

An essay on the organic diseases and lesions of the heart and great vessels / from the clinical lectures of J. N. Corvisart ... ; published, under his inspection, by C. E. Horeau ... ; translated from the French, with notes, by Jacob Gates.

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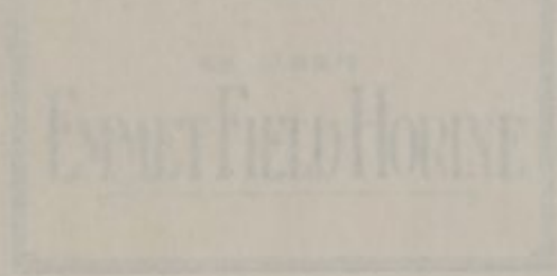
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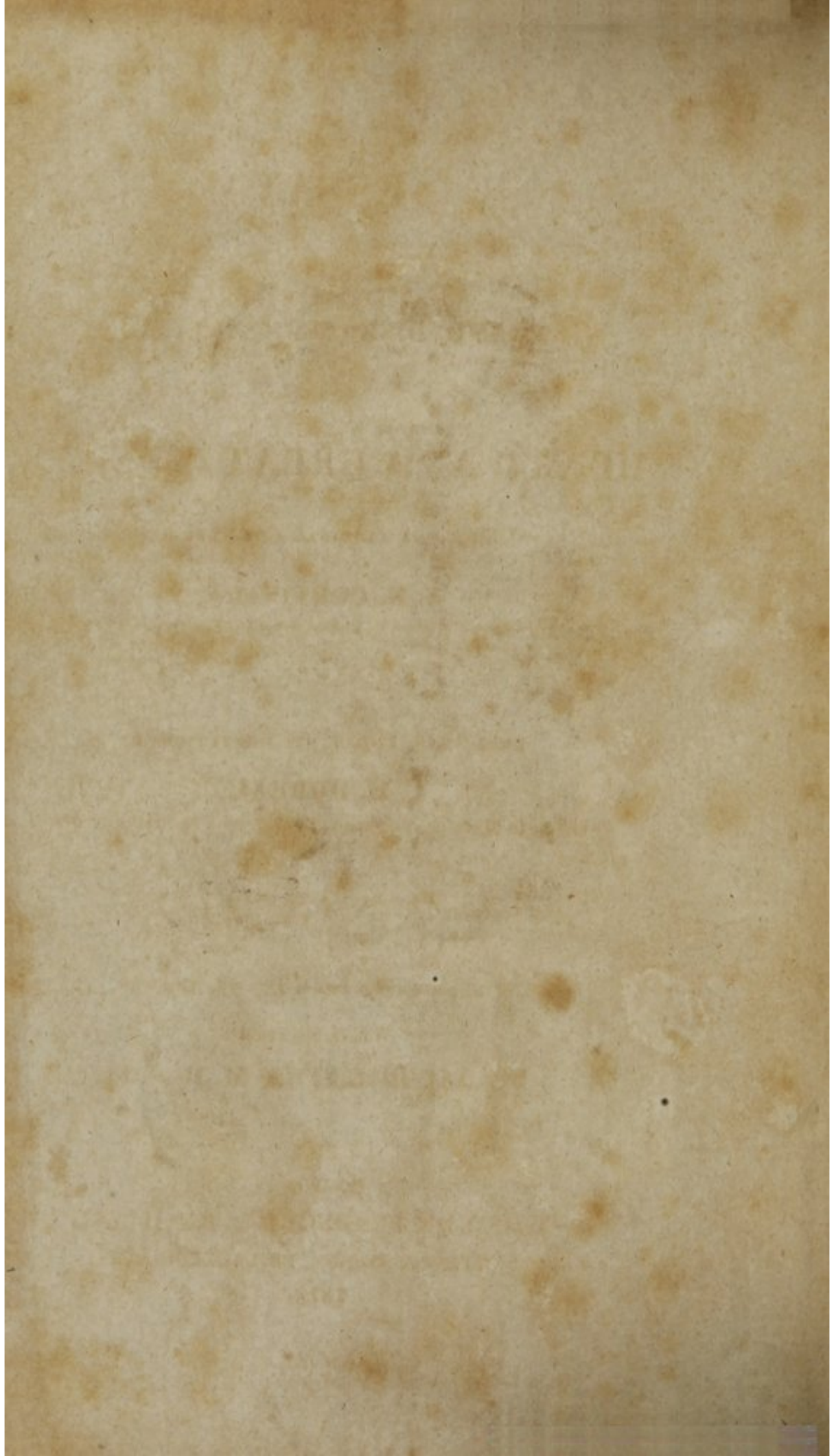




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AN

ESSAY

ON THE

ORGANIC DISEASES AND LESIONS

OF THE

HEART AND GREAT VESSELS.

FROM THE CLINICAL LECTURES OF

J. N. CORVISART,

First Physician of their Imperial and Royal Majesties; Officer of the Legion of Honor, Honorary Professor of the School of Medicine of Paris, and of the Imperial College of France; Physician in Chief of the Hospital of La Charité, &c. &c.

PUBLISHED, UNDER HIS INSPECTION, BY

C. E. HOREAU,

Doctor in Medicine, Surgeon of the Infirmary and House of the Emperor and King.

Hæret lateri lethalis arundo.

VIRG. ÆNEID.

TRANSLATED FROM THE FRENCH,

WITH NOTES,

BY JACOB GATES, M. M. S. S.

BOSTON :

**PUBLISHED BY BRADFORD & READ, AND BY
ANTHONY FINLEY, PHILADELPHIA.**

1812.

ADVERTISEMENT.

FROM unexpected events, considerable time has elapsed since the following work was prepared for the press and announced to the public. As most of the faculty have been but partially acquainted with this very formidable class of organic diseases, a production like the present, tending to elucidate so fully a subject of such great moment, must ever be extremely acceptable to the physician, as well as interesting to society.

The distinct characters given of pericarditis, pleurisy, and peripneumony, will let new and valuable light into the mind of the inquirer. "It is the first time," says the French reviewer of the organic diseases of the heart, "that I have found these characters so worthy of observation, well drawn in any medical work."

The chief aim of the translator has been to give an exact transcript of the author's ideas; how far he has succeeded in this humble but useful labor, the intelligent and candid reader will best judge.

The Dedication in the original by *Corvisart*, to *Napoleon I. &c.* is omitted.

The notes inserted by the translator are designated by the letter T.

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EDITOR'S PREFACE.

PROFESSOR CORVISART would long ago have published a work on the present subject, if he could have found leisure for the purpose. Wearied, in fine, with many vain attempts, the professor desired to associate me in his labour, and accordingly engaged me to methodise, under his inspection, the following essay from his lectures.

The necessity of doing it appeared to him the more imperious, as, while he was deferring, without forgetting his project, numerous pupils possessed his observations or appropriated his ideas to themselves. Some have done it by rendering to this celebrated professor the just tribute of applause and gratitude, which they owed to his laborious and useful lectures ; but many others, without quoting him, have published on these diseases, facts, opinions, considerations, and fragments of a doctrine which are entirely his own.

Such plagiarisms, of which the professor has long been conscious, have often induced him to make, in his lectures, the poignant application of this passage : *Diviserunt sibi vestimenta mea, et super vestem meam miserunt sortem.*

In short, if we attend to whatever has been either borrowed or stolen from him, we shall find some scattered

facts, a mutilated and confused doctrine, ideas ill chosen, consequences ill drawn : All being desirous to communicate something immediately, a heterogeneous collection has been the result of their hasty productions.

The importance, and as it were the novelty of the subject excited him to this undertaking : " If I am not deceived," he often said, " such a work must throw great light upon a class of diseases very little understood, though quite frequent ; it must manifest the numerous mistakes which have been committed by a vast number physicians, both ancient and modern. It is clear that the majority of the individuals, reputed to have died of anasarca, leucophlegmatia, and particularly of hydrothorax, and of various species of asthmas, and singular dyspnoeas, may have perished from diseases of the heart." I think the reader will find this assertion fully demonstrated in the course of this work.

The principal cause of these mistakes is observed to be the same among the ancients and moderns ; among the first, from their ignorance of anatomy, owing to their superstitious respect for the dead ; and, since the renovation of the sciences, it must be imputed to the inattention of physicians to practical anatomy, and that now called *pathological*.

How little, in short, of the latter is found, (I will not say among practitioners busily employed in great towns, who seldom have the opportunity, on account of the difficulty of obtaining permission, to open dead bodies) even in hospitals, where a law is enacted to inspect the dead, to develope either the cause or the effects of the latent diseases to which the patients have fallen victims ? And in the trifling number of dissections which have been performed, how hastily, imperfectly, and often secretly, have they not been conducted ? It might be said

that they who ordered them, (for they were very seldom performed by the physician) were suspicious of not discovering what they conjectured, or what they did not predict: I will say more, because in dissections made here and there in hospitals, I think I have not once seen the scalpel directed to the heart, for the purpose of knowing its internal state, until the author awakened the attention of physicians to the diseases of this organ, and rendered the knowledge of them public and easy.

What other means than experience have we of knowing the nature of diseases, or as Stoll says, *totius substantiæ*, viz. which attack and destroy the principle of life, without our ever being able to find a trace of their destructive influence, either in the state of the fluids or solids, at least in the present condition of our knowledge? I repeat it, how can we distinguish them from those which antecedently or subsequently, have had for cause or effect greater or less lesion, the alteration and derangement more or less complete, of any organ whatever?

Anatomy alone, aided by an exact acquaintance with the action of the parts and phenomena of an organic lesion, can elucidate this complicated subject, by opening the dead before their interment.

It is not by private and mysterious dissections that this application of physiological anatomy can produce successful and general results; it is not by observations made on bodies disinterred, and taken at random into the public amphitheatres, that we can be satisfied as to the nature of the disease. This is the sole defect of the excellent work of *Morgagni*, in which the most extensive erudition is otherwise found united to the most solid discussion and the most luminous views.

The great difficulty indeed, was not to discover, by an accurate dissection, certain organic lesions, with which

every attentive anatomist is often sure to meet. The point both difficult and important, the end truly useful, is to study on the living and diseased man, the characters peculiar to lesions of the different organs, to observe well their phenomena, and establish their symptoms, by observations sufficiently numerous, to prevent the possibility of misunderstanding them. Such a labor necessarily required a great hospital, where the patients could be observed and chosen, and a physician determined in his inquiries, never hesitating to inspect the morbid bodies of the dead. Such was, be it said to his applause the professor, of whom I claim the honor of having been the pupil, and some of whose lectures I am about to publish. He taught clinical medicine long before the foundation of any similar instruction in France, and he has ever pointed out to his pupils the most important cases, and the most latent diseases ; and after a diagnosis and prognosis seldom incorrect, he has invariably with the scalpel laid open the disorganizations of the viscera which he had predicted.

When a great number of facts has been thus publicly offered for the purpose of practical instruction ; when these facts have the seal of the most scrupulous authority ; when, however latent may have been a lesion in its consequences, the knowledge of it is rendered easy and familiar, then, it can be pronounced that science has made the most durable progress.

Now, among a multiplicity of chronic diseases of the organs, which the author has explained, it may be safely advanced that he has extended the knowledge of the lesions of the heart so far as to leave little to be desired, at least as to the art of distinguishing them. The author, after having publicly taught anatomy, and most of the other branches of medicine for many years, began, in

1788, to teach exclusively clinical medicine; and in the seventeen years subsequent to this date, he continued to demonstrate by signs and symptoms appropriate to the organic affections of the heart, the existence, and moreover the frequency of such diseases; so that could it be credited, ignorance or prejudice, if not invincible blindness, has almost accused the author of *seeing these diseases every where*,....so be it; but the accusers should add *where they are*. With more propriety, the author could accuse many of never seeing these diseases where they are, and of believing them sometimes to exist where they do not; his private practice has often proved the truth of this assertion.

I have the assurance to advance, that the authenticity of the observations, constituting the basis of this work, is far superior to those with which many authors have swelled theirs: nothing is altered or counterfeit in the facts, which were often collected and delineated by the assistance of a great number of pupils.

I must add, in order not to enlarge uselessly this essay, I have not quoted a third of the observations rendered equally public, which professor *Leroux* preserves in his precious deposit, and continues to enrich by new observations. The ones which I have offered, have appeared to me sufficient to convince the most incredulous; what I am here uttering proves their frequency, as what I am publishing demonstrates their existence. It must be again observed that, in point of authenticity, not a single case has been taken from the private practice of the author. Every one here inserted has been publicly examined and confirmed.

The reader will therefore give implicit credit to all the facts quoted in this work, as being due to the author; if neither doubt nor suspicion can be attached to them;

if by carefully studying the symptoms, professor *Corvisart* has never mistaken an organic lesion of the heart ; if dissection has invariably confirmed his prediction, I ask what disease is better known, what subject is now more complete ?

But as what is incapable of contradiction, cannot always be excluded from malicious or perfidious raillery, I have no fear of the reproach against this work, which an ancient ironically expressed against the books of the epidemics of Hippocrates, that it was *a meditation on death*. The author will, doubtless, be patient under such a charge, rather made to flatter self-love, than to offend vanity ; I grant that this work is a meditation on death. But why does nature, who has so many means of destroying us inevitably, borrow that of the organic lesions of the heart, and all the ills which they comprise in their train ? Whence arises the error, either from a host of physicians both ancient and modern, who in strict imitation of one another from age to age, have uniformly taken effects for causes ; who have ever mistaken the nature and seat of the complaint ; who have merely used palliatives, when they pretended to make a radical cure ; who have tormented multitudes of patients with a variety of dangerous and disgusting drugs without any happy effect ? Or, by an incredible obliquity of judgment, is the error to be imputed to the physician, the steady observer, who, dissipating the prejudice necessarily produced by reading only, should be able to recognize and demonstrate, by means of long public instruction, and by the assistance of daily experience, a mistake both old and believed, and to substitute for it nearly a complete history of a prevalent disease, made easy to be comprehended, in its simplicity and complications, by its signs, symptoms, progress, and termination ?

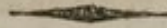
The essay which I am publishing is a work purely practical, founded on irrefragable observation ; hence clinical medicine rests solely upon the old and durable basis, *observation*. Doubtless, many works, to be commended, have been published in modern times on the healing art. All the accessory sciences seem to be intelligently united to enrich medicine with their new discoveries ; yet the light which they have imparted, has reflected merely a glimmering ray on a path where many of those who are hastening have already been bewildered.

Slow experience and correct observation must establish or destroy those brilliant theories, and ingenious systems, the seducing fruit of a vivid and fertile imagination ; and they must appear before these two rigid judges, *observation* and *experience*, in order to know whether, like so many others, after having shone a moment, they will in their turn be buried in oblivion, or be renewed in whole or part, after an indefinite series of ages.

Whatever be the fate of this essay, even notwithstanding its imperfections, it must be regarded as a useful directory. I say, notwithstanding its imperfections, from which neither the author nor myself can be exempt ; and, without speaking of the faults of the arrangement which must belong to me. Neither my memory, nor notes have faithfully represented all the ideas of *Corvisart*, who always necessarily extemporized, and sometimes by a sort of inspiration which rendered his ideas too rapid. My particular desire is, that the approbation of the public and the leisure of the professor will induce him to supply the deficiencies existing in this edition. It now remains to give a sketch of the plan.

It will first be observed that I have employed as few as possible of the new words too frequently introduced into medical science, and which are far from having received a general assent. M. *Corvisart* adopted them with much difficulty, and it is necessary to conform to his language. Every word, said he, which does not tend to convey a known idea more clearly, is useless ; it burdens the memory, without improving the understanding, or benefitting science : how many have been introduced which deserve this censure ! According to him, the useful and even the necessary revolution, which the chemical nomenclature has undergone (a revolution, which has also had its excesses) and which all the learned who cultivate this science, have very unanimously adopted, has generated, like an epidemic, the desire of reforming the language of medicine. Therefore a multitude of new words has crept in to obscure it ; if some terms more appropriate and exact, introduced by logical writers after mature reflection, have been received by the judicious and impartial, there are many, it is presumed, which time and custom will never sanction. *Stoll*, unquestionably, saw this useless innovation arising, simultaneously with the dangerous spirit of systems, when, speaking of the style of aphorisms in general, he says, *verum uti hæc probo, ita displicet illa, ut nunc est, ventosa loquacitas quæ, sub amplo verborum volumine, nil solidi tenet : displicet illa opinionum vertigo quâ ars laborat, ubi hypothesis hypothesisin trudit.* An incorrect taste, has since introduced, not without sometimes perverting the language, the aphoristic style into didactic works, where dryness is substituted for conciseness, or the obscure for the sententious ; besides, their plan is discordant : this example abounds with imitators.

I should likewise avoid what the author has ever considered as an abuse, when the thing is overacted ; viz. the language and mathematical rules to which many authors have subjected the language and science of medicine. I shall not commence a discussion of this point ; though I am far from thinking that the difficult art of knowing and curing diseases will ever acquire much assistance from the sciences, which are strictly called *exact*, by converting medicine into a species of problems resolvable by their rules. Mathematical exactness does not constitute that of the judgment, and it is evidently an error of the latter, to desire that a science which has data so opposite should yield to the former.



PLAN OF THE WORK.

The simple recapitulation of the numerous morbid states of the heart manifests the necessity of pursuing in their examination, a method ; I am therefore inclined to adopt the following.

The heart, like all the other organs, is formed by the assemblage of several different tissues. A cursory view of the lesions of this organ exhibits them always nearly the same in the analogous tissues, and evinces in the different tissues, particular modifications, which proceed partly from the different organization of the injured tissue. From this consideration, I conceived that I could assume, in the same tissues of the heart, the division of its lesions. This order is, indeed, more anatomical than medical ; but if one reflect much on the nature of organic diseases, he will doubt with me, whether any other be more convenient. Besides, I have

adopted this order mostly for the purpose of facilitating a satisfactory distribution of the materials which I had to treat,* and which will be arranged in five classes.

