secretion of humours.

The reparation of fibres requires a junction of the earth and elementary gluten, the caseous part of the chyle forms the earth of the bones, and the oleaginous part, joined with the fixed air and water, forms the gluten of fibres.

The nutritious juice of the solids, therefore, seems to be a gluten, more or less impregnated with earth, a greater quantity of earth being requisite for the bones, but a smaller portion for the soft parts.

It does not appear whether the nutritious juices, earth, and gluten be attracted into the defective parts, by the force of attraction: or, whether nutrition may be performed by any other means; but, in my opinion, it is caused by attraction and cohesion.*

Since every humour of our body, except the excrements—as the urine, perspiration, and fæces; are impregnated with a gelatinous, or nutritious juice, which also pervades the fibres in every part of the body; it is evident that every part is continually supplied with a nutritious juice.

Some parts—as the nails and hair are supplied by the application of a nutritious juice, which is called nutrition, by protrusion.

INCREASE OF THE BODY.

The more completely man is originally formed, the more speedily he increases in size; thus the embryo from an invisible being, in the space of nine months, increases to the weight of eight pounds.

After birth, the body continues increasing to the twenty-first year; though each year, gradually less. Women attain their full stature sooner than men.

THE CAUSES WHICH INCREASE THE GROWTH OF THE BODY IN THE FOETUS AND INFANT, SO CONSIDERABLY, ARE

1. The laxity, or more easily extension of all the vessels.
2. The vessels of some parts not being given off.
3. The greater proportionate size of the heart, as well as its greater irritability, and that of the arteries.
4. A quicker and stronger motion of the humours.
5. A soft, copious, and nutritious food; hence, a great quantity of gelatinous humours.
6. The cartilaginous and extensile state of the bones.

THE

* See the Treatise on all the Diets in the World in Volume IV. of the *Rational and Improved Practice of Physic, with Prescriptions, &c.*

THE CAUSES WHICH TERMINATE THE INCREASE OF THE BODY ARE

1. An evolution of all the vessels.
2. The strength of the vessels, not permitting farther extension.
3. Such an extenuation of the cartilages as to resist farther increase of the bones.
4. A firmer food, by which a nutritious juice, containing more earth, is deposited in the interstices of the fibres; hence, they become more firm.
5. The heart increases in size less in proportion than the other parts, and its irritability diminishes; hence, a less and weaker motion of the humours.

The menses of women seem to put a more speedy termination to their corporeal increase.

The state of increase is said to cease when the body neither continues to increase, nor manifestly to diminish.

After the thirtieth year, the bodies of some men are apt to become corpulent, which arises from a great quantity of fat being deposited in the cellular membrane, and a diminution of exercise.

DECREASE OF THE BODY.

THE CAUSES OF THE BODY DECREASING IN OLD AGE ARE

1. All the fibres gradually become so indurated by a nutritious earthy juice, that they are more rigid and dry.
2. The more minute vessels being compressed by the dilatation of the larger ones, that they gradually grow together.
3. By the concretion of several of the lacteals, or absorbents, a smaller quantity of chyle goes into the blood.
4. The humours become acrid and earthy by a diminished excretion.
5. All the natural actions which form the nutritious juice are depraved.

From these reasons, it appears why the body increases in youth; is at a standard in the middle of life; and decreases in old age.

In youth, there is more nutritious juice deposited between the fibres than is lost, whence increase of the body follows: in old age, there is less, to which we may attribute its decrease; but in the vigour of life, what is lost is daily renewed, whence the acme, or utmost state of increase is observed.

THE USE OF NUTRITION:

1. The conservation of our bodies; for if nutrition should cease, it would soon become dry and worn out.

* Now called by other names, which, in the present disposition of the Chemists, in their more accurate analysis of the human body, may again change.

2. That the alkalescence and putridity of the humours, arising from the absence of food, may be properly tempered by the effusion of a new chyle.
3. That the whole body may be excited and strengthened, which languishes by want of food.
4. That the body may increase in youth by a more considerable nutrition.

SECRETION OF HUMOURS.

Secretion is the separation of any humour from the blood. The secretory organs are the extremities of arteries and lateral pores of vessels.

All secretions are carried on from the arteries, except the bile, which is secreted from veins, performing the function of arteries in the liver.

The blood is the mass of secretion, flowing through the arteries; for all humours are secreted from it.

The blood contains the constituent principles of all the secreted humours; namely, water, jelly, oil, salt, and calcareous earth.*

THE HUMOURS SECRETED FROM THE BLOOD, ARE DIVIDED INTO FOUR CLASSES:

1. Aqueous humours, which are those not coagulable by mineral acids—as perspirable matter, the aqueous humour of the eye, the tears, saliva, pancreatic juice, and urine.
2. The gelatinous humours, which are fluid, and coagulated by mineral acids—as the vapours of the ventricles of the brain, of the pericardium, pleura, peritoneum, tunica vaginalis testis, liquor of the amnion, the synovia, or liquor of the joints, the gastric and enteric juices, liquor of the uterus, of the lymphatics of the sheaths of tendons, the white of an egg.
3. Mucous humours, which are viscid, not coagulable by mineral acids, but become ropy—such as mucus of the trachea and bronchia, of the fauces, of the primæ viæ, urethra, and vagina.
4. Fatty humours are those, which, when dry, burn in a flame—as the oil of the adipose membrane, bile, wax of the ears, milk, the yolk of an egg.

The proximate cause of secretion is, that every secreting vessel is smaller than the artery, from which it is formed, or the vein in which the artery terminates: hence, all the secreted humours, not even the mucus and semen excepted, are thinner than the blood, when first secreted, but thicker afterward.

The diversity of secretion depends on the different properties of the humours, which are carried to the secretory organ; and by the difference in shape of the pores and secreting arteries; the extremities of secreting vessels, therefore, are found to be stellated, pencillated, or like a brush, tortuous, &c.

THE

THE ORGANS WHICH PREPARE THE SECRETED JUICES ARE

1. Follicular glands, in which the secreted fluid, by remaining some time, becomes thicker—as mucus, and the fat of glands.
2. Receptacula, which retain the secreted humours for some time—as the gall-bladder for the bile, and vesiculæ seminales for the semen.
3. The absorbent vessels of these receptacles, which carry away the thinner parts of the fluid contained.
4. Whether may not a peculiar fermentation take place in the receptacles of some of these secreted humours?

The power carrying the fluid to be secreted into the secreting vessels, is the pressure from behind.

The power by which the fluids, secreted, are carried out of their receptacles, is

1. A contraction of the muscular fibres of the receptacle, containing the fluid, as may be observed in the bladder and vesiculæ seminales.
2. The adjacent muscles: thus the saliva is expelled by the muscles of the jaws; the semen, by the acceleratores urinæ; the bile by the stomach, when turgid; and the pancreatic juice by the abdominal press.
3. The stimulus of the secreted humours, which, by its weight, quantity, or acrimony, irritates the receptacle to contraction.

These observations are sufficient to elucidate secretion in general, as to each particular secretion.—See *Doctrine of the Humours*.

EXCRETION OF HUMOURS.

The excretion of humours is their exit out of the body.

The excrementitious humours are the matter of perspiration, the fæces and urine.

By these excretions the body frees itself from noxious and useless humours.

EXPULSION OF THE FÆCES

Is the passage of the excrements from the anus.

Fæces comprehend that part of the food which passes into the great intestines, not changeable into chyle, absorbed by the mouths of the lacteals, nor meseraic veins.

This mass, in the great intestines, acquires a peculiar stercoraceous fætor by fermentation, and is propelled into the intestine, called rectum, by the peristaltic motion of the great intestines of the abdominal muscles and diaphragm.

The intestine, called rectum by its bulk, or more rarely by a peculiar acrimony of the fæces irritating it, acquires a tenesmus, or frequent desire of going to stool.

By this stimulus, the sphincter ani relaxes, and the fibres of the rectum contract; thus the fæces are propelled downwards through the anus, which is then open.

Contraction of the internal sphincters also assist the expulsion.

Thus, fæces, the consistence of an electuary to the weight of four or five ounces are ejected, and passing out by the round arched aperture of the anus, they are moulded into a cylindrical form.

As soon as all the fæces are ejected, the tenesmus and action of the abdominal press cease.

The anus is again contracted by its sphincter and levator muscles.

THE USE.

The body is thus relieved of its fæces, which would do mischief, and bring on putridity, if not discharged.

SECRETION OF THE URINE.

The secretion of urine is its separation from the blood.

The extremities of the renal arteries, which go into the substance of the tubuli, form this secreting organ.

The urine passes from the tubuli into the renal papillæ, out of which into the pelvis of the kidney; from this it goes down the ureters, and falls into the bladder drop by drop.

The urine is retained some hours in the bladder, by the natural contraction of the neck of the bladder.

The urine, gradually collected, either by its quantity or acrimony, excites a desire of discharging it: by this stimulus, the neck of the bladder is relaxed; and the muscular coat contracted, the urine is thus propelled through the urethra.

A slight contraction of the abdominal muscles and diaphragm assists its expulsion: in men, the last drops of urine are expelled from the urethra by the contraction of the muscles, called acceleratores urinæ, which press upon the urethra.

The mucus, which moistens the internal surface of the urethra, defends it from the acrimony of the urine.

USE.

To take away from the blood its superfluous water, salts; what is worn off the solids—earth, impure oil, and other useless humours.—In relaxed nervous habits, do not the exhalant arteries furnish some of the superabundance of pale urine so common in nervous affections?

TRANSPIRATION.

TRANSPIRATION.

Transpiration is an exhalation of an insensible vapour.

IT IS DIVIDED INTO

1. Cutaneous transpiration from the whole surface of the body.
2. Pulmonary transpiration from the surface of the air cells of the lungs.
3. Internal transpiration, or exhalation, which exhales into the cavities of our bodies.

The organs of transpiration are the extremities of arteries upon the skin, air surface of the lungs, and which open into the internal cavities of the body.

The matter of transpiration from the skin and lungs, is aqueous, passing off in the form of vapour, with a small quantity of water and volatile salt.

The quantity of perspirable matter in summer, and in our climate, is reckoned at five pounds in twenty-four hours; but this varies according to the difference of food, air, climate, motion, and rest.

Internal transpiration is an aqueous vapour, a little gelatinous from the mouths of exhalents.

USE.

Cutaneous transpiration frees the blood from a superfluous water, and the more subtile excrements; it also continually moistens the skin, and prevents it from being dried by the air.

Internal transpiration causes the viscera in the cavities to be moist.

Sweat is such an increased transpiration as to pass off in form of a visible vapour, and is secreted from the same vessels as transpiration; it carries from the blood not only water, but also saline, earthy, and oleaginous particles, and forms drops.

INHALATION.

Inhalation is the absorption of vapours which exhale into the cavities of the body, and of those which are applied to the external surface of the body.

THE ABSORBING ORGANS ARE

1. The extremities of veins which open on the external surface of the skin, and on the surface of the internal cavities and viscera.
2. Lymphatic veins which arise in these cavities, and in every part of the cellular membrane.

The absorbed saline particles is carried by the absorbent veins into the mass of blood; but the more gelatinous into the thoracic duct by the lymphatics, coagillable lymph absorbents.*

USE.

Internal absorption prevents the dropsy of the cavities of our bodies; the absorbed lymph dilates the chyle in the thoracic duct; but cutaneous absorption attracts medicines applied to the skin; and, perhaps, some principle from the air, as yet unknown.

OF ACTIONS COMMON TO EACH SEX.

THE ACTIONS WHICH SERVE FOR THE PROPAGATION OF OUR SPECIES ARE CALLED SEXUAL—AS

IN MEN,

The secretion of the semen.

IN WOMEN,

Menstruation.

Conception.

Evolution of the embryo.

Pregnancy.

Labour.

Child-birth.

USE.

For propagation: for if man could not propagate his species, human kind would have continued one age only.

THE

* See the Experiments and Demonstrations of *Ab. Kaaw Boerhaave*, and the illustrious Anatomist *Meckell*, who has shewn that some of the lymphatic absorbents communicate with the sanguiferous veins.—This the Hunters, their followers, and *Hewson*, deny. Future experiments must determine the truth. The contending on the subject is loss of time to little purpose, as it cannot be of great importance in the cure of diseases. The glory of the discoveries, which the Hunters have assumed, are not strictly consonant to truth, which numerous Authors prove by antecedent writings.

THE SECRETION OF SEMEN.

The extremities of the spermatic arteries constitute the organs for the secretion of semen, which is deposited in the serpentine vessels, forming the pulpy substance of the testis.

The semen is carried from these serpentine vessels into the epididymis, then to the vas deferens, from which it passes into the vesiculæ seminales.

The semen is propelled forwards by the formation of new semen, and by the contraction of the cremaster muscle, which surrounds the spermatic chord.

The semen collected in the vesiculæ seminales, excites a desire of emission, either by its quantity, or a peculiar stimulus, amorous ideas, &c.

Thus veins of the cavernous substance of the penis are contracted by nervous influence, by which contraction the arterial blood is compelled to go into the cells of its substance, whence the penis begins to distend, becomes warm, firm, and excited to coition.

When the penis is quite erect, the vesiculæ seminales are contracted by a convulsive motion; thus the semen is propelled through the ejaculatory ducts with very great impetus into the urethra, from which, by the action of the accelerator muscles, it is thrown to a great distance.

About the time of emission, from the extreme degree of erection, the nervous membrane of the glans penis suffers great extension, from which the utmost sense of venereal pleasure arises.

Then, at the time of ejection, the juice of the prostate gland is mixed with the semen, and thrown out with it.

Thus, during coition, the semen is thrown into the cavity of the uterus, and its volatile part seems to ascend the Fallopian tubes to the ovaria.

When the semen is emitted, the nervous influence is diminished, the penis ceases to be erect, and a languor is perceived all over the body.

USE.

The semen contains a principle, by which the embryo lying inactive in the female ovulum, seems to be vivified and animated.

MENSTRUATION.

Menstruation is a secretion of blood from the uterus, which happens to women every month.

The extremities of arteries in the fundus uteri seem to constitute this secreting organ.

The cause of this discharge either remains unknown, or proceeds from a peculiar fulness of the uterine vessels; this seems to be occasioned by the structure of the uterus.

This evacuation, in our climate, begins about the fourteenth year, and discontinues at the forty-ninth, or fiftieth.

The menstrual blood can scarcely be called corrupt, if a woman be in good health, and free from disease.

But the menstrual blood differs in quantity, time of discharge, duration of continuance, beginning and end, as well as in the symptoms which precede or accompany it; according to the season, habit of body, climate, kind of living, exercise, &c.

USE.

The menses render women fit for conception, and the nutrition of the foetus.

CONCEPTION.

Coition is an embrace between man and woman, in which the man, by his erect penis introduced into the vagina of the woman, throws the semen into the cavity of her uterus.

In coition, by nervous influence, the nymphæ and clitoris of women become erect; the uterus is turgid with blood, and the Fallopian tubes become rigid: they are distended, and embrace the ovarium by their fimbriæ, which are spread out, and applied to the most projecting vesicle at the mouth of the ovarium.

In women, during the greatest degree of erection, they suddenly emit a great quantity of mucus, which is improperly reckoned female semen; after which, all the erected parts collapse, except the fimbriæ of the Fallopian tubes, which remain applied to the ovaria for some days.

Besides, the projecting vesicle of the ovarium, which is in the greatest state of maturity, becomes turgid, and at last is broken, out of which comes an ovulum; at first, inconsiderable: this is received by the mouth of the Fallopian tube, and carried into the cavity of the uterus by a peristaltic motion.—Cruikshank says, the peristaltic motion is upwards till the ovum is impregnated; after which it is downwards.

The vivified ovulum is thus carried into the uterus, where it receives its coverings, and is increased.

USE.

By a successful coitus, the ovulum receives life, and is carried into the cavity of the uterus.

EVOLUTION OF THE EMBRYO.

The vivified ovulum, carried from the vesicle of the ovarium into the cavity of the uterus, seems already to consist of three membranes, the liquor of the amnion, the placenta, umbilical chord and embryo.

But all these parts are so small and transparent, that in the first few days they cannot be distinguished.

The semen seems to excite the heart of the embryo to motion; it then begins to move the humours in the aorta, and all the vessels: thus the humour goes into the heart from the vena cava and pulmonary vein, and the first circulation of humours begins.

Then the ovulum, by conception, being shut up in the cavity of the uterus, in the first days, swims in a liquor which it attracts: thus the liquor of the amnion is increased, and the ovulum becomes large enough to fill the cavity of the uterus.

The external surface of the ovulum then adheres to the internal surface of the uterus, and surrounded by the fibrous texture of the ovulum and uterus; the superior part of the ovulum, which contains the placenta, concretes with the vessels of the uterus, so that the vessels of each are joined by anastomosis.

Thus the blood of the mother flows from the uterus into the placenta, and thence through the umbilical vein of the chord into the embryo; but that part of the blood, which is not used for nutrition, returns by the umbilical arteries of the foetus into the placenta.

By this passing and re-passing of the blood, all the vessels of the foetus are longated, dilated, and nourished; thus the foetus, and all its parts continually increase till delivery.

The diversity of appearance of the embryo seems to consist in the difference of stimulus in the semen; but it is not known how this is effected.

Nutrition is conveyed to the foetus, both by the umbilical vein; and, perhaps, by the liquor of the amnion.

The foetus has no excretions; that is, neither urine nor faeces: nor does it perspire.

RESPIRATION OF THE FOETUS.

As long as the foetus is in the uterus, it does not breathe, nor is it affected by the air.

CIRCULATION OF BLOOD IN THE FOETUS.

The blood of the umbilical vein comes partly from the vena portarum, and partly from the canalis venosus, which goes from the vena porta into the vena cava; but the lungs, being contracted and collapsed, the greatest part of the blood passes through the foramen, ovale, and canalis arteriosus: a very small part passes through the lungs; the most considerable part of the blood is returned into the placenta by the umbilical arteries.

SLEEP AND WAKING OF THE FOETUS.

The continued motion of the embryo, and cause of sleep being wanting, occasion it to be continually awake.

SITUATION OF THE EMBRYO.

In the first months of pregnancy, the head is uppermost, and the face forwards; but in the latter months, on account of the increased weight of the head, it is downwards, and the face backwards.

The external surface of the foetus is smeared over with a fatty substance, secreted by the cutaneous glands, by which it obviates the macerating quality of the liquor of the amnion, and is more easily delivered at the time of birth.

The cranium of the foetus has membranous sutures; and the bones consist of different portions, that the head may be compressed, and diminished in size, during the time of delivery.

The life of the foetus consists in the circulation of blood, which takes place at the very moment of conception.

But the animation of the foetus consists of the conjunction of body and mind; hence, this may take place at the same instant of conception, or at the first respiration after birth; since no animal life can exist without a soul.

According to the number of female ovula, in a state of maturity—one, two, three or four foetus are impregnated by a single coitus.

SUPERFETATION

Is the impregnation of a woman already pregnant, which usually happens from the uterus being double.

MONSTERS

Seem to be occasioned by a præternatural formation of the embryo.

PREGNANCY.

Soon after conception, the orifice of the uterus contracts, and is closed by a viscid humour.

The uterus then becomes larger and heavier; and in the first month, occupies part of the pelvis; but in the latter months, being much increased in size, it occupies most of the cavity of the abdomen.

The menses cease; the breasts swell a little: pregnant women frequently vomit, and suffer other inconveniences, which arise from compression of the viscera, increased irritability of the body, retention of the menses, and stimulus of the foetus.

At

At the third month, the abdomen begins to swell above the pubis, increasing more and more till the eighth month: at the fifth, a motion of the foetus is perceived, the orifice of the uterus becomes softer, thinner, and rounder; and, at the last month, it opens.

The os uteri is tuberculated, during pregnancy.

The thickness of the uterus remains nearly the same; the cartilages of the pelvis becomes softer; the vagina abounds in mucus.

The time of pregnancy, allowed by Nature, is nine solar months; but, now and then, it is longer or shorter.

USE OF PREGNANCY.

That the foetus may be surrounded, and come to maturity; to be able to bear the inconveniences of the air, and fit to support life.

LABOUR.

When the time of pregnancy is at an end, labour follows; the cause of which is not thoroughly known.

THE PHENOMENA WHICH PRECEDE, ACCOMPANY, AND FOLLOW IT, ARE AS UNDER:

1. The pregnant woman, for some days before delivery, feels slight pains about the loins, the belly descends a little; the orifice of the uterus, which was almost obliterated, becomes larger, is found situated lower in the pelvis: she is more frequently excited to void urine; walks with greater difficulty; and a tenacious viscid humour is discharged from the vagina.

DELIVERY IS KNOWN TO BE COMING ON, AS FOLLOW:

2. When labour begins, the woman is seized with pains about the loins, which return stronger at intervals; the uterus and abdomen contract; the orifice of the uterus enlarges more and more; a bladder, containing the foetus and liquors, protrudes through the orifice, the top of the head of the foetus presses downwards in the liquor, and oblige the woman to take longer inspirations; the pulse becomes stronger and quicker; the face turns red, and perspires; the parts of generation swell.
3. All these gradually become more violent; at last the woman calls out: during her cries, a great quantity of viscous humour comes from the vulva, which is tinged with blood; she feels a very violent tenesmus, which, in a great measure, keeps up her spirits.—Every effort of the body is used to expel the contents of the uterus; then a small portion of the liquor of the amnion is discharged, on the membranes being ruptured; soon afterwards the head of the foetus descends a little out of the vagina, which is propelled more and more by the violent pains; the child then follows, with the remaining part of the fluid.

4. Thus, all the phenomena suddenly cease, and a temporary ease follows, which is short of continuance; for soon afterwards new pains come on, and the placenta, with the membranes and umbilical chord of the ovum are expelled, which should be drawn away gently with the hand; the delivery of the placenta is followed by a discharge of pure blood for some hours, which afterwards becomes serous or milky, and is called the lochia.

The proximate cause which excites the labour pains at the ninth month is not known: whether does it proceed from the extrication and extreme extension of the fibres of the uterus, the quantity of collected fluids, or the weight of the foetus?

The parts which assist in the delivery of the foetus are divided into active and passive.

THE ACTIVE PARTS ARE

1. The uterus, which contracts its body and fundus by muscular power, the orifice is thus dilated, and the contents of the uterus are propelled through its orifice and the vagina, in which there is no resistance.
2. The abdominal muscles and diaphragm, which contract like a press, and force downwards every thing contained in the uterus into the cavity of the pelvis, where it is contained like a wedge.

THE LIQUOR OF THE AMNION AND THE FOETUS ARE THE PASSIVE PARTS.

Though they act upon the inferior segment of the membranous ovum which protrudes out of the orifice of the uterus in form of a bladder, and is distended by the liquor of the amnion, which at last breaks,

The ovum, filled with the liquor of the amnion and the head of the foetus, dilates the orifice of the uterus and the vagina more and more: from this dilatation, the labia majora are drawn inwards; but the os coccygis is pressed backwards by the head passing out, which takes the curve of the os sacrum going between the bones of the pubis.

CHILD-BIRTH.

When the child is delivered, the cavity of the uterus contracts, by which means the placenta and membranes of the ovum adhering to it are separated and expelled. The navel string is tied and cut.

The lochia flow chiefly from the arteries of the uterus, to which the placenta adhered: but these vessels, dilated during pregnancy, contract very much; the uterus, abdomen, and pelvis, soon recover their former size, especially if the abdomen be properly bandaged.

About

About the fourth day after delivery, the breasts, which had begun to be distended towards the end of pregnancy, become hard and painful from the great quantity of milk contained, the papilla becomes erect, and a fever comes on, called the milk fever.

The breasts are emptied of the milk by the sucking of the infant, which is very agreeable to the mother; it removes the inconveniences from the breasts being distended, and prevents unpleasant symptoms which would arise from the regurgitation of the milk.

After some months, giving suck, becomes unpleasant to the mother; and the child, desiring firmer food, begins to reject it, which is the time for weaning.

THE AGES OF MAN.

A man's life seldom continues above seventy years; which usual stage of life is divided into seven ages, of which each has its metamorphosis:

FIRST, THE AGE OF EMBRYO,

Whilst it lives in the uterus for a space of nine months: the embryo, at first, is like a mucous, in which are observed a white line, called Malpighi's ridge, and which seems to be the system of the brain; also, a red point called punctum saliens, which is the heart of the embryo.—This small being, in the space of nine months, increases to the weight of eight pounds.

SECOND AGE IS INFANCY,

Extending from the first to the seventh year; the first phenomena observed are the following, soon after a child is born:

1. It breathes, and cries on account of the air irritating the lungs.
2. Whilst crying it discharges the meconium and urine.
3. On being put to the mother's breast, it compresses the nipple between its lips, and sucks the milk.
4. It sleeps very much.
5. It opens its eyes, but does not see, on account of the pupillary membrane not being removed.
6. Neither does it hear, from the narrowness of the meatus auditorius; nor smell, because the pituitary sinuses are not yet formed.

THE CHANGES WHICH HAPPEN IN THE CHILD'S BODY AFTER BIRTH ARE

1. The umbilical chord tied near the navel, which, after a few days, becomes dry, and falls off at the navel, leaving a cicatrix.

2. The lungs, which, in the foetus, were of a dark-brown colour, solid, and sinking in water, become light, spongy, large, whitish, swimming in water, and full of air, which shews that the infant has breathed.

3. The canalis arteriosus and foramen ovale, gradually concrete; the blood then passes upwards more easily into the dilated and soft pulmonary arteries.

4. In like manner also the umbilical vein and arteries, and urachus of the bladder, gradually concrete, and are not distended by any humour passing through them.

5. The liver, which, in the foetus, is swelled, gradually becomes smaller, and situated under the ribs; the stomach increases in length, the great intestines are dilated, and the intestine, called caecum, is formed by the weight of faeces.

6. The bones are mostly cartilaginous; the apophyses are hardly formed; all the epiphyses and apophyses of bones are enlarged more and more by the action of the muscles.

7. The heart more irritable, larger, and stronger than the vessels; whence, the pulse is quicker in infants, and the vessels found in greater quantity at every part.

8. The brain and nerves are larger; whence, the sensibility and irritability of infants is more considerable than of adults.

9. The sutures and fontanella of the cranium gradually concrete.

10. All the glands are larger, and abound more in gelatinous humours.

11. The skin is fine, smooth, and thin; also, much fat is observable.

12. At the sixth month, the first teeth come, which, until now, were in the alveoli of the jaws; at the third year, the first dentition is completed.

13. In the second year, the muscles becoming stronger, the infant begins to go alone; at the beginning of the third year can talk, and gradually becomes informed.

14. When the first dentition is complete, the infant refuses the breast, chews soft food, becomes diverting, and full of ingenuity, considering its age.

THIRD AGE IS CHILDHOOD,

Which continues from the seventh to the fourteenth year; at the seventh, the first teeth fall out, and the second set gradually come forward; there is frequent desire of food, and fondness of trifles, action, and loquacity; the humours are carried to the head in considerable quantity.

FOURTH AGE IS YOUTH,

Which continues from the fourteenth to the twenty-first year: after the fourteenth year, the breasts of girls begin to swell, the vulva to enlarge, and the menses to appear.

At

At the time of puberty, the voice is also found to become graver; a moss-like hair springs up about the pubis; semen is secreted in the testicles, and venereal desires are excited; juvenile audacity is experienced by the timid youth; the ingenuity and memory are in a great degree of perfection: and, at the twenty first year, both sexes cease to grow taller; the beard comes on the chin, and hairs on the axilla.

FIFTH, OR ADULT AGE,

Lasts from the twenty-first to the thirtieth year; all the members become more firm and perfect; also, the teeth, called dentes sapientiae, are found to arise.—The male sex now become marriageable; but the female were fit for marriage at the latter end of the juvenile age.

SIXTH AGE, OR MANHOOD,

Which continues from the thirtieth to the fiftieth year, or until baldness. In this stage of life, the utmost strength of body and mind is observed; the catamenia ceases about the forty-fifth year; and women become incapable of bearing children.

SEVENTH, OR OLD AGE.

From the fiftieth to the sixtieth year, man begins to grow old; the hair becomes grey; the sight and hearing are diminished; proper names are, with difficulty, retained in the memory; the venereal desires are less; and many die about the sixty-third year.

EIGHTH, OR DECRIPED AGE,

From the sixtieth to the seventieth year, or longer, in which

1. The body becomes lean, rigid, and bent.
2. The skin is opake, and full of wrinkles about the forehead.
3. The hair becomes grey, and the head bald.
4. The cheeks are pale.
5. The muscles are tough, hard, and almost tendinous; the ligaments are rigid; the bones liable to break; the sutures of the cranium obliterated; the cartilages and tendons ossify.
6. The teeth become loose, raised up, and few in number.
7. The heart is proportionally smaller, weaker, and less irritable; the small vessels are fewer, and the larger ones dilated.

8. The brain and nerves are drier, less irritable, and sensible.

9. The eyes become less convex.

10. The glands of the testicles and ovaria waste away.

11. The vital actions become more tardy; the pulse, which, in infancy, beat one hundred and fifty times in a minute; in advanced age, is scarcely fifty—the heat of the body decreases.

12. The animal actions and muscular power diminished by rigidity: the joints tremble, the knees totter, the feet frequently stumble, the external senses are dull, and the internal diminished, the memory is weak, and the mind forgetful.

13. As to the natural actions, the appetite is small, digestion slow, and a smaller quantity of chyle is carried into the blood, on account of the fewness of the lacteals: hence, there is little nutrition; all the secretions are diminished, from which follow decrease of the body, leannes, paucity of humours, which are acrid, and loaded with earth.

14. The sexual actions, at last, cease; the male no longer secrets semen, nor has erection; and the female has no menstruation; they become barren.

DEATH.

The natural mortality of man is estimated, that one in thirty-six dies every year, generally.

Præternatural death differs—as to age, sex, climate, diseases, and accidental causes.

The proximate cause of a natural death is a gradually increasing rigidity of the fibres, by which the irritability of the heart and motion of the blood gradually cease.

The soul then leaves the body, and goes to where GOD has assigned it, though unknown to man.

The signs of death are—loss of pulsation in the heart and arteries, cessation of respiration; the sensibility, and irritability of every part is so far gone, that they cannot be recalled, the body becomes cold and stiff; soon afterwards a peculiar cadaverous foetor is exhaled from it.

The lot of a cadaver, or dead person, is to be buried in the earth, in which it returns, by putridity to the principles of which it was composed.

The soft parts soon pass off, or mix with the earth; but the bones, which require more time to be deprived of their gluten, are longer of dissolution.

ADDITIONAL OBSERVATIONS.

It may be necessary to add some few observations on the human functions :

DIGESTION OF FOOD,

Softened and prepared by mastication, and passed through the oesophagus into the stomach.

It has been denied, that fermentation has any existence in digesting aliment, contrary to many experiments, and received opinions of many great men; and particularly those of the learned Dr. Mackbride, &c.

The food, if well chewed before it passes into the stomach, is already soft, and almost chyme, from the addition of fermenting drinks, or other fermenting substances, where it undergoes an *intestine motion*; and acid air, in eructations, is frequently forced up the oesophagus, which every person, almost, experiences: and likewise rancid oils of strong fish, &c. are again perceived, after being in the stomach many hours—as bacon, sprats, herrings, &c. from ventricular commotion of the particles to be prepared for passing the pylorus.

How far that intestine motion, the heat of the stomach, and action of respiration advance digestion in forming chyme, is not ascertained; but the stomach, during this action, is frequently enormously distended by air, especially by leguminous food, sweets turned sour, &c. If the matter be thrown up, it has a sourish taste.—This looks like ferment.

The celebrated and ingenious *Stevens, Reaumur, Spallanzani, Scopoli, Brugnatelli, Caramini*, and others, assert, that no fermentation takes place: but the whole process of digestion is performed by the solvent powers of the gastric juice.

As to the gastric juice, it is next to impossible to collect any such fluid. I cannot conceive any other liquid but that which is poured forth from the mouths of minute exhalent arteries, opening on the internal surface of the stomach, which, by experiments made by myself, seem to be something similar to the vaporous exhalations of other parts, chiefly composed of water, a little muriatic salt, &c. in short, similar to the finer serum of the blood.

The experiments made by those ingenious Philosophers, do not justify the conclusions drawn. Some are on animals different from men; and what they have called gastric juice, must have been various mixtures in the stomach. Some assert, it is acid; others, alkaline: but *Spallanzani* asserts, that it is neither acid, nor alkaline.—Hence, the incongruity of their doctrines.

WARMTH OF THE STOMACH,

A POWERFUL AUXILIARY.

The warmth of the stomach, with very little other assistance, acting on the fine masticated solids, and moistening fluids, taken as foods, may, in general, produce the

chyme, that pappy substance, in the same manner as Papin's digester, by a very gentle heat, dissolves meats, bones, vegetables, &c. Amidst these jarring and opposite articles of food, composed of animal, vegetable substances, and fruits; beer and wine, an intestine motion, similar to fermentation; and gentle heat may produce the effect. It is, however, only mentioned as a rational conjecture, that may be easily imitated in a closed glass vessel, and a very moderate sand heat.

Digestion has been accounted for, variously, in all ages, according to prevailing systems and opinions; but it still is considered, by many, obscure. In a practical point of view, it is much better to know how, by antacids, &c. flatulency, with acid air, may be neutralized and protruded through the pylorus; and how, by tonics, the weakened nervous stomach may be restored to vigour, and enabled to resist that distressing distension, which, in some instances, has produced even apoplexy, and sudden death, than to waste time in unprofitable speculations, of no practical utility.*

RESPIRATION.

Investigations on respiration have been attended with some success; and noxious, or destructive particles of different air, have been explained in a manner that do the highest honour to the ingenious and laborious researchers into these fugitive, invisible, floating [†]airs, or gasses.

To assert that the changes of the blood in the lungs from respiration were unknown, as some have lately; and that air and water were considered by the ancients, and many moderns, amongst the most simple elements, until now, are assertions not strictly consonant to truth. The ancients knew both water and air to be compound bodies; and many differences in those fluids were not unknown to Hippocrates.

Facitious airs, destructive to animals, were well known to the Honourable *Robert Boyle*, and many other Philosophers; and that the atmospheric air was a compound heterogeneous body, dependent on exhalations, vapours, &c. composed of innumerable discordant particles.

GASSES UNRESPIRABLE.

The air, or gasses, which human beings cannot respire, and which close the epiglottis, if applied to it, is *carbonic acid gass*, or fixed air, and other *acid gasses*, according to *Rosier*. The first of these airs prove fatal instantaneously, and extinguish the flame of a flambeaux, not leaving the least spark; which I have seen in *la Grotta del Canc*, near Naples. The same happens in mines, and was called choke damp. This air being much heavier than the atmospheric, cannot ascend: and I have sat in that famous grotto, near the *Lacus Avernus* of Virgil, a considerable time, unhurt, viewing

* I have made some experiments, that may hereafter be submitted to the consideration of the learned, on the processes of Digestion, Chylification, &c.

[†] Gas was a word first used, I believe, by the ingenious *Van Helmont*, who, though despised by many of his time, is now appearing the creator of a term that has an extensive latitude.

viewing the deleterious effects on different animals, in suspending life, &c.

The *hydrogen* and *azotic* gasses, prove fatal; but are said to produce no change in the blood.

The *carbonated hydrogen*, *carbonic oxide*, and, perhaps, *nitrous* gas, may be breathed—but kill—and produce changes in the blood.

The *oxide* of *azot*, and *oxygen* air, or *gass*, may be breathed some time, without destruction; but death ensues at last.

The atmospheric air, which is a compound, perhaps, not yet perfectly ascertained; and liable, from various circumstances, to a change of component particles, is the only air human beings can long continue to respire.

Numerous experiments have been made on these gasses, and some hasty conclusions drawn; but still they require succeeding investigation.

It has been well known, that *pabulum vite* of the ancients, or vital air of the moderns, changed the colour of the blood in the lungs; and we know little more now.

In respiration, a certain portion of vital air, or oxygen, disappears, and is absorbed by the inhalent minutest veins, opening on the surface of the bronchial vessels and vesicles, and is conveyed to the larger branches of the pulmonary veins, producing a change in the blood, before it enters the left auricle, in its progress to the aorta.

CARBONIC ACID GAS IS EMITTED,

A great part of which, according to my opinion, is nothing but the exhaling vapour from the oscula of the minutest arteries opening on the surface of the bronchia, which unites with the air expired.

Several ingenious investigators, particularly Lavoisier, who says, that about 15.73 oz. troy weight, of carbonic acid is emitted in twenty-four hours: but Mr. Davy says, that thirty-seven ounces is the quantity excluded.

The changes that are produced in the blood, according to Priestly, Cigna, Hasselstratz, Beddoes, Watt, and particularly Mr. Davy, are

1. The blood absorbs vital air.
2. It acquires a florid red colour, and the chyle disappears.
3. It emits carbonic acid gas, and perhaps carbon.
4. It emits water, and perhaps hydrogen.

Lavoisier, and others, from not being accurate Physiologists, though great Chemists, do not seem to know, that it has been proved, that exhalent arteries in the bronchia send forth fluid.

For the different hypotheses, and various experiments, see those of Dr. Black, Priestly, La Place, Green, Girtanner, Hasselstratz, Lavoisier, Crawford, La Grange, and others, who may be consulted, but do not agree on this abstruse subject; and have left it little better than they found it, in many particulars.

Do not light, caloric, and electric fluid, enter the lungs in inspiration with the atmospheric air? Do they not act

as a stimulus, and keep the lungs in action? Do they preserve the free circulation of the blood?

THE ACTION OF THE KIDNEYS.

The Chemical Experimentors assert, that a chemical change is produced in the kidneys: for there are two substances in the urine, not existing in the blood—urea and uric acid, supposed to be formed in the kidneys. Some light might be thrown on this subject: if the blood, proceeding from the emulgent artery, and after the secretion in the kidneys; what passes into the emulgent veins, were well comprehended. All analyses; however, on dead substances, may be different to what they were in the living human body: and, hitherto, they have not much improved practical science, either in accounting for causes and effects, or in the cure of diseases, but have done much mischief by false conclusions, and misapplication.*

PERSPIRATION.

Without perspiration, the human body would be over loaded with noxious particles.

Sanctorius continued experiments on this subject above thirty years, and illustrated it.

Kaaw Boerhaave proved, that perspiration was universal, both internal and external passing in the form of vapours; and that inhalation was equally performed through the whole system.

The greatest perspiration has been calculated at 52.89 ounces in twenty-four hours: but there must be a great difference in different constitutions, seasons, ages, sexes, and climates.

It is increased by drink; is most, immediately after full meals, and rises highest during digestion, according to *Fourcroy*.

Profuse perspiration diminishes urine; and this latter evacuation, the former. *Tillet*, *Cruikshank*, *Jurine*, *Ingenhousz*, *Mills*, and *Fordyce*, have all endeavoured to explain this subject.

It appears that carbonic acid gas is emitted—water, marine salt, which may be tasted in the sweat; and some have supposed, that oxygen gas is absorbed. Besides the particles mentioned, there is an oily matter, an acid, and phosphat of lime.

It has been doubted, whether the skin absorbs; but turpentine liniments, garlic, and other odoriferous substances, applied to the skin, places the fact beyond doubt, for they cause the breath and urine to smell, &c.

The lungs, likewise, in moist air, carry humidity to the blood, and increase the weight of human beings.†

OF ASSIMILATION.

It has been observed, that blood, by means of the pulsating arteries, supplies the waste of the whole human system.

The

* What have the projects of the *fixed air*, or *carbonic acid gas*, done in putrid fevers, or cancerous ulcers? What has the *vital air*, or *oxygen gas*, done in ulcerated lungs, phthisis, pulmonafis, or pulmonary consumption—the *cow-house* practice, or other conceits of unexperienced visionists—or the *nitrid acid* in confirmed venereal infection? Have not all those, who have been sufficiently credulous to espouse these Chimeras, reason to lament the loss of time, and sometimes of life, while they administered these untried supposed specifics. Unfortunate are the patients who became victims to such, and other irrational novelties.

† The *Abbe Fontana* has observed this.

The process by which the different ingredients of the blood are made part of the various organs of the human body, is called **ASSIMILATION**.

Every assimilating organ produces a specific change—as the stomach, the attracting powers of the lacteals, conveying chyle through the mesenteric glands to the receptaculum chyli, thoracic duct, &c. and the conversion of chyle into blood by the assimilating organs, the blood vessels, &c.

Parts which did not belong to one another, provided they be similar, assimilate, or unite—as muscle to muscle, bone to bone, as Mr. J. Hunter and Bovina, and surgery practice long have proved. Healing of disunited parts, by the first intention; and adhesions, after inflammation, all shew assimilation and cohesion, even of parts that were before detached—as the pleura to the lungs, the surface of the liver to the diaphragm, which I have explored by dissections of Dr. Hooper, at the St. Marylebone Infirmary, in numerous instances:

1. Blood and arterial action supply all secretions.
2. Deposition of different particles supply new daily, from the *oscula*, or minute mouths of arteries; attraction, cohesion and consolidation, follow, according to the supplies wanted to renew all parts, from the hardest to the softest.
3. The wasted parts are all excluded by outlets; for the particles, forming the body, never remain stationary in health.
4. There is a constant loss, and a constant supply of new particles.
5. So that in a certain time, what particles formed the former man, no longer exist in the same body.
6. The form and identity of person continues similar to original formation and figure, during healthful assimilation; but defects in assimilation and morbid changes in the blood may not only change external appearances, but be the cause of great deviations in mental indowments and disposition.
7. No particles of the body, contained heretofore, exist at certain periods.—Man, therefore, physically considered, is not the same man he was—Which might furnish a curious argument in law.
8. The defective assimilation and reparation of the assimilating organs, leads, in old age, to defects in the natural, vital, and animal functions; and, lastly, is productive of death, even without any accidental causes, as acute diseases, &c. which may prove fatal at any time of life.

DECOMPOSITION AND PUTREFACTION OF ANIMAL BODIES AFTER DEATH.

The spontaneous destruction of animal bodies, after death, is denominated *putrefaction*; which Beecher, Stahl, Boyle, Beal, Sir J. Pringle, Macbride, and others, have described with important experiments, and observations:

1. Animal substances require moisture, and a certain degree of heat, for the putrefactive process.
2. Animals may be kept long in a freezing temperature, without change; and ice, packed with fish, or other animal substances, prevent change for a considerable journey.

* We had shocking instances of the destructive effects of the poor buried together, covered with long folding doors, near the Old Infirmary, Marylebone, where putrid fever was almost constant: and the worthy Mr Varenne, apothecary, and his wife, fell victims to its baneful influence; many nurses, and others—though many were saved by spirited modes of cure adopted.—See *Treatises on Putrid Sore Throat*, &c.

† See *Schola Medicinæ*, Latin Edition, where the Egyptian and modern Methods of Embalming are fully explained.

PUTREFACTION IN THE AIR.

1. The colour becomes gradually paler, and its consistence diminishes.
2. Flesh softens, and a serious matter exsudes, or sweats out.
3. The texture of the part becomes relaxed, and its organization destroyed.
4. It gradually acquires a disagreeable smell; and as the substance sinks down, and is diminished in bulk, its smell becomes stronger and ammoniacal.
5. The matter effervesces with acids, and if enclosed some little time, converts syrup of violets, green.
6. If the air be admitted, the urinous exhalation is dissipated, and a peculiar putrid odour is spread around with impetuosity, a smell of the most insupportable kind, which lasts long, and pervades every place, affecting the bodies of **LIVING ANIMALS**, after the manner of a ferment, capable of altering the fluids.—This smell is corrected by ammonia.
7. When the matter is volatilized, the putrefactive process becomes **ACTIVE** a second time, and the substance suddenly swells up, becomes filled with bubbles of air, and soon after subsides again, smelling horribly.
8. The colour changes, and the fibrous texture of the flesh is scarcely distinguishable, and the whole is changed into a soft brown, or greenish matter, of the consistence of a poultice, whose odour is faint, nauseous, and very active on the bodies of living animals, producing putrid complaints.*
9. The odorant principle gradually loses its force, the substance becomes deeper coloured, and rather deliquescent; and being rubbed between the fingers, breaks into a coarse powder, like earth.
10. This is the last state of putrefaction, but requires a considerable time before animal substances assume this form.—*Fourcroy*.