1st. The first will treat of the *membranous envelopes of the heart*.

2d. The second will comprise those of *its muscular substance*.

3d. The third will explain the lesions of the *tendinous or fibrous tissue*.

4th. The fourth will embrace the affections which involve the *different tissues*, and the preternatural states which are considered as diseases of this organ.

5th. The fifth will give a brief account of the aneurisms of the aorta. In fine, the work will be concluded by corollaries in which I shall speak of the causes, signs, progress, prognosis, treatment of the diseases of the heart, and of the means of distinguishing them from the affections with which they have been confounded, &c.

Very far from wishing to make a compilation, I first designed to insert, in this work only the observations peculiar to Profess. *Corvisart*; but to leave nothing to be desired as to the known diseases of the heart, there will be found at the end of each class, an appendix, where the diseases of the heart, which he has not observed, and which have been inspected by other authors, will be described agreeably to the method which will be followed in the course of this essay.

* One of the inconveniences which this distribution involves, is the impossibility, when following it, of treating in the same class, of *pericarditis*, and *carditis*; it is clear that a classification which requires a separation of these two diseases must be imperfect.

PRELIMINARY DISCOURSE.

THE organic lesions, viz. every species of alteration which occurs in the texture of the solid parts, whose determinate concurrence and arrangement are requisite to form an organ, and to establish its action and duration, the law and manner of its action, &c. are far more prevalent than most of the physicians have yet thought, if we judge from the silence of authors on this very numerous class of diseases.

My object is not to treat of all the known organic diseases; on one hand, I should trespass on the extensive field of surgery; on the other, I should exceed the limits, prescribed in this work. I shall first concisely show that the internal organic lesions are frequent; I shall next attend to the examination of the organic lesions of the heart, and demonstrate their frequency.

Let it first be asked, why physicians have been so inattentive to these diseases? The strongest reason, as to the ancients, was evidently their ignorance of anatomy; their respect for the dead did not allow them to cultivate this science. Galen, according to history, travelled to Alexandria to see a human skeleton. If this proves his zeal, it confirms also his ignorance of anatomy. For the want of subjects, apes were dissected. But supposing that they could be obtained with facility, it is clear, that notwithstanding the great similitude of the organs of these animals, the ancients devoted little attention to such inquiries, which gave them but doubtful information, and which must excite their curiosity, restricted by civil,

political, and religious institutions. Therefore, it is not surprising that they neglected to speak of organic lesions.

The barbarous ages which so long desolated Europe, were unfavorable to the study of anatomy. Science having passed over to the Arabians, did not labor to enrich this branch of medicine. Their authors produced no works of value on the internal organic diseases.

On the revival of letters in Italy, France, and successively in the other European countries, in proportion as civilization began to be re-established, anatomy was soon carried to a great height, which the splendid labors of the moderns have not retarded ; so that the progress which this study has now made, leaves future anatomists little to accomplish.

The anatomists, engaged altogether in unfolding the intimate structure of the parts, neglected with few exceptions what related to the organic lesions of the viscera. Many noticed, however, such as were casually displayed ; and these observations have originated valuable works, some of which have even immortalized their authors. To prove what I am advancing, suffice it to name *Morgagni*. But his excellent work, the monument of judicious and great erudition, has furnished more ornaments for the use of other physicians, than it has assisted or accelerated the art of exploring organic diseases.

The only end to be desired by the practitioner, is not to investigate, from a vain curiosity, what singularities dead bodies exhibit, but to acquire the habit of distinguishing diseases by certain signs, and constant symptoms ; unless men be now found bold enough to assert that, in order to cure diseases, it is not essential to understand them ; and, it must be granted, this pitiful assertion has been defended among pretended physicians ; hence the prevalence of the opinion that the minute study of anatomy is useless to the physician. This opinion, which has caused great inattention to the study of this science, is one of the principal sources of the little proficiency of the art in the knowledge of the organic diseases : *Morgagni* affirms the same in his text.

But to render this source of ignorance and error still more obvious, let us apply to the various organic diseases what *Senac* says only of the heart: "If practitioners do not understand diseases," says he, "they will pronounce with temerity on a multiplicity of cases; they will torment patients with remedies hurtful or useless; they will hasten death by treating alike ailments that are altogether different; they will be liable to be shamefully deceived on inspecting the dead; in fine, the danger will be near when they think it remote." How many physicians have escaped the fatal deception with which *Senac* threatened his cotemporaries, by abstaining carefully from finding in the dead body, the mistakes which their ignorance of anatomy caused them to commit.

Therefore if it be well proved, as authors of the greatest reputation have thought, that the deficiency of accurate and extensive anatomical knowledge has necessarily continued the ignorance of most of the organic lesions, the inverse proposition offers of itself: *the more exact anatomy is studied by physicians, the sooner they will be able by careful observation to distinguish and establish among diseases, a great number of organic lesions, whose existence has not by a majority of them been even suspected.*

But it were very erroneous to think morbid anatomy sufficient to accomplish this end; it is quite the reverse; the physician who does not unite physiology* with anatomy will ever remain a more or less dexterous, industrious, and patient inquirer, but he will never become a firm and decisive practitioner, particularly in the treatment of the organic lesions. By the bed-side, how many false diagnostics have I not witnessed, some suspecting the liver and stomach diseased, when the thorax was attacked, and vice versa; others mistaking a disease of the heart, &c. &c. for every species of dropsy, for asthma, &c. In fine, there is not an organ which I have

* When I say *physiology*, I mean, once for all, the physiology of experience and observation (ever cautious of the too easy inductions from analogy) but not the systematic physiology which is often supposing, and constantly explaining.

not seen falsely suspected, either of being diseased, or the contrary, by persons who could not be censured for their ignorance of anatomical knowledge.

What is then the source of such mistakes? I repeat it, it is the deficiency of correct physiology. Without this, what avails correct anatomy? It is not enough to distinguish the various springs of the human machine by their names, forms, place, and relative situation, or by their principles, if it be possible; if one do not animate by thought, all the wheels of this astonishing machine; if, beside the reading of instructive books on this important subject, he do not study diligently on the living man, the numerous sensible phenomena of the actions of the parts; if he do not constantly compare these sensible and peculiar phenomena of the life and health of the organs, with the derangements which each of them presents in its lesion, I answer, he will never be able to understand perfectly the threatening or confirmed organic diseases.

I have mentioned the *sensible phenomena*: as, it must be declared, whatever be the perspicuity of the most subtile physiologist, he is yet far from knowing intuitively, or by unequivocal signs, the internal action of each organ, without confounding it, for example with certain sympathetic phenomena.*

Let us grant, on the other hand, that the motions which are produced in the inside of the viscera, and which are consequently out of the reach of our senses, fix limits evidently too narrow for positive physiology, and open a field too extensive for abstract and systematic physiology. And, it is unfortunately, on account of the irregularity of the laws and actions of the internal motions of the viscera, that nature lays the secret foundation of organic diseases, whose evolutions cannot be perceived sufficiently early to prevent their fatal progress.

* Sympathy is "one of those general and sweeping expressions, which though nearly banished from other sciences, continue in the writings of physicians, and serve at once as a proof and a cause of the imperfection of our art." Currie's Reports, p. 190.—Tr.

Farther, every man must be, to the real physician, a moveable picture, ever occurring to his observation : he must sedulously apply himself both to the physical and moral man ; and (except the bond which unites this double being, and which has forever been concealed from the human eye) the physician must perceive the most delicate perceptible influence of the reciprocal action of the one over the other. In fact, he is the greatest physician who is the most profound in thought, as he will see, with a better eye, the nicest phenomena of life, and predict more remotely the kind of disease which threatens an individual, and to which he must yield, except in violent cases, and such as do not usually happen.

Where is, they ask, a physician so intelligent ? No where, we reply ; but I am not the less convinced that one of the properties on which the *tact** of the great physician is actually founded, consists chiefly in this penetration, constantly strengthened by exercise, which leads him to notice in a patient, the scene of moral af-

* "The word *tact* (says Roubaud) is now, in general employed to express a decision of the mind, prompt, subtle, and just ; a decision which seems to anticipate the slow process of reflection and reasoning, and to proceed from a sort of instinctive suggestion, conducting us instantaneously and unerringly to the truth."

The chief difference in the meaning between the two words, *taste* and *tact*, seems to consist in this, that *taste* presupposes a certain degree of original susceptibility, and a certain degree of relish, stronger or weaker, for the beauties of nature ; whereas the word *tact* is appropriate to things in which the power of judging is wholly acquired ; as, of distinguishing the hands of different masters in painting and in the other decisions concerning the merits of artists, which fall under the province of the *connoisseur*. It is applied also to a quick perception of those delicate shades in character and manners, which are objects of study to the man of the world. In this last sense, the English proverbial expression of *feeling one's way*, seems to suppose such a power as the French denote by the word *tact*, and has probably been suggested by some similar association.

In these metaphorical applications of the word *tact*, the allusion is plainly made to the more delicate perceptions of touch ; such, for instance, as those which to a blind man, supply the place of sight—in a manner somewhat analogous to that in which a nice *tact* supersedes, upon the subjects with which it is conversant, the exercise of reasoning. Stewart's Essays, p. 430.—Tn.

fections, as he observes all the physical phenomena which either develope, produce, or follow them.

To what mistakes, in fact, is not the physician subject who, in his practice, neglects the study of the moral man? The slightest attention to the social state, particularly in great cities, where all the passions and vices, assuming their various shades and forms, animate, excite, stimulate and convulse the whole system, examples of which are seen in the nervous system, in a thousand different ways. If one attend to the disorder which this commotion induces in the viscera, and every part of the animal economy, he will find each function deranged in a greater or less degree, from causes ever acting or perpetually arising. He will see the inadvertent physician lost in conjecture, fluctuating in opinion, wavering in the choice of means, and generally deceived in the results which he promised himself.

With what mistakes still more imposing is not the physician embarrassed, who, to the strict attention which is due to the influence of the various passions and affections, does not join, in different circumstances, the real suspicion which the false appearances of a hundred pretended ailments generate? Shall I instance the attacks of counterfeit nerves, forced sometimes to epilepsy and catalesy; false hemorrhages, contortion of one limb or several, artificial ulcers, &c.; gestation, supposed when it does not exist, or denied when it does; foreign bodies introduced into different cavities, &c. &c.? Here at least the phenomena of these fictitious ailments being perceptible to the senses can very often be distinguished by an intelligent physician. But, what shall I say, concerning the snares which are occasionally laid for him, and by what signs are feigned pains of the head, stomach, rheumatism, &c. to be known? The most cautious will not always avoid these insidious declarations, and is it necessary still to enlarge this picture with the exaggerations of patients in regard to their real ailments, either for the purpose of exciting about their own persons

greater concern, or receiving stricter attention of the physician ?*

Therefore, placed too often between truth and falsehood, the credulous or inexperienced physician finds himself the dupe of the treacherous, the involuntary instrument of secret intrigues or criminal plots, by which his reputation has sometimes been fatally wounded ; thence by adding to the real embarrassments of the practice of medicine, society strives to perplex it with its numerous and complicated passions and interests, and repeats the trite accusation, that *medicine is a conjectural art*.

I should render this digression quite tedious, which is now extended too far, if I, by recrimination, entered into a comparison between the certainty and even quackery of most of the other sciences ; I will merely observe that whatever be the uncertainty attributed to medicine, every thing relative to it serves to increase this uncertainty in an indefinite manner, according to the value and multiplicity of the snares and obstacles which it has perpetually to encounter.

It was my intention to prove that, if the number and history of organic diseases be not yet understood, the deficiency since the revival of letters, is in the physicians who have been ignorant of, or inattentive to anatomy, connected with physiology, such as I have defined it ; and this deficiency has necessarily led to another, that of neglecting the opening of bodies ; thence frequent, and it is presumed, great mistakes are made, by often substituting effects for causes, and by taking one disease for another.

It is, unquestionably, to this neglect of the study of anatomy, connected with physiological observation, that we must attribute the propensity of the generality of the junior physicians to theories, systems and explanations,

* Where is the physician, having practised in hospitals, and charged with visiting the soldiers, the individuals who solicit admission into such places, for whom these snares have not been laid ?

until experience has regulated the only principles which they should preserve, and obliterate from their memories the deceptive impressions of the imagination, and bring their reason under the safe direction of experience and observation.

I intended also to prove that the knowledge of morality, namely, of the human heart, is as necessary to the physician as that of the body, for the purpose of often avoiding another order of numerous mistakes.

With more leisure and taste for abstraction, I could have supported this part of my discourse with metaphysical considerations and proofs borrowed from the best authorities: but I have gained my point, if I have said enough for readers of reputation.

As it is not sufficient to have established the sources of ignorance or inattention to organic diseases; let us prove why they must be frequent.

First, authors in general have thoughtlessly disregarded the alteration and lesion of our organs as to their action. To say that our organs must be wasted or altered, according to the duration, intensity, and irregularity of their action, is as they thought, to stop at trivial considerations; it is to compare the human body to a machine, and to confound it with the unstable productions of the mechanic arts. These reproaches, having been always exaggerated, and often rendered ridiculous, have diverted the attention of physicians from correct observation: and the imagination being continually fixed on the abstract study of the principle of life, its nature, laws, its reparative and preservative power, &c. they neglected to notice the successive or accidental derangements which obtained in the human machine.

Indeed, I am far from withholding the just tribute of applause which the efforts of powerful geniuses deserve for partially elucidating the obscurity which involves the nature of the principle which enlivens animals, supports the functions of their organs, and ever repairs, *as far as it is possible*, the loss occasioned by their action, or by destructive agents both internal and external! This

inquiry is sublime, and can belong only to a small number of minds at once transcendent and solid, certain, on account of a decided method, of not being misled by such lofty and abstract considerations.

But supposing that their profound meditations may have led them to discover a few laws of a principle, of whose nature they still discover their ignorance, it does not follow unless the organs which it puts in motion, be subject, by their peculiar action, or that of many different agents, to alterations from which this principle, the mover, preserver, and repairer does not always protect them; such are the alterations, whose investigation has been too long neglected, and whose frequency I am attempting to prove.

Shall I be indulged with a comparison whose disparity, if not inconvenience, I probably feel as much as any one? Then I will compare the human body to a machine;* all the arts combined will never be able to produce one so complicated, or so truly perfect and admirable in harmony. But let us suppose what they can do better; in the works of mechanics, the active principle of all the parts, the common mover is always known; the air, gases, vapors, water, elasticity, &c. in fact, the power and resistance are known and submitted to rigorous calculation. Nothing can be so well known, or calculated mathematically in the human machine: here it must be granted, is a vast difference.

The mechanic sees the alterations in the parts of this machine; he moderates, and suspends its action, or substitutes a new part for a defective one.† There is still a great difference. What the mechanic does, is

* Whatever be the principle of life, its necessity and power I here separate from my researches; and considering only the materiality of the body, I am investigating the derangements of its constituent parts; for, the body alone is subjected to our senses, nearly all the rest belongs exclusively to the province of metaphysics.

† The medical art can distinguish a few alterations in the parts; sometimes it can moderate their action, very seldom suspend it; but it has no power to substitute a good for a bad part: I am speaking of the internal parts.

indeed, effected by the *vital* principle, but mediately, viz. by the assistance of the elements it possesses, elaborates, and assimilates ; the difference is yet immense.

Whatever be the efforts of the mechanician, and what the power of the occult principle of life, the wheels of the machine, and the organs of the body are not less frequently exposed to the alteration resulting both from their own action, and from the action of a multitude of external agents, which, prevailing against the resistances of these principles, establish in their constituent parts such a derangement, as in a machine or in the human body, is a real organic disorder.

And this organic derangement will be in a compound ratio of the energy or activity in the machine or organs, or the power of the destructive agent on the one part, and of the solidity and consequently the resistance of organization on the other ; so that the machine or body will resist more or less an equal force of the agent and action in proportion as the parts of the one, or the organs of the other, happen to be composed of better materials, of forms, proportions, relations, more exact and perfect.

Therefore the human machine will resist the more powerfully whatever may tend to alter its springs, according to the better primitive constitution of these springs ; this is obvious, let the system adopted be what it may.

Now, by an inverse ratio, the human machine will resist the less, as its elementary organs, their texture, relations, &c. shall become more vitiated, confused, and disconnected in their action. And this vitiated assemblage may be extended so far as to constitute a body which will resist the vital principle itself. Such are monsters which vegetate variously in the bosom that nourishes them, and which perish instantly or more remotely, when, with their borrowed life, they appear in the light, for which they are not formed.

Now, from the physical impossibility of living *per se*, although attended with such exactness of organization as to be able to attain the most unusual longevity, the defects of this exactness are evidently incalculable ; yet

they are not less real. Hence inevitable death to a vast number of beings in all the mean terms between these two extremes, is a melancholy and incontrovertible truth. And medicine would have acquired a great reach of practical knowledge, had it learnt to estimate the vital power of each organ, abstractly, viz. by calculating the value of the organs, independently of the destructive external causes, &c. &c. That if mathematical exactness in this case be obviously impossible, it were an absurdity to refuse to this science some approximate data. Now, a strict attention, habitual perception, and accurate senses, which convey a clear impression to a sound mind, must corroborate this approximate calculation, which is the only one possible.

If, to this positive fact, that a numerous body of human beings from their malconformation must perish at different periods of their career, one add the vast series of moral and physical causes which attack life, he will be astonished that the daily mortality be not greater.

Now behold the physician, impressed with these great truths, to whom a crowd of beings, destined to an end improperly called early, come to solicit a few days which their frail constitutions deny them, because they were born with the germs of a life of pain, and with the causes of a premature death, and in fine, let the reproaches of the multitude of sceptics* be estimated.

Let us then declare that it is, to a crowd of ill organized beings, as unjust to ask health of the healing art, and to pretend to longevity, as it would be to exact of the most famous architect to render a house durable and solid, constructed contrary to every principle, and with the worst materials. Such a habitation, scarcely erected,

* Who has not applied to some physician (with an air of superiority which confidence gives in a would-be unanswerable argument) the sophism of J. J. Rousseau that *medicine ought to be without a physician?* He might say also that *diseases* ought to be without patients. And, continuing this freak, would it not be to wish philosophy without philosophers, and the arts without artists, &c. in a word, he might as well wish the world without inhabitants! Moliere and the author of Gil Blas have handled the subject better.

already tumbles, and will soon fall, in spite of all the resources of art; while the edifice with a solid foundation, will long brave the succession of ages and the tempests of the elements.

Thus we see some privileged beings endowed with a complete organization, while others are so imperfectly formed as to be invariably disordered. Have all created beings merely a portion of life which is distributed in *excess* to some, but in *defect* to others? Are not the former under the absolute necessity of lavishing and even losing that excess, without, unfortunately, the possibility of converting it to the advantage of the latter? It is doubtless an idle question, because it is incapable of solution.*

But let us leave these abstract considerations, and pass over the multiplicity of opinions which generate them; finally let us attend to the main question: I have said enough, it is believed, to prevent dispute,

That organic diseases are more frequent than was formerly thought;

That physicians of every age have not made the necessary researches for the purpose of convincing themselves;

That a great number of these lesions, or the disposition to their evolution is often original or constitutional;

That whatever be the power of life, or the energy of the vital principle, this power and energy are not always sufficient to defend the best established springs of the machine from the lesions to which either their functions or external causes expose them.

Let us now observe whether the organic diseases of the heart are to occupy a principal place among these very numerous lesions.

I do not hesitate to advance that the most frequent organic diseases, phthisis pulmonalis excepted, are those

* How would this be, if we should offer here the contrast of the care that is taken to preserve the tribes of animals and the repeated mixtures of every species of malconformation, virus, &c. &c. among men?

of the heart. Now, without considering all the principal organs of the body, or the multiplicity of the various lesions with which I have found them affected, I assert that in my examinations, these diseases have appeared a hundred times oftener than the others, both in the hospital of la Charité, and in the town; but, as it is improbable that patients so affected have been oftener brought to this hospital than to the rest, it is reasonable to conclude that a proportional number must have been sent to the other hospitals.

And if, as I believe it to be proved in this work, most of the asthmas, dropsies of the chest, leucophlegmatias, &c. are induced by a disease of the heart; if the mistake, in this instance, is common both in public institutions, and in private practice, it may be safely concluded that deaths from the organic affections of the heart are perhaps far more numerous than those from the lesion of the brain, stomach, liver, spleen, kidneys, &c. taken together. This assertion is so well demonstrated, that I deem it superfluous to attempt to establish here an approximate calculation.

But, it will be asked, whence arises the frequency of these diseases? From numerous causes, doubtless, but from two principal ones: from the action of the organ and from the passions of men.*

I advanced above, and think I have proved, that our organs, notwithstanding the preservative and reparative action of the vital principal, may be altered even by that which induces action. Now, which is the viscus whose

* Lord Kaime says, "he has seldom known a man of great genius who was not more or less under the dominion of some strong passion." Alexander and Cæsar owed much of the force of their military talents to their ambition. Pride gave to the soul of Cato all its elevation, and vanity acted powerfully in producing the eloquence of Cicero. Avarice, when influenced by habits of gaming, also love, anger, and all the other passions of less force, stimulate the intellects, and thereby dispose them to evolve a greater quantity of thought. Even grief, after its first paroxysm has subsided, has the same effect. The poems of Ovid and Danté, written during their banishment; the Night Thoughts of Young, and the monodies of Lyttleton and Shaw, are immutable proofs of the truth of this assertion. "Vexation," says Van Helmont, "brings forth understanding." Rush's Lectures.—TR.

continuance of action is comparable to that of the heart? None. *Bichat* has said with truth, that the organs of animal life have *their intermission of action*. It was equally clear to him that those of organic life did not always act with the same energy, and he might have very properly called this diminution a *remission of action*. The heart alone, in the body, has, absolutely speaking, neither intermission, nor remission, but strictly a *perpetuity* of action.

Observe the embryo; scarcely can we discover its rudiments; the *punctum saliens* of *Harvey* is the heart which we see beating. Now, from this *punctum saliens*, and even before, to the death of old age, which I will suppose at ninety years, who has numbered the millions of pulsations, that the heart shall have beaten without a second's repose? Their sum amounts to 2 milliards, 838 millions, 240 thousand, from the moment of birth, at least if the heart should accomplish this immense series of pulsations, without any obstacle to disturb or retard its numerous and powerful efforts; but how far its action is from being uniform and moderate! It is clear, the organs of the trunk, the head, the extremities, all vegetate and grow, in the centre of the embryo that is formed, but in the almost absolute repose of the functions. The heart first began alone, and continues its function a long time alone; and gives life to all the rest. But who knows what efforts it must make, what obstacles are opposed to it, what principles of irritation already obstruct its action, either by the nature of the humors that are conveyed to it, or by the moral influences of the mother, &c.?

But without speaking too confidently of these causes in deranging the organization of the heart, or at least in laying the foundation of a future disorganization by the efforts of other agents to which it will be exposed, behold the foetus emerged from its mother's bosom: as from this period arise new obstacles to the action of the heart; and these obstacles, far from being diminished during life, seem to be proportionably augmented.

Passing over the organic changes that are first effected, such as the closing of the foramen ovale, the obliteration of the canalis arteriosus, the evolution of the pulmonary artery, &c. what impediments arise from the solitary act of respiration and its various modifications ! The cries of infancy, wrestling, fencing, the use of wind instruments, laughing, weeping, dancing, running, leaping, hopping, reading, declamation, singing, the venereal act with its excesses, every kind of efforts, every species of attitudes, coughing and all the other morbid affections of the organs of respiration, muscular action, and influence of the atmosphere. Here is truly a frightful catalogue of causes whose effects are inevitably felt by the heart, and which are so many impediments of different powers to the facility and freedom of its action ; and what is very remarkable, all these causes require, on the part of the heart, greater efforts and more frequent contractions ; so that by extending to nearly a third the vast number of pulsations counted in the natural course of life, we should establish a calculation not far from the truth.

Shall I presume to enlarge this picture of the impediments to the free action of the heart, from the nature or abuse of many different aliments or condiments, fermented drinks, *poisons*, effluvia, manufactures, &c. ? Indeed, if due weight be given to the reflections that flow spontaneously from the preceding considerations, the existence, as it were, of a few hours, must be regarded as a miracle by every body ; unless one had the temerity to deny the obvious influence of all these causes to modify the phenomena of the action of the heart.

Let us finish the picture of the causes which agitate the heart, either by augmenting the frequency of its strokes, or obstructing the facility of its action : let us speak of the influence of moral causes, and name the passions.

Who will deny the vast power of the following causes : anger, madness, fear, jealousy, terror, love, despair, joy,

avarice, cupidity, ambition, revenge ; and the infinite shades of these passions and affections, generally either miserable, criminal, or fatal in their consequences ?

I will leave to the philosophical and political legislator the task of moderating or restraining the passions by wise laws, or correcting them by suitable chastisements ; to the severe moralist, that of subduing them by good precepts ; to the vehement preacher, the task of controlling them by terrifying the conscience ; to the eloquent rhetorician and ingenious and sensible poet, the art of frightening the imagination by lively paintings ; moral medicine is unquestionably necessary, though too often equally impotent with the physical.

If any one could candidly deny, or only doubt of the fatal physical influence of the passions over the heart, it may be sufficient for him to be informed that it may be lacerated in a fit of anger, and instant death ensue ; and I am not the only physician who has thought that its organic lesions were more frequent in the horrible times of the revolution, than in the usual calm of social life.

Therefore, whatever may be the limitation or modifications which we believe must be effected by the action of so many powerful physical or moral causes on the heart, who can deny at least, that either because it acts incessantly, or is the most liable to be constantly disturbed in its action, it must not be likewise the most exposed of all the organs to be injured in its structure ?

But why does a lesion apparently very little extended, the constriction of an orifice, or ossification of a valve, &c. tend to a certain death ? This is, evidently, rather a question of the commonalty than of able physicians ; I will reply to the first, and may I be pardoned by returning to my comparison, gross, it is true, but obvious :

I will call the heart the great fountain of the human machine ; for, let its action be suspended, apparent death ensues ; let it cease entirely,* actual death suddenly ensues ; which is more or less the case in a machine.

* It will not be seriously objected, it is presumed, that, in absolute death,

Therefore the general life, and individual life of each organ, and part, have a necessary dependence on the life and action of the heart ; derange this action, and the derangement must pervade every part of the animal economy. Now it is the evident action of the heart to give the principal impulse to the blood, viz. to the fountain of all the humors, secretions, excretions, reparations, nutritive matter, &c. &c. &c.

Hence the disturbance generally extended, when the laws of the circulation are deranged, may be considered either in the solids or fluids ; let us be concise, and consider it only in the humors, especially in the blood : what takes place in the organic lesions of the heart ? The blood does not undergo the regular efforts it needs : *its crasis* ceases to be such as it ought ; the alteration of respiration adds to the deranged action of the heart, and contaminates the constitution of the blood ; the progression of the fluids is rather tumultuous than regular ; an occult though real chemistry no longer follows its customary laws in the attractions, and repulsions of the elements ; the blood is badly formed or decomposed ; the serum predominates, is effused, and infiltrated through every part. The degenerate blood becomes a bad stimulus to the action of the heart, brain, and all the viscera : add to these derangements, the physical and moral influences, &c. &c. and you will see how, by passing round this highly contaminated circle, inevitable death closes this painful scene.

He advanced a profound truth who said, *ex amico solidorum et fluidorum duello sanitas et vita* ; and let it be attentively weighed. Let us suppose, therefore, this harmony of action and reaction, of effort and resistance, deranged during a given lapse of time, and that the derangement depends on a defect generated in the organization by the principal agent in the circulation. On this hypothesis,

capillary circulation continues for sometime, that the hair, beard, &c. still vegetate in a dead body ; I hope I shall not appear ridiculous, by asserting that a man is really dead, though his beard grow.

to believe in the possibility of the continuance of life, is, with me, the greatest instance of absurdity entertained either in physiology or medicine.

Therefore, contrary to the expectation, perhaps, of some who will read this work, they will generally find the fatal prognostic of death ; it will amount to a certainty when the disease shall become confirmed. Seldom can the adage, *principiis obsta*, be applied here. I think it possible sometimes to prevent the disease ; to cure it, never.*

Finally, let us conclude, and prove, by considerations, truly afflicting, that in most cases, medicine will never be able to avert the generality of the causes which occasion, after their influence is a while endured, the organic diseases of the heart ; as (it ought to be often repeated) all the causes are either physical or moral : how can we withdraw from the first all who practise professions, who cultivate arts or trades, whose labor exposes them to intemperance, requires efforts, leads to excessive action of the lungs, and muscles, which induce disorder in the circulation, and impair sooner or later the principal agent of this function ? As much would it avail, in a flight of philanthropic *mania*, to pronounce the dissolution of society.

But, if it be absolutely impossible to withdraw from the physical causes of these diseases the generality of mankind whom imperious necessity subjects to them, who can dissipate the moral causes ? To effect this it would be necessary to deprive man of his passions ; † now to conceive man without passions, is to conceive a being without his attributes ; this would be to have an idea of the impossible : which implies a contradiction.

Let us, however, soften a little this picture, and grant that there are beings so very happily born and favorably

* I know there are physicians who think they have cured diseases of the heart ; if they had not become organic, I believe it, such examples are found in this work ; if they had become so, I very much doubt it, and satisfactory proof will ever be wanting.

† See note on the passions, p. 27.—T n.

situated as to be able by art to be withdrawn from the action of causes which tend to develope in them the lesions of the heart ; such are those on whom fortune bestows her favors, and blesses with independence ; and who, born with mild passions, can, by the assistance of wise advice, remove the fatal influence of the physical causes, by quitting exercises, professions, &c. which they practised from taste rather than necessity : by correcting, in behalf of the arts and of the luxury which accompanies them, inclemencies which cannot be controlled, or by migrating to climates more regular and congenial ; by bringing under the dominion of reason the violence of the passions, checking their aberrations, by giving them a better direction, by happy propensities which are cautiously instilled.

But, while the practitioner, by his art, cures these diseases which threatened a few individuals who have been favored by fortune and a happy temperament, how many of the lower order of society he sees necessarily devoted to occupations whose influence will develope in them such lesions, and whose grovelling propensities, brutal passions, and ungovernable or uneducated minds, will subject them to whatever will irresistably produce such lesions.

Placed in the midst of a scene so checkered, so complicated, and so strikingly contrasted, what great necessity does not the physician, worthy of this name, as actor and spectator together, experience of uniting philosophy and medicine, an alliance so expressly enjoined by *Hippocrates*.

He who merited the epithet of *divine* as much by his lofty wisdom and extraordinary virtues, as by his extensive knowledge in the healing art, was far from thinking that this term would one day become among men, an opprobrium, or signal for persecution !

To the real physician, who is capable of pronouncing and keeping the oath of *Hippocrates*, and is fully impressed with the precepts of his book *De decenti habitu*, phi-

losophy will never be separated from medicine ; if in the toilsome exercise of his art, he find false accusations to encounter, unjust opinions to endure, low jealousies to remove, ingratitude instead of reward, he will be able to rise above such calumnies by his *wisdom*, and will receive consolation from the small number, whose enlightened justice will permit him to see that she reposes entirely on the confidence rendered to his understanding and on the esteem due to his virtues.

AN ESSAY
ON THE
DISEASES OF THE HEART.

FIRST CLASS.

AFFECTIONS OF THE MEMBRANOUS ENVELOPES OF THE
HEART.

General considerations.

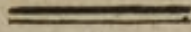
THE envelopes of the heart, according to modern anatomists, are composed of two different membranes. The one, external, thick, and fibrous, merits little attention in regard to the alterations it may exhibit; the other, fine, and delicate, of the nature of those called *serous*, is far more important to the physician under the treble consideration of its extent, uses, and the diseases to which it is liable. By the denomination of the membranous envelopes of the heart it is then meant more particularly to designate this last membrane, closely adhering on one part to the external surface of the heart, and united in the other half of its extent with the fibrous lamina of the pericardium.

By its organization, the pericardium is subject to all the diseases of the serous membranes; as in the last, the defect of equilibrium between the action of the exhalent and absorbent vessels, yields to serous effusions proportionate to this defect of equilibrium: like the serous membranes, the pericardium is susceptible of in-

inflammations either acute or chronic, which have with the inflammations of the membranes of the same texture, marks of resemblance which leave not a doubt of their causes, signs, and symptoms being, likewise, the same. If some particular phenomena, if more striking symptoms indicate in this affection greater danger, they belong solely to the connection of this membrane with one of the most essential organs, viz. with the heart, whose entire and regular action is indispensable to the integrity and regularity of life.

The greatest number of pathological states in which the pericardium is found, results from the inflammation extended to different stages. Pericarditis must, therefore, be placed at the head of the history of the diseases of this membrane.

CHAP. I.



ARTICLE I.

Of pericarditis in general.

I CALL pericarditis, with the rest of the faculty, the inflammation of the whole or of a part of the membrane which invests the heart, and furnishes it with an envelope. This affection appears not to arise from any other causes than those which originate inflammation in the analagous membranes; such are a sanguine constitution, the suppression of a nasal hemorrhage, of a hemorrhoidal flux, of menstruation, of perspiration by means of a cold wind, the immoderate exercise of the body, the intense application of the mind, the use of iced-drinks in summer,* and spirituous liquors at all times; the

* It is perhaps to be regretted, that a substance capable of exerting such an extensive agency on the human system, in abating inflammation, and which might therefore be regarded, upon many occasions, as a valuable article of the *Materia Medica*, should have been added to the list of those luxuries which grace our tables. Such liquors are most gratifying, when the body is exposed to the heat of a crowded room, and are often most injudiciously introduced as a refreshment, after the heat and fatigue occasioned by dancing. That under these circumstances they should prove detrimental to the system might naturally be expected. But even when the body is perfectly cool, the effects of the introduction of aliment so much below the temperature of the body, may be highly noxious. Dr. Haller informs us, that the cold water which he drank while crossing the Alps, which is entirely furnished by the solution of those immense masses of ice which cover their summits, produced a pain in his breast resembling pleurisy; also a singular stupor, a dejection of mind, and a disinclination to any kind of exertion.

Dr. Rush relates the cases of two officers in the American army, one of whom, from imprudently eating a quantity of ice-cream, was afflicted with a scirrhus in the stomach, which terminated fatally, at the distance of twelve

metastasis of a rheumatic, gouty, or cutaneous complaint, &c. the inflammation of the neighboring parts. Beside the general causes, the action of bodies striking upon the precordial region, seems to be often the exciting cause; it is what at least I can deduce both from my observations, and from those which other authors have left in their writings.

Pericarditis considered in a number of cases, presents varieties with which it is necessary to be acquainted to have a clear and precise idea of the disease. In certain cases it exhibits great violence in its appearance, rapidity in its progress, and celerity in its termination. Seldom does the inflammation follow the usual progress by passing successively through its several stages. Sometimes the disease is evidently chronic; the attack is insensible and hidden, the progress insidious and obscure, the termination very slow. These different cases offer perhaps fewer varieties than different degrees of the same disease. Every one will be convinced, however, in the sequel, that the first period is often marked by complications which are found but very rarely in the second.

months: and the other was attacked by a disease so acute as seriously to endanger his life, from imprudently taking a draught of iced-punch.