PRODUCE OF THE DECOMPOSITION.

1. Hydrogen gas, holding sulphur, phosphorus, and carbon in solution.
2. Ammonia, water, carbonic acid, and perhaps azotic gas.
3. Nitric acid seems, in some cases, to be formed, and emitted.
4. The earthy residuum consists of fixed parts of the animal substance, mixed with charcoal, oil, and ammonia.

PUTRIFICATION UNDER THE EARTH.

1. Proceeds more slowly; but difficult to ascertain.
2. The abdomen bursts, and emits a horridly foetid and nauseous gas; at the same time, a dark coloured liquid flows out.
3. When many be buried together, the soft parts are diminished in size, and converted into a saponaceous matter, by their parts acting one on the other. This was first observed in 1786, at the burial-ground of the Innocents, at Paris.—*Fourcroy*, An. de Chim. v. 154.
4. There are various modes of preventing animal putrefaction, which come under the head of embalming dead bodies.†

PATHOLOGY,

PATHOLOGY.

CONSPECTUS OF PATHOLOGY.

ON PATHOLOGY IN GENERAL.

NOSOLOGY

ON NOSOLOGY GENERALLY.

SIMPLE DISEASES OF THE SOLIDS, AS

Diseases of cohesion,
elasticity,
irritability,
sensibility.

ORGANIC DISEASES OF THE SOLIDS.

Diseases of number,
diameter,
magnitude,
figure,
situation,
connection,
contistence,
substance,
colour,
heat,
the surface,
gravity,
the fluids
cohesion,
quantity,
acrimony,
degeneration,
a mixed kind,
change of place,
retention,
excretion,
secretion,
motion.

ON THE DIVISION AND DIFFERENCE OF DISEASES IN GENERAL.

ÆTIOLOGY.

ON THE CAUSES OF DISEASES GENERALLY.

The proximate cause of diseases,
exciting,
predisposing.

SYMPTOMATOLOGY.

OF SYMPTOMS GENERALLY.

Of external and
internal symptoms.

SEMIOTICA.

ON THE SIGNS OF DISEASES GENERALLY.

The diagnosis,
anamnesis,
prognosis.

THERAPEUTICS.

On the cure of diseases in general,
in particular.

Hygiene.
Pharmacy,
Surgery

ON PATHOLOGY GENERALLY.

PATHOLOGY is a science, which teaches the doctrine of
external and internal diseases, their causes and effects.

It is divided into general, which treats of diseases generally,
and into special, which considers each disease
separately.

A a a

General pathology is divided into five parts.

1. *Nosology*, or an account of the name, division, and difference of diseases, which require to be as intelligible, as possible, and without quaint phraseology.
2. *Ætiology*, or on the cause of diseases.

3. *Symptomatology*

3. *Symptomatology*, or on the symptoms of diseases.
4. *Semiotica*, or on the signs of diseases.
5. *Therapeutica*, or on the cure of diseases.

Therapeutics, are subdivided into three parts.

1. Hygiene, on the food and regimen of natural things in the human body.
2. Pharmacy, on medicines.
3. Surgery teaches how to cure diseases, by the hands and instruments. The Therapeutics will hereafter be published, and all the experience of near fifty years be unreservedly communicated.

NOSOLOGY.

Nosology is a science which points out the denomination, differences, and divisions of diseases.

A disease is a preternatural state of any part.

Diseases acquire names, from their disposition, first symptom, or promixate cause, or from their situation, as the cholic being usually in the colon, &c. &c.

The primary division of diseases is,

1. Into simple diseases of the solids.
2. organic.
3. diseases of the fluids.

SIMPLE DISEASES OF THE SOLIDS.

Simple diseases of the solids are preternatural states of the power, which the fibres of our body exert.

The primary strength of parts is,

1. Cohesion,
2. Elasticity,
3. Irritability,
4. Sensibility.

DISEASES OF COHESION, CONCEIVED BY THE NEWTONIAN DOCTRINES OF ATTRACTION AND REPULSION.

Cohesion, or the attraction of the elements, which constitute a fibre, can be unnatural in three ways,

1. By too small a cohesion.
2. too great a cohesion.
3. defect of cohesion.

Too small a cohesion of the elements of the fibrillæ cohesion, in the soft parts, is called laxity of fibres; but in the bones it is named mollities.

Cohesion of the elements of the fibrillæ, when too considerable in the soft parts, is called rigidity of fibres; but the same in the bones is named fragility.

A defect, or loss of cohesion in the soft parts, is called tabes, but in the hard parts, it forms a powder.

DISEASES OF ELASTICITY.

The elasticity of elastic parts, constitutes a disease, by excess or diminution.

Excess of elasticity, is called too great a contraction of fibres.

Defect of elasticity, is an inactive state of the fibres.

DISEASES OF IRRITABILITY.

Irritability of muscular fibres, can be improper by excess, or defect, too great, or too little mobility.

Excess of irritability, is too great a mobility of the muscular fibres.

Defect of irritability, is a torpid state of the muscular fibres.

A preternatural contraction of muscular fibres, is called a spasm; and a preternatural immobility, or inaction of them is paralysis. All these are applicable to all moveable parts.

DISEASES OF SENSIBILITY.

Excess of sensibility, is called pain, or an unpleasant sensation.

Defect of sensibility, is named insensibility or anodynia.

ORGANIC DISEASES OF THE SOLIDS.

Organic diseases of the solids are preternatural states of the visible qualities, in the solid parts of our bodies.

The visible qualities of the organs of our body are, number, diameter, magnitude, form, situation, connection, consistence, substance, colour, heat, smoothness, and gravity.

DISEASES OF NUMBER.

The number of any part may be improper, by excess, or defect.

The number exceeds if there be six fingers, three testicles, a double penis, or two heads.

The number is deficient if a finger, leg, arm, penis, or nose, be wanting.

DISEASES OF DIAMETER.

The diameter of vessels, or other cavities, may be improper by excess, or defect of their natural size.

The diameter being increased, is called a morbid excess.

The diameter of containing parts being diminished or obliterated, is called a morbid narrowness.

There are seven species of morbid excess.

1. *Eurisma*, or a preternatural dilatation of the vessels, and other cavities, as in the true aneurism, varicose vessels, and the ascites.
2. *Phlogosis*, or a preternatural dilatation of all blood vessels, which brings on heat and redness, as may be seen in every inflammation and long erythema.
3. *Anastomosis*, or a preternatural dilatation of the orifices, or mouths of vessels, such as is observed in some hæmorrhages, and in the rings of inguinal herniæ.
4. *Diapedesis*, or a preternatural dilatation of pores in the sides of vessels, or cavities, which transude the humours they ought to contain, as happens in every high

high inflammation, and in cavities, which are much distended.

5. *Diæresis*, or a wound into a vessel, or cavity of the cranium, thorax, or abdomen.
6. *Mixis*, or rupture of vessels or cavities, as rupture of the navel, in ascites of the capsular ligament in luxation of veins in the piles, and of an artery in aneurism.
7. *Diabrosis*, or the erosion of any cavity by acrimony, caustic, or ulceration.

There are also seven species of morbid passage in vessels or cavities.

1. *Emphraxis*, or an obstruction of vessels or passages, as the humour not having power to pass through the vessel or duct.
2. *Stenochoria*, or a stoppage of the passage, by a swelling of the side of the cavity, or canal; thus a swelling of the internal membrane produces stenochoria of the œsophagus, urethra, or vagina.
3. *Thilipsis*, or compression of a vessel, or cavity, from some cause situated beyond it, as a schirrus under the axilla, by compressing the brachial artery, brings on a dryness of the arm.
4. The *contractility* of a cavity, or a preternatural contraction of any vessel, or canal, by a spontaneous contractile power, thus sudden contraction of the urethra, causes an ischury, or impossibility of making water.
5. *Sinizesis*, or a preternatural collapsing of vessels or ducts; thus the umbilical vessels are obliterated after birth.
6. *Symphysis*, or a preternatural junction, or concretion of vessels, as happens in vessels and other canals in old age.
7. Too great a *narrowness* in an aperture, or canal, as in a phymosis of the prepuce, or in the arch of the rectum, &c.

DISEASES OF MAGNITUDE, OR SIZE.

The size of parts may be too great, or too small.

The increased size of any part is called a tumour, in which are included all tumours whether indolent or suppurating.

The diminished size of any part, is called meagerness, as a wasting of the arm or leg.

DISEASES OF SHAPE.

The shape of any part may be unnatural in dimensions, thickness, or form.

Excess of dimensions in length, as the head being longer than usual.

Defect of dimensions, as shortness of the head.

Excess of thickness, as the neck being too thick.

Defect of thickness, as smallness of the legs.

Difference of shape in a part, is called deformity, as a wry neck, crooked spine, or bandy legs.

DISEASES OF SITUATION.

The situation of any part can be unnatural, in motion and direction.

Situation in an improper place, is called error of place, as a tooth growing from the palate, or the vulva directly under the navel, or opening into the anus.

The situation of a part moved out of its place, is called ectopia, in which we comprehend all herniæ, prolapsus, and diastases of bones.

The situation of a part passing out of its natural direction, is called obliquity, as obliquity of the uterus, tooth, or head.

DISEASES OF CONNECTION.

The connection of a part can be either too weak or too strong.

Too weak a connection, is seen in a preternatural range of motion in a joint.

Too strong a connection is observed in a preternatural immobility of a joint, as in ankylosis.

DISEASES OF CONTINUITY.

The continuity of a part may be dissolved, or that which should be dissolved, may unnecessarily remain.

A preternatural solution of continuity in the soft parts, is a wound, ulcer, or the hare lip; and in the hard parts a fracture, caries, or fissure.

A preternatural continuity of what should be dissolved, is a concretion of the anus, vulva, joint, &c.

DISEASES OF CONSISTENCE.

The consistence of a part may be preternatural, by possessing too much softness, or hardness.

The consistence is too soft in œdema, abscess, or gangrene.

The consistence is too hard in indurated tumours, and ossified parts.

DISEASES OF SUBSTANCE.

The natural substance of any part may be changed, and become preternatural.

To which we may refer the substance of soft parts, when, become cartilaginous, bony, earthy, cavernous, callous, fungous, steatomatous, schirrous, putrid, and the hard substance of bones, changed into a fungous or fleshy structure.

DISEASES OF COLOUR.

The natural colour of any part may become improper by defect, or diversity from its usual appearance.

A defect of the natural colour is observed in the face, lips, particularly in the pallor of a wound, ulcer, or of any other part.

A diversity from the natural colour, is the pallidity in chlorosis, or dropsy; the redness observed in inflammation,

tion, the livid in gangrene, and ecchymosis, the black in necrosis and caries.

DISEASES OF HEAT.

The natural heat of any part may become improper, by being increased or diminished.

Excess of heat in inflammations, and, in some contagious putrid and yellow fevers, is observed, and

Defect of heat, in anasarca, syncope from hæmorrhage, or in debility in the minute arterial system.

DISEASES OF THE SURFACE.

The surface of any part may become improper, by its smoothness, or roughness.

A morbid smoothness is seen in baldness.

An unnatural roughness of surface arises from pustules, vesicles, papillæ, scurf, &c.

DISEASES OF GRAVITY.

The natural gravity of any part, may become unnatural by excess or diminution.

An excess of gravity is perceived in an inflamed and indurated part: from fluid deposited in the cellular structure, congelating, &c.

A defect of gravity is evident in emphysema of the whole body, hence putrid bodies swim in water, on account of the extrication of the fixed air, or what is now called carbonic acid gas.

DISEASES OF THE FLUIDS.

The humours of our body may become improper.

1. In quantity,
2. cohesion.
3. acrimony.
4. degeneration.
5. mixture.
6. situation.
7. retention.
8. excretion.
9. secretion.
10. motion.

DISEASES OF QUANTITY.

The quantity of blood may be improper, by excess or defect.

An excess is called *plethora*, and

A defect *keneangia*.

Plethora, or an abundance of good blood, is divided.

1. Into universal, when the blood abounds in every part of the body; and partial when in any particular part only.
2. Into true, when there is abundance of real blood; and spurious, when it is only an expansion, and rarefaction of blood.

Keneangia, or a deficiency of good blood, may also be universal or partial.

DISEASES OF COHESION.

A cohesion of the principles, which constitute the humours, may be unnatural by excess, defect, or separation. Excess of cohesion, is called thickness; and defect of cohesion, is named thinness.

The thickness of humours is twofold.

1. Simple thickness, which arises entirely from a diminished quantity of water.
2. Compound thickness, which is either glutinous, inflammatory, atrabiliary, coagulated, or venereal.

The thinness of humours is also double.

1. Simple thinness, arising only from too great a quantity of serum, and
2. Compound thinness, which has some specific acrimony connected with it.

A separation of these particles, which should adhere together, is called a secession; thus, if the aqua, salt, oil, mucus, earth, or gelly only, separate from the common mass of blood, various morbid states of the humours arise, and tumours are formed by this separation, &c.

DISEASES OF ACRTITUDE.

Acritudes are impregnations of the humours, with some irritating principle, or morbid mutation.

Acritudes of the humours are divided into common and specific.

The common acritudes are,

1. An acid acritude, or an abundance of acid salt in the humours, as in the rickets, softening bones, &c.
2. An alkaline acritude, or too great a quantity of alkaline salt in the humours; but this is not so admissible as the former, though often supposed.
3. An ammoniacal acritude, or a too great abundance of a salt, which is natural to our humours. Neither this nor the last can be demonstrated in life.
4. A muriatic acritude, or an unnecessary quantity of common salt in our bodies, as in long sea voyages, &c.

The specific acritudes are,

1. The acritude of chronic diseases, as venereal, scorbutic, gouty, arthritic, rheumatic, scrophulous, scirrhus, cancerous, ulcerous, carious, scabious, tineous, leprous, elephantiac, herpetic plicous. They all differ, but their specific properties are not known.
2. The acritude of acute diseases, as variolous, morbillous, miliary, scarlatine, erysipelalous, petechial, pestilential carbunculous, gangrenous, putrid, intermitting febrile, or continual febrile.

All these differ not only in causes, but effects, and appearances, which are more particularly specified in practical medicine.

DISEASES OF DEGENERATION.

The spontaneous changes of humours, from a natural into a morbid state; among these may be considered those degene-

degenerations which take place in the primæ viæ, or in the humours themselves; and in the priæ viæ are called *saburræ*, but in the humours *cacochyniæ* or *cachexiæ*, to which we may refer.

1. Rancidity, or the degeneration of oil into an acrid humour, such as is perceived in rancid butter.
2. Putrescence, or the degeneration of blood, and gelatinous humours into a thin fœtid humour, such as is observed in the most malignant and yellow fevers, and in a dead person.
3. Purulescence, or the degeneration of gelatinous humour into pus, or a soft whitish humour, such as is found in wounds, but this is divided,

1. Into good pus, which has a soft taste, or smell, is of the consistence of cream, of a straw colour, and heavier than water, it burns in a flame, and is the consequence of inflammation of a wound or ulcer.

2. Into bad pus, which is thin fœtid, acrid and greenish, blackish, or brownish; this pus is also called *sanies* or *ichor*.

3. Into spurious pus, which is a yellow mucus, arising without preceding inflammation, or wound; and does not flame in burning; this pus like mucus, may be often observed in coryza, gonorrhœa, fistula lachrymalis, and fluor albus.

Pyogenia, or the generation of pus is yet obscure, the gelatinous part of the serum, in a wound, ulcer, or inflammatory tumour transuding through the vessels mixed with the oil of the adipose membrane, seems to constitute pus.

Spurious pus is without oil, therefore it does not burn.

4. An inflammatory crust is some of the gelatinous part of the blood, or serum degenerated into a white tenacious humour, which usually covers the surface of blood after bleeding in inflammatory diseases.

5. Concrecence, is a degeneration of schirrous matter, into a specific acrimony, such as is observed in cancer.

6. Acrescentia, is a peculiar degeneration of the bile, which greatly resembles rancidity.

7. *Atra bilis*, which is observed in melancholy people and maniacs.

8. The acidity of perspirable matter arises from retention.

9. The acidity of the urine arises from its long retention in the bladder.

10. Acridity of the fæces is occasioned by their long retention in the intestines, with flatus, &c.

11. The acridity of ulcers, which is absorbed from their surface, is communicated to the humours.

12. The *saburra* of the primæ viæ, is formed by various degenerations, as acid, putrid, bilious, rancid, glutinous, saline, crude, aromatic, austere, earthy, flatulent, poisonous, verminous.

13. The degeneration of liquids into a substance, like honey, pulp, hard fat, cartilage, bone, or earth.

DISEASES OF MIXTURE IN THE FLUIDS.

These are improper combinations of the humours, as to their

constituent principles, to which we may refer the following diathrosis and discrasie of the humours.

1. Aquosity, from a superabundance of water, as in the dropsy.
2. Oleosity, from too much oil, as in fatness.
3. Chylosity, if from milk as in women.
4. Cruority, from red globules of blood, in a sanguine habit.
5. Glutinosity, from gluten in a pituitous one.
6. Gelatinosity, from jelly, as in infants.
7. Earthiness, if from too much earth, as in old people, the gouty, and calculous, abounding with calcareous particles.
8. Acridity, if any acrid principle superabound in the humours, see acrimony.

DISEASES FROM CHANGE OF PLACE.

The passing of humours from their own into other vessels, is called change of place, as, those vessels, which are named serous, becoming distended so as to carry red blood, which may be observed in inflammations, and erythema.

DISEASES FROM RETENTION OF HUMOURS.

A continuance in the body of a humour, which ought to be excreted, is called retention, as retention of perspiration, the urine, fæces of the intestines, milk, menstruation, lochia, discharge necessary for the piles, or of any other morbid matter.

DISEASES FROM THE EXCRETION OF HUMOURS.

The passage of a humour out of the body, is called excretion, as the excretion of blood from a wound, of too much pus from an ulcer, of serum or lymph from an ulcer or tumour of a lymphatic vessel.

DISEASES FROM THE SECRETION OF HUMOURS.

A morbid secretion is an effusion, or extravasation of a sanious humour from the vessels into the cells of the cellular membrane, or into the great cavities of the body, as extravasation of blood in ecchymosis, of water in the dropsy, of air in emphysema, and of milk in lacteal tumours.

Metastasis is a secretion, mutation, or translation, of a morbid humour into some particular part, under which are comprehended all metastatical and critical tumours. Proofs, however, of metastasis are sometimes easier to assert than demonstrate: therefore much caution and experience are necessary, before determination, as in gout, rheumatism, fevers, &c.

DISEASES FROM THE FLUIDS.

The motion of fluids may become unnatural by excess or defect.

Too quick a motion all over the body, is called excess in motion.

Too quick a motion in a particular part, is called congestion of humours.

A defect of motion in any part, is called retardation, or stagnation of humours.

There can be an obstruction of the flux, and reflux of the humours, in any part, which depositions and accumulations amply demonstrate.

ON THE DIVISION AND DIFFERENCE OF DISEASES.

The whole course of every disease is divided in five stages.

1. The beginning is the stage, in which the disease commences.
2. The increase, when the disease is increasing.
3. The stage, in which it neither increases nor diminishes, called *acme*, or height.
4. The decrease, in which it decreases.
5. The termination, when the disease is quite at an end.

The difference of diseases is divided into essential and accidental.

The essential difference is, the natural difference of one disease from another.

The accidental difference is, that variety observed in the same disease, of great importance in practice.

From the essential difference, diseases are divided into classes, genera, species, and varieties.

The accidental difference of diseases comes from their origin, time, seat, course, disposition, manner of living, sex, age, climate, and accidental circumstances, which are as various, as there are varieties in human beings, ages, sexes, climates, seasons, &c.

DIFFERENCE OF DISEASES AS TO THEIR ORIGIN.

With regard to the origin or causes of diseases, they are divided into,

1. Hereditary, congenerate, and adventitious.
- Those are hereditary, which arise in children, from a disease of the parents, they can, therefore, be paternal or maternal, thus the venereal disease, calculus or stone, scrophula, gout, madness, cataract often descend from one generation to another.

Those are called congenial, which the fœtus contracts in the uterus, but in other respects, are not hereditary, as marks, or moles, in particular places, hydrocephalus, bifid spine, and all deformities.

All diseases are named adventitious, which are contracted at birth, or afterwards, until death, all diseases are comprehended under this head, except hereditary and congenerate.

2. Diseases are distinguished into primary and secondary.
- Primary or protopathic, which do not arise from any other disease, but from their own particular cause, as a wound, contusion, or fracture.
- Secondary, or deuteropathic, arising from another disease, either present or preceding, as luxation from a tumour within a joint, an ulcer from inflammation, and cataract after an operation.

3. Into pandemic, endemic, epidemic, and sporadic.

Pandemic, which affect people in the same place, without contagion, as soldiers marching in a dusty season are mostly all seized with ophthalmia, thus a damp air gives many people a rheumatic tooth ach.

Endemic, which are peculiar to a people or country, as strumæ are common to the inhabitants of mountainous countries, scorbutic ulcers to those living on the sea coast, and the plica polonica to the polenese.

Epidemic, which attack many persons at the same time and place, thus carbuncles, pestilential buboes, putrid sore throats, now and then rage epidemically.

Sporadic, which are observed every where and at all times, even epidemic diseases are sometimes observed to be sporadic, thus a person only may be attacked by a putrid sore throat, or have a carbuncle.

4. Into true, fictitious, and artificial diseases.

Those are true which come naturally.

Artificial, which are produced by art, as ulcers by a seton, issue, or blister.

Fictitious, as pretended lameness, elephantiasis, spots, or apparent blotches, made by painting, a pretended wolf in the stomach, and other counterfeited diseases invented by beggars and impostors to excite compassion, &c.

5. Into legitimate and spurious.

Those are *legitimate*, which have a true disposition.

Those are *spurious*, which take on the appearance of other diseases, and have no radical disposition of disease, thus herniæ and aneurisms are distinguished into true and false.

6. Into diseases from an internal, or external cause.

Diseases from an *internal* cause, or spontaneous, which arise from a vitiated state of the fluids or solids, without any external cause, as cachexies, icterus, scurvy, scrophula, &c. ulcers from a scorbutic, scrophulous, or any other acrimony.