The suppression of the menstrual discharge has also been enumerated amongst the effects produced by the use of ices: an effect of this kind becomes probable in proportion to the delicacy of the subject. The annals of the Clinical Institute of Wurtzbourg, contain the history of a young woman, of a very feeble constitution, in whom the regularity of this important function had been with difficulty established by medical aid. In the summer of the year 1796, she drank, when warm, a large quantity of cold water. The discharge ceased, and never afterwards returned, although the most active emmenagoges were made use of. Some months afterwards, her health rapidly declined, a great difficulty of breathing came on, and she died at the end of about two years, of a polypus at the heart. (*Bibliothèque Germanique*, Tom. VII. p. 24. See also *Tissot; Avis au Peuple*.) In the last work the author informs us, that a pleurisy so violent as to destroy life in a few hours, has been sometimes produced by drinking cold water, when the body is much heated. Instant death is not an unfrequent consequence of similar imprudence, in the burning summers of the United States. *Stock on Cold.—T.*

SECT. I.

Of acute pericarditis.

THE acute inflammation of the pericardium, less obscure than chronic pericarditis, presents, however, great embarrassments to the inquiries of the physician. Its sudden attack, rapid progress, and speedy termination, leave scarcely time necessary to fix its character. Generally complicated with a similar affection of the lungs, pleura, mediastinum, diaphragm, and sometimes of the stomach, its diagnostic becomes the more difficult, as there then exists a complication of symptoms, a multiplicity of phenomena among which it is extremely perplexing to recognise the principal disease. We find, therefore, connected with it most of the signs of pleurisy, peripneumony, paraphrenesis, and inflammation of the stomach; and often the greater intensity of one symptom conceals another adapted to develop the true seat of the disease.

Case I. A man aged forty-three, of a strong constitution, felt suddenly, the 10th of May, 1800, without any known cause or previous sign, a difficulty of respiration, an acute pain in the inferior and left region of the thorax, extending toward the epigastrium and into the right hypochondrium; the cough was laborious, dry and painful; the expectoration sparing, without being tinged with blood. A violent ague took place, the first night.

Admitted, 12th of May, into the clinical ward, this man experienced no cephalalgia; the countenance was distressed, the cheeks, nose and lips of a deep red, yellowish about the orbits; the muscles of the face agitated by slight convulsive motions; the tongue moist; the pulse, small, frequent, a little hard, otherwise regular: respiration difficult, strong, frequent, interrupted; expectoration sparing and greyish; the region of the heart extremely painful; there were some irregular palpitations; belly bound, no urine since the attack of the disease.

The same day, two bleedings in the arm, demulcents, carminatives, and mild cathartics, relieved the patient a little. The pain was removed, and a vesicatory caused it to disappear entirely. Notwithstanding this momentary and local relief, the state of the patient becoming instantly more alarming, he passed the night from the 13th to the 14th in agitation and delirium, and died the 14th in the morning, the fifth day of the disease.

On dissection, some turbid and flocculent water was seen in the left cavity of the thorax. The pleura, on the inferior lobe of the left lung, and on the superior surface of the diaphragm, as well as the inferior third of the external surface of the pericardium, was inflamed and covered with a pseudo-membranous layer. The substance of the inferior lobe of the left lung was hard and turgid; the cavity of the pericardium filled with a sero-purulent liquid of a reddish cast; the internal surface of this membrane invested with an exudation of very thick yellow lymph; the surface of the heart rugous and unequal, though the muscular substance did not appear affected.

The various phenomena of the disease fully prove that, at the time of its attack, the inflammation, which was fixed in the pericardium, had simultaneously attacked the pleura diaphragmatica, costalis, and a small portion of the inferior lobe of the left lung. We see also some phenomena of paraphrenesis suffocate, as it were, the signs of the pericarditis, and the phenomena of the pericarditis obscure the signs of the paraphrenesis. On the one hand, we do not see those frequent symptoms, and burning pain in the region of the heart which characterise principally the acute pericarditis; on the other hand, we do not perceive that sardonic laugh, that furious and continued delirium, and convulsions, which, according to almost every author, but which I do not consider as belonging exclusively to this affection, designate more particularly the paraphrenesis. The symptoms in this case are obscure and confused, and the difficulty of re-

recognising the actual seat of the disease is the greater as its attack is sudden, progress rapid, and termination speedy. Here, the pericarditis was complicated with paraphrenesis and pleuro-peripneumony; but it proves that pleuro-peripneumony is the most frequently complicated with it.



There is another variety of acute pericarditis, exhibiting less obscurity in its diagnostic, and less precipitation in its progress, that differs, in several respects, from the first, and resembles it in many.

I do not think it necessary to give a particular article on the history of this variety. Nevertheless, I will venture to call it *subacute* pericarditis, not with the intention to introduce into medical language a new term, but to avoid the confusion which the distinction of these two varieties may originate in the minds of readers, if different names were not assigned to these affections.*

The first of these inflammations was announced by frightful symptoms, advanced rapidly, and precipitated

* Wilson, when treating of pneumonia, says, one would, a priori, be led to believe that the symptoms accompanying an inflammation of the heart must differ essentially from those attending inflammation of any other of the thoracic viscera. This however is far from being the case. Dr. Cullen, indeed, in his system of nosology, makes carditis a distinct genus from pneumonia, but observes at the same time in a note that he agrees with Vogelius in believing that the symptoms of carditis are almost the same with those of peripneumony, but in general more severe. Linnæus, he observes, must have been of the same opinion, since neither carditis, nor pericarditis is arranged as distinct complaints in his system of nosology.

Dr. Cullen defines carditis, a fever with a pain in the region of the heart, anxiety, dyspnoea, cough, an irregular pulse, palpitation and syncope. From this definition would the following case from Wendt be regarded as one of carditis. A man of thirty-six years of age, he observes, complained of a pain in the left side, with a violent and painful cough, and was obliged on account of the dyspnoea to remain in the erect posture. The cough was moist, and much yellow matter was expectorated without relieving the symptoms. Guided by the foregoing definition, we should assert that in the foregoing case the heart was inflamed. On dissection it was found that both the heart and pericardium were

the patient into the tomb. The other is a true inflammation passing through its several stages, and affecting a termination usual in this species of disease, by preserving, indeed, several characters common to certain other acute affections of the chest, being, however, very often recognised by particular phenomena, and signs which are peculiar to it.

The attack of the pericarditis, which we agree to call *subacute*, is very seldom marked by severe symptoms which can cause the disease to be considered as quickly fatal. On its appearance, it ordinarily assumes the forms of one of those inflammatory affections which, though alarming, are mortal in but a very few cases; the practitioner cannot give a decided diagnostic, until it has continued sometime, because he then has been able to collect all the signs whose succession leaves no longer any doubt as to the seat of the ailment.

Pleurisy is the phlegmasia with which this incipient pericarditis has the most resemblance. As in this affection, the patient experiences at first a sensation of heat in the whole diseased side of the thorax; shortly after, this heat is concentrated toward the region of the heart, where is felt a sharp burning pain. Respiration soon becomes high and difficult, the pulse is frequent, hard, but seldom irregular; the cheeks, but more particularly the left, are tinged with a bright red. Such are the phenomena of attack: On the third or fourth day, the particular alteration of features and countenance, on which we see the expression of deep despondency and a sort of irritation, a constant and inexpressible anxiety, a continual agitation, respiration high, laborious, and interrupted, palpitations slight, faintings partial, the more

inflamed, and pus was found among the muscular fibres of the former. Many similar cases might be adduced to shew the insufficiency of any diagnostic symptoms of carditis. If an irregular pulse attends the symptoms of pneumonia, and actual syncope occur, it is more than probable that the heart is inflamed, but these symptoms are far from being constant attendants of carditis, and the former very frequently attends other cases of pneumonia.—T.

remote from each other, the slower is the progress of the disease ; in fine, the pulse small, frequent, hard, corded, concentrated, and often irregular, leaves but little doubt as to the actual seat of the disease. These last characters of the pulse are nearly opposed to those which certain authors report that they have found in the same case. This diversity of opinions arises doubtless from the different periods when the observations on the pulse were made. In short, on the three or four first days of the attack, the pulse, though hard, is very full ; but when the signs which truly characterise the disease have appeared, the pulse becomes small, quick, hard, tense, concentrated and irregular ; and continues so through almost the whole course of the complaint, and it is not until the progress of the affection has thrown the patient into a state of extreme debility, that it becomes small, soft, intermittent, almost imperceptible, and very irregular.

The more serious symptoms, which supervene, toward the third day, from the attack, remain so but a very short time, after which the features are more altered, and the face assumes every appearance of that so well depicted by Hippocrates, and which custom has so improperly called *hippocratic* ; the pain ceases wholly or partly ; there are occasional ague fits, long and imperfect faintings, suffocation, insupportable anxiety ; a general infiltration intervenes ; the patient dies at last most often unexpectedly, either wishing to rise, drinking, or changing his position.

Case II. January 9th, 1799, a man of the age of forty, received a blow with a fist on the region of the heart. The 14th of the same month, violent febrile symptoms, accompanied with oppression and pain under the left portion of the sternum, suddenly appeared ; during the three first days, the symptoms increased to such a degree, that he decided on the 19th to enter the hospital ; then the most evident inflammatory symptoms had disappeared without affording any actual relief ; he com-

plained merely of a slight head-ach, and of an inexpressible anxiety which left him no repose ; the skin was dry and hot, the pulse small, frequent, unequal, irregular, intermittent ; the eyes were sunk in the sockets, the countenance changed, the left cheek very red, the mouth as usual. The noise, by percussion, was obscure in the whole extent of the left side. Respiration, apparently easy, was nevertheless small, frequent, somewhat interrupted ; the cough dry and without pain. The patient complained of a pain which extended from the posterior part of the sternum to the left side, and to the right inferior part of the thorax. There were momentary weaknesses which did not arrive to fainting. The bowels were constipated, urine thick, depositing a sediment.

Venesection was recommended the first day, but it was not urged, because we recognised the degree to which the disease had already attained. From the 25th of January it was easily perceived that the complaint had made rapid progress ; the countenance became more and more *hippocratic*, the patient did not enjoy a moment's repose, respiration was constantly interrupted and exceedingly difficult ; the pulse unsteady and hardly sensible ; notwithstanding the use of cordials the prostration of strength was extreme. He remained in this state the first ten days he was in the hospital ; the only remarkable phenomenon during this time was the very sudden and spontaneous flux from the right eye, by a suppuration which was established there, without being preceded or accompanied by any inflammatory symptom. After this time had elapsed, the disease seemed to advance with greater rapidity. The features were altogether discomposed ; the pulse became insensible, the prostration extreme even to fainting. The patient died the nineteenth day from his entrance into the hospital, and the twenty-fourth of the disease.

We sought in the head the causes of the sudden flux from the right eye, but found the brain, the thalami nervorum opticom, and the nerves themselves, in a sound state.

The pericardium was surprisingly enlarged, its capacity was such that it contained nearly two pints of a sero-purulent liquid ; its internal surface was encrusted with a thick layer of albuminous matter, whose superficies was reticulate and *curdled* ; in short, we cannot give a more accurate idea of its appearance than by comparing it to the internal surface of the second stomach of a calf.

The heart had not changed its size, but the lamina of the pericardium, which covers it, had become very dense, and was more than two lines in thickness. The fleshy fibres were not apparently altered. The left lung was compressed, spongy and crepitating ; the right sound.

The part of the diaphragm united with the pericardium was not inflamed.

When the patient was brought to the hospital, the inflammation had in a great measure subsided ; the sup-
puration and effusion began to be formed. It is probable if the antiphlogistic plan had been employed at the commencement of the disease, by moderating the force of the inflammation, it might have changed its progress, and conducted it to a happy termination ; but five days had elapsed ; the appearance of the inflammation was severe and sudden ; and when the patient came to the hospital, the few means which remained to be put in practice, rendered the prognostic very doubtful.



The moderate pericarditis does not always proceed at its commencement with equal celerity. Its milder attack, the slow progress of the inflammation, passing through, in certain cases, its periods, permit us sometimes, at a very advanced period of the disease, to attempt advantageously the employment of means which in the last case could not be put in practice, because, as it happens very usually in hospitals, the patient did not apply for assistance, until the most favorable opportunity for acting, especially in inflammatory diseases, was past.

Because, in the last case, the inflammation, in the space of five days, had run through its several stages, it is not necessary to conclude that this period is the term beyond which it is unimportant to employ efficacious means.

Case III. A woman aged forty-three years, after three days of hard exercise, felt suddenly a head-ach, a violent ague, a spot extremely painful, at first circumscribed, in the region of the heart, occupying shortly after all the left side of the thorax. The fever, at first slight, soon became very severe. There supervened delirium, a frequent and painful cough without expectoration, a singular oppression of respiration, and insupportable anxiety. On the third day of the disease, the menses appeared regularly, but less copiously than in the healthy state, yet in sufficient quantity as nearly to dissipate the most alarming symptoms; so far the patient had not opposed the progress of the disease with any thing but large draughts of water.

The menstruation which, in the healthy state, continued nine or ten days, was now suppressed within three; the disease, almost at the same instant, resumed its first severity. Then commenced frequent and feeble palpitations, and syncopes on the least motion; this troublesome state endured four days; the tenth of the disease, the symptoms were somewhat abated, without their entire disappearance. At this period the patient entered the hospital. The pulse was small, tense, frequent, and very regular; the habit of body was not emaciated; the countenance was pale, cheeks colored, features contracted, nose thin, mouth unnatural, eyes bloodshot, head-ach not severe, respiration high and frequent, cough dry and continued; by percussion, the chest sounded badly on the left side, which was generally painful, particularly about the region of the heart, when the epigastrium was pressed up and down. The patient preferred to lie on the left side; she fainted immediately on turning to the right, or was about falling

asleep. She could not rest five minutes at a time in the same position. All the symptoms were aggravated at midnight.

During the two first days from her entrance into the hospital, she was in a very tranquil state. She was satisfied with the demulcent drinks prescribed. The fourth day from the attack, and fourteenth of the disease, very sharp inflammatory symptoms having re-appeared, twelve leeches were applied on the left side of the chest. The oppression was but momentarily diminished; some days after we were obliged to recur to bloodletting, which produced a perceptible improvement; a second bleeding, on the same day, had a more satisfactory effect; the state of the disease was improving daily; in fine, the tongue being foul and mouth bad, a purgative put the patient in a condition to leave the hospital the thirty-third day of the disease, and twenty-third from her entrance.

I have not hesitated to consider this affection as a pericarditis; the signs being sufficiently numerous, and exact to demonstrate it clearly. I am also confident by percussion that the other organs contained in the thorax were at the same time affected. This complication was otherwise indicated by the general pain of the left side of the thorax. If the menstrual evacuation which happened on the third day of the disease had not effected a salutary sanguineous cleansing, the patient, confided to my care not till the eleventh day, would have been, at the time of her entrance into the hospital, in a too advanced stage of inflammation, and the disease would have followed the same course as in the first case; we may be ever assured that its termination would have been also fatal. By appreciating the curative efforts which nature performed in this case, either by menstruation, or by the sanguineous evacuation which was the consequence of it, it cannot be pretended that medicine did not perform much for the patient, when these symptoms, resuming their first intensity, an evacuation of blood which by the

good effects it produced at the time of the menses, and by the nature of the affection, was doubly indicated, gave to the disease such a change, that the woman became convalescent within a few days.

SECT. II.

Of chronic pericarditis.

WE are yet far from having accurate knowledge of chronic inflammation, particularly of that of the viscera contained in the chest. The history of chronic pericarditis especially, is involved in extreme obscurity. This obscurity arises most frequently from its numerous complications, either with a disease of the heart itself, or with a chronic inflammation of a neighboring organ, or with the hydropericardium, hydrothorax, or some other affection to the evolution of which it has repeatedly contributed.

From these various complications, from its insensible attack, from its secret progress, arises, in most cases, a difficulty often insurmountable in the diagnostic of this inflammation. If we attend to the few observations transmitted to us on this point of practice, we know not by what signs to distinguish its attack, what symptoms accompany its progress, hence we are obliged to grant that all the phenomena that belong to this disease are so vague, that it is even uncertain whether a combination of a great number of observations of this kind can throw much light on its history.

Case IV. A potter, aged 62 years, had experienced, from infancy, an habitual restraint in respiration which had increased with age. He was professionally exposed to the vicissitudes of heat and cold. In the month of March, 1801, he felt in the loins, mostly on the left side, some very acute rheumatic pains, which apparently increased the dyspnœa with which he was affected. Con-

fined to his bed by the continuance of the pains, he was brought to the hospital la Charité, where he remained a month without experiencing any relief. Returning to his occupation, the pains abated a little, but on the last of June of the same year, his legs were infiltrated; a convulsive cough intervened which caused sharp pains in the breast. These symptoms were dissipated in order to re-appear with more vigor. The infiltration* having become general, he returned to the hospital the 9th of October, 1802. At this period, the countenance was bloated, the general infiltration was very trifling; the thorax sounded well in every part; respiration was short, embarrassed, frequent, and accompanied with a sensation of weight toward the cartilago ensiformis. Many variations were observed in the motions of the heart and pulse. The beats of the heart were equal, and regular, sometimes an obscure trembling, a sort of rushing like water was felt. The pulse, constantly frequent, was alternately equal, regular, unequal, irregular, and intermittent. There was no palpitation; the sleep was very long, though often interrupted by dreams; the patient lay with difficulty on the left side, he was rather inclined to lie on his back.

He remained in a state nearly similar until the 22d of October, toward the morning, he did not appear to be more restless than on the preceding day. He died, however, in the evening, in great distress.

On the inspection of his body, the lips were purple, the countenance pale; the chest sounded well in every part, except about the heart, where the sound was somewhat dull. In this place, both lungs adhered to the

* Infiltration, from the Lat. *infiltratio*, from the prep. *in*, and *filtrum*, filter: action of passing through a filter, (chemistry) a new term, used in chemistry to express the action by which a fluid passes in, or is imperceptibly, insinuated into the cellular texture of the solid part. Anasarca is a dropsy by infiltration. Ascites is a dropsy by effusion. Dictionnaire des Sciences, et des Arts. Tom. II. — T.

pleura. The lungs, though crepitating, were granular in their whole extent.

The size of the heart was not increased.

The pericardium contained a small quantity of turbid fluid. This membrane had acquired some thickness; its internal surface was neither so smooth nor equal as in the natural state; the lamina which covers the heart was of a greyish color, thickened, unequal, wrinkled, horny, and presented granulations, whose summit appeared ulcerated.

The two auricles were constricted and contracted.

We found a few small indurated tubercles in the mitral valves. The tricuspid valves, somewhat thickened, had the consistence of cartilage. The fifth dorsal vertebra and the head of the correspondent rib, were affected with an incipient caries. To the chronic pericarditis were joined, in this subject, the granular state of the lungs and caries of a dorsal vertebra. This granular state of the whole lungs explains the old and habitual dyspnœa: the thickness, &c. of every part of the pericardium, establishes the chronic pericarditis: the occupation of the patient, his rheumatic pains, in the loins and organs of the chest, accelerated the progress, decided the infiltration, &c.

Notwithstanding these complications, some affection of the heart might be suspected; the nature of the disease might even be known, by the flying confused noises which were felt in the region of this organ, by the irregularities and inequalities of the pulse, by the convulsive and painful cough, in fine, by the symptoms which were sufficiently prominent for the purpose of giving an accurate diagnostic. I have often observed the chronic pericarditis; but most of my observations exhibit symptoms more obscure than those whose history I have just given. By reading with the greatest attention, and weighing these observations, it is necessary to recur often to dissection, in order to learn the true seat of the disease. I doubt not of physicians frequently finding

themselves extremely embarrassed whenever it will be requisite to understand this affection at the bed side, on account of the very uniform complications which accompany it. I am also greatly disposed to consider this disease as generally subsequent, particularly in the one which is the subject of the foregoing case.

I have, in the preceding articles, pointed out as clearly as possible, the signs and symptoms of the different species of the pericarditis which I have thought could be admitted. I have experimentally advanced, that if the prognostic was favorable, it could be only in the *subacute pericarditis*, not in those which I have termed acute and chronic; that the latter, on the contrary lead to a death more or less sudden, but generally certain.

As to the treatment, these inflammations require the administration of the means practised in the different phlegmasias, either acute or chronic, of the chest, observing when the antiphlogistic plan and especially general and topical bleeding ought to be employed more speedily, and perseveringly in the first period than in the second, and in this than in the third: and when these various bleedings have been practised, much is promised from the use of revulsives. The best, according to my experience, and of which I have not been the first to manifest the employment, both in pericarditis, and in pleurisies, &c. consists in the application of large blisters on the part affected, though often circumscribed to a point. I cannot too much recommend this practice, from the advantages I have constantly derived from it.

ARTICLE II.

Of the adhesion of the pericarditis to the heart.

THE examination of the various degrees of the inflammation of the pericardium has taught us that, when patients have died of this affection, the marks of organic lesion were as variable as the degrees themselves. Thus, in consequence of the first degree of acute pericarditis, we find in the cavity of the pericardium a small quantity of fluid, thickish, turbid, and reddish; the internal surface is red, livid, and marbled.

When patients have died of a pericarditis whose progress has been slower, or even of a chronic pericarditis, the internal surface of the pericardium, both upon its loose portion and upon that which adheres to the heart, is often covered with a considerable pseudo-membranous exudation, which I have sometimes found more than six lines thick. If we remove this stratum of lymph, which generally yields with facility, we find the membranous surface phlogose, sometimes unequal, of a pale red and as if bleached by the surface which covered it. Between these two albuminous strata, one of which invests the external membrane of the heart, and the other the internal surface of the pericardium, we often find more or less of an effused purulent fluid; but it is also common to observe, in consequence of inflammations, whose progress has not been rapid, the loose portion and the cardiac portion of the pericardium united to each other by the means of these two albuminous strata, and which can be separated sometimes by drawing these two portions of the pericardium in a contrary direction. Then each of these lymphatic layers still adheres to the part of the pericardium from which it had originated by exudation. In other cases they cannot be disunited; their separation appears to be the more difficult, according to the continuance of the exudation. Besides, what-

ever be the cause which decides the formation of the adhesion of the pericardium to the heart, the collection of a multiplicity of facts informs us that this adhesion which is observed after death, obtains equally, during life, in three different ways : 1, it is formed by the interposition of the albuminous matter, exuding from the inflamed membrane ; 2, it is intimate and immediate ; then it seems that no medium of union is interposed : 3, in fine, it obtains by very numerous cellular filaments, whose length varies from seven or eight lines to the least length imaginable ; hence the date of the evolution of the adhesion is doubtless quite remote. The adhesion of the pericardium to the heart does not, in many instances, constitute actual disease ; it barely puts the subjects afflicted with it into a state of supportable torture ; in other circumstances, the symptoms which it occasions, are sufficiently serious to characterise a state really morbid. Let us exemplify :

Case V. A man aged forty, felt a very sharp pain which he referred to the epigastric region. The pain was accompanied with weak, but frequent, palpitations, and great difficulty of respiration. The pulse was small, quick and irregular, and the hand, applied over the region of the heart, felt that the beats of this organ were performed irregularly. From time to time, the painful point, difficulty of respiration, palpitations, in fine, all the symptoms were remarkably aggravated. In one of these paroxysms, which re-appeared at short intervals, there supervened round the lids of the right eye, an ecchymosis, and the globe of this eye was inflamed.

Although the combination and weight of these symptoms caused us to be apprehensive of the safety of the patient, we, fortunately, by the continued use of antiphlogistics, demulcents, and antispasmodics, put him in a condition to pursue his accustomed occupations. His health continued for forty days ; then he returned to the hospital. To the symptoms already described, were added an ascites and repeated paroxysms of fever.

The quantity of water effused rendered paracentesis necessary, which was employed as a palliative only; the water re-accumulated; the patient complained of continual pains in several points of the abdomen, but principally at the bottom of the right iliac region. Besides, the pulse was constantly very small, the patient wakeful, and the left side of the thorax sounded not in the least. His strength wasted every day, notwithstanding the use of cordials. In short, eight days after the first attack which has been related, the patient passed tranquilly from life to death, soon after he was laid in his bed where we believed him asleep.

In the course of this patient's first disease, I announced the existence of an organic lesion of the heart. My diagnostic was more accurate long before his death, and I thought I could advance that the adhesion of the pericardium to the heart existed. On opening the body, I found a large quantity of water in the left cavity of the thorax; the pericardium adhered, externally, to the lungs, internally, to the whole surface of the heart. The adhesion was so strong, that the pericardium could not be separated from the heart but by careful dissection. The blood accumulated in the right cavities of this organ, and in the *venæ cavæ*, so very copiously as to give them an extraordinary size. The other parts of the heart presented nothing unnatural. The blood retained in all these cavities a remarkable fluidity. The muscular fibres of this viscus were generally very pale, and their action must have been reduced to almost nothing sometime before death, which perhaps was caused by this deficiency of action. The left lung, pressed toward the superior part of the thorax, was indurated; the right was perfectly sound.

The abdominal cavity contained much bloody serosity; the alimentary canal was contracted and altered externally, almost the whole of the superficies of the peritonæum being covered with granulations.

The symptoms just described are not the only ones that have been observed on subjects that had the peri-

cardium adhering to the heart. Those it remains to speak of, are in general extremely varied; but in most cases, the face is suffused with sudden redness, produced by the disturbance which the adhesion occasions in the regular action of the heart, according to the diversified motions of the body, independently of the moral affections. The patient experiences also a tedious sensation of pulling in the region of the heart, because, in the act of respiration, the diaphragm pulls, in its depression, the pericardium and the whole heart, adhering to it. Respiration is high, frequent, and difficult from the least exercise; fainting supervenes; the pulse is more or less irregular, especially on any bodily exercise.

These symptoms would be still much more marked, if the inferior surface of the diaphragm had contracted adhesions with a large tumor situated in the abdomen, or with any other viscus, for example, the liver, which would have acquired an extraordinary weight. These different circumstances, by fixing the diaphragm below, would present consequently a permanent and invincible object to the free action of the heart.

The absence of strong palpitations is a symptom which appears to me very proper, if not to characterise the disease, at least to cause it to be distinguished from the other affections of the heart, in which, the converse generally obtains. The palpitations must in short be considered as extraordinary and violent motions of the heart. Now, how can this organ, attached to the diaphragm, perform these extended motions, if its displacement is rendered impossible by its adhesions? The contractions of the heart are, in this case, quick and irregular, but dull and low, obscure and abortive.

Notwithstanding what has been said, I aver that the diagnostic of the adhesion of the pericardium to the heart, if we suppose it simple, is extremely difficult to establish positively. I will add, when it is connected with any other affection of the heart or thorax, that even the most prominent symptoms of the disease which in-

volves the adhesion of the pericardium, prevent our being able to discover, or often even to suspect, this last affection.

Case VI. A young girl, very regular from the age of eighteen to twenty-three and a half years, was at this period, affected by a cold which she neglected five months; she then felt in the left side of the thorax an extremely painful point. Respiration was short, and embarrassed; there was an incipient aphonia, dry and frequent cough, fever slight in the evening, sweat upon the chest, heat and dryness in the palms of the hands and soles of the feet. Such appeared to be her state the 21st of June, 1799, when she was admitted into the Clinical ward. The means employed, during her residence in the hospital, procured little relief. The cough and aphonia abated; but the respiration became more difficult, more short, and hurried, and sometimes hissing, being performed by elevating the shoulders. She experienced constantly during the night dyspnœa, long and fatiguing fits of coughing, in fine, extreme tightness in the chest, the febrile symptoms had perceptibly abated; the complaint making new progress, the cheeks became purple and spotted, the lips of a bright red; the rest of the countenance was pale, the eye-lids fatigued and yellowish; the chest was free from pain; it did not sound on the left when struck; the pulse was small, very frequent, without any sensible irregularity; the arms and legs were not œdematous; the appetite gone; she could not lie upon her right side.

From the positive existence of an effusion in the left cavity of the chest, it was clear to me that medicine was here without the least efficacy. I was persuaded that the operation for empyema was more than a doubtful remedy, I could scarcely decide to perform it; however, the distress for breath having still increased, I opened the chest, the 10th of October, 1799; there flowed immediately a considerable quantity of fluid, having every physical and chemical property of the serum of the

blood. During the day, another quantity of fluid was discharged, yet respiration was equally difficult.

11th. No sleep, respiration more easy; the abdomen less swoln, the countenance also altered; the day, was very quiet, some fever in the evening.

12th. The serosity flowed still profusely through the wound; this serosity exhaled a strong and fetid odor; injections were administered, composed of equal parts of a decoction of barley and cinchona. The chest when struck sounded well on both sides; the pulse was weak and frequent.

13th. The night was very good. During the day, cough more fatiguing, discharge from the wound of a quantity of water sufficiently copious to lead us to believe that it was constantly forming; pulse frequent, a little more steady than at night.

14th, 15th, and 16th. The symptoms became more and more alarming; the pain returned in the left side; some irregularity in the pulse; she died the 17th.

On opening the body, the lips of the wound appeared gangrenous; there was a little serosity in the right cavity of the chest: the lung on this side was sound; the internal part of the left cavity was covered with granulations. The lung on this side was small, hard, scirrhus and flattened against the mediastinum; the pericardium thick, whitish, was very closely united to the heart, without a possibility of separating the least portion of it without the assistance of a cutting instrument; the heart, whose substance appeared discolored, was, with its envelope, pressed up toward the right and superior part of the thorax.

I have quoted this case in preference to any other, because it gives me the opportunity of saying that, having often performed the operation for empyema, in analogous cases, I think I have ascertained that it seldom procures an ephemeral relief, but in all these cases, hastens the death of the patient.

From the simple exposition of symptoms induced by the adhesion of the pericardium to the heart, we must not think that the state of the subjects who are affected with it, is invariably tedious to bear. There are, however, subjects who, after death, have been found in this morbid state without, during life, having exhibited the slightest mark of its existence. It would then appear that, in time, the heart is habituated to the impediments which this affection brings to its motions. On the other hand, it has been thought that the habitual restraint and continued anxiety which most often resulted from it, might throw the patient, though enjoying apparently good health, into such a state of inquietude and melancholy, as would render life insupportable. Assisted by this opinion, cases have been adduced to which I will add one which to me is singular.

Case VII. An apothecary exhibited, for several years, in his countenance, the impression of constant melancholy. His respiration was incessantly short, especially when he hastened his walk. Without any known cause, this man attempted first to poison himself with opium without success; he lived melancholic for several months, and then took a second dose of the same poison which destroyed him very soon, after having given rise to true symptoms of peripneumony. We learnt afterwards that he had contracted a small debt which he could not pay. I do not know whether this cause alone was sufficient to lead him to the desperate act which terminated his life; but on opening his body we saw that the pericardium had formed with the apex of the heart, a very old adhesion in a circular space of two inches in diameter. We observed, moreover, marks of the recent peripneumony which had occasioned both a serous effusion into the cavity of the chest and his death.

It would be unreasonable to conclude from this case, and from those already published, that suicides have always the pericardium adhering to the heart. It is with

the adhesion of which I am speaking as with biliary calculi, which have been said to be often found in persons who attempted their lives. Is the uneasiness, anxiety, and anguish which, in certain instances, the adhesion of the pericardium to the heart induces, capable of rendering the burden of life intolerable ?

ARTICLE III.

Of the white spots which are observed on the surface of the heart.

IN a very great number of subjects, white spots are seen on the surface of the heart, whose indefinite extent varies from the size of a lentil to that of a crown, or larger. The formation of these white spots has been attributed to the impression of the parietes of the thorax on the heart, when, by contraction they are carried toward the ribs. This mode of formation seems inadmissible, since the spots, which from this explanation, should always occupy the anterior face of the organ, are frequently seen on the posterior part.

What cause can therefore be assigned for the evolution of this singular state ? Can it be called pathological ? And what sort of lesion arises from one or from several of these spots ?

These white spots or plates, which, at the first glance, appear to belong to the opacity of the lamina of the pericardium which adheres to the heart, more attentively examined, are not actual alterations, but effects of an old affection of this membrane. If we remove one of the white plates, which cannot be done without detaching the pericardium, we see that they are produced by a layer of lymphatic substance, applied to the internal surface of the lamina of the pericardium which adheres to the heart. By scraping away this pseudo-mem-

branous layer, we find that the membrane, to which it is applied, has lost none of its transparency, and that is not apparently changed in its texture. This white matter seems to have been deposited by an exudation similar to that which is usually made in consequence of the inflammation of the serous membranes.

Is it rational to think that the spots are marks of local, slight and chronic inflammation of the external membrane of the heart, which has furnished the lymphatic exudation ; and that the matter exuded, not having been received by the absorbents, produces the white spots in question ? I will observe, that there is often found on the viscera, covered with membranes of the same kind, on the surface of the liver, of the intestines, of the lungs, of the arachnoides in particular, similar spots, which perhaps are induced also by a local inflammation of little extent, that might have been indicated by slight symptoms during life ; but these symptoms have been too vague, to then cause a suspicion of the affection to which they belonged.

Yet their extent and seat, in some circumstances, render the explanation very doubtful which I have hazarded, and it is very difficult in some of these cases, to be persuaded that the inflammation, which must have obtained, has not occasioned a real disease, even very serious, rather than slight symptoms, of which the patients have scarcely retained the remembrance.*

* In opening dead bodies there is very often to be seen upon the surface of the heart a white opaque spot, like a thickening of the pericardium. This is sometimes not broader than a sixpence ; at other times as broad as a crown. It is most common on the surface of the right ventricle, and is very rarely to be seen either on the surface of the left ventricle, or of the auricles, although it is occasionally on both.

It consists of an adventitious membrane, formed on a portion of the pericardium, which covers the heart, and may easily be dissected off so as to leave the pericardium entire. It is an appearance, I believe, of no consequence whatever, and is so very common that it can hardly be considered as a disease. *Baillie's Morbid Anat.—T.*

CHAP. II.

Of hydro-pericardium.

THE dropsy of the pericardium might be considered as one of the results of the inflammation of this serous membrane ; but the collection of turbid, colored, purulent liquid, which is formed in the pericardium, in consequence of pericarditis, differs, in many respects, from the accumulation of limpid and often discolored serosity, induced by a disease of the heart, an inflammation of the mediastinum, of the pleura, of the lung, or any other cause which destroys directly or indirectly the indispensable equilibrium between the action of the exhalents and absorbents of this membrane. It is this serous, limpid and almost colorless effusion which particularly constitutes hydro-pericardium.

The pericardium, like all analogous membranes from the nature of their texture, continually moistened with an aquo-serous humor, furnished by the exhalents, and imbibed again by absorption, becomes, when the exhalation is too strong, or the absorbent power too weak, the seat of a particular dropsy.