Diseases from an *external* cause, or violence, arise from some external affection, as ulcers by blistering, inflammation by a contusion, catarrhs and fevers, by mutations in the air, &c.

DIFFERENCE IN THE SEAT OF DISEASES.

Diseases are distinguished with regard to their seat.

1. Into *external*, which are situated on the external surface of the body, as some eruptions, wounds, ulcer, or tumour.
2. Into *internal*, which occupy some cavity in the body, as ascites, hydrothorax, hydrocephalus, wounds of the viscera, an effusion of blood; water in the head, abdomen, or in the thorax, caries of a joint, spina ventosa, &c.
3. Into *vague*, or flying, which travel from place to place, as moveable erysipelas, rheumatisms, vague arthritis, or gout.
4. Into *fixed*, which constantly remain in the place they first attacked, as pleurisy, peupneumony, &c. which is the case in most diseases.
5. *Retrograde*, which sometimes affect an external part, then an internal, thus the gout, or erysipelas suddenly leaves

leaves an external part, and goes to the brain, or lungs, or diaphragm, which occasions great danger.

6. *Idiopathic*, which arise from a cause situated in that part where the disease is seen.
7. *Sympathetic*, or consensual, the cause of which resides in a different part from that where the disease is observed as amaurosis from saburra of the stomach, the tooth ach from pregnancy, and vomiting from a violence done to the head, or from various other causes. All these sympathetic symptoms arise from the sympathy of the nerves. See *par vagum* &c.
8. *Symptomatic*, or significant of another disease, almost every disease may be termed symptomatic of the original affection. It is seated in a part, or is universal; but the sensations felt are conveyed to the common sensorium, or brain, by the communication, and sympathy of the nervous system.
9. *Universal*, which occupy all the surface of the body, as anasarca pneumatosis universal; burning, if any one should fall into a scalding liquid.
10. *Partial*, which occupy one part entirely, as œdema of the legs, emphysema of the head, erysipelas of the face.
11. *Topical*, or local, which are seated in one place only, on a part as a wound, encysted tumour, many diseases are found local with respect to situation, which are universal as to their causes, as cancer, schrophula.
12. Diseases of parts, which are proper to each part, thus an anatomical division of diseases is formed, as diseases of the head, neck, thorax, abdomen, joints, skin, eyes, teeth, bones, glands, &c.

DIFFERENCE OF DISEASES IN THEIR COURSE.

Diseases are distinguished by the course they take into,

1. *Short*, which are speedily cured as light colds, inflammatory tumours, wounds and fractures.
2. *Long*, which are longer of cure, as all chronic diseases, palsy, gout, ulcers, heroiæ, prolapsus.
3. *Chronic*, which continue for years, as a cancer, old ulcers, spina ventosa, caries.
4. *Continual*, which run on in the same manner from beginning to end.
5. *Remittent*, which remit at times, or exacerbate; but do not entirely cease.
6. *Intermittent*, or periodic, which come on at certain times and go off again, as ebriis intermittens, periodic opthalmia, which is troublesome every second or third day, and cured by bark, acid of vitriol, or solutions of white vitriol, in bitter infusions.

Periodic diseases of a particular cast, are called *typic*, but those which do not take on a particular type are called *shifting*, or *wandering*.

The time between the attacks is called *apyrexia*, but that time in which the fit continues is called *paroxysm*, or *pyrexia*.

7. *Precedent*, which precede another disease, thus inflam-

mation is a preceding disease to suppuration, gangrene, or scirrhus; an abscess, fissure, disease of a bone precedes caries.

8. *Accessory*, which injuriously adds fresh evils to the existing disease, as whooping cough, superadded to measles, or an inflammation of the lungs to the asthmatic, gangrene to a wound, contusion to a schirrous breast.
9. *Succeeding*, which succeed a disease, thus boils frequently follow the small-pox, and carious abscesses succeed leucomata of the cornea.

THE DIFFERENCE OF DISEASES AS TO THEIR DISPOSITION.

Diseases with respect to their disposition are distinguished into,

1. *Great*, which in their course produce great and important symptoms, as violent fevers, hernia incarcerated, mischief done to a nerve.
2. *Small*, which produces slight symptoms, and such as are free from danger, as slight catarrh, a small wound, or simple ulcer.
3. *Mild*, which have neither important symptoms, nor danger attending, as some nervous affections that are more troublesome than dangerous, an encysted tumour, schirrus, or polypus, when not virulent.
4. *Malignant*, which has either some apparent or secret danger, as painful schirrus, bite of a mad dog, or poisoned viper.
5. *Refractory*, which baffle the effects of the most experienced remedies, or are rather increased by endeavouring to cure improperly, as cancer, deep seated caries.
6. *Contagious*, which go from one to another by contact, as the yellow fever, putrid sore throat, measles, small-pox, or the venereal disease, pestilential bubo, &c.
7. *Regular*, which have their usual symptoms.
8. *Irregular*, or *anomalous*, which have not their usual symptoms, and sometimes are puzzling to our experience, in naming.
9. *Simple*, which happen alone in any part, as a simple fracture, or luxation.
10. *Compound*, which happen twice or more in one place, as a double, or treble fracture, in a single bone.
11. *Complicated*, which take place with another disease in the same part, as a luxation complicated with a wound, caries, or fracture of the joint.

DIFFERENCE OF DISEASES AS TO THEIR TERMINATION.

With regard to the terminations diseases usually have, they are divided into,

1. *Curable*, which can be cured by art or nature.
2. *Incurable*, which cannot hitherto be cured, by art nor natural efforts.
3. *Mortal*, which terminate in death, as aneurism of the aorta.
Mortal

Mortal diseases are subdivided into,

1. Those which are absolutely mortal, in which neither art, nor nature can prevent death.
2. Those which are mortal naturally, but which are cured by art, not by nature, as scarlatina anginosa, &c.
3. Accidentally mortal, which are not naturally so, but cause death by improper treatment of the practitioner, or abuse of the nonnaturals.
4. Doubtful, of which the termination in life or death is uncertain.
5. Relapsing, which, after being cured, frequently return as a cataract, amaurosis, gout, chronic, rheumatism, &c.
6. Salutary, which preserve a person from a more dangerous disease, which they sometimes remove, as ulcers, critical tumours, purging, &c.
7. Unsalutary, or hurtful, which neither preserve the body from any other disease, nor cure it.

DIFFERENCE OF DISEASES FROM THE KIND OF LIFE.

From the kind of life, diseases are divided into those of artificers, soldiers, countrymen, literary persons, the clergy, the rich, the poor, travellers, or those leading a sedentary life.

DIFFERENCE OF DISEASES FROM CONSTITUTION.

From a difference of constitution, diseases are divided into those of a sanguineous, bilious, pituitary, or atrabiliary habit.

DIFFERENCE OF DISEASES FROM SEX.

From the sex, diseases are divided into masculine and feminine; feminine diseases are subdivided into those of virgins, of pregnant women, during child birth, after delivery, and of old women.

DIFFERENCE OF DISEASES FROM AGE.

From the age diseases are divided into those of the fœtus, children, young persons, adults, and old people.

DIFFERENCE OF DISEASES FROM CLIMATE.

From the climate, diseases are divided into those of hot, cold, temperate, wet, or dry climates.

DIFFERENCE OF DISEASES FROM TIME.

From the time diseases are divided into those of spring, summer, autumn, and winter, those happening at the new, or at the full moon, diurnal and nocturnal.

From the time of continuance diseases are divided into recent and inveterate.

Finally, each disease may be distinguished into its stages, as beginning, advancing, remaining, declining, and finishing.

ÆTIOLOGY, OR DOCTRINE OF THE CAUSES OF DISEASES.

ON THE CAUSES OF DISEASES GENERALLY.

The cause of a disease is any thing which produces it.

In a general way, the causes of diseases are divided into,

1. Proegumenic, or predisposing.
2. Procatartic, occasional, or exciting.
3. Proximate, or constituent causes of diseases.

The proegumenic, or predisposing causes, is such a disposition of the body as renders it fit to receive a disease.

All diseases have not a predisposing cause; this predisposition is a certain state of the fluids, solids, or both, and is present in the constitution, before the disease takes place.

The procatartic, or occasional cause is a thing, which, being applied to the body excites a predisposition to disease.

This is also called the remote cause, and is divided into,

1. External, which does not exist in the body, but is applied to it.
2. Internal, which existing in the body, occasions the disease.

The proximate cause is that change of the fluids or solids, which constitutes the existing disease, or it is the disease itself.

The study of the causes of diseases is extremely necessary for physicians, since a cure depends on the removal of the morbid cause.

THE PROXIMATE CAUSE OF DISEASES.

The proximate causes are simple diseases of the fibres, or humours, which constitute the parts affected.

DISEASES ARISING FROM SIMPLE AFFECTIONS OF THE SOLIDS.

Laxity, occasions distortion, luxation, true aneurism, piles, herniæ, debility of the moving powers.

Mollities ossium, or softness of the bones, causes bending of the limbs, crookedness, or deformity of parts.

Rigidity gives rise to ankylosis of the joints, brittleness of the bones and fractures.

A consumptive wasting of parts produces a putrid, gangrenous, or carious humour.

Too great elasticity, thus too much elasticity in the cartilages of the pelvis, causes a difficult labour in women that are past youth.

Too little elasticity, thus weakness of the cartilages of the pelvis, causes diastasis of the bones of the pelvis, and weakness, or inelasticity of the intervertebral cartilages occasions deformity, crookedness, &c.

Increased irritability, stimulus upon the nerves of sense causes pain, upon the nerves of motion it produces spasm,

spasm, or convulsion, and upon the vital nerves, it occasions inflammation, or fever.

Diminished irritability, soon produces gangrene.

Spasm, excites a spasmodic ischury, or impossibility of making water, or other sudden contraction.

Paralysis causes a paralytic angina, and ischury, from a paralysis of the bladder, or loss of motion in limbs.

Increased sensibility causes pain.

Diminished sensibility induces an insensible state, gangrene; when affecting the optic nerve, it causes amaurosis, and by affection of the auditory nerve it occasions deafness, of the lingual loss of taste.

DISEASES ARISING FROM AFFECTION OF THE FLUIDS.

From plethora hæmorrhages arise, either by usual, or unusual channels, true and spurious inflammations.

From keneangia tumours, become œdematous.

From thickness, obstructions and tumours proceed.

From thinness, inflammations, spots, hæmorrhages, and extravasations.

From acrimony, various diseases have their origin, as

Acid acrimony occasions universal, or particular softness of the bones, carious and gangrenous tumours.

Alkaline acrimony, causes an acrid thinness of the humours from which ulcers, inflammations, and hæmorrhages arise.

Muriatic acrimony brings on rigidity and foul ulcers.

Venereal acrimony occasions gonorrhea, fluor albus, ulcers, ophthalmia, warts, nocturnal pains, nodes, swellings, and copper coloured eruptions.

Scorbutic acrimony causes fungous ulcers, spongy gums, indurations of the legs, spots, and cracking of bones.

Arthritic acrimony, produces arthritic tumours, and ulcers, which discharge a foul blackish ichor.

Gouty acrimony, occasions gouty tumours and earthy swellings in the great toe and fingers.

Rheumatic acrimony, causes pains in the muscles, painful tumours, foul ulcers, caries, dryness and contraction of the limbs, sore throat and eyes, rheumatic tooth ach, rheumatic inflammations rarely become red. Arthrodynia follows.

Scrophulous acrimony, produces scrophula in the glands of the neck, mesentery and groin, ophthalmia, swelling of the nose and upper lip, caries of the bones, and white swellings.

Schirrous and cancerous acrimony, occasions schirrus and cancers.

Carbunculous and pestilential acrimony, cause carbuncles and pestilential buboes.

Putrid acrimony brings on mortification in tumours and wounds.

Rancid acrimony, occasions erysipelas and caries of the bones.

Bilious acrimony, likewise produces erysipelas, and the shingles, or herpes.

The acrimony of ulcers, being absorbed, occasions slow fever, metastatical tumours.

The saburra of the primæ viæ frequently occasions ophthalmia, the tooth ach, and inflammations of wounds and ulcers.

From error of situation, true and spurious inflammations arise, or rednesses, without pain or heat.

From retention of the perspirable matter, fevers, serous tumours, hydrocele, dropsy, and rheumatism arise.

From retention of urine, the ischury, mortification of the bladder, rupture, cystocele, and the stone are occasioned.

From retention of the fæces, are produced extension of the rectum, swelling beyond the anus, piles, ophthalmia, sore throat, from too much blood being determined to the head.

From retention of the milk, mastodinia, inflammation, and induration of the breasts, also lacteal tumours of the extremities have their origin.

From retention of the menses or piles, hæmorrhages and tumours, in various places, are occasioned.

From retention of the semen, spermatocele, sarcocele, and inflammation of the testis.

From a too great excretion, or too profuse evacuation of blood, death, or œdematous tumours.

From the excretion of semen, amblyopia, blindness, and seminal weakness.

From extravasation of blood, ecchymosis, spurious, aneurism and thrombus.

From extravasation of serum, œdema, serous tumours, and dropsy.

From extravasation of lymph, lymphatic tumours.

From extravasation of air, emphysema.

From metastasis of morbid matter, metastatic, or critical tumours arise.

From congestion, or a violent motion of the blood to any part, hæmorrhages, ophthalmia and amaurosis.

From stagnation of the fluids, putridity, or various degenerations of the humours, as may be seen in cystic and hydropic tumours, stagnation of the urine, causes calculus.

From a separation of principles, various diseases arise, as from a separation of the aqueous portion, œdema, or dropsy, from the oil lypomata, or obesity, from the chyle, lacteal tumours; from the earth, calculi, or earthy tumours; from the gluten, œdematous tumours; from secretion, of a nutritious juice, sarcoma and polypi, probably have their origin.

EXCITING CAUSES OF DISEASES.

These are what excite the proximate causes, or the causes of the proximate causes.

The most frequent exciting causes of diseases are six, which are usually called the non-naturals, viz.

1. The air.
2. Foods and drink.
3. Motion and rest.
4. Sleep and waking.
5. Things excreted and retained.
6. Passions of the mind.

THE AIR.

The atmospheric air surrounding our body, generally irritates, inflames, and suddenly dries every part which is not covered by the epidermis, by which means it does hurt to wounds, ulcers, and bones, when laid bare, it appears that the air has peculiar qualities, by which it causes diseases, as easterly winds, &c.

1. Warm air rarefies the fluids, relaxes the solids, renders the nervous system too irritable, disposes the bile, and other humours to putridity, hence, from great heat arise much suppuration of wounds, gangrene, generation of vermin, fungous, tetanus.
2. Cold air condenses the humours, contracts the solids, congeals the coagulable parts of our humours, by which chilblains, gangrene, and mortification of congealed parts follow, especially if heat be applied to them; cold applied to a wound, impedes suppuration, and sometimes causes tetanus.
3. Dry air, by its dryness, prevents or retards wounds and ulcers from healing, causes ophthalmia and sore throat, coughs, cold, and asthma.
4. Moist air, by obstructing cutaneous perspiration, and relaxing the solids, causes chronic, ophthalmia, tooth ach, and rheumatic tumours, intermitting fevers.
5. An air filled with heterogeneous qualities, occasions various morbid effects.
6. Putrid air, as in an hospital, by foul exhalations from the sick, or from ulcers, especially gangrenous ones, causes wounds mostly to become gangrenous, which is the reason why many die in putrid hospitals, after suffering amputation, or the trepan.
7. Epidemic air, which contains a particular virus, occasions pestilential buboes, carbuncles, and sometimes putrid sore throats, fevers, &c. of putrid kind.
8. Air loaded with dust, brings on redness of the eyes, and sometimes a sore throat and hoarseness.
9. A high wind, by blowing the tiles off houses, causes many severe wounds in the head, the wind also dries the epidermis, and occasions chops in the lips and hands.
10. The air being taken away, by an air pump, causes partial, or general swelling, all over the body, those who are sunk under water, die for want of air.
11. Fœtid air is hurtful to the eyes, by its exhalation, bringing on ophthalmia; from the exhalations of aqua-fortis a cataract is produced; the fumes of mercury in the chamber of a person in a salivation, occasions the

very worst kind of salivation, and other symptoms to those afflicted with the scurvy.

12. The air which is extricated from our body, either fluids or solids, is by the means of putridity; hence proceeds emphysema of a gangrenous part, and swelling in a dead person.

The air pervades every part of our body, that when it is blown into a wound, the whole body becomes emphysematous, thus also, the air escaping from the lungs by the breaking of a rib, into the cellular membrane, causes general emphysema.

THE INGESTA.

Every thing taken by the mouth, whether victuals, drink, or medicine, carried into the primæ viæ, is called the ingesta. The food can produce a disease by its quantity, or quality.

The quantity may be too much, or too little.

The quantity being too great, produces an ill formed chyle, therefore from excessive eating, too much suppuration of wounds and ulcers, or a bad pus, fungus, and inflammations are occasioned, flatulence, &c.

Excessive eating of lying in women, causes deposition of milk, in the extremities, and swelling of the breasts, also inflammations, in wounds of the stomach and intestines, voracity alone produces death, and in those subject to herniæ, it occasions strangulation of the intestine.

A deficient quantity of food, or long fasting, makes the fluids putrid, thence bad suppuration, gangrene, and death, hence too rigid a diet in fractures sometimes prevents a junction of the bones.

The quality of the ingesta can have several bad properties.

1. Spirituous food causes congestion to the head, hence in wounds of the head, and perturbation of the brain, it is hurtful; a continued use of strong spirits brings on induration of the liver, glands, and such a narrowness of the oesophagus, as to render deglutition difficult, contracts the lacteals, diminishes healthful chylication; of course sanguification, nutrition, and bodily strength, produces dropsy, &c.
2. Fatty food, by relaxing the primæ viæ and peritoneum, subjects the person to ruptures; corrupt food, generates a rancid saburra in the stomach, by which a vitiated chyle is carried into the blood, affecting the adeps, and medullary part of the bones, occasioning inflammations, erysipelas, magignant ulcers, spina ventosa, and mortification, in some instances.
3. *Glutinous-food*, produces a glutinous and acedent saburra, in the primæ viæ, by which, a glutinous and acedent chyle goes into the blood, whence arise obstruction of the glands, tumours of the joints, spurious, anchylosis, and œdematous swellings.
4. *Salt-food*, occasions a predominant muriatic and scorbutic acrimony. It has been found to dissolve the callus of fractured bones, which had been formed many years before.

5. *Alkaline*

5. *Alkaline-food*, dissolves the gelatinary part of the blood, hence arises an incurable state of wounds, ulcers, and fractures, and from the thinness of the blood various hæmorrhages and livid spots are occasioned.
6. *Acid-food*, causes an itchiness, cutaneous diseases, softness of the bones, and rickets.
7. *Sweet-food*, by long continuance, brings on acidity of the humours, which occasion the teeth to be black, and the rickets in children.
8. *Acrid and aromatic food*, causes inflammation in wounds and ulcers, when long chewed, in the mouth it also occasions blackness and caries of the teeth.
9. *Flatulent-food*, frequently occasions a strangulated hernia, to those who are subject to them.
10. *Cold-food*, sometimes brings on a cold and tooth ach, and hot food occasions fissures and blackness of the teeth; but when too hot, it burns the mouth, fauces and œsophagus, which occasions a morbid narrowness of that channel.
11. *Poisoned-food*, causes different diseases, according to the kind of poison; thus, bread made of impure flour, occasions the cereal convulsion, an account of which may be seen in the rational practice, in the chapter on convulsions, &c. dry gangrene in the extremities: arsenic swallowed, has been known to occasion mortification of the stomach, or genitals.
12. *Indigestible-food*, causes a crude saburra, and flatulence, by which a strangulated hernia may be occasioned.
13. *Heterogeneous-bodies*, in food usually remain in the fauces, cardia, pylorus, or near Tulpus valve, or at the termination of the rectum; by mistake of deglutition the food sometimes escapes into the eustachian tube, fissure of the larynx, trachea, or bronchia, and, if not immediately expelled, they suffocate, though they sometimes find an unexpected passage out of the body, by inflammation, abscess, or fistula.

INCREASED MUSCULAR MOTION.

Increased action of the muscles, accelerates the blood's motion, increases heat, opens the exhalent arteries, and being suddenly checked by cold, produces many evils; hence it increases inflammatory tumours, and inflamed cold ones is hurtful in hæmorrhages, disturbs the situation of a fracture, luxation, wound, or ulcer, and prevents them from healing.

Particular motions of any part tend to the same purpose, as

1. *Force*, as during labour, any bodily exercise, wrestling, expelling the urine, or fæces, may produce bronchocele, hernia, prolapsus, ophthalmia.
2. *Deep inspirations*, by inflating the lungs to the utmost, has produced rupture of the blood vessels, hernia, and ophthalmia.
3. *Vomiting and cough* are sometimes productive of redness of the eyes, force a great quantity of blood to the brain, hence fatal effusions, apoplexy, hydrocephalus membranarum in children, and in the; ventricles of the brain, &c. ecchymosis, and herniæ, vomiting has caused rupture of the œsophagus, and forced the stomach into the thorax.

4. *Sneezing*, brings on rupture, and in people who have been trepanned, a protrusion of the brain, through the trepanned part.
5. *Immoderate laughter*, has caused strumæ of the neck, a dislocation of the jaw bone, a determination of blood to the brain and eyes.
6. *Gaping*, has occasioned dislocation of the jaw bone.
7. *Loud hallowing*, has been productive of hernia, and singing redness of the eyes, and sore throat.
8. *Dancing*, a fracture of the leg, luxation, or distortion of the foot, knee, or thigh, rupture of the liver, spleen, or aorta; perturbation of the brain, and rupture of the tendo achillis.
9. *Continual walking*, rigidity of the knees and ankylosis.
10. *Straddling*, has occasioned hernia.
11. *Porterage*, a distortion of the spine, and crookedness of the legs.
12. *Lifting heavy weights*, pain of the side, hernia, pulmonocele, prolapsus.
13. *Wrestling*, a distortion of muscles and tendons, rupture of the ligaments of the wrist, distortion, or luxation of the hand, fingers, elbow, or shoulder.

DIMINISHED MUSCULAR MOTION.

Diminished muscular motion causes rigidity of the muscles and ligaments, also ankylosis.