The quantity of water that could be amassed, would be trifling, if the pericardium possessed the faculty of being dilated, and of acquiring a certain capacity ; but here a difficulty arises. On dissection, whatever may have been the kind of death of the individuals, there is found more or less of serum in the cavity of the pericardium. This fact is so uniform, that many authors have cited, as extraordinary, cases in which the internal

surface of the pericardium was dry. The quantity of fluid is, they say, determined, in this case, by the space of time elapsed after the death of the individual. It is still more rational to assert that the disposition of the subject, the nature of the disease, its duration, its treatment perhaps, act singularly on this difference of quantity. Thus I have seen subjects opened immediately after death, and in the cavity of whose pericardium was found a very large quantity of water, while on opening other subjects, being dead a much longer time, very little of it was seen ; it ought not however, to be said that there was a dropsy, in the first case. What quantity of water then constitutes the hydro-pericardium ?

Opinions are here divided, and it seems to me the more difficult to give an accurate answer, as the authors have treated of the dropsy of which I am speaking without having previously put the question which I have proposed. If, however, observation proves that the quantity of six ounces be the most that has been found in the pericardium of a great number of individuals having died from the effects of every species of disease, beside those which may induce hydro-pericardium, am I not right to infer that, when this serosity exceeds six or seven ounces, a dropsy of this membrane exists ; and even that a less quantity may constitute a subsequent dropsy ?

This quantity which I consider as morbific when it exceeds in weight six or seven ounces, may become much more considerable. I have found in the pericardium of a subject, that died in consequence of an aneurism of the aorta, two pounds of aqueous and colorless fluid. Authors cite cases of more copious effusions. At the close of this paragraph, I shall report a case in which the pericardium contained eight pounds of serosity ; seldom will a more plentiful effusion be observed ; for, on the one part, the extensibility of the pericardium is naturally very limited ; and on the other, when its distension is considerable, the compression of the lungs and

bronchiæ, of the heart and great vessels, rarely permits the patient to protract his painful career.

Case VIII. A man aged thirty-four, convalescent of a very severe peripneumony, had experienced great embarrassment of respiration, attended with a dry and frequent cough. Four months after he was admitted into the hospital; he could not lie horizontally, remaining day and night in a sitting posture, inclined on the left side; if he attempted to turn on the right side, he was immediately seized with dyspnœa. The countenance was bloated and of a purple color, the lips were livid, the legs œdematous, pulse quick, very weak and irregular; he experienced partial, but frequent faintings. The pulsation of the heart could not be felt. The anterior and left portion of the thorax did not sound when struck. From this assemblage of symptoms I announced the existence of hydro-pericardium, and the fatal event of the disease.

Leeches applied to the anus, and a spontaneous hemorrhage from the nose, rendered respiration more easy; then some feeble and tumultuous beats were observed in the region of the heart. But, the symptoms immediately grew worse, and the patient died in such anguish as is difficult to describe.

On opening the body, the pericardium was much distended, compressing the collapsed and indurated lung; this membrane was thicker than in the natural state; its cavity contained about eight pounds of a clear and greenish serosity. The superficies of the heart appeared to have been the seat of a chronic inflammation. There was but very little serosity effused into the thorax.

The causes of dropsy of the pericardium are, beside those of dropsies in general, affections of the heart, of the mediastinum, of the pleura and of the lung, in particular.

The signs by which hydro-pericardium may be known to exist, have been, long since, a subject of discussion, without much certainty as to the diagnosis of

the affection. The following is however the clearest that my practice has furnished on this subject.

Patients affected with hydro-pericardium have habitually the countenance of a purple color, the lips black and livid. They feel a painful sensation, a distressing weight about the region of the heart, a difficulty of breathing which threatens suffocation, when the patient wishes to assume a horizontal position ; he often experiences syncope, but more rarely palpitation. The pulse is small, weak, frequent, concentrated, and irregular. By applying the hand over the region of the heart, tumultuous and obscure beats are felt ; it may be said that the heart causes its strokes to be felt, merely through a soft substance, or rather through a fluid, situated between it and the parietes of the thorax. When the percussion of the thorax is performed, whether the patient is sitting or placed horizontally in his bed, the sound that this cavity gives is obscure, or even nothing anteriorly and on the left, in an extent proportionate to the dilatation which the fluid has evinced in the pericardium.

In some cases, the left side of the thorax is higher, rounder, and more convex than the right ; when the disease is chronic, the strength of the patient is almost annihilated, an œdema supervenes in the inferior extremities, but more rarely a slight tumor in the anterior part, and on the left side of the thorax.

These different signs exist most commonly in cases of simple hydro-pericardium, and are generally known ; but there are others which, on account of their being discovered but rarely, or by a small number of practitioners, deserve equally to fix the attention. Thus, I have had an opportunity of making an observation analogous to that of *Senac*, who saw between the third, fourth, and fifth ribs, a quantity of fluid effused into the pericardium. I cannot say that I have seen the same phenomenon, yet I have convinced myself of its existence, by the touch ; it may be that the undulations that my hand, applied over the region of the heart, felt distinctly,

were occasioned merely by the beats of the heart. I am far from denying it ; but I can affirm if it is so, the particular character of these beats is very easy to be known. I ought, indeed, to say that I have made this observation only on one patient, while we must conclude from what *Senac* says, that he saw these undulations on many. In fine, I observe again that I have only touched what *Senac* says he saw very distinctly. I think it unnecessary to spend more time in discussing the other different signs given by certain authors, as pathognomonic of hydro-pericardium, and which, according to *Morgagni*, are scarcely worthy, for the most part, of being numbered in the catalogue of the equivocal signs of this affection ; I shall therefore only point out, as such, an enormous weight which patients feel on the heart, according to *Lancisi*, and many others. The opinion of the patients, who say they feel their heart swimming in a fluid, from *Reimann*, *Saxonia*, &c. the livid and leaden color of the lips ; patients finding it impossible to lie on the right side, without being nearly suffocated, a sign which has been alternately given as characteristic of several diseases of the chest, and which appears to me to belong exclusively to none, since it is found in many.

To the above signs, I will add one, which I have have observed twice, and which appears to deserve more weight than the last, viz. of the pulsations of the heart which are felt, sometimes in the right, sometimes in the left, or to express myself more clearly, in different points of a very extensive circle. How can we conceive that these disorderly pulsations can be performed, if the heart is still confined, as it naturally is, by the pericardium, an immoveable sack, whose cavity, proportionate to the size of this viscus, fixes the extent and direction of its motions ? If these pulsations are manifested in various points, remote from each other, the pericardium must be dilated ; now this cannot happen but from two causes : 1, by the enlargement of the size of the heart ; but then there is necessarily an augmentation of both, the relations

remaining the same, and the pulsations may augment in force, but they must be always felt nearly in the same point of the thorax ; 2, by the accumulation of a fluid in its cavity ; it is then that the heart, whose size is not proportionably increased, swims freely in this fluid, and strikes points the more distant, as the effusion and dilatation are the more augmented ; this is one of the cases which I announced above as being my own ; I give it here as it was previously printed in one of the theses of the Parisian school.

Case IX. A tailor, aged thirty-three, of a robust constitution, came about the 21st of March, 1800, to the hospital. Three or four years had elapsed since the attack of the disease. A long and forced race, at the moment when he was seized with the greatest fright, had caused dyspnœa, dry cough, and palpitations which became continually stronger. These phenomena were renewed on the least motion of the patient, whose countenance was animated and injected. The beats of the heart were confused, and made with a sort of rushing noise. Every other function, especially that of digestion, was performed perfectly. There was no sign of effusion either in the chest or abdomen. There was no infiltration at first, but it began to form in the inferior extremities. The patient not finding his state improved, left forty days after his entrance, but he returned immediately. Already his countenance began to be altered, and soon all the phenomena dependent on the organic disease of the heart became more and more alarming ; his sleep was disturbed by terrifying dreams, and he often started suddenly. The secretion of urine diminished ; the infiltration increased ; it penetrated the parietes of the abdomen, and also the arms and hands ; it was firm, and the color of the skin was not changed. The liver became painful ; piles appeared which added to the suffering of the patient, and an evident effusion was formed in the abdomen. All the remedies given as palliatives, did not accomplish this end, having scarcely

any effect. However, the swelling became so enormous and distressing, that we scarified the legs; a large quantity of serum was discharged; and as the patient had great vital energy, the skin quickly resumed its tone. The relief gained by this evacuation, was short; the scarifications inflamed, and became painful, which was an obstruction to a farther discharge of the fluid. The cellular and abdominal dropsies were very soon found as profuse, as they were before, and increased even to the close of the disease. Here we observed that the beats of the heart had somewhat less force, and were felt in different points of the anterior region of the thorax, as if the apex of the organ struck first in one place, and then in another. This phenomenon made me think that the pericardium might be the seat of an effusion, which was confirmed by the inspection of the dead body. In fine, after residing seven months in the hospital, the symptoms peculiar to the essential disease, as anxiety, suffocation, becoming daily more insupportable, the patient expired after having spit blood, in an agony of some hours.

There was a general infiltration of the cellular substance; the cavities of the thorax contained but very little water; but the pericardium, which was greatly distended, and occupied nearly all the transverse diameter of the thorax, contained more than a pint. The size of the heart was much augmented; the orifice of the aortic ventricle was constricted, and formed a sort of curved, irregular cleft, presenting a hardness and some osseous asperities. The mitral valve was both hard and ossified; the aortic were thick and callous. The abdomen contained an abundance of serosity tinged yellow; the liver was very dense, hard and remarkably engorged with blood.

It is unnecessary to observe, I think, that if, in this case, the assemblage of signs is not found which I have said are proper to manifest hydro-pericardium, because the effusion was subsequent. The heart was the

organ first affected. The symptoms of the disease of this organ were very decided.

The number and assemblage of the signs which I have given above, as belonging to the disease of which I am treating in this chapter, are well suited to combat the opinion of physicians, who have considered it impossible ever to establish the diagnostic of the hydro-pericardium; it must however be granted that the disease, being very easy to distinguish when it is alone, is attended, in most cases, by its numerous and frequent complications, with very great obscurity. In short, beside the dropsy of the chest, which is often formed at the same time, we find it occasionally united with diseases which originated it, such as affections of the lung and heart; but in the greatest number of cases, an experienced tact will always discriminate it.

Before concluding whatever has related to hydro-pericardium, I must speak of a very interesting phenomenon, which I have frequently observed. In the cases of anasarca, or general pneumatosis, the great quantity of serosity infiltrated into the cellular tissue of the extremities commonly produces a remarkable swelling of the limbs; the abdomen is also very often filled with a great mass of fluid; but it sometimes happens, that the chest is free from this serous diathesis, and preserves its natural state during the general infiltration. When respiration in this case is obstructed, it is altogether owing to the compression of the diaphragm. If, in these circumstances, the percussion of this cavity be practised, notwithstanding the swelling of the integuments, we perceive that it gives a sound sufficiently distinct to decide that it contains no serosity. By making the same experiment on the region of the heart, we obtain the same results; so we thence exclude every idea of hydro-thorax, or hydro-pericardium, whose symptoms, indeed, do not exist, but which may be suspected, in proportion to the state of general leucophlegmatia.

Because two days, or even the morning, before death, it were found, in these subjects, that the chest was free from effusion, we must not believe that it will not be discovered in the dead body. We might be very much deceived, by asserting that the chest will be perfectly empty, and then find it unexpectedly filled with fluid.

I have often observed in my lectures that such a subject as, a few days before death, or even in articulo mortis, had the extremities swoln and distended with serosity, was no longer found, when we examined it fifteen or twenty hours after this event, in a state of intumescence so evident in the inferior extremities; we sometimes have noticed no more than a slight infiltration of these parts. There happens then in a very short space of time, even though the body be deprived of life, a sort of revulsion that determines, on the one hand, the almost total disappearance of the infiltration of the members, and causes that on the other the chest and pericardium be filled in proportion as the cellular tissue is emptied; hence we are very much surprised, on opening the chest, to find its cavity, as well as that of the pericardium, containing more or less fluid, when we expected to find it altogether free from effusion.

Whether the hydro-pericardium be simple, or united with the hydro-thorax, the internal remedies are the same as those generally indicated in dropsies. *Senac* proposed to perform particularly for the hydro-pericardium, the operation of paracentesis; he has minutely described the manner of performing it with the trocar. I think, contrary to his opinion, that the advantages derived from it, seldom will counterbalance the danger to which it exposes the patient. But, if it was decided to do it, the incision with the bistouri ought to be preferred to the perforation with the trocar, an operation dangerous in many respects.

APPENDIX TO THE FIRST CLASS.

SENAC, in confirmation of the advice which he gives of paracentesis in cases of hydro pericardium, does not report a single case; he barely cites a case of hydrothorax in which he opened the chest with the greatest success. But relatively to the danger of the operation, the two cases have not the least resemblance.

Desault has gone farther, without however happening to open the pericardium. The following is an interesting history of the operation, as is reported in his surgical works.

Case X. A man entered the hospital of la Charité, with every symptom of a dropsy of the pericardium; dry cough, pulse slow, hard,* irregular, with pain, and anxiety; a danger of suffocating when the body is recumbent; sensible relief when sitting; frequent syncopes, the countenance pale, and bloated; manifest dilatation in the precordial region; propensity to incline on the left side; such were the phenomena presented.

Debois, Sue, Dumangin, Desault, being in consultation, did not at first agree as to the cause on which these phenomena depended; one thought it a disease of the heart, another a dropsy of the chest; the third an accumulation of water in the pericardium.

They finally agreed to the two last opinions which had divided the consulters. To induce them to agree, *Desault* proposed an operation which suited either case; this was to open the chest between the sixth and seventh rib on the left side, opposite the apex of the heart, by separating the skin, the decussation of the muscles obliquus major and pectoralis major, and the plain of the

* The slowness and hardness of the pulse are, as I believe, phenomena contrary to those that should exist in hydro-pericardium.

intercortals. This project being adopted, was executed the next day.

The incision having been made with precaution, *Desault* introduced his finger into the chest, and felt a species of pouch full of water, which he mistook for the pericardium. The other consulters having, likewise, examined the parts, were of the same opinion. He opened, therefore, with a probe-pointed bistouri, the dilated pouch, and let out about a pint of water, which escaped with a sort of hissing on each expiration. The discharge subsiding, the finger introduced again into the aperture, felt a body united, pointed, and conical, which struck the finger. All the assistants felt it, and concluded that it was the naked heart.

All the symptoms were quieted the two first days subsequent to the operation; but they re-appeared the third, became more severe, and the patient died the fourth. The dissection exhibited a membrane which united the edge of the left lung with the pericardium, and formed the pouch taken and cut for this membrane. The conical and pointed body, which they had judged to be the naked heart, was, indeed, this organ, but surrounded with the pericardium, to which it adhered generally, much more dilated than usual, and filled with dark colored blood, somewhat coagulated.

I do not number among the affections of the pericardium, the absolute want of this membrane which some anatomists say they have observed.* I have given, for a reason of this voluntary omission, that I did not doubt of their having been deceived by taking the adhesion of

* In the Edinburgh Med. and Surg. Journal, vol. III, p. 86, the reviewers of Professor Portal's "*Cours d'Anatomie*," &c. observe that "He seems to think the pericardium has never been found wanting; he has always detected it firmly adhering to the heart, in instances where it might have been said to be deficient; and *Haller*, he says, always found it in animals he dissected." But, if the *Morbid Anatomy of Baillie* had been consulted, or the Med. and Chirurg. Transactions, our author would have found the history of a pericardium wanting from original formation, the authenticity of which there is no reason to doubt.—T,

the pericardium to the heart, for the absence of this membrane. This fact, and many others more extraordinary, which certain authors have given themselves the trouble to collect, deserve no more to engage the attention than does the history of hearts covered with hair, which, from the opinion of *Lancisi* and *Haller*, were merely lymphatic filaments attached to the surface of the heart or of the pericardium. *Senac*, so incredulous on this point, appears likewise far from believing in the existence of hairy hearts in great men and robbers, although *Aristomenes*, *Hermogenes*, *Leonidas* and *Lysander*, appeared, in their day, men as distinguished for the hair found in their hearts as for the talents and splendid actions which have given them celebrity.

SECOND CLASS.



AFFECTIONS OF THE MUSCULAR SUBSTANCE OF THE HEART.

General considerations.

THE muscular substance is what most essentially constitutes the central organ of circulation. This acts the principal part in its organization, since to the contractility of the muscular fibre the motions are entirely indebted, which give impulse to the fluid which the heart causes to circulate.

This single view is sufficient to make us feel how alarming must be the lesions which necessarily induce the alteration and sometimes annihilation of the properties of the muscular fibre. The action of the heart is then not only restrained, and obstructed, as in the affections of the membranous envelopes, but it is really altered in its principle. The circulation suffers derangements proportionate to the disorganization of the viscus that is the agent of it. These derangements are quickly extended through all the other functions which have immediate dependence on this ; hence the alarming and threatening symptoms which I am going soon to particularize.

Though there is some difference in structure between the ventricles and auricles, the parietes of these cavities have not less dependence on the same muscular tissue. In the healthy state, in fact, the particular arrangement of the fleshy fibres, and their inconsiderable number, seem barely to distinguish the tissue of the auricle, and it is in cases of great dilatations, or other affections, that the

parietes of these cavities lose their muscular character, for the purpose of assuming a membranous appearance, or suffering other changes.

I should have placed at the beginning of this class the inflammations of the muscular part of the heart, had I been able to furnish well authenticated examples of this isolated pathological state ; but the simultaneous inflammation of the different tissues of this organ, constituting in reality carditis, I shall not place this disease in the class of the affections of the muscular tissue, as some have thought it expedient to do. If it was even necessary between several tissues visibly concerned in the inflammation of the heart, to designate one of them which would be more particularly so, it might perhaps be thought that the cellular tissue has, in this case, more to suffer than the muscular which, indeed, is always engaged, though much less than the first. I shall have occasion to develop, when treating of carditis, this proposition contradictory to some new opinions.

The most common change, evinced by the muscular substance of the heart, is aneurism. This substance is not in fact the only one injured in this affection ; but the membranous envelopes, which are then found concerned, are indirectly so, their dilatation appearing ever to be simply passive, except in cases where several kinds of lesions are found together, and several tissues simultaneously affected.

ARTICLE I.

Of aneurisms of the heart in general.

Physicians have adopted two different etymologies of the term *aneurism*; some, considering it compounded of à privative, and νεῦρον, *nerve*, have thought it might be translated by the Latin word *enervatio*. Others having derived it from the preposition ἀνά, *per, through*,* and from the verb, εὐρύνω, *dilato*, are much farther from the essence of the disease. Whichever of these etymologies may appear preferable, surgical language will always be incorrect upon this point, since surgeons distinguish by the same word *aneurism*, two diseases, (the false and the true aneurism) which, approximate in their effects, are different in respect to their causes and nature. The same incorrectness prevails not in medicine when the word *aneurism* is used to designate a dilatation of the heart. However, in order to avoid all ambiguity in the acceptation which may be given to this term, aneurism signifies with us, a preternatural dilatation, either active or passive, of one or of all the cavities of this viscus. When I shall have established the differences which exist between the various aneurisms of the heart, the necessity of attaching to this word the sense which I have just given, will be still better understood.

It is necessary to distinguish two species of aneurism of the heart. The real existence of these two species is proved to the physician by symptoms different and appropriate to each; to the anatomist by constant and repeated observation of two very distinct states in which the heart is found when it has been the seat of the disease.

* If the term aneurism be derived from the preposition ἀνά, which the French translate *trop, outre mesure*, which in English signifies *too much, beyond measure*, and from the verb εὐρύνω, *dilato*, hence ἀνεύρυται must be rendered *to dilate too much, or beyond measure*; ἀνά is translated in the text into English by the word *through*.

In the first species (*active aneurism*) the heart is dilated, its parietes thickened, the energy of its action increased.

In the second (*passive aneurism*) there is likewise a dilatation, but an attenuation of the parietes, and diminution of energy in the action of the organ.

Although aneurisms of the heart, and of the arteries of the extremities, may have been designated under one denomination, it would be difficult to establish between these two affections a parallel sufficiently exact to render the identity of names admissible. What analogy is there, for example, between aneurism of the heart in which there is a thickening of the parietes and augmentation of their energy, and aneurism of the crural or popliteal arteries? We should find, indeed, more relation between the aneurism of the arteries, and that of the heart with the attenuation of its parietes; but still how many points of dissimilarity do there not exist?

The approximations which I have just pointed out relate for the most part indirectly to my subject; they prove merely in nosologies, an imperfection which nobody, I think, will call in question, and which is more easy to discover than to reform.*

* According to the celebrated Dr. Rush, in his introductory lectures, the division of diseases into genera and species by what has lately received the name of nosology, has retarded the progress of medicine.

Nosology, says he, presupposes the characters of diseases to be as fixed as the characters of animals and plants: but this is far from being the case. Animals and plants are exactly the same in all their properties, that they were nearly six thousand years ago, but who can say the same thing of any one disease? They are all changed by time and still more by climates, and a great variety of accidental circumstances. But the same morbid state of the system often assumes, in the course of a few days, all the symptoms of a dozen different genera of diseases. Thus a malignant fever frequently invades every part of the body, and is at once, or in succession, an epitome of the whole class of pyrexia in Dr. Cullen's synopsis.

Errors in theory seldom fail of producing errors in practice. Nosology has retarded the progress of medicine in the following ways.

1st. It precludes all the advantages which are to be derived from attaching diseases, in their forming state, at which time they are devoid of their nosological characters, and are the most easily or certainly prevented or cured.

ARTICLE II.

Of active aneurism of the heart, or with a thickening of its parietes in general.

THE heart, as well as all the other muscles of the human body, is susceptible of acquiring a more marked growth, a more solid consistence, a more considerable power by the greater continuity or energy of its action. Do we not daily observe the extraordinary evolution of all the muscles of the body, in porters, of those of the arms in forgers, bakers, &c. ? Exercise for the external muscles, exercise and irritation for the heart, are the principal causes that make of these organs a more active centre of nutrition, and fix in them a greater quantity of nutritive substance. To render this fact clearer and more intelligible, before pointed out by *Blanchard*, let us suppose in a subject, otherwise well organized, a heart of the usual dimension, having a quantity of action proportionate to the mass of muscular fibres which compose it, but vessels out of proportion as to the narrowness of their calibres, and which, therefore, have no relative capacity with the quantity of fluid which they are to circulate. The heart, in this individual, will have to propel, through the narrow arteries, too large a column of blood. These vessels will not at first dilate sufficiently to admit such a quantity of fluid ; they will obstruct the progress of the fluid which will necessarily react upon the

2d. It has led physicians to prescribe exclusively for the names of diseases, without a due regard to the condition of the system. This practice has done the most mischief, where a malignant or inflammatory constitution of the atmosphere has produced a single or predominating epidemic, which calls for the same class of remedies, under all the machinations which are produced by a difference in its seat, and existing causes.

3d. It multiplies unnecessarily the articles of the materia medica, by employing nearly as many medicines, as there are forms of diseases.—T.

agent of its impulse. The first effect of this reaction will be to determine the extension and elongation of the fibres of the heart ; the second, to occasion a longer residence of the blood in the cavities of this organ, and consequently a longer impression of its stimulus. In fine, the coronary arteries, as well as the capillaries of the heart, continuing in a permanent state of engorgement, will furnish more nutritive fluid to the fleshy substance of this organ. Hence, the dilatation of the cavities, the elongation of the fibres, the thickening of their masses, the greater consistence of the parietes, the more vigorous action of the organ. The same causes acting incessantly will ever tend to change more and more the natural state of the heart, together with the arteries which proceed from it ; these last will yield with less facility, the dilating power acting less directly upon their parietes which, besides, may oppose a resistance relatively stronger in proportion to their own organization and assistance than the action of the surrounding parts affords them. The heart, on the contrary, free on every part, formed of fibres susceptible of great extension, of fibres which are sustained merely by their reciprocal union, will suffer, in its organization, a change which the same effort could not have produced upon the arteries. We sometimes see these vessels yield to the efforts of the blood, driven by the heart which preserves, in certain subjects, its natural size, while the arch of the aorta, undergoes great dilatation ; but then a particular local weakness, produced by causes which will be developed in another part of this work, favors the dilatation of the vessel that becomes the seat of the aneurism. The evolution of aneurisms of the first species does not always arise from the want of a relation between the calibre of the vessels and the quantity of blood which the heart causes to circulate in them. All the obstacles to the course of the blood, either by a malformation, by a certain pathological state, or by the influence of the moral affections on the action of the heart, perhaps too the greater or less stimulant quality of the

blood which, in equal quantity, must increase or diminish the force of the organ, ought also to be counted among the causes of these aneurisms, since the effects which they produce, and the derangements which they occasion in the circulation, appear to be the same in their results.



ARTICLE III.

Of active aneurism of the heart, or with a thickening of its parietes, affecting the whole of this organ.

WHAT has been said in the preceding article of the manner of formation and of the principal causes of active aneurism or of the first species, applies naturally to active aneurism of every cavity of the heart ; but it is extremely rare to find subjects in whom every cavity of this organ is at once dilated with a condensation of its walls. If daily experience did not confirm the assertion, reason would have been sufficient to prove that aneurism of the first species, or active, could but very seldom be developed at once, and to a degree thus marked, on each side of the heart. To render this simultaneous state of affection possible, it would be necessary that the two halves of this organ, and the two arterial systems which proceed from it, should be found, in the same subject and at the same period, in a condition favorable for the evolution of the same disease. It would be necessary that one obstacle, placed in one of the points of the general arterial system, and that another obstacle, placed in the pulmonary arterial system, should be opposed to the free exercise of each circulation ; it would be necessary that the different organization of the parietes of the two ventricles, should bring a resistance equal to the reaction of the blood, which cannot, in the case supposed, obey the impulse which it receives ; it would be necessary that both of the arterial systems,

either in proportion to their structure, or in virtue of the particular degree of distance of some of their portions, should be offered with the same facility to a dilatation ever indispensable, in this case ; it would be necessary, in fine, that the blood which is obliged to flow back into the ventricles, should retrograde as easily into the left auricle as into the right, into the pulmonary veins as into the *venæ cavæ*. In most cases, on the contrary, we observe that such an obstacle to the circulation as determines the formation of active aneurism of the left ventricle, consequently originates an aneurism of the second species, or passive, of the auricles or of the right ventricle, or of these cavities united. When treating of the manner of formation of aneurism of the second species, or passive, I shall have occasion to designate other approximations which will be naturally connected with the considerations which were before admitted.

Although the examples of active aneurisms of all the cavities of the heart be extremely rare, and that this affection is much oftener seen to happen in one of the cavities of the heart, than the other, as in the left ; I have however collected many cases of this kind ; an example of which follows :


Case XI. A wheelwright, aged fifty-eight years, of a strong constitution, felt, after a violent effort, a sharp pain in the right side of the thorax. Immediately there ensued oppression, cough, and spitting of blood. The extremities then became œdematous, the countenance bloated, and unequally livid ; the pulse strong, full, regular and frequent ; the strokes of the heart violent, dry and hurried, but regular. The region of this organ sounded feebly.

The character of the beats of the heart, and of the pulse, the result from percussion, together with the other symptoms, decided me on the nature of the affection which appeared to be an aneurism of the heart, with a condensation of its parietes. The prognostic was very alarming ; I practised however several bleedings, in

consequence of the suffocation and hæmoptysis which threatened the patient ; but no symptom was abated by the means which I used, and the patient died three months after the violent effort which had originated the phenomena of the disease.

On dissection, the right cavity of the pleura was found nearly full of serosity. The inferior lobes of the lung, on this side, hard, and gorged with black blood. The left cavity of the thorax was destitute of water ; the lung, on this side, was sound and crepitating.

The heart was twice its natural size. Its length, from base to apex, was more than eight inches. The parietes of the organ very thick ; those of the left ventricle had, however, more thickness and solidity than those of the right ; the inside of these different cavities was in a very healthy state. I shall treat no farther of active aneurism of the whole heart. What will be said, in the following articles, of active aneurism, particularly considered in the several cavities of this organ, may mostly apply to the case just related. I have not thought necessary to give here the exposition of the symptoms peculiar to this kind of lesion. To avoid the repetitions which must necessarily have fatigued the reader, I refer to the following chapter, the exposition of the symptoms of active aneurism in general, and the discussion of the particular phenomena which can manifest which cavity is affected by it.



ARTICLE IV.

Of active aneurism of the heart, or with a thickening of its parietes, affecting the left ventricle.

NUMEROUS observations have evinced the left ventricle to be the most frequently affected with aneurism of the first species. The peculiar organization of this

ventricle, and the relations of this organization with the general vascular system, appear to me well calculated to account for the greater frequency of active aneurism in the aortic ventricle.

Each of the ventricles is naturally endued with energy proportionate to the impulse, that is necessary to give the blood. The left which must propel this fluid through the whole extent of the arterial system, has consequently received from the nature of its thicker and more muscular parietes, a greater vigor. The right, on the contrary, having to carry the blood in the very limited extent of the pulmonary arterial system, needs but a middle power which it possesses. This different organization of the two cavities causes each of them to have, by its structure, a disposition to become the seat of either species of aneurism which I have admitted.

Having already asserted that I considered the blood, when it does not circulate freely, and is accumulated, as the agent of every species of dilatation, as the dilating force, if I may so express myself, of the several cavities; but to this dilating force, the two ventricles present resistances quite different; the left palpitates, and is irritated by the obstacle; its parietes are distended, but their power, whether elastic, or contractile, tends to restore them to their natural length. This reciprocal action is incessantly repeated, and always to the detriment of the organ, whose force is momentarily overcome rather than exhausted.

In fine, this violent action, severe irritation, and prolonged application of the stimulus of the blood, have made, I repeat it, of this part a more active centre of nutrition; the parietes have become more thick and solid; the heart, far from having lost its energy, has acquired more; but it is neither relatively suited to the resistance which is to be surmounted, nor to the general organization of the individual. The equilibrium is destroyed, the organ is diseased, the principal function is perverted, and those which depend on it are disturbed.

I should anticipate the history of passive aneurism, or of the second species, by completing here the parallel which I began to establish between the mode of formation of the different kinds of aneurism of the left and right ventricles. I refer therefore what remains to be said on this subject, to the article of passive aneurism of the pulmonary ventricle.

Active aneurism being more frequent in the left ventricle, may yet be known from other causes. May it suffice to observe that the alterations of the aortic mouth are much more common than those of the orifice of the pulmonary artery.

The following are two examples of active aneurism of the left ventricle.

Case XII. A mantua-maker, aged twenty-four years, of a slender constitution, had the menses for the first time, at twenty. The periodical discharge having been regularly performed for a year, an intermittent fever suspended it some time. Thence she began to experience frequent palpitations, occasional faintings, and an habitual cough. These symptoms were announced by a complete syncope which endured more than two hours. The first paroxysm of the fever being past, the menses returned more regularly, and the patient enjoyed for two years better health, when a recent fever, whose paroxysms continued every day eight or ten hours, suppressed again the menses which did not reappear. These paroxysms of fever ceased, when having been renewed fifteen days after, the health of the patient was a little improved; but it was soon changed by excessive grief, vigilance, and immoderate labor. During three years, dating from the appearance of the first symptoms, she had continual palpitations of the heart, and experienced syncopes which often forced her to suspend her walk or occupation.

March 21, 1801, this woman enfeebled by fatigue and disease, was obliged to keep her bed. She then experienced in the extremities on the left side extreme

weakness which was, shortly after, changed into hemiplegia of the same side. New paroxysms of a quotidian fever re-appeared, and the 10th of April she was conveyed to the hospital.

The habit of body was extremely emaciated. There was no head-ach, the features were greatly altered, the face pale, the mouth bad, the tongue dry and brownish towards its base, respiration high and frequent. She experienced a slight pain in the right side of the thorax. We felt in the region of the heart long palpitations, and a singular tumult sensible even to the eye. The abdomen was not painful, all the left side of the body was devoid of motion and partially infiltrated; the pulse was small, feeble and frequent on the paralytic side, but fuller and sufficiently strong and frequent on the right side.

The aneurism of the heart, in this case, notwithstanding its complications, too well characterized by the collection of certain symptoms, to prevent my having the least doubt of the nature of the principal affection, and of its fatal termination. The patient was then found so dangerous as to appear near her dissolution. She passed, however, five days in the hospital; she was agitated during night by suffocations with very little intermission; she lay constantly on the paralytic side. The 14th of April, the symptoms became worse; she complained of pain in the thorax, and died on the evening of the 15th, after a long and painful agony. On dissection, the natural complexion of the body was discolored; the face was purple, bloated, and infiltrated; the limbs, particularly on the left side, were also infiltrated.

The substance of the right hemisphere of the brain was very decidedly in a state of decomposition, of an ash-color, and of the consistence of thick pap. The hemiplegia and infiltration of this side induced us to predict this lesion.

The thorax when struck sounded well on the right, but not in the least on the left.

The left lung was pressed toward the summit of the thorax ; and reduced to half of its usual size. The right lung preserved its natural state. The pericardium occupied most of the left cavity of the thorax ; it contained a little serosity. The heart had acquired an extraordinary size in proportion to the small stature of the subject. The right cavities of this organ, and the left auricle being somewhat distended, presented not a mark of lesion. The ventricular orifice on this side was large ; we saw on the mitral valve vegetations analogous to venereal excrescences. The middle part of the loose edge of this mitral valve, was surmounted by a tubercle of the bigness of a filbert, attached to the valve by a very broad basis. The tubercle exhibited on its surface inequalities that gave it much resemblance to a mulberry. The cavity of the left ventricle had acquired a very considerable size. Its fleshy parietes were much thicker than natural.

The aortic mouth was free ; the sigmoid valves were in their natural state.

Case XIII. A baker, aged thirty-six years, of a robust constitution, had long experienced very difficult respiration ; he often had violent palpitations of the heart ; the region of this organ did not sound ; the pulse was regular, frequent, hard, and vibrating. During the palpitations, we observed the pulsation of the jugular veins.

From the description of the disease, I was sure to find, on the first examination of the subject, an aneurism of the heart ; but the disease was not sufficiently advanced to induce the immediate death of the patient.

He left the hospital of la Charité, and returned thither several times in the course of two months. During which time, I was happily enabled to restore him to a state of apparent health, of which he profited by attending to his business ; but he was quickly compelled, from the return of the complaint, to apply for further assist-

ance. In fine, while he was in the hospital, the last time, he died suddenly.

On dissection, I found no liquid effused into the cavity of the thorax. The pericardium adhered both to the lung, and to the surface of the heart. The anterior face of this organ was covered with points of a dark red. The auricles had lost their usual capacity, and appeared to be retracted. The right ventricle was dilated; its parietes were of very little thickness. The left ventricle was greatly enlarged, and its parietes were so increased, that in many parts of their extent, they were more than an inch thick.

In the first of these two cases, the aneurism of the heart, though easily known, presented no character so striking as in other analogous cases. Many foreign phenomena might be superadded to these that proceeded from the principal disease, and might readily throw obscurity on the diagnostic. The hemiplegia, whose cause could not be suspected and which the dissection demonstrated to exist in the right lobe of the brain; the intermittents from their frequency and continuance, had kept the patient extremely weak and depressed, nothing was more suited to originate the error which attentive and rigid examination avoided.

In the second case, are seen united in the same subject the two species of aneurism; namely, active aneurism of the left ventricle, and passive dilatation of the right ventricle. The cases in which these two affections are found to co-exist, are frequent; passive dilatation of the right ventricle being a consequence more or less remote, but almost necessary of the aneurism of the left ventricle.