Under this head may be classed every position of certain members, as

1. *Too long standing*, produces œdema, piles, and ulcers of the legs.
2. *An improper situation*, occasions crookedness, and deformities.
3. *Too long sitting*, causes rigidity of the knees.
4. *Continual bending of the knee*, occasions lupia—and rigidity of the spine.
5. *Continual lying in bed*, brings on inflammation, excoriation, and mortification about the os coccygis, and os sacrum, it also occasions calculi in the bladder and kidneys.

EXTERNAL VIOLENCE.

The kinds of violence, which usually occasion diseases, are

1. *Incision*, which makes an incised wound.
2. *Puncture*, which makes a punctured wound.
3. *Contusion*, which produces ecchymosis, or a contused wound, and afterwards even carious bones &c.
4. *A bite*, which occasions a contused wound.
5. *Rupture*, which frequently forces the members from their articulations.
6. *Amputation*, performed by the knife, or made by a shot, occasions loss of the member.
7. *Falling*, especially from a pretty high place, produces fractures and luxations of the bones, contusions of the

the soft parts, and perturbation of the brain, or spinal marrow.

8. *A cannon ball flying past*, though not touching the person may break, or luxate a bone, bring on ecchymosis, or burn the soft parts and disturb the brain.
9. *A cannon ball touching a part mostly carries it away*, seldom bruises it only.
10. *A musket ball coming in the direction of our body*, passes through it entirely; in part, or only touches it; consequently various wounds and contusions are occasioned.
11. *A piercing penetrating wound*, forms a rugged foramen.
12. *A superficial wound*, or scratch, sanguineous excoriations, which especially in old persons, and those of a bad habit of body, ulcerate.
13. *Hard-friction*, upon a part produces excoriation of the palm of the hand from work, or of the sole of the foot by walking, of the thighs by riding; sanguineous excoriation on the breast of a woman, from violence in giving suck to an infant.
14. *Extension of a part*, which is either sudden or gradual; by sudden great pain, laceration of the vessels and nerves follow, occasioning ecchymosis, inflammations and tetanus, whilst gradual extension is frequently experienced without dangerous symptoms, but if the extending, or distending cause be suddenly removed, as water in the hydrocele, œdema, or ascites, gangrene, or effusions of blood sometimes follow.
15. *Contortion of a member occasions luxations, fractures, and ecchymosis from ruptured vessels.*
16. *Compression on a part*, generally brings on mortification; on an artery, it occasions an emptiness, or dryness of the veins; on a vein, it causes œdema; on a nerve, it is productive of paralysis and withering.
17. *Commotion is a violent concussion of the whole body*, or of one part only, thus by a violent leap from a great height, the whole body is put out of order; by the violent motion of the head only, and from a perturbation of the brain, various symptoms are occasioned, as loss of the senses, both internal and external.

THINGS EXTERNALLY APPLIED.

Under this head are considered,

1. *The cloaths*, which may do mischief, by compression or composition, as
The head, by the use of hairy caps is made too hot, which occasions a greater determination of blood to the head and favours the production of vermin.
The neck being too closely girted by a cravat, occasions redness of the eyes, and hæmorrhage from the nostrils, apoplexy, rupture of the blood vessels, of the brain, lethargy, and death.
The breast, being improperly cloathed, causes deformity, excoriation of the axilla, and swelling of the arm.
The legs become ulcerated by coarse linen stockings.
The feet have corns from wearing tight shoes.

2. *Bandages improperly applied for inflamed parts*, rolled up too closely, go into gangrene and sphacelus, or mortification, which is sometimes observed in fractures.
3. *Poisons applied externally*, thus arsenic, or corrosive sublimate, sprinkled on ulcers, have been known to bring on mortification and death, from the bite of a viper, gangrene emphysema, and sometimes death follow, from the bite of a mad dog, hydrophobia follows.
4. *Contagion*, which is a morbid matter passing out of the body of a sick person into that of a healthy one, such as in infectious putrid fevers, the lues venerea, cancer, carbuncles, and the plague.
5. *Improper medicines*, thus rancid ointments applied to fresh wounds cause them to degenerate into foul ulcers.
 By the application of hot things to chilblains, suddenly, or to frost nipped persons, gangrene is brought on; by greasy dressings to erysipelas, foul ulcers, sometimes, and gangrenes are produced.
6. Some *insects* whose bite cause spreading inflammation, or tubercles, as wasps, gnats, and lice, cause itching; some flies settle upon wounds and ulcers, leaving their filth upon them.
7. *Extraneous things carried into the body irritate*, hence they cause inflammation and suppuration, by which they frequently are excluded. *Swallowing a pin*, which perforating the rectum, made its way into the ovarium and uterus, causing dreadful misery some years, and ending fatally. The true cause was never discovered of this irremediable case, until the body was opened, at the St. Mary-le-bone Infirmary, where the woman had long been before she died; then, the life-destroying pin was extracted in the presence of myself and pupils.
8. *Cold*, or the matter of ice, makes chilblains (see diseases proceeding from cold.)
9. *Fire* occasions inflammation, suppuration, and mortification, dry heat brings on a dry gangrene, moist heat, as boiling water, causes watery vesicles to rise, inflammations; or produces a moist gangrene.
10. *Thunder*, which seems to be concentrated electric fire, causes wonderful burnings, marks, fractures of the bones, perturbation of the brain and nerves, and sometimes death itself, without any apparent violence, either external or internal.
11. *Too strong light* falling on the retina, occasions winking, confused vision, amblyopia, and amaurosis.
12. The rays of the sun, when very strong, cause freckles, and spots in the face, and sneezing; browns the rete mucosum, and darkens the colour of the skin.
13. *Sound*, I have known the sound from a heavy discharge of cannon, bring on difficulty of hearing, deafness, discharge of blood from the ear, likewise the teeth are set on edge, by a disagreeable sound; and those who are musical amateurs, amongst whom I reckon myself, on hearing false tones, experience the most ungrateful sensations; but from true harmony, inexpressible delight.

14. A strong pungent odour, brings on redness or inflammation of the eyes.

WORKMANSHIP, OR DISEASES OF ARTIFICERS.

The reasons, by which working at trades, or in manufactories, cause diseases are,

1. The substance which a workman may handle, or by which the air he breaths may be rendered unwholesome.
2. The posture, motion of the body or hands, which a workman may be obliged to use.

Countrymen and gardeners exposed to the hottest rays of the sun during the summer, by its heat, acquire a darkness of the face and epheles.

By continued manual labour, the palms of the hands of sailors become callous, if a countryman should have a whitlow on the finger, and the incision not be made deep enough, mortification or caries of the phalanx frequently follows, the epidermis when thick and callous, lies on the neighbouring soft parts and bones, hence, compression of the nerves and vessels brings on gangrene and caries of the bones from the pus being confined.

The *Literati* by the constant sight of white objects, as paper, become subject to myops and inflammations of the eye-lids.

Physicians and surgeons, by intercourse with the sick, get contagious diseases, unless very circumspect.

Refiners become dim sighted by the fusion of metals and working iron, quenching of which, in the water, causes amaurosis.

White-lead makers, are seized with obstinate colics, paralysis, a contraction of the fingers, hands, arms, and at last of the whole body, with fixed arthritis, or arthrodia.

Coppersmiths, by constant use, have greenish hair and teeth, they also become deaf by continually striking with the hammer.

Blacksmiths, are also deaf by the sound of the hammer, and subject to hernia by lifting heavy weights, have watery eyes, and loss of sight by strong fires.

Founders, from being in the melting house, often become dim sighted.

Miners digging quicksilver, are troubled with loose teeth and a falling out of them.

It was formerly observed that those who rubbed mercurial ointment on a part, where seized with trembling of the hand, therefore surgeons desire venereal patients to rub in for themselves, or the hand should be covered with a bladder, to prevent absorption.

Gilders working with amalgama, become deaf and dumb through the rarefaction of mercury, by the heat used, and they are likewise paralytic.

Letterfounders feel a loss of sensation, and contraction of the hands, by the fumes of antimony and lead.

Lapidaries are troubled with ophthalmia and cophosis, by the particles of stones getting into their eyes, mouth, and ears; a bladder hung up in their shop and closed,

frequently acquires a considerable quantity of this dust, whence it appears, that this powder is very penetrating, and shews the bladder porous.

Plasterers have ulcerated lips by slacking the lime, and dry wrinkled hands, but seldom scabby.

Potters are subject to a contraction of the hands by the calcination of lead, for the vitrification of their ware, and become chronically rheumatic in the hands and feet, by working the cold earth.

Salt-makers become scorbutic and ophthalmic.

Cooks, by the fire are troubled with inflammation and, at last, blindness. Confectioners destroy teeth.

Nightmen are mostly bleary eyed, and have a bad sight from the exhalations of the fæces, and can hardly work four hours a day for a pain in the eyes, they are afterwards obliged to sit in a dark place, and wash their eyes with warm water; the fætor is so corrosive, that silver and copper vessels become black, and can hardly be cleaned from it, from this it is evident why a foul chamber pot hurts the eyes.

Washing-women are watry eyed from the noxious odor of the lixivium, œdematous from standing, subject to whitloes in the fingers, from alternate heat and cold, also chaps occasioned by the soap.

Tallow-chandlers are subject to eye diseases from the unpleasant fætor of the melted fat.

Millers become deaf by the sound of the mill, and the volatile part of the flour.

Bakers are hoarse by the volatile part of the flour, and have generally large hands, for exercise, increases the size of parts.

Hair-dressers become dim sighted by the powder.

Sifters become dim sighted by the dust of the flour, and get a cough as well as scabby eruption.

Labourers become crooked by carrying heavy weights on their back, which by custom occasions pain of the back and thighs, by lifting weighty things they get ruptures and the blood of the small vessels being pressed by loads occasions sciatica.

Porters by carrying burthens and bending forwards, become crooked, also subject to ruptures.

Shoe-makers by stooping forwards and sitting with their knees bent, become curved and lame, by continual bending to work, their arms become thick, and muscles of the thorax strong.

Tailors walk awkwardly, by their feet being compressed in sitting, and their backs are bent; even girls sitting closely to sewing, as making gowns, &c. by the scapulæ bones receding, become round shouldered.

Hunters frequently have ruptures, hoarseness, &c.

Grooms are subject to calculi, from the violent motion of the kidneys, they are libidinous from the motion of the genitals, and frequently have the piles from friction and concussion of the anus.

Singers, and children that hollow much are subject to hernia, musicians playing the bassoon, have red eyes from straining,

straining, also hoarseness and sore throat from extreme action of the larynx.

A kind of *watchmen* in the Indies, that call the hours in a particular voice, mostly become blind.

Standing workmen, also attendants of the king, and the soothsayers of the ancients, who stand for the whole day, had varicose feet, and at last œdema.

Sedentary-workmen, also the literati become subject to the piles and costiveness, by compressing the iliac vessels when sitting.

In fact, all workmen, who are exposed to a fœtid atmosphere are bad-sighted and cachetic, therefore ulcers in them are difficult of cure.

PASSIONS OF THE MIND.

Passions are ideas impressed on the mind with great violence, which are succeeded by involuntary motions.

It is not a diaphonia, but extreme pleasure, or displeasure produces these ideas; passions, are therefore, divided into,

Agreeable, which we desire to come to pass, as pleasure and love.

Disagreeable, which we hate, as anger, hatred, envy, sorrow, fear, terror, and shame.

1. *Pleasure*, by increasing the blood's motion, does mischief to inflammatory parts, and where a considerable artery is wounded, it may cause death.

2. *Love*, or the desire of venery in both sexes, causes an increased flow of blood towards the genitals, whence proceeds inflammation of the penis and testicles, which may either form or increase spermatocele.

3. *Anger* by increasing the blood's motion, sometimes bursts a blood vessel in the brain, or lungs, causes inflammation of a wound and hæmorrhage, may produce a severe fever, the bite of a man, or animal, who is mad has brought on hydrophobia and madness: anger by disturbing the bile frequently causes erysipelas.

4. *Sorrow* brings on schirrus by weakening the nerves and vessels, it also occasions œdematous tumours.

5. *Fear* suddenly relaxes all the muscular fibres, hence by relaxing the sphincter, it causes an involuntary discharge of urine, great fear first brings on fainting, afterwards a greater inflammation of a wound follows.

6. *Terror* produces spasm of the muscles, hence, in wounded persons especially, it occasions tetanus, by terror vessels contract, by which there is little hæmorrhage during surgical operations, which some hours after follows more abundantly.

Terror frequently produces schirrus, or changes it into cancer, it can also make slight wounds mortal, for men have been known to die of very inconsiderable wounds, on account of terror.

7. *Shame* causes blushing, hence, it occasions a determination of blood to the face.

THE LONGING OF A PREGNANT WOMAN.

It is yet doubted whether a strong imagination of a pregnant

woman can occasion marks in the fœtus. I am of opinion that no new organic part which did not pre-exist can be formed, nor any part already formed be destroyed, by the force of imagination, although we are not able to deny, but that there may be some power of the imagination over the fœtus; these marks seem to be formed by a preternatural evolution of the embryo, or some unknown cause. There are, however, some strong presumptive evidences, that frights &c. have been the cause of marks.

TOO MUCH EXERCISE OF THE SENSES.

Exercise of the internal, or external senses may be improper by excess, or defect.

Too much application of the brain, as in long study, brings on debility of the nerves, and causes a great determination of blood to the head, therefore it is hurtful in wounds of the head, and diseases of the eyes.

Extreme exercise of an organ of sense, leaves debility in the organ, and occasions a determination of blood to it, thus from looking too long on an object, debility of sight, redness of the eyes and amaurosis, from long custom of hearing loud sounds, we become deaf.

SLEEP.

Too much sleep relaxes the fibres, and brings on a pituitary diathesis of the humours, hence it disposes the habit to œdema.

WAKING.

Too long being awake hurts the eyes, consequently a redness is observed.

DIVINE POWER.

The ancients, in almost every country, believed, that destructive evils proceeded from an angry god; but it is a hard thing that God, who endeavours to bless all men, should be made the author of diseases in general; therefore such notions are superstitions.

INFERNAL POWER, OR WITCHCRAFT.

It is merely a fable, and inconsistent to suppose, that the magic witches, or wizards, by making a bargain with the devil, can afflict men with diseases at pleasure; for the diseases which malevolent men sometimes cause are brought on by their natural disposition, or habits. Credulity, even in governments, until lately, countenanced these absurdities, and many poor innocent old women have been drowned, or burnt for witches; *superstitio ridiculosa!*

PROGRESSIVE EXTERNAL DISEASES.

Thus from wounds, or abscesses, fistula, frequently are causes, or from erysipelas of mortification.

PROGRESSIVE INTERNAL DISEASES.

Internal diseases frequently deposit their matter at various external

external parts, by which different critical, or metastatic tumours arise.

THE PREDISPOSING CAUSES OF DISEASES.

The most frequent predisposing causes of diseases, are, Improper evolution of the fœtus.

Evolution of the fœtus whilst in the uterus gives occasion to many diseases, according as it may be caused, too suddenly, or too slowly, or improperly, by which deformity, and particular marks have their origin.

TEMPERAMENT OF BODY.

The temperament of body is a peculiar constitution as to the humours, as,

1. A sanguine temperament, in which red blood abounds, hence, true and spurious inflammations arise, and hæmorrhages.
2. A phlegmatic temperament, in which serum and mucus abound, hence, œdematous and aqueous tumours.
3. A bilious temperament, in which bile abounds, hence, erysipelas and herpes.
4. A melancholic temperament, in which the blood is black and thick, hence, schirrus and cancerous affections in these temperaments.
5. A fat temperament, in which fat every where abounds, hence, an easy suppuration, corpulency, &c.
6. A gelatinous temperament, in which a jelly abounds in all the fluids, as in the fœtus and infants, hence, their growth and marks.
7. An irritable temperament, in which nervous influence abounds, hence, spasms and convulsions are easily produced by a wound, or even slight cause.
8. A bad temperament, or cachetic, in which the humours are impregnated with some acrimony, or labour under diseases. See acrimonies and discrasia.

IDIOSYNCRASIA.

Idiosyncrasia is a constitution peculiar to every one, by which a person is affected by external things differently from another, to this we may attribute fainting at the sight of a wound, or cat; inflammation of the cutis by the application of a medicine, which would not affect the skin of another, &c. &c.

HABIT OF BODY.

This is a peculiar constitution of the body, as to its solid parts, as,

1. An irritable habit, is that in which the nervous system is very sensible, and the muscles irritable, hence, when wounded tetanus or convulsion easily follows, inflammation is also easily brought on.
2. A torpid habit, in which the nervous system possesses little sensibility, and the muscles not easily excited, as in phlegmatic and melancholy people.

3. A robust habit, in which the fibres are strong and elastic as in men and countrymen.
4. A weak habit, in which the fibres are weak, as in children.
5. A rigid habit, in which the fibres are stiff as in madmen and old people.
6. A soft habit, in which the fibres are soft, lax, and possessing little elasticity, as in women and infants.
7. A lean habit, in which the fibres are strong, without much cellular membrane.
8. A fat habit, in which the fibres are soft and surrounded with much fat.
9. A diseased habit is the same as a cachectic or bad constitution.

AGE.

Each age has its peculiar diseases.

1. Infancy. The diseases, which are said to arise from infancy, are the thrush, inflammation, or ulceration of the navel, hydrocele, umbilical, or inguinal hernia, scald head, crusta lactea, chafing, discharge from the ears and eyes, itching or inflammation of the gums, difficult dentition, spina ventosa, scrophula.
2. Youth. On account of the great motion of blood towards the head, hæmorrhages of the nostrils, sore throat, redness of the eyes are observed in youth, about the time of puberty, spermatocele and tumours of the groin are observed from growth.
3. Manhood. This period of life brings on the inconveniences of piles, calculus, and gout.
4. Old age. The humours become acrid, and abounding in earth, which cause rigidity of the fibres and joints, curvation of the spine, deafness, and dimness of sight, or blindness, brittleness of the bones, and inclination of wounds, and contusions, particularly of the tibia, to degenerate into foul ulcers.

SEX.

The male sex is subject to peculiar diseases about the genitals, as scrotal hernia, both true and spurious, phymosis, paraphymosis, inflammation, and induration of the testicle.

Diseases of the female sex, also arise from various actions peculiar to their genitals and breasts, as in menstruation and delivery, prolapsus of the vagina, rupture of the uterus or perineum, in the breasts, mastodinia, inflammation, induration, and cancer.

THE STRUCTURE OF A PART.

Every part of our body from its natural structure, is more subject to peculiar diseases than any other part, thus a schirrus takes place in the glands, and the most usual disease of the adipose membrane is abscess, thus fistula in ano, very frequently arises from fat and putridity in the rectum.

SYMPTO-

SYMPTOMATOLOGY, OR DOCTRINE OF THE SYMPTOMS OF DISEASES.

A symptom is the effect or phenomenon of a disease.

Every symptom, therefore, is an injury of the actions of our body, or of the visible qualities, in any part.

Symptoms are divided, with respect to their origin, into,

1. Symptoms of a disease from the disease itself.
2. Symptoms of the cause of a disease, from the cause of the disease being present.
3. Symptoms of other symptoms, from sympathy.
4. *Epigenomenous* symptoms, which arise from a new disease coming on.

Symptoms are again divided from the time of appearance, into,

1. *Preceding*, which precede a disease.
2. *Concomitant*, which accompany it.
3. *Subsequent*, which follow when the disease has terminated.

Symptoms are also distinguished into external, which consist of mischief done to any visible quality; and

Internal, which are constituted by an injury done to any action of an internal part.

Finally every disease has,

1. Proper symptoms, which are peculiar to the disease, they are also called characteristic and pathognomic.
2. *Common* symptoms, which are common to many diseases.
3. *Dangerous* symptoms, which cause hazard of the life.
4. *Milder* symptoms, which do not endanger life.

EXTERNAL SYMPTOMS.

The external symptoms of diseases arise from injury done to the visible qualities under this head, we may range almost all external diseases, which may be symptoms of another internal disease.

Pain. An unpleasant sensation in a particular part, is a symptom of inflammation, cancer, rheumatic tumour, spina ventosa, of a wound whilst it is being inflicted, of injury done to a nerve, or of an ulcer.

Anodynia, or *Insensibility.* The absence of feeling in a part, which in a natural state would give pain, constitutes symptoms of mortification, compression, or division of a nerve, or a ligature made on it.

Heat. A sensation of heat in a particular part, is a symptom of inflammation and injury done to a nerve.

Cold. The sensation of cold in a part is a symptom of sphacelus.

Morbid colour. A preternatural colour is various, when red, or livid, it is a symptom of ecchymosis, aneurism, piles, gangrene, and sphacelus.

Blackness in necrosis, redness in inflammation, paleness in œdema.

Fætor. This is a symptom of a cancerous, putrid, or carious ulcer, gangrene, under this head may be considered the fætor from a carious tooth, tartar, or scurvy in the mouth, carbuncle on the tongue, fætor of the ears, from an ulcer; of the nose, from an ulcer there, of the genitals from incontinence of the urine and fæces.

Itching. A sensation exciting a person to scratch, is a symptom of a scabious acrimony of ulcers, and sometimes of depositions under the cuticle of fractures, after having been tied up for a long time.

Hardiness. A hard consistence is a symptom of schirrus and nodes, a part is tense over inflammatory tumours, and hard over an exostosis.

Softness. A soft consistence, is a symptom of meliceris, a doughy one is observed in œdema and gangrene, but elastic in serous tumours and enterocele, a fluctuating one is felt in an abscess.

Swelling. A swelling is a symptom of all tumours, indolent, or suppurating.

Withering or *wasting*, is a symptom of violence done to an artery, or principal nerve of any part, spina ventosa, or luxations, when not reduced.

Inflammation. This is a symptom of various diseases, internal and external, wounds, ulcers, fractures, luxations, and contusions.

Emphysema. This is a symptom of wounds, mortification, fracture of the ribs, and the bite of a viper.

Erythema is a symptom of old ulcers, acrimonious scorbutic habit, affection of the pericranium and of a caries.

Ophthalmia is a symptom of most diseases of the eyes, violence done to the head, redness of the eyes coming on seven or eight times a day, when the brain is hurt denotes a determination of blood to the head, suppuration of the brain and death, redness of the eyes in cancer informs us that the cancerous virus is dispersed all over the body.

Gangrene is a symptom of much injury having been done to the nerves, of fracture when the bone is much crushed, of luxation of the vertebræ, of the bite of an empoisoned viper, of a principal artery or nerve being cut off, it happens also in some wounds, ulcers, tumours, and herniæ.

Suppuration, is a symptom of contused wounds, ulcers, and some tumours, as phlegmon, boils, &c.

Gravity, when too considerable, is a symptom of indurated and inflammatory tumours.

Lightness, when too considerable, is a symptom of emphysema.

Dryness is a symptom of the dry ophthalmia, and loss of tone in the coats and mouths of exhalent arteries.

Moisture, is a symptom of the moist ophthalmia, and laxity of exhalents in their openings.

Pulsation is a symptom of inflammation going into sup-
puration,

puration, but chiefly of a true aneurism, where the great arteries are situated.

Loss of pulse. Loss of pulse in any member, is a symptom of sphacelus, of an artery divided, compressed, or tied, as after an operation for the aneurism.

A cracking noise in a joint, is a symptom of the scurvy, distortion of the hand, foot, or it is a symptom of emphysema.

Hæmorrhage from the nostrils, is a symptom of the nose being bruised, the brain disturbed, or of a polypus forced away, if through the trachea, or œsophagus, or stomach, &c. denote the rupture of an artery or vein.

Hæmorrhage, is a symptom of a wound, ulcer, scorbutic, or putrid, and of a cancer when open.

Hæmorrhage from the ears, is a symptom of the brain being disturbed.

Bleeding of the gums, is a symptom of the scurvy in them.

A discharge of lymph, is a symptom of a wounded lymphatic, or of a tumour of them.

A discharge of serum, is a symptom of recent wounds, and some fungous ulcers, relaxed exhalents, &c.

A discharge of pus, or ichor, is a symptom of ulcers and wounds; purulent pus, is a symptom of ozenæ and scrophula; a discharge from the ear, is a symptom of an ulcer in it, and of contusion of the head.

An effusion of synovia, is a symptom of a wound or ulcer penetrating into the cavity of a joint.

Proctorrhæa, is a symptom of an internal fistula, ani, and of the piles.

A contraction of the muscles and ligaments, is a symptom of fractures, wounds, and tumours of the joints, and of irregular nervous influence, or its deficiency.

Atonia, or great laxity of the muscles and ligaments, is a symptom of distortion, and sometimes of a reduced luxation, of defect in the nervous powers, acting on muscles, debility, &c.

ON INTERNAL SYMPTOMS.

Internal symptoms are affections of the vital, animal, or natural actions.

SYMPTOMS OF THE VITAL ACTIONS.

These are affections of the pulse, motion of the heart, and respiration.

SYMPTOMS OF THE PULSE.

A small, slow, and intermittent pulse, is a symptom of diseased organization of the heart, large vessels, hydrops, pericardii, aneurism, of internal, or external hæmorrhage, of gangrene, or it precedes death.

A quick and strong pulse is a symptom of fever and inflammations, hence febrile and inflammatory symptoms; but a quick and more feeble pulse, putrid fevers from contagion, &c. nervous fever, and various diseases arising from debilitating causes.

FEBRILE SYMPTOMS.

1. An *inflammatory* fever is a symptom which either precedes, accompanies, or succeeds inflammatory tumours, finally, under the name of a suppurating, or wound fever, it is a symptom of inflammation, wounds, contusions, and complicated fractures, with inflammation.
2. *Putrid fever*, proceeds from the absorption of putrid contagion, either by respiration, or from a gangrenous, or putrid wound, and is a symptom of mortification, a putrid or carious ulcer; wounded persons, and those who have ulcers, are more subject to it in the unwholesome air of an hospital, than in any other place, except from animal putrefaction.
3. *Bilious fever*, either in the internal canal, or diffused through the whole body, as in the yellow West India fevers, arises from putrid bile, hence, it frequently accompanies the erysipelas of wounded persons, and those who have ulcers, or hepatitis.
4. *Slow fever*, which gradually weakens the body, is a symptom of diseased viscera, an abscess lying concealed, of a large wound, or ulcer, discharging much pus, it is also a symptom of a cancerous ulcer and wounded lymphatic.
5. An *intermittent fever* coming on periodically, daily, every second or third day, is not a symptom of an external disease, but since wounded persons are more easily affected than healthy ones by improper diet, bringing on an intermittent fever, it is then an epigomenous symptom of an external disease.

INFLAMMATORY SYMPTOMS.

1. *Phrenitis*, an inflammation of the membranes of the brain, arising from inflammatory fever and violent delirium, is a symptom of the head being bruised or wounded, sometimes of violent inflammation of the ear, and comes on from the tooth ach and a whitlow.
2. *Cephalitis*, or inflammation of the brain, is a symptom of the brain being contused, wounded, or compressed by the cranium.
3. *Cynanche*, or inflammation of the pharynx, or larynx, is sometimes brought on by extraneous bodies being contained in those cavities for some time.
4. *Pleuritis*, is a symptom of inflammation of the intercostal muscles, and pleuræ which usually follows cold, fractures and contusions of the ribs and sternum.
5. *Peripneumony*, or an inflammation of the lungs, very frequently arise from wounds of this viscus, or fractures of the ribs, cynanche sometimes brings an inflammation of the lungs, likewise sudden cold, &c.
6. *Diaphragmatisis*, or inflammation of the diaphragm is occasioned by wounds and contusions of it.
7. *Corditis*, or inflammation of the heart is a symptom of superficial wounds, or injuries done to it.
8. *Gastritis*, or inflammation of the stomach, is a symptom of a wound or contusion in it, of incarcerated gastrocele, or of sharp substances swallowed.
9. *Enteritis*,

9. Enteritis, or inflammation of the intestines, is a symptom of intestinal wounds and contusions, incarcerated enterocele and of spiculated substances swallowed.
10. Epiploitis, or inflammation of the omentum, is a symptom of a wound, or injury done to the omentum, of incarcerated epiplocele, from protrusion through a wound, compression, or ligatures on it.
11. Hepatitis, or inflammation of the liver, is a symptom of the liver being bruised, ruptured, or wounded.
12. Splenitis, or inflammation of the spleen, is a symptom of the spleen being bruised, or wounded, it sometimes follows wounds of the brain.
13. Nephritis, or inflammation of the kidney, is a symptom of its being bruised or wounded, gravel, stone, &c.
14. Cystitis, or inflammation of the urinary bladder, is a symptom of its being hurt, or wounded, frequently of ischury, from the operation for the stone and incarcerated cystocele.
15. Metritis, or inflammation of the uterus, is a symptom following a bruise, wound, or rupture of the uterus in delivery, or from the caesarian section.
16. Myositis, or inflammation of the muscles, is a symptom of contusions, wounds, fractures, and rheumatisms.

SYMPTOMS OF THE ACTION OF THE HEART.

1. Lypothymia, or fainting, an apparent cessation of the vital actions, is a symptom of hæmorrhage external, or internal, of fear before bleeding, or a surgical operation, of mortification, after the healing of an old ulcer, or of injury done to the heart.
2. Asphyxia, or apparent death, is a symptom in persons hanged for some time, frozen, nearly drowned, or children after a difficult birth.
3. Palpitation of the heart, is a symptom of injury done to the heart, which is then subject to aneurism, sometimes the heart palpitates through fear, when about to undergo a surgical operation, or from exercise.

SYMPTOMS OF RESPIRATION.

- Oithopnæa, or suffocating respiring, is a symptom of hydrothorax, empyema, of any thing sticking in the œsophagus, or escaped into the trachea, of swelling in the neck, a penetrating wound of the thorax, with an effusion of blood, or escape of air, of injury done to the lungs, or phrenic nerve of the diaphragm, compression of the ensiform cartilage, ascites, or deformity, of overloaded mucus in trachea.
- Empyema, or effusion of pus into the cavity of the thorax, is a symptom of an abscess of the thorax, of a contusion, or injury done to the lungs.

SYMPTOMS OF THE ANIMAL ACTIONS.

These are injuries of the external and internal senses, of sleep and voluntary muscular motion.

SYMPTOMS OF THE EXTERNAL SENSES.

Amaurosis, is a symptom of an injury done to the superci-

liary nerve, or of the brain, or eye being contused or wounded, also diseases of the frontal sinuses.

Amphypopia, is a symptom of mostly all the eye diseases.

Photophobia, or intolerance of light, is a symptom of ophthalmia, particularly when internal.

Cophosis, or deafness, is a symptom of contusion of the ears and most of their diseases.

Agheusia, or loss of taste, is a symptom of the tongue being paralytic.

Anosmia, or loss of smell, is a symptom of ozenæ and polypus.

Anæsthesia, or loss of feeling, called insensibility, is a symptom of the sensorial nerves being divided, tied, compressed, or destroyed by gangrene.

Stupor, or a diminished sense of feeling, is a symptom which precedes gangrene, or necrosis, arising, also, from a nerve being tied, or brain compressed.

Formication, or a sensation like stinging of ants, is a symptom of the same diseases as stupor.

UNPLEASANT AND PAINFUL SENSATIONS.

Cephalagia, or pain in the head, is a symptom of contusion, excrescences, or caries of the cranium, rheumatism.

Hemicrania, or pain in one side of the head, is a symptom of ophthalmia, tooth-ach, and diseases seated in the pituitary, sinuses of the frontal bone.

Pleurodine, or pain in the thorax, but not inflammatory, is a symptom of external emphysema, of contusion of the thorax, and violent straining.

Cardialgia, or pain of the stomach, is a symptom of gastrocele, compression of the ensiform cartilage and contusion of the stomach, of acid wind, &c.

Colica, or pain of the intestines, is a symptom of incarcerated hernia, and bruise of the abdomen, wind, &c.

Hepatalgia, or pain in the region of the liver, is a symptom of swelling of the gall bladder, or abscess of the liver, inflammation, schinus.

Nephralgia, or pain in the kidneys, is a symptom of renal calculi, which sometimes make their way out by an abscess in the lumbar region, of gravel, &c.

Hysteralgia, or pain of the uterus, is a symptom of calculus, polypus, cancer in the uterus, or vagina.

Mastodynia, or pain of the breast, is a symptom of cancer, inflammation, or abundance of milk in the breasts.

Arthritis, or pain of the joints, is a symptom of tumours, wounds, and ulcers of the joints, gout, &c.

Ostocopus, or pain in the bone itself, is a symptom of spinæ ventosæ, cancer, node, or sarcoctosis.

Myositis, or rheumatism, a pain of the muscles, is a symptom proceeding ab abscess, necrosis.

Anxiety, is a symptom of the bite of an empoisoned viper.

Lassitude, or an unpleasant sensation of debility, is a symptom of wounds received, the scurvy, or contagious diseases as the venereal disease, debility, &c.

Itching, is a sensation exciting to scratch, and a symptom of wounds,

wounds, cutaneous diseases and fractures, when they have been tied up a long time, of scurvy, itch, &c.

Cold, is a symptom of hæmorrhage, suppuration, and mortification.

Heat, is a symptom of fever, which accompanies inflammatory tumours, and inflammations.

SYMPTOMS OF THE INTERNAL SENSES.

These are depravations or abolitions of the imagination, or memory.

1. Delirium, is a symptom of a great hæmorrhage, affection of the brain, and much pain.
2. Furious madness, or the desire of biting, is a symptom caused by the bite of a mad animal.
3. Hydrophobia, or an extreme aversion to water or fluids, is a frequent symptom of wounds, by the bite of a mad-dog.
4. Tarantismus, or an immoderate desire of dancing, is said to be a symptom proceeding from the bite of the tarantula, but experiments have not proved that it is caused by the sting of a tarantula.
5. Vertigo, or dizziness, is a symptom of great hæmorrhage and affection of the brain.
6. Stupidity, is a symptom of injury done to the head.
7. Amnesia, or a loss of recollection of mostly all the ideas, is a symptom of the brain being disordered.

SYMPTOMS OF SLEEP.

A profound sleep, or a comatose state, is a symptom of the brain being affected by an effusion of blood, or indentation of the cranium, hydrocephalus ischury, an old ulcer being healed, without removing causes.

Typhominia, or apparent sleep with delirium, is a symptom of the brain being irritated by injury, it also follows the bite of a venomous insect, called scolopenda.

Agryphnia is continually being awake with the recollection of almost every disagreeable idea and pain, it is present chiefly in the night, from indigestion, &c.

Panophobia, or fear in sleep, is a symptom, which frequently accompanies fractures, internal hydrocephalus, and the bite of a morbid animal, indigestion, &c.

SYMPTOMS OF MUSCULAR MOTION.

The action of the muscles can be improper, by spasms, paralysis, or relaxation.

Spasms are divided into tonic and clonic, or spasms and convulsions.

Spasms are involuntary and constant contractions of the muscles, and convulsions are involuntary and reciprocal motions of the muscles, alternately.

SPASMS.

Tetanus is a rigidity of all the muscles of the body, by which it is rendered like a statue, and continues extended in a right line, bent forwards, backwards, or

sideways, it is a symptom of the brain, or temporal muscle being injured, of a nerve being bruised, tied, pulled, pinched, or touched with a caustic, hence contusions of the head, wounds, amputations, ligatures of the spermatic chord, affections of the nerves carious teeth, and luxations, with ruptured capsular ligament frequently occasion it, particularly in hot climates and hospitals, mostly in irritable habits.

The cramp or spasm of the leg, is a symptom of varicose veins in the leg, or irregular nervous power.

Spasm of the jaw, or locked jaw, is a symptom of angina of the tonsils, and frequently the forerunner of universal tetanus.

Spasm of the face, or sardonic laugh, sometimes follows an injury done to the nerve of the diaphragm.

CONVULSIONS.

Convulsion is an involuntary motion of the muscles of the whole body, and is a symptom of violence done to the brain, spinal marrow and punctures of nerves, also great hæmorrhages and excruciating pains, as the tooth ach, ear ach, dentition, calculus, and internal caries of the cranium, of the vertebræ, bifid spine, by pressure with the finger, internal hydrocephalus; wounded persons exposed to an air that is too cold, are easily seized with tetanus, or convulsions.

Nystagmus, or convulsion of the palpebræ and bulb of the eye is a symptom of ophthalmia.

Trismus, or a grinding of the teeth, is a symptom of excruciating pain. The locked jaw is also called trismus.

Epilepsy is a periodical convulsion of the whole body, and a symptom of exostosis, internal caries of the cranium, or vertebræ, commotion of the brain, and the sudden and improper healing of an old ulcer.

Horror, is a symptom of beginning inflammation, when going into suppuration.

Tremor, is a symptom of contusion of the head, and of the fear a person undergoes before, or during an operation, or nervous affection.

Sneezing, is a symptom of ophthalmia, from cold, and of the separation of a polypus.

Gaping, is a symptom of periodic ophthalmia and of hæmorrhage.

Hiccup, is an involuntary contraction of the diaphragm sometimes interrupted by loud inspiration, and is a symptom of hæmorrhage, ischury, gangrene, aphthous, angina, wounds of the brain, diaphragm, stomach and intestines, or contusions only, incarcerated hernia, fracture of the vertebræ, or compression of the ensiform cartilage, and forerunner of death.

Cough, is a sonorous concussion of the thorax, and a symptom of some extraneous body having escaped into the trachea, of pus being absorbed from an ulcer, and deposited in the lungs, of mucus, &c.

PARALYSIS, OR PALSY.

Apoplexy is a paralysis of all the voluntary muscles, with loud

loud respiration and profound sleep, or comatose state and is a symptom of injury done to the brain, extravasated blood, or compression of the cranium.

Paralysis, or palsy, is a lax immobility of one member, and a symptom of a nerve being divided, compressed, tied, or of perturbation and compression of the brain.

Hemiplegia, is a palsy of one side only, and a symptom of compression of the brain.

Paraplegia, is a palsy of the whole body below the head, or of the lower joints, and is a symptom of luxated or fractured vertebræ, or injury done to the spinal marrow.

Debility of all the members of the body, is a symptom of internal hydrocephalus, bifid spine, bite of poisonous animals, the effect of any contagion, as venereal disease, scurvy, gangrene.

SYMPTOMS OF THE VOICE.

Aphony, or defect in speech, is a symptom of the recurrent branch of the larynx being divided, compressed, or too much distended, as after hanging, also from wounds of the thorax, trachea, tongue when deep and producing tetanus.

Psellismus, or inability to articulate certain syllables, is a symptom of the tongue being deformed, or deficiency of the uvula, velum palati, teeth, hare lip, fissure of the palate, contusion of the head.

Cacophonia, is an unpleasant tone of voice, a nasal voice, is a symptom of a polypus of the nose, ozena, narrowness of the posterior, foramina of the nose, or defect in the uvula.

An hissing voice, is a symptom of angina of the larynx, or polypus, an hoarse voice, is a symptom of angina from cold, coryza, and relaxed uvula.

SYMPTOMS OF THE NATURAL ACTIONS.

These are affections of appetite, thirst, mastication, deglutition, chylication, sanguification, nutrition, secretions, and excretions.

SYMPTOMS OF THE APPETITE NATURALLY.

Anorexia, or want of appetite, is a symptom of great pain, vulnerary fever, hæmorrhage, affection of the gall, bladder, or stomach.

Nausea, loathing of food, is a symptom of the brain being disturbed.

Adipsia, or want of thirst, is a symptom of paralytic angina.

Polydipsia, or an extreme desire of drinking, is a symptom in wounded persons, it is also observed in inflammation and gangrene, fevers, &c.

Satyrasis, or a violent desire of coition, with a firm erection of the penis, is a symptom of gonorrhea, hydrophobia of hanged persons, and from the application of cantharides.

Anaphrodisia, or impotence without power of erection in the

penis, is a symptom of a fall on the loins, or os sacrum, and of the testicles being indurated, &c.

Tenesmus alvi, or a frequent desire of going to stool, is a symptom of calculus, inflammation of the bladder, piles when painful, fistula ani, particularly after the operation.

Tenesmus vesicæ, or frequent desire of making water, is a symptom of dysuria. See dysuria.

SYMPTOMS OF DIGESTION.

Mastication being affected, is a symptom of the maxillary bone being luxated, or broken, looseness of the teeth, or want of them paralysis, or tetanus of the muscles of the cheeks and maxillary bone, also wounds and ulcers in them, a cleft palate, hare lip.

Dysphagia, or difficult deglutition, is a symptom of tetanus, hydrophobia, paralytic, affection of the œsophagus, of tumours in it, or outside, compressing it, of bodies sticking there in being swallowed, or rupture of it, the same symptom is induced by luxation of the os hyoides, branchocèle, polypus of the œsophagus, or of the nostrils hanging in the fauces, also of inflammatory, suppurating, schirruses, venereal, scorbutic spasmodic, or catarrhal sore throat.

Dyspepsia, or defect of digestion, is a symptom of the stomach not performing its office, also from being wounded, or the presence of ventricular, or intestinal hernia, wounds of the gall bladder or hepatic duct.

SYMPTOMS OF SANGUIFICATION.

Cachexia, or bad sanguification is a symptom of hæmorrhage, ulcers, of all acrimonies of the scrophula, scurvy, lues venereæ, necrosis and dyspepsia.

The jaundice, or bilious cachexy, is a symptom of the bite of a viper, or mad animal, diseased liver, &c.

Anasarca, is an aqueous swelling of the body, and a symptom of some preceding hæmorrhage, of ulcers suddenly healed, or discharging too much, of the urine being long retained, or diminished.

SYMPTOMS OF NUTRITION.

Tabes, or wasting of the body, with a slow fever, without cough, and expectoration of pus, is a symptom of every large ulcer, of scrophula, cancer, hernia of the stomach, injury done to the thoracic duct, and of a considerable preceding hæmorrhage.

Pulmonary consumption, is a general emaciation of the body, with a slow fever, cough and evacuation of pus, it is a symptom of contusion, or suppuration of the lungs, of an ulcer suddenly healed, the matter of which is deposited in the lungs, or of an abscess lying a long time concealed.

SYMPTOMS OF SECRETION.

Under this head may be considered to great excretion, or retention of what should be excreted.

SANGUINEOUS PROFLUVIA.

Hæmoptysis, or spitting of blood, is a symptom of the lungs being wounded, or contusion of the thorax.

Hæmatemesis, or vomiting of blood, is a symptom of the stomach being wounded, or vessel ruptured.

Hæmaturia, or passing bloody urine, is a symptom of wound or contusion in the bladder and kidneys, lifting an heavy weight, stone in the bladder, or ruptured vessel.

Menorrhagia, or uterine hæmorrhage is a symptom of the uterus being contused, particularly in pregnant women, also of polypus, rupture of vessels.

A bloody diarrhœa, is a symptom of the intestines being abraded, or bruise of the abdomen.

Bloody discharge from the piles, is a symptom of intestinal tuberculi, polypi, burst vessel, or cancer.

DISCHARGES WITHOUT BLOOD.

Vomiting is a symptom of the brain being disturbed, of injury done to the diaphragm or stomach, incarcerated hernia, renal ischury, fever, &c.

Vomiting of feces of the intestines, with costiveness, is a symptom of incarcerated hernia, constriction of the rectum, and cholera morbus.

Diarrhœa, or frequent going to stool, is a symptom of irritated intestines, of ulcers, abscesses, or wounds from which pus is absorbed, of ischury, and of the essence of aloes being applied to a wound constantly for a long time.

Ptyalismus, or copious excretion of saliva, is a symptom of increased action of the salivary glands, injury done to the salivary duct, of an ulcer in the mouth, of irritation caused by a tooth, of ischury and mercurials applied externally, or taken; a purulent ptyalism, is a symptom of an ulcer in the ears, nostrils, or fauces.

Anacatharsis, or expectoration of pus from the lungs, is a symptom of contusion of the thorax, injury done to the lungs, or of empyema.

Diabetes, or too copious efflux of urine, is a symptom of contusion of the loins, or increased urinal secretion.

Enuresis, or involuntary emission of urine, is a symptom of luxated vertebræ, uterine, or vaginal polypi, prolapsus uteri, cystocele, fistula of the bladder, lithotomy, or relaxation of the sphincter of the bladder.

Incontinence of the stools or feces, is a symptom of luxated, or fractured lumbar vertebræ, injury, or perturbation of the spinal marrow, of cancer, or swellings in the rectum, division of the sphincter ani in lithotomy, operation for the fistula, morbid sphincter.

Pyuria, or discharging a purulent matter, or mucus, by the urethra, is a symptom of calculus, piles, ulcer of the bladder, or kidneys, and pus absorbed from an abscess.

Leucorrhœa, or fluor albus, from the vagina, or uterus, is a symptom of an ulcer, or cancer, polypus, or prolapsus, of those parts, diseased habit.

Gonorrhœa, or a discharge of pus like mucus, from the urethra, is sometimes a symptom of calculus in the bladder, bougie in the urethra, or ulcer there, venereal infection, &c.

Flatulence, a return of air by the mouth, in belching, and noise in the bowels, is a symptom in persons subject to hernia, flatulency, acid air, &c.

Ædopsia, or emission of wind by the urethra, or vagina, is a symptom of fistula ani penetrating into the bladder, or vagina, or ulcer penetrating the bladder from the rectum.

RETENTIONS OF THE EXCRETIONS.

Ischuria, or retention of urine, either in the kidneys, or urethra, when in the latter, it is a symptom of a stone, or carnuncle in the urethra, of a tumour in perinæo, or between the bladder and rectum, of a contracted urethra, paralysis of the bladder, œdematous penis, and concretion of the prepuce.

Renal ischury, is a symptom of inflammation of the kidneys, injury done to the bladder, or spasm, as is sometimes seen after lithotomy.

Dysuria, or painful and scalding discharge of urine, is a symptom of calculus, inflamed piles, virulent gonorrhœa, when fresh contracted, and sometimes of cantharides externally applied.

Dysmenorrhagia, or suppression of the menses, is a symptom of the orifice of the uterus, or vagina being concreted.

Costiveness, is a symptom of concretion of the rectum, polypus of the intestines, wound, or injury of the gall, bladder, and incarcerated hernia, or of diminished bile.

SEMIOTICA, OR DOCTRINE OF THE SIGNS OF DISEASES.

A sign is a phænomenon, or appearance, by which we know the state of a present, past, or future disease.

The signs of diseases are divided, into,

1. Diagnostic, which denote the present state of the disease.
2. Anamnestic, shewing the preceding state of the disease.
3. Prognostic, which denote the future state of the disease.

The diagnostic signs are subdivided into proper, common, and epigenomena.

The prognostic signs are subdivided into good, equivocal, and bad.

THE DIAGNOSTIC OF DISEASES.

This is a science, explaining the signs, by which a present disease may be known, and distinguished from another; thus the signs of a present disease, are found out by the assistance of the external senses, sound judgment, and analogy, by anatomy, &c.

1. By the touch, with the finger, or instruments, as a catheter, or probe, by which we know the extent or direction of wounds, or ulcers, the presence of a calculus in the bladder, fracture, or luxation of a bone, hardness,

hardness, softness, fluctuation, pulsation, heat or coldness of tumours.

2. By the hearing we perceive the creaking of fractured bones, and the crackling of air in emphysema.
3. By the smell we distinguish gangrenous putridity, the fætor of the fæces, or urine in wounds of the great intestines, cancerous ulcer of the womb, &c.
4. By the taste, thus an effusion of a bitter fluid from a wound of the abdomen, denotes injury of the gall bladder.
5. By the sight we discern the external appearance of wounds and ulcers, the colour and extent of tumours, and know at sight, what injury is done to particular parts by the effusion of fluid, as, by a discharge of fæces, by a wound of the abdomen, we are certain of injury having been done to the great intestines.
6. By the judgment, through which we know the nature of a disease by the action of the morbid causes, and of those things which increase or diminish them.
7. By analogy, we compare diseases little known, with those which are better understood.
8. By particular motions and pain in many complaints, we know the seat of the disease.

The signs of every disease are divided into proper, common, and epigenomic.

The proper sign of a disease, which is also called the pathognomonic, and characteristic, is that, by which one disease differs from another, as pulsation in true aneurism, an impression of the finger after touching a part, is a sign of œdema; and a crackling of the cellular membrane denotes, emphysema.

Sometimes we take the pathognomonic sign of a disease from one only, sometimes from several symptoms; but there are some cases which have no pathognomonic sign, hence they cannot be detected by human intelligence: blood effused under the cranium, sometimes offers an example of this kind, except by stupor appearing.

The common sign of a disease, is that which is common to many diseases, thus pain is a sign common to most tumours, whether indolent or suppurating.

The epigenomic sign is that which indicates another disease.

having preceded, being present, or about to come, thus an intermittent fever being occasioned by, or, coming on after a wound, is an epigenomic sign.

ANAMNESIS OF DISEASES.

This is a science treating on the signs, by which we trace the cause of diseases.

The proximate cause of a disease is understood,

1. By the nature of the disease.
2. From the known, or remote action of the exciting cause.
3. From the presence of the predisposing cause.

The exciting cause will be known from the account of the patient, if the disease may have happened through violence, or any other external cause, but if it should have been brought on by any internal cause, which he cannot account for, it is necessary for the surgeon to examine all the internal causes, which may have given origin to the disease.

Hence an inquiry concerning the six, non-naturals, and the diseases, which preceded the present, generally constitute the anamnesis.

THE PROGNOSIS OF DISEASES.

This is a science treating of the signs, by which we judge of the future state of diseases.

The prognostic signs are divided into good, which give hopes of life and health, equivocal, which neither suppose danger, nor difficult recovery.

Bad, which expect difficult recovery, or danger of the life.

From these signs are judged,

1. The termination of a disease, either into another or death.
2. The cure of a disease, whether it be easy, difficult, or impossible.

In doubtful cases a man of sense would not speak decidedly, but give the most probable opinion.

The termination and cure of each disease is spoken of in special pathology, and the modes of cure, indications, contraindications, and remedies will appear in the practice of medicine.

The NOSOLOGY has increased within these few years to a most enormous degree. Every late writer in pathology, seems to think he has a right to change the names of diseases according to will, caprice, and pleasure; by this means the memory is loaded with names without advantage, or improvement of things. I shall endeavour, in my practical work, to give just definitions of diseases, and simplify the nomina. All that I have been able to investigate from the numerous dissections observable in a long life, will best appear in the practice of physic, by which means many difficulties and prejudices at present in vogue, will be removed, and the art may appear in the language of truth, without the false props of idle speculations and chimerical hypotheses. Sound practice may be best formed from the ravaging and fatal effects of diseases, by well considering and comprehending with clear reasoning, and the application of important remedies, how fatality may be prevented, and judicious cures effected, in numerous diseases incident to the human body. Now follows the Latin Conspectus of the original work.

CONSPECTUS

CONSPECTUS

Scholæ Medicinæ Universalis Novæ continens Historiam Medicinæ Anatomiam, Physiologiam, atque Pathologiam Specialem, cum Plurimis Tabulis Æneis. Auctore Gulielmo Rowley, M.D. Universitatis Oxon.; Colleg. Regal. Medicorum Londinensis Membro, nec non Medico Nosocomii S. Maribonensis, &c. &c.

Historia Medicinæ cui tabulis Chronologicis a mundo condito ad Hippocratem Coum; ab initio Belli Peloponnesiaci quo Hippocrates floruit ad exitum Justiniani; ab illo ævo ad hoc tempus, cum vi tabulis antiquis.

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1. ΦΥΣΙΟΛΟΓΙΚΗ considerat corpus humanum in statu sano.

2. ΠΑΘΟΛΟΓΙΚΗ, contemplatur corpus humanum in statu ægroto,

3. ΘΕΡΑΠΕΥΤΙΚΗ, tuetur corpus in statu sano, inque ægroto sanat.

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* Nonnullæ tabulæ sunt absque literis indicantibus ut earum elegantia conservetur.

† E multis auctoribus Græcis hæc excerpta sunt, ut ex Hippocrate, Rufo Ephesio, Galeno, Oribasio et aliis. Ostendunt in genere scientiam antiquorum in rebus anatomicis.

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Graeci a functione, unicum instrumentum, duobus nuncuparunt, νεῦρον, a νῆστιν, et τόρον a τένειν; quod videlicet muscoli, nervorum potissimum ope et nutare et tendere valeant—Sub nomine nervorum antiqui intelligebant: 1. Ligamenta ossa mutuo colligantia. 2. Tendines, et universas aponeuroses musculorum. 3. Nervorum genus quod nunc speciatim nomine nervorum notum est: organa nempe longa, teretia calvariam et dorsi vertebrae elabentia, sensus motusque in corpore instrumenta—Temporibus Hippocratis ac Aristotelis cognitio nervorum fuit valde exigua, &c.—Herophilus, Erasistratus, Galenus, Rufus Ephesius, Oribasius, Berengarius, Nicolaus Massa, Vesalius, Eustachius, Leuwenhoek, Willisius, Viussenius, Winslow, Monro, Whytt, Hallerus, Meckelius, Zinn, Moscati, Pater, de la Torre,

* Νῆστιν μὲν, Rufus Ephesius de partibus hominis.

Prochaska, 116—*Alexand. Monro*, Jun.—Opiniones hominum hominum celeberrimorum, ibid.

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In cerebro et nervorum tractatione considerata veniunt:—1. *Integumenta tria*: dura mater—membrana arachnoidea—et pia meninx—2. Cerebrum proprie sic dictum, seu magnum—3. Cerebellum, seu cerebrum minus et medulla oblongata—4. Medulla spinalis—5. Nervorum cerebralium paria novem—6. Nervorum Vertebraliū triginta—7. Nervorum horum ganglia et propagines—8. Arteriæ carotides et vertebrales—9. Venæ, seu sinus venosi viginti duo.

1. Structura duræ matris—2. Adhæsiones—3. Processus—4. Propagines—5. Vasa—6. Glandulæ—Omnes venæ cerebri, cerebelli et spinales medullæ absque valvulis sunt, 125—Utilitas sinuum: sinus, amplitudine reliquas æque grandes venas potius superant hinc possis concludere, naturam tarditatem in sanguinis reditu quævisse; refluxum sanguinis venosi in nixu et inspiratione violentiori, aliquo moderare probabile est—Ex tarditate sanguinis in sinibus coagula produci, in apoplexia, cephalæa, epilepsia, phrenitide soporisque morbis, frequenter observatur—Ex congestione visæ sunt rupturæ—Vasa lymphatica in dubio sunt, &c. Nervi—De cerebro in specie, 126—Proportio cerebri ad corpus in tabula annexa, inter varia ac varia animalia.—Substantia cerebri, 127—1. Medullaris—2. Corticalis—Figura—Moles—Pondus.

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Vasa cerebri, cerebelli, et medullæ, et spinalis - 144

Galenus et *Oribasius* refutantur a *Berengario*, *Vesalio*, *Massa*, *Wepfero*, et *Willisio*, &c. - - - - 145

Arteriæ visæ fuerunt, cæcæ, lapideæ, osseæ, minoris diametri. *Willisius*.

Calculosæ, induratæ in maniaco, in cephalæa. *Harmer*.

Arterias tenuis meningis omnes, osseas vidit *Morganius*.

Sanguinis per cerebrum iter, valde expeditum est, liber transitus, ex arteriis in venas - - - - 148

Sanguinis in homine erecto ob pondus suum, minore celeritate ad caput venit, et majori redi.

In morbis acutis, erectus situs quærendus, ut minor sanguinis in cerebrum impulsus sit.

In situ supino sanguinis in cerebrum velocitas a pondere augetur, vis qua refluit minuitur, ita cruor in cerebrum congeritur.

Venæ encephali.

Venæ in cerebro adsunt, sed non valvulosæ; sunt teneræ suis arteriis ampliores, per corticem, medullam et caveas dispersæ—Venæ in sinus se exonerant, &c.—Vena occipitalis ascendit, ex magno trunco venæ jugularis internæ, ad occiput pone aurem.

Vasa lymphatica: vasa aquosa cerebri passim citantur in plexu choroideo videntur plures ut *Stenonius Nuckius*, *Ridley*, 14.—In corporibus striatis. *Simoncellius*—*Richardus Carr*, vidit lymphatica vasa per os cribri-forme ad natus euntes—In pia matre et in ambitu cerebri vidit *Edmundus King*, *Samuel Collins*, imprimis *Antonius Pacchionus*, sub meningibus *Lossius Fassin*—In cerebro et intra cerebrum *Hertodtius* circa anfractus cerebri *Bohnius*—Vasa lymphatica varicosa cerebri *Lancisius* et *Heuermannus*—Sub fornice versus glandulam pinealem, grandes lymphæ ductus vidit *Morgagnius*—In sulcis inter colliculos et secundum vasa rubra in animalibus *Cl. Bourgelat* dixit—Hisce autem plura obijciuntur, et imprimis a *Hewsono*—Quod nusquam in corpore humano longe absque glandulis conglobatis lymphatica vasa decurrant, concludit hinc, vasa abesse, ubi glandulæ desint—Sed nuper *Cl. Monro juniori*, probabile videtur glandulam pituitariam esse de lymphaticam genere, vidit vasa absorbentia in cerebro piscis (*skatefish*) et per analogiam concludit ea in homine etiam adesse.

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Olfactorium par, &c.

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GENITALIA MULIERUM.

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Partes quæ in mulieribus generationi inserviunt apte dividuntur, in externas, et internas, et sunt—*Externæ*. Mons veneris—labia majora—minora—clitoris—hymen—*Internæ*, vagina—uterus—tubæ Fallopiianæ—ovaria—ligamenta lata—rotunda—urethra.

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Auris, organum est auditus - - - - 266

Auris dividitur: 1. In auriculam et meatum auditorium externum—2. In cavitationem tympani—3. In labyrinthum—Partes autem molles; sunt externæ vel internæ—*Externæ* sunt: 1. Auricula—2. Meatus auditorius externus—3. Membrana tympani—*Internæ*: 1. Periosteum auris internæ—2. Membrana communis auris internæ—3. Tuba Eustachiana—Auricula—substantia ejus—Helix—Antihelix—Concha—Tragus—Antitragus—Lobulus auris—Pinna vel ala—Musculi—Superior musculus—Posterior—Anterior—Transversus—Antitragicus—Tragicus—Meatus auditorius externus—Glandulæ ceruminosæ—Membrana tympani—Structura membranæ—componitur ex laminis sex—*Prima* est epidermidis—*Secunda*, productio membranæ meatus vestientis—*Tertia*, textus cellularis in quo vasa faciunt elegans rete—*Quarta*, splendens, tenuis, diaphana, enascitur a periosteo meatus—*Quinta*, textus cellularis est, simili vasorum plexu donata uti *tertia*—*Sexta*, est a periosteo cavi tympani. Et si hæc membrana plurimis componatur laminis, satis tamen tenuis est a malleo, hujusque musculis intensa, ac sensilissima, uti inflammationes id evincunt.

Usus.

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Usus auris: motus tremulos, aeris ope excipit; ad ossicula auditus, hinc per partes auris internas, in cerebrum usque deducit; et sensum auditus excitat, &c. &c.

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LINGUA.

Definitio—**involucra**—**figura**—**divisio**—**1. Basis, vel radix**—**2. Corpus**—**3. Dorsum**—**4. Linea mediana**—**5. Latera**—**6. Apex**—**Connexio; cum osse hyoide, maxilla inferiori, processu styloide, pharynge, larynge, per musculos et membranas.**

Ligamenta—**1. Frænulum**—**Membraneum**—**Substantia linguæ**—**fabrica**—**pars inferior**—**media**—**postrema**—**Papillæ nerveæ, 273**—**1. maximæ**—**2. fungiformes**—**conoidæ**—**aliæ papillæ filiformes cylindricæ, &c.** **Arteriæ linguæ**—**Venæ**—**Nervi**—**Glandulæ**—**Motus linguæ a musculis variis**—**Usus linguæ: gustus, et sermonis et cantus instrumentum præcipuum, manducationi quoque suctioni, deglutioni, expuitioni, &c. inservit, &c. &c.**

COLLUM.

Collum vel cervix—**Jugulum**—**pomum Adami, 274**—**Cervix**—**humeri**—**Partes externæ**—**1. Integumenta communia**—**2. Musculi multi**—**3. Vertebrae**—**4. Medulla spinalis colli**—**5. Octo paria nervorum cervicalium**—**6. Arteriæ carotides**—**7. Venæ jugulares externæ et internæ**—**8. Glandulæ jugulares**—**9. Glandula thyroidea**—**10. Nervi**—**11. Ganglia plura, vide in tabulis**—**12. Lymphatica vasa**—**Partes internæ**—**1. Fauces**—**2. Pharynx**—**3. Oesophagi pars**—**4. Larynx**—**5. Trachæa pars.**

FAUCES.

Cavum amplum in pharyngem terminatum, quod retro linguam et velum palatinum est nominatur fauces—**tunica**—**arteriæ**—**venæ**—**musculi**—**nervi**—**usus.**

PHARYNX.

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Pharynx est ampla figuræ irregularis cavea infundibulo similis, retro laryngem ante vertebrae colli superiores faucibus adhæret, in oesophagum terminatur—**Sedes**—**Connexio**—**figura**—**substantia**—**musculi**—**Nomina musculorum pharyngis**—**arteria**—**venæ**—**nervi**—**Glandulæ**—**Usus: pharynx admittit, detradit alimenta in oesophagum.**

OESOPHAGUS.

Vel gula. Est tubus membranaceus, musculosus, qui a pharynge incipiens, in ventriculum usque descendit—**Situs**—**Connexio**—**Substantia**—**1. Membrana communis**—**2. Membrana muscularis**—**3. Membrana nervea**—**4. Membrana villosa**—**Villi, 276**—**Arteriæ**—**Venæ**—**Glandulæ oesophageæ**—**Usus: per oesophagum cibi promoventur**—**Constringitur oesophagus ab irritatione cibi descendens.**

LARYNX.

Larynx est trachæa pars suprema—**Vocis organum est**—**Constat cartilaginibus quinque; musculis pluribus; interna membrana nervea**—**1. Annularis cartilago**—**seu cricoidea**—**Thyroidea cartilago**—**3. et 4. Arytænoideæ**—**5. Epiglottis**—**Figura**—**Basis**—**membrana**—**Glandulæ**—**sinus laryngis seu ventriculi**—**Musculi laryngis sunt tria paria.**

TRACHEA.

Trachea, aspera arteria, vel fistula pulmonalis, 277—**est canalis longus ex anaulis cartilagineis, fibris muscularibus,**

laribus, carneis, constans; semper apertus; qui ante oesophagum, a larynge per collum super oesophagum extensus, in thoracem descendit; ibique in duos ramos dividitur, qui *Bronchia*, vocantur, &c.—1. Larynx—2. Trachea—1. tunica extima cellulosa—2. tunica musciosa—3. Glandulæ parva—thyroidea—4. Bronchiæ, sunt rami tracheæ inter vasa pulmonalia per pulmones ubique distensi quibus adhærent vesiculæ—Ortus—Fines: de bronchiorum finibus lis est inter anatomicos—Opiniones—arteriæ bronchiales—dextra arteria—sinistra—venæ bronchiales duæ sunt—dextra—sinistra—vasa hæc cum bronchiis communicant—Nervi—Glandulæ notabiles tracheæ adsunt, quæ ad humectandæ inserviunt—1. Bronchiales sunt nigræ—2. Thyroidea—plena est seroso, flavescens, lenitur viscido humore—usus incertus—Usus tracheæ arteriæ: est ad respirationem et loquelam; dum respiramus et loquimur, aerem introrsum et extrorsum mittit.

THORAX.

Thorax, vel pectus, est medius corporis venter, sive cavitas inter collum et abdomen situm, extenditur a collo ad diaphragma—Substantia—divisio—Externæ partes—Mammæ—Nomina in fæminis mammæ, in viris mammillæ—Integumenta—numerus—situs—magnitudo—Figura—pulchritudo—tempus incrementi—tempus decrementi—papillæ substantia—foraminula—Areola—Usus—Substantia mammarum—1. Integumenta—2. Substantia—3. Glandulæ lacteæ—4. Vasa lactea—tubuli lactiferi—5. Arteriæ mammarum—6. Venæ—7. Vasa lymphatica—8. Nervi—Usus mammarum. Lac nutritioni infantis dicatum, in glandulosa substantia secernere, in tubulis et finibus lactiferis colligere, asservere, et suo tempore infanti per papillam præbere.

Mammis remotis, in thorace considerata: 1. Musculi pectorales—intercostales externi—interni—membrana, pleura dicta totum thoracis cavum investiens.

PLEURA.

Pleura est membrana crassa, robusta, diaphana, *cellularis*, internam superficiem thoracis investiens—superficies interna—externa cellulosa—Mediastinum est processus membranaceus magnus, quod thoracis cavum in duas cavitates discernit. Constat binis pleuræ laminis textu celluloso invicem nexis. Connexio pleuræ est cum costis, musculis intercostalibus, sterno et corporibus vertebrarum dorsi, interius cum pericardio et diaphragmate. Vasa—arteriæ *copiosissimæ*—venæ—vasa lymphatica—Nervi. Usus: 1. Ut pectoris internam superficiem amiciat—2. Thoracem in binas partes dividat—3. Pulmonalibus et pericardio externam dat membranam—4. Totum thoracem investit, lubricat, firmat.

DIAPHRAGMA.

Diaphragma est sepimentum, quod thoracem a cavo abdominali separat—Numen—situs—substantia musciosa—Connexio: *Antorsum* processui ensiformi sterni ultimis duabus costis veris et margini cartilagineo omnium costarum spuriarum, pericardio, mediastino, ad-

hæret. *Postorsum*, duo crura carnea formata, quæ corporibus vertebrarum lumbarium nectuntur—Foramina tria—arteriæ—venæ—nervi—usus.

PULMONES.

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Pulmo est viscus thoracis maximum, molle, spongiosum, cor complectens, respirationis organon—Figura—Color—Involucra—Connexio: cum collo, ope asperiæ arteriæ; cum sterno et vertebris, ope mediastini; cum corde, ope vasorum pulmonalium—divisio—Fabrica—substantia—vesicularis spongiosa—Tela cellulosa in magna adest copia, revincit omnes partes facitque cellulas communicantes cum vasis aëreis, firmat, ordinat, stabilat, vasa, omnes minimosque lobulos comprehendit, donec lobuli resolvantur in cellulas membranaceas exiguas, aëre in adulto plenas variæ figuræ. Cellulosa hæc tela aucta ultimo ipsum pulmonem constituit. In ea dividuntur arteriæ et venæ pulmonales, aërea vasa, et in cellulosa ultimæ spatiolis minimæ arteriolæ venæque repunt, intertextæ in retis speciem, ibique et arteriæ vaporem copiosum pulmonis aëreas cellulas exhalet et vena ab iisdem vaporem aquosum recipit.

2. Vasculosa—3. Bronchialis—Vasa aërea: ab aspera arteria producuntur—Interior etiam membrana tracheæ nervea—Involucrum pulmonis pleura est continuatio.

Vasa pulmonum—1. Communia seu pulmonalia—2. Propria seu bronchialia—Arteria pulmonalis—Vena pulmonalis—Arteriæ bronchiales—Venæ bronchiales—Glandulæ innumerabiles sedent in cellulosa tunica—Glandulæ bronchiales—Vasa lymphatica—Nervi.

Usus pulmonis—1. Respiratio—Inspiratio, exspiratio, &c. &c.

PERICARDIUM.

Pericardium est peculiaris saccus membranaceus, cor cum suis appendicibus includens, hærens inter duos pulmonis lobos—Figura, 284—basis—Connexio superius cum mediastino et vasis magnis cordis cæheret basis. Inferius: diaphragmati nectitur, apex liber est, et in cavitate quadam lobi sinistri pulmonis fovetur—substantia—constat ex duplici membrana—vasa arteriosa et venosa—lymphatica vasa—nervi—liquor—pericardii—videtur inservire pro cordis humectatione motusque facilitate—Morbi in immensum nonnunquam augent hanc aquam, quæ est lymphatica, ad ignem in gelatinam spissescit.—Usus pericardii:

1. Sustentare cor, quasi pendulum maxime, quando dorso incumbitur.

2. Defendere cor, ne aer frigidior, pulmonem ingrediens, illud forte offendant.

3. Ne pus, aqua, &c. thoracis, cor lædere possit. Liquorem pericardii continere pro cordis faciliiori motu.

COR.

Cor est machina seu instrumentum ex copiosissimis carneis fibris composita—Circulationis sanguinis et vitæ organum

organum primum habetur — Figura — Longitudo — Latitudo — Circumferentia — pondus — Substantia cordis — situs — Cordis obliquus est, non transversalis — sedes conformatio — Visum est cor basim habere in sinistra thoracis cavea, apicem in dextra — In statu naturali cor ascendit et descendit cum diaphragmate; *ascendit* in fortiori expiratione, *descendit* autem in valida inspiratione, quia pericardium diaphragmati connexum est inferius.

Divisio externarum partium cordis est. 1. Basis et apex — 2. superficies superior et inferior — 3. Margines, anterior et posterior — Divisio internarum partium cordis — Ventriculus dexter — Ventriculus sinister — Orificia, 286 — Valvulae semilunares — tricuspidales — Vasa cordis propria et communia vel propria — Communia — 1. Aorta — 2. Arteria pulmonalis — 3. Venae pulmonales vena cava — Vasa propria sunt — Arteriae coronariae dextrae et sinistrae, quae ab aorta, per cordis substantiam disperguntur, idque nutriunt.

Auriculæ duae — Vis irritabilis — diastole — systole, 287 — Motus cordis, mirabilis est, dies noctesque sine unius momenti intermissione et sine delassatione, centum quandoque et ultra annos perdurens uniuoque die centies millies pulsans. Usus cordis est: primum organum motus vitalis sanguinis, ejusque circulationem per omnes partes corporis promovens, ad corporis incrementum, nutritionem et vitam. Cor sanguinem per venas ex omnibus partibus recipit et per arterias ad omnes rursus partes suo motu pellit, &c.

TABULA XLVII. Figura I. Cor mulieris exhibet cum vasis suis contiguis — cera repletum a dextro latere in situ suo naturali.

Figura II. Idem cor a sinistro latere sub eodem corporis situ, quasi per costas conspiciendum exhibet.

TABULA XLVIII. De circulatione sanguinis, et de valvulis, &c.

EPITOME SPLANCHNOLOGIÆ.

Explicatio partium omnium brevis, mihi videtur; hoc in opusculo, definitiones, situs, nexus partium dantur, præcipue in praxi medicinæ utilissimi; osteologia, syndesmologia jam accurate dicta sunt in priore parte hujus operis, hic ergo omittuntur.

Divisio corporis humani - - - - - 290

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— Vagina — Partes genitales virorum — Mulierum

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Partes uteri gravidæ — Placenta uterina — Funiculus umbilicalis — Ovum membranaceum fœtus — Liquor amnii — Fœtus quibus differt ab adulto.

HYGROLOGIA, seu.

DOCTRINA DE HUMORIBUS CORPORIS HUMANI.

Liquida nostri corporis partes humores vocantur. Hi dividuntur in humores secretos et non secretos — Humores non secreti.

1. Chylus. Est humor albus, lacti similis, qui ex cibis in ventriculo et intestinis tenuibus digestis oritur.

2. Sanguis. Est humor rubicundus, qui in corde, arteriis et venis continetur.

3. Lympha est aqua gelatinosa, quæ in vasis lymphaticis continetur.

Humores a sanguine secreti in cranii et specu ventrali, vapor aquosus, &c.

In cavo narium. Mucus narium.

In cavo oris. Saliva a glandulis salivalibus secernitur.

In cavo faucium. Mucus faucium et œsophagi.

In oculis. Humor aqueus, lens chrySTALLINA, humor vitreus, lachrymæ, succus glandularum Meibomiarum.

In auribus. Cerumen aurium, aqua auditoria.

In collo. Succus glandularum submaxillarium, jugularium et glandulae thyroideæ, qui lympha gelatinosa est.

In mammis. Lac mammarum.

In thorace. Mucus laryngis, tracheæ et bronchiorum. Succus glandulae thymus, vapor pericardii et cavitum thoracis, qui ab arteriis exhalantibus secernitur. Materia perspirabilis pulmonum, quæ ex pulmonibus exhalat.

In abdomine. Succus gastricus, succus entericus, ea arteriis minutissimis exhalantibus aëre mistis, succus pancreaticus, bilis. Mucus ventriculi et intestinorum. Chylus, fæces intestinorum.

In vesica urinaria. Urina, mucus.

In genitalibus virorum. Semen, mucus urethrae, succus glandulae prostatae, succus glandularum odoriferarum glandis, vapor tunicae vaginalis, qui aquosus est.

In genitalibus mulierum. Mucus vaginae et urethrae, succus glandularum odoriferarum, sanguis menstruus, sanguis lochialis, liquor amnii.

In fœtu. Meconium.

In articulationibus. Synovia, succus vaginam tendinum.

In ossibus. Medulla ossium, succus medullaris.

In integumentibus communibus. Mucus Malpighianus, succus glandularum subcutanearum qui pinguis est. Succus pilorum, materia perspirabilis, quæ sub forma vaporis invisibilis per vasa exhalantia arteriosa ex tota superficie cutis perpetuo exhalat; oleum membranae adiposæ, quod ubique in cellulis tela cellulosa et omento a poris lateralibus arteriarem secernitur.

SCHOLA

SCHOLA MEDICINÆ UNIVERSALIS NOVA.

LIBER II.

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Boerhaavius docuit vasa lymphatica, esse arterias minutissimas in venas congeneres abeuntes, serumque sanguinis pellucidum vehentes: sed ab anatomicis recentissimis, *hæc theoria eversa est.*

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From this exhibition of the Latin *Schola Medicinæ* may be seen, by comparison, the difference between that more elaborate work, and the present English edition.

THE CONCLUSION.

With a brief account of the plan instituted at the St. Mary-le-bone infirmary, for instructing pupils in the science of medicine, and its various branches, &c.

THUS is concluded the abridged translation of *Schola Medicinæ Universalis Nova*; principally adapted to the purposes of practice in the medical art. The Latin edition is more diffusive; but, perhaps, not more useful, except, that it contains the appearances from dissections, and relations of morbid parts of all diseases, in a column parallel to the physiology. In the history of medicine, the English edition is much enlarged, and the whole practice and sentiments of the illustrious father of medicine, HIPPOCRATES, are arranged, not without much labour, in a conspicuous point of view. The doctrines likewise of the Greek philosophers are introduced, and the *dogmata* of ASCLEPIADES, and other leaders of sectaries are exhibited. The ancients were no less industrious in forming visionary systems than the moderns. They were frequently credited, took root, blazed forth with lustre, lived for a certain period, attracted admiration, *pro-tempore*, while in fashion, gradually came into disrepute, decayed, and then fell never to rise again. This has been, and ever will be, the fate of all narrow systems, which would contract the wide expanse and varieties of human nature, into a few miserable unproved chimerical principles.

After such repeated failures of many ingenious and real learned men, it is surprising that any professor, or physician, will dare to advance, or attempt to enforce doctrines, which, if examined by the lights of reason and truth, are found, not only defective, but absolutely false. Miserable must be the art, after above 2000 years labour, of different and succeeding artists, if from their joint science, a foundation for rational practice cannot be formed, without those false and erroneous props, hypotheses, unintelligible and equivocal ambiguous phraseology, the subtle schemes of artifice, through the vanity of appearing singular.

There are facts enough in the art, fully established, for all the purposes of investigating the causes, and curing all curable diseases; then why desert truths and experience, to embrace error, falshood, the stratagems of delusion, or the wild effusions of infatuation and immature experience? Why?—Why, because men are desirous of a shorter cut to obtain knowledge, than can be acquired by the laborious studies and experience already promulgated, in the former part of this work, as indispensably necessary. Imagination, if let loose, takes more rapid and unsubstantial flights than cool reason, guided by science, truth, and solid judgment.

The authors of false doctrines may be justly charged with intentional deception, and their superficial believers and followers, with vicious credulity and indolence, in suffering themselves to be imposed on by the semblance of veracity, where no veracity exists. Versatile juvenile characters, often rapidly fly after every superficial crude novelty; experience, reason, and profound judgment, are meditating cautions, penetrating and circumspect. Which of the two is most appropriate to so important a science as medicine? Let those who are capable of reasoning and reflection determine.

The greatest ambition of my life, the grandest objects of an ardent solicitude, have been to see a *rational school of medicine* erected; for this purpose have all my labours been directed, and through the joint assistance of my colleagues Doctor Hooper, and Mr. Phillips, at the St. Mary-le-bone Infirmary, those views are nearly accomplished. I am proud to say, I laid the first brick of that airy building, on the eleventh of June, 1792, and gave the outlines of the defects of our former infirmary; which I had long attended, and other hospitals, to the benevolent noblemen and gentlemen of the committee, to render the new erection complete, as much as appeared possible, for the comforts of the poor afflicted, and for the humane purposes of that most excellent parochial institution. Mr. White distinguished himself as an excellent architect. It has since received improvements; so that it may be considered as a model for all the purposes of a complete British hospital. I had seen, and had plans of most of the hospitals in Europe, and had investigated their merits and defects; the former were adopted, and the latter excluded.* One important circumstance has been observed, never to mingle the surgery patients with the medical; but to keep them both in separate wards, by which the olfactory nerves are not offended with the disagreeable odours of ulcers, ointments, &c. nor the surgery patients exposed to the contaminating air of putrid fevers, &c. The wards are airy, open, and all distinct.

As to the modes of exercising the pupils, these too differ from all other places, or hospitals in Europe; and they are respectfully submitted to the candid and learned in the profession, and to all those useful and celebrated members of society, professors, who undertake the important task of initiating students into that art, which, amongst all others, is the most learned and difficult of access.

I. As nothing can be understood without a knowledge of learned

* The hospitals have been examined as to the building, arrangements, and medical practice, at Rouen, Amiens, Paris, and Lyons, in FRANCE; those at Turin, Florence, Bologna, Rome, Naples, Ferrara, Padua, Venice, and others in ITALY; those of Trieste, Lintz, Vienna, Ratisbon, Franckfort, Mentz, Cologne, and other parts of GERMANY; St. Omers, Brussels, the Low Countries, and all HOLLAND, as Amsterdam, Rotterdam, Leyden, the Hague, &c.

learned languages, terms, definitions, and constituent particles of substances; these are the primary objects in medical education and instruction.

II. These are applied, first, to pharmacy, and all the junior pupils of the second and third class, are monthly, in rotation, employed in preparing the numerous prescriptions of an unbounded and extensive practice, and knowing the purposes for which they are prescribed.*

III. When capable, they have their month in rotation, to dress patients, and attend the surgery department in the surgery wards; and all the pupils, without distinction, are present at surgical operations, and extispiscial inquiries, or examination of the causes of death, in the dissecting room, where they are in the constant habit of observing the various ravages of different diseases they have seen and attended during life, and they acquire, by this means, no small knowledge in anatomy. Dr. Hooper kindly gives the pupils important lectures; which, advanced in life as I am, I rarely fail of attending, well knowing, by long experience, that this

is the only true mode of establishing real and improved accessions to science.

IV. From their first entrance as students they attend my practice round the house, and are occasionally informed of its *rationale*; where the wards are arranged in the following order.† The pupils are occasionally examined concerning the diseases, causes, indications, and contra-indications, and receive clinical instructions, at the bed side of the sick. The arrangement adopted facilitates science, and many acquire the *experience of aged men*, long before they are *twenty years old*. It may be pronounced now, from experiment, that nothing can be compared, or devised, equal to an early education in all the branches and extensive duties of the profession. It is a saving of ten years in the life of man, and if the sentence of the divine Hippocrates be true, which has never been denied, that *life is short, the art long*; it must follow, that those who are earliest initiated into the very fundamental principles, and who see them confirmed daily by practical experience, must take precedency in science of all those

* There is a *formula medicamentorum*, of my arranging, containing the prescriptions used.

† 2 *Convalescent*, large airy wards for men and women, separate.

2 *Pyrexial* wards, for the admission of febrile diseases.

2 *Chronic* wards, for different species of chronic diseases.

2 *Pulmonic* wards, for peripneumony, pleurisy, various coughs, asthma, empyema, &c.

2 Small-pox wards, for the reception of variolous patients.

2 Casual wards, for particular cases.

4 Wards on the upper part of the house, for venereal patients.

4 Large wards for surgery patients, on the ground floor.

2 Wards for the treatment of the itch.

A large cold bath and dissecting room, with appropriate conveniences.

On every floor *water-closets*, and in every ward portable water closets, for those who are incapable of quitting their wards; by which means all the wards are preserved from fecal and offensive scents. In the uppermost part of the wards, near the ceiling, are *apertures* for the exclusion of all foul air, hydrogen, gas, &c. by which means every ward is as sweet as any gentleman's house.

At a distance from these wards, is a large lying-in ward, and an airy apartment for particular midwifery cases.

Large airy wards in the uppermost part of the house, for infants, children, and their mothers.

Over the head of every patient, in all the wards, is the name, age, and disease, of each individual patient.

In the middle of each ward, on tables, are stands, perforated to hold bottles, with printed directions, for the accurate administration of remedies, and indicating those who are allowed wine, porter, &c. as their cases may require.

All round the house there are passages for the poor to walk, with benches; in the upper part glazed; in the lower open; and at certain hours the men, at other hours the women, able, are permitted to walk in a large garden.

In apartments appropriated to the purpose, all the sick, on admittance, have their cloaths entirely taken off, their bodies are washed, cleansed, and purified, and then are put on the clean hospital dresses. Whatever cloathing they come in with is cleaned, put into a large repository, and tickered, and, when cured and discharged, they receive all they brought, with necessary additions, if requisite.

In all the large and numerous wards, where the indigent, not afflicted with disease, are clothed and nourished, the same cleanliness and regularity pervades the whole. The younger persons of both sexes are employed in different manufactures, that require industry, and not much skill, and they have some small allowance of money for themselves, as an incitement to assiduity. The aged are indulged, the sick attended, and all the objects of distress are comforted and rendered as happy as their condition can possibly allow them. The insane, to the amount of above fifty men and women, are monthly attended and prescribed for, at Bethnal Green; and in the last year, twenty unfortunates, of this description, were removed from the mad-house, nineteen of whom remain well.

Besides the immense number of the poor in the house and infirmary, many hundreds are relieved both in sickness and poverty with attendance, medicine, and money, out of the house, in the different parts of that extensive and opulent quarter of London, the St. Mary-le-bone parish. In short, humanity and liberality march hand in hand, to relieve the necessitous and afflicted, and to the honour of the noblemen and gentlemen directors and guardians of the poor, nothing is proposed worthy of attention that is not complied with; nor no expence spared, that can, in the least, alleviate human misery. All is conducted on the most striking and laudable principles of universal benevolence, and yet with strict economy. A stronger proof of the great utility of the hospital plan and modes of treatment, than in the report for 1802, cannot be exhibited; in which it was remarked that out of between 4 and 500 patients, in scarlet fever, with putrid sore throat, only three died; not one in an hundred, which exceeds the success given in my treatise, on the modes adopted for curing those and other putrid diseases, &c. &c.

those who have not such important, very important advantages.

V. Dr. Hooper has judiciously instituted weekly examinations, from which none of the pupils are allowed to be absent, under pain of a small pecuniary forfeit; and in the proper seasons of the year, anatomical demonstrations are made monthly, by every pupil of the first and second class; and I am happy to say, in farther confirmation of what is advanced, that they acquit themselves highly honourable to the institution, that has been established for their future fortune in life, and the public utility. If similar plans were carried into effect in all the provincial, or county hospitals, the students would be well grounded in theoretical and practical science, before they came to London to finish their studies, and his Majesty would be certain of having excellent surgeons and learned physicians for the navy and army, which was not the case a few years ago, and the whole country would reap the benefit by the salvation of thousands of lives, who fall victims to error, empiricism, inexperience, and deficient science.*

VI. The pupils, in rotation, write all the prescriptions in the hospital books, the names, age, and disease of patients, over the bed's head in the wards; and when properly qualified by studies and experience, they assist in visiting the out-door patients, under the direction of Dr. Hooper, the assistant resident physician, and Mr. Phillips, surgeon to the household of His Royal Highness the Prince of Wales.

VII. The pupils are obliged to give the chemical analysis of bodies, the doctrines of composition, decomposition, &c. and Dr. Hooper explains the materia medica, and makes, occasionally, botanical excursions, exhibits pharmaceutic chemistry; so that it must appear evident, that every mode of communicating science is adopted that can be suggested; and nothing but a deficiency in the natural intellects, can prevent the *tyro* from becoming the respectable practitioner. At most other places they are left to learn what they please; here every one is compelled to become proficient in whatever tasks are directed, according to the classes, which are divided into three.

VIII. Every year at Christmas, a report is made by Dr. Hooper, of the number of patients admitted into the infirmary, as to the out patients they are innumerable. It may be observed, that numerous diseases are admitted, which most other great hospitals in London reject, as many in-

fectious diseases, the small-pox, lying-in women, &c. &c. and though we have not so many chirurgical operations as some, yet there are few, at one time, or other, that are not performed.

It must appear, therefore, evident, that the diseases common to infants at their birth, lying in women, of boys and girls, from that age to puberty, from thence to the middle age, and, lastly, from that time to the latest hour of life, to the ages of 80 and above 100 of both sexes, even until death; all, all come constantly under view, arranged so as one affection cannot be confounded with another. The anatomical investigations after death, explain the effects of diseases, and lead to their causes, and how, and when they might have, probably, been prevented from leading to fatality. After such an education, after such an experience, after such numerous facts are imprinted on young minds, before baneful passions predominate, it is highly rational to suppose, the pupils will not be led away from the paths of truth by fleeting hypothesis, by those mushroom conceits, that are daily exuding from the brains of those who are incompetent and superficial judges of the present excellent state of the art, men, who only surprise to deceive. It commonly happens, that speculations and practice are ever at direct variance, and high and irrational expectations are cruelly damped, and severely punished by disappointment. Therefore, when novelties appear, read, reflect, investigate, reason logically, never suffer an inflamed imagination to preside over sage circumspection; and judge impartially before you conclude; but never desert known truths, for unproved projects. There are many roads to the same end, and he is wisest, who discovers and pursues the *safest, speediest, and best*.

The work and the evening of life are approaching to a final close. The exposure of fallacy has often created private professional enemies and calumny; but if the offensive, though well intended censures, have served the cause of humanity and science, all the ends proposed are accomplished. Suffer the author, then, to finish his career in the words of that excellent and virtuous Roman, *QUINTILLIAN*. *Conscius sum mihi quantum mediocritate valui, quaque antea scierim, quaque operis hujusce gratia potuerim inquirere, candide me, atque simpliciter in notitiam eorum, si qui forte cognoscere voluissent, protulisse. Atque id viro bono satis est, docuisse quod scierit.*

* It is not to the honour of the country, that ignorance in *anatomy* is enforced by the *laws of the land*. Medical men are expected to be skilful, and are liable to be punished for ignorance; yet the sources of anatomical intelligence, on which the foundation of all true medical knowledge depends, and without which no learned medical author, nor no disease can be comprehended, are legally impeded, or rendered so hazardous, that many prefer ignorance to science, from the danger attending anatomical researches. When the *dead body bill* was agitated in the House of Commons, I came forth, singly, and delivered my sentiments, and sent a small pamphlet on the subject to every member of Lords and Commons, shewing how the evils might easily be removed, without doing any violation to the dead, or injuring the feelings of the living. The institutions at *PARIS*, are rational and publicly useful; but they originated from the great *COLBERT*, the wise minister of *LOUIS QUATORZE*. In this avaricious, commercial, monopolizing country, nothing but *SELF* is considered, and the public good is frequently sacrificed to prejudices, or a vicious pride, that never listens to the voice of reason. At the end of my treatise on dropsy are reprinted what was respectfully submitted to the legislature of Great Britain; but I was informed, that a law officer objected to those proposals, although my efforts prevented the *dead body bill* from passing into a law, on which much more might be said, *sed nunc tacendum est*. The anatomical professors in London are an honour to the country and ornaments to society, who, under many disadvantages, at the hazard of health, &c. instruct pupils, and teach the true road to fame and fortune. Their arduous labours merit the highest estimation from society, and all the profession. The nation reaps the benefit, and the government of this and every wise nation, should liberally afford recompense equal to their high and transcendent merit.