ARTICLE V.

Of active aneurism of the heart, or with a thickening of its parietes, affecting the right ventricle.

HAVING found in the organization of the left ventricle, and in the nature and relations of its action, the cause of the greater frequency of the evolution of active aneurism in this cavity, is it not to have partly explained why the right ventricle is less exposed to this kind of affection? What remains to be said, on this subject, is too closely connected with the history of passive aneurism, or second species, to be treated of elsewhere than in the chapter where I shall particularize this kind of affection.

Although active aneurisms belong more particularly to the left ventricle, it is true, however, that the right ventricle and even the auricles of the heart are sometimes the seat of this disease. What state then must this ventricle assume, in order that it become prepared for contracting a change that seems foreign to its natural organization? We must suppose, in this case, as in many others, a native, organic predisposition, the possibility of which a candid mind cannot deny. Do not anatomists quote cases in which they have observed the transposition of the ventricles? Have they not seen also that in certain subjects the right ventricle was naturally, without any regard to a pathological state, thicker, and more energetic than was the left ventricle in the same individual? Have we not daily, in the various parts of the human body, examples of varieties of similar irregularities of organization?

Besides, without having recourse to those complete transpositions, which, though having been quoted by several authors, are very common; frequent observation proves that the several cavities of the heart are not always formed by parietes whose thickness and energy are uniformly similar. Thus, the right ventricle, whose parietes

are usually lax and soft, has, in some subjects, a very remarkable solidity of texture. These differences doubtless depend most often on the individual constitution; but it is true also that individual constitutions are actual predispositions to such or such a disease, especially organic.

The right ventricle may, therefore, by reason of a slight variety of organization, become the seat of active aneurism which is however very seldom, as the varied organization of the left ventricle may sometimes also favor, in the left heart, the formation of passive aneurism, which is less frequently evolved than that of the first species. To the cases of this kind of lesion related by ancient authors, I will add one casually taken from my own collection.

Case XIV. A man, aged thirty-eight, of a sanguine, strong, vigorous and very irritable temperament, attempted, in a fit of anger, to commit suicide. Shortly after he was seized with violent palpitations, which were renewed on the least motion. Having passed more than eight months in this unhappy state, he entered the hospital. Then his habit of body was bloated and injected. The thorax when struck sounded in every point; he experienced, however, great oppression of respiration; the heart beat forcibly; the pulse was frequent, hard, vibrating, and irregular.

The dilatation of the heart was manifest; but in the condition the patient was found, very little was to be hoped from the means adapted to combat the disease; hence they were fruitlessly employed. In fine, the complaint having progressed, this man died as if suffocated. His dissolution however, did not seem to be so near.

On opening the body, I found the lungs nearly in the natural state. The heart, included in the pericardium, presented an enormous size. The right auricle was greatly dilated. The right ventricle had acquired a preternatural capacity; its parietes were considerably thickened.

Ernest J. Hering.

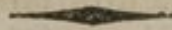
The cavities on the left side were in their usual state. The fleshy substance of the aortic ventricle seemed to have less consistence than that of the pulmonary ventricle.

The mouth of the aorta, unequally hardened, was rather dilated than contracted.

Strong emotions of the mind determined by the fit of anger, in which this man attempted his life, appear, here, to have been the sole cause of the disease. I shall have occasion, in the course of this work, to say how many active causes of this nature there are for the production of dilatations of the heart.

The case which I have quoted perfectly establishes the existence of aneurism of the first species in the right ventricle; but it furnishes no symptoms proper to distinguish it from the same affection of the left ventricle.

It is however possible to distinguish many symptoms, whose combination may exhibit this kind of lesion, and it is what I shall shortly do in the article where I shall treat of the signs of aneurisms in general.



ARTICLE VI.

Of active aneurism of the heart, or with a thickening of its parietes, affecting the auricles.

IF the relative dilatibility of the parietes of the right ventricle previously strengthens in general this cavity, against the evolution of active aneurism, for a stronger reason still the auricles of the heart will be found, from their feeble texture, less exposed to the same kind of lesion. Their tissue is so extensible, in comparison to that of the ventricles, that whatever be the nature of the obstacle to the circulation, the effort of the blood on the parietes of the cavities, distends and dilates them with a facility that prevents the fleshy substance from contracting a greater thickness than what is natural to it.

I can also advance as a corollary of what I have said, and of what I shall say in the sequel, that, if active aneurism, or of the first species, belongs more particularly to the ventricles of the heart, it is the second species in which passive aneurism more usually affects its auricles. However it be, we have some rare examples, indeed, which establish the existence of active aneurism in the auricles of the heart. Several of them are found recorded in different authors, and I have myself observed a certain number.

Case XV. A printer, aged twenty-seven years, of a bilious sanguine temperament, experienced, at the commencement of the revolution, excessive melancholy, caused by the massacre of part of his family, and the loss of his fortune. This young man, forced by circumstances to enter into the army, had to endure all the fatigues of war. He caught the itch, for which he was treated several times by friction, but without the complete disappearance of the disease. Some months after, he was seized with an extreme difficulty of breathing; this difficulty continued a month, accompanied with suffocation and palpitation, which supervened whenever he hurried his walk. In the course of the first year, the symptoms returned only at intervals. During the first months of the second, the symptoms became more alarming, and on his entrance into the Clinical Hospital, the 12th of January, 1800, two years after the appearance of the first symptoms of the disease, the face was pale, the thorax sounded perfectly well, he was unable to lie on the left side without a repetition of the suffocation. The bowels were soluble, the pulse, in the left arm, was serrated, small, frequent, weak, and embarrassed. These phenomena of the pulse were still more remarkable in the right arm: we felt, however, in the region of the heart strong and quick pulsations; this region did not sound when struck.

The difference which existed between the phenomena of the pulse and the strokes of the heart induced me

immediately to recognize aneurism of the heart, complicated with a constriction of one of the left orifices.

The plethoric state of the patient indicated venesection, one bleeding was performed which procured, as we had predicted, a momentary relief. The symptoms were aggravated; the palpitations became much more frequent, especially during the night, which the patient could not pass otherwise than in a sitting posture. The little sleep he had was greatly disturbed. The cough became more obstinate, expectoration more viscous, more tenacious, and of the color of coal.

Preparations of squills appeared to produce good effects.

The remembrance of the cutaneous affection, which was reproduced so often, caused us to adopt a remedy. We applied a blister to the left arm, but far from obtaining advantage from this treatment, the state of the patient became worse. The cantharides, acting powerfully on the bladder, suppressed almost entirely the urine which was before sparing. I soon renounced a plan notoriously more hurtful than useful, and the irritation was removed by demulcents and antispasmodics; but the suffocations and palpitations remained the same; the infiltration of the extremities began to be evident. The pulse became more and more insensible.

In this state of pain and suffering, the patient past from the 20th of January to the 2d of March. The 3d of this month, the suffocations were continued; the chest was harrassed by a very frequent cough, and painful expectoration; the urine was less frequent; the infiltration increased proportionally. The appetite and sleep were entirely lost. All the functions were more or less deranged. The patient, naturally melancholic, became daily more gloomy, sad, and pensive. Being no longer able to bear the burden of such an afflicting existence, he used means to deliver himself from it, when he died suddenly the 19th of March, 1800, after two years sickness, and two months residence in the hospital.

On dissection, I found the right lung very small, adhering in every direction to the pleura which was thickened and become cartilaginous in many points. The lung on the left side sound, but larger than natural, pressed the heart toward the right cavity of the thorax.

The pericardium was unusually dilated. The heart was more than triple its natural size. The two auricles, and particularly that of the venæ cavæ, appeared to be the only parts affected with active aneurism. The orifices of the right cavities were free and unaltered; but instead of the opening of a communication from the left auricle into the ventricle of the same side, we found a simple cleft of four or five lines in length, and one in breadth. This cleft, surrounded and formed by an osseous tumor of the thickness of the finger, could neither be dilated nor contracted. On the side of the auricle, we felt on this tumor inequalities and little eminences in form of palpably osseous vegetations.

The ventricles were in their natural state. The orifice of the aorta, and this vessel itself, were in a sound state. The venæ cavæ, on the contrary, had acquired three times their natural size.

In my cases of this species of aneurism, I have selected this, for, beside the interest that it presents in respect to the causes of its origin, it has also the advantage of demonstrating, in the same subject, the simultaneous evolution of active aneurism in the two auricles of the heart.

Case XVI. On the dissection of another subject that died in the Clinical Hospital, after having exhibited during the last periods of life every symptom of active aneurism, I found the parietes of the left auricle dilated, having acquired great thickness; but this disposition was common to the right auricle and to the pulmonary ventricle.

These simultaneous affections will necessarily often obtain, when an osseous constriction and consequently immoveable, of the orifice of the left ventricle, shall

force, from a longer or shorter continuance of the disease, the blood to remain in the left ventricle, in the pulmonary veins, in the capillary arteries of the lungs, in the right ventricle, in its auricle, in the venæ cavæ, &c.

Here I conclude what I had to say on aneurism of the first species, observed in the various cavities of the heart. The signs peculiar to this affection, and those which may serve to distinguish it from every other analogous lesion, will be explained in a particular chapter, immediately after the history of aneurisms of the second species, or of passive dilatations.

CHAP. II.

ARTICLE I.

Of passive aneurism of the heart, or with an attenuation of its parietes.

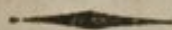
THE accumulation of the blood in the cavities of the heart, the more protracted irritation of its parietes, the more active and deeper circulation of this nourishing fluid in its fleshy substance, and lively reaction of the muscular fibres, have served to explain the formation of active aneurism in general, and that of the left ventricle in particular; other remarkable appearances will render the evolution of passive aneurism equally easy to be understood.

This second species of aneurism which involves both the thinning of the parietes, and debilitated action of the heart, pursues in its formation, a course totally different from that of active aneurism.

The heart, in aneurism of the first species, seems to become the centre of a more active circulation and nutrition. In that of the second, this organ, on the contrary, is distended in the same manner as the bladder in cases of retention of urine. The urine increasing gradually, distends the musculo-membranous pouch which serves as a reservoir; then the parietes of the bladder, losing their thickness, acquire a preternatural extent: they quit, at the same time, with their elasticity and most of their contractility, the requisite power of discharging the urine. When the urine can be no farther accumulated, the distention of the walls and their tenuity become such, that a rupture obtains in the most feeble point, and the urine is necessarily poured into the abdominal cavity, or infiltrated into the neighboring parts.

In passive aneurism, the heart is dilated nearly in the same manner. The blood which, from an auricle must pass into the corresponding ventricle, or finding an obstacle at the orifice of this last cavity, into some other point more remote from the circulating system, remains and is accumulated in the cavity of the auricle whose walls it insensibly distends. This pure and simple distention induces their attenuation, and loss of elasticity and contractility. These various changes expose them to ruptures which would be the necessary result of the disease, did not the derangements which this affection produces in the circulation and functions depending on it, extinguish life with uncommon rapidity, and let the dilatation arrive to such a degree, that the rupture of the membranes must ensue, as often happens. We might extend much farther the comparison, established between the dilatation of a cavity of the heart, and the distention of the bladder from retention of urine, by shewing the ureters secondarily dilated, as happens to the *vanæ cavæ* and pulmonary veins in the different aneurisms. The first points of analogy are sufficient for my purpose. In this way we must comprehend passive aneurisms in general. I must now relate what is to be

understood of the manner of evolution of these same dilatations when they occupy the whole of the cavities of the heart, or the various cavities of this organ in particular.



ARTICLE II.

Of passive aneurism of the heart, or with attenuation of its parietes, affecting the whole of the cavities of this organ.

CERTAIN conditions are essential to the evolution of passive aneurism, according as it affects either the whole of the cavities of the heart, or only one of them.

One of these conditions, which seems to assist principally the formation of passive aneurism of the whole heart, is the partial obliteration of the aortic orifice ; and in this, or some other analogous case, can a general dilatation supervene ; especially when a natural or acquired debility is in the texture of the organ. The blood, meeting with an obstacle at the very instant it ought to flow from the heart, is successively increased, ; 1, in the aortic ventricle ; 2, in the left auricle ; 3, in the pulmonary ventricle ; 4, in the auricle of the venæ cavæ. Each of these cavities labors in vain to expel, by a complete contraction, the contained fluid ; but it is in too great quantity, and the orifice through which it must flow, already too narrow for the column of blood which the heart, in a sound state, must propel, is still more embarrassed by the quantity being too much increased. Instead of saying that the manner of change of the aortic mouth was one of the conditions favorable to the evolution of passive dilatation of all the cavities of the heart, I should perhaps have advanced that this condition was almost exclusively necessary. For, how can the left ventricle become the seat of passive aneurism, if the obstacle to the circulation is found, for example, in the orifice of the left auricular ventricle ? In this case, we

should meet with a dilatation only in the left auricle, pulmonary ventricle and right auricle. Likewise, the alteration of the pulmonary artery will necessarily induce a dilatation only in the right ventricle and auricle ; consequently, the constriction or alteration of the orifice of the right auricular ventricle will be incapable of favoring any other dilatation than that of the venæ cavæ, and of these veins themselves. Further, we may without fear of being deceived, advance that when an aneurism is formed in one of the cavities of the heart, for example, on account of an obstacle being in the orifice of the left auricular ventricle, the ventricle on this side, far from being morbidly dilated, will necessarily lose its natural capacity, since, receiving a less quantity of blood than what is necessary in a healthy state, the muscular fibres are left to all their retractility, by the imperfect, but continual emptiness of the cavity ; hence the contraction of the walls of the ventricle, and the diminution of its capacity. This diminution of size and capacity of the left ventricle, caused by the same constriction which produced the aneurismal dilatation of the left auricle, would have equally prevailed in every other cavity of the heart, when found in similar circumstances. Therefore, we may establish, from experience, the two following propositions :

1. The evolution of all the cavities of the heart, or of one, or of several, or of that which is the seat of the dilatation, always supposes, in the circulation, an obstacle situated in the current of the blood, before all these cavities.

2. The heart, which, in aneurism of the first species, seems to employ incessantly its own action to augment the organic lesion already existing, is, in aneurisms of the second species, an organ as passive as it appears to be active in the first.

Case XVII. A farrier, aged forty years, was admitted, the 4th of May, 1801, into the Clinical Ward ; he gave a very imperfect account of his disease ; he said

that he had been sick for the space of three months only, though the alteration of his habit indicated an older affection ; his complexion was pale and yellowish ; his countenance bloated, and discomposed ; cough frequent, respiration high, short, and interrupted ; the chest when struck did not sound in the region of the heart ; but we there felt the impression of a fluid which seemed to gush out ; the legs and thighs were infiltrated ; the abdomen was tense ; the pulse weak, small, very frequent and irregular. Although it were impossible to obtain more accurate information of this disease, the appearance of the patient, the state of respiration, and of the pulse, the thorax, when struck, giving no sound, the peculiar rushing noise of the region of the heart, convinced me of the existence of a dilatation of the heart and of the constriction of the aortic orifice, changes which I announced would be found on dissection.

The state of debility, depression, and instant suffocation predicted a sudden death, which happened the next morning after his entrance into the hospital.

On opening the body, the cheeks, especially the lips, were bluish, the venous vessels of the whole body were much gorged with blood ; the chest sounded well on the right side, but not in the least in the region of the heart, for a considerable extent.

The pericardium contained little serosity. The heart was extremely dilated and filled with blood ; its walls flabby and weak ; the right auricle, very large, had little consistence ; the ventricle of the same side was of an extraordinary capacity ; the communicating orifice from one of these cavities into the other, was also very large. The left auricle, as well as ventricle, was spacious ; their communicating orifice was likewise dilated. The orifice of the aorta was constricted, its valves were thickened and shrivelled. The internal surface of this vessel was, in the part which is connected with the heart, hard, very rough grained, and ossified in a few points.

The lungs were sound,

A very large quantity of water was effused into the abdomen; otherwise, the viscera, contained in this cavity, were sound.

Case XVIII. A dealer in cloths, forty-four years of age, of a robust constitution, was attacked, in 1795, with an inflammation of the abdomen and a catarrh on the right side of the chest. In 1796, he first experienced palpitations to which he paid little attention, till November, 1800, when he felt great difficulty of breathing, accompanied with very sharp pains in the abdomen, being more particularly fixed near the epigastrium. While walking, he was troubled with suffocations which obliged him to stop instantly. All these symptoms were generally less severe, as the palpitations became stronger; the legs were not infiltrated.

When this patient came to the hospital, the 8th of May, 1800, his face was pale; he spoke with pain; he lay indifferently on either side; by applying the hand on the region of the heart, lively and very long strokes were felt; the pulse was serrated, irregular, and flying in the right, but altogether insensible in the left arm.

He first resided in the hospital two months. In the beginning, he was bled once, without obtaining much relief. He was afterwards confined to a demulcent regimen with success until the 28th of June; when finding himself better, he wished to return home. But some time after his departure, his legs began to be infiltrated. The infiltration extended gradually and reached the trunk. During the four months he kept his house, all the symptoms were aggravated. He lost his sleep entirely, without being able to leave his bed. He had a painful cough, and expectorated almost pure florid blood. At last, the 26th of October, 1801, a year after his most severe attack, he was brought, a second time, into the Clinical Ward. Then his head was heavy and painful, his countenance bloated and injected, his lips highly colored. The right cavity of the thorax sounded well when struck; the left sounded equally clear,

except in the region of the heart, where the sound was not heard. We there felt the pulsations of this organ far extended, even under the cartilago ensiformis. From the threatening suffocation, and very frequent spitting of blood, it could be determined how far the lung was gorged with this fluid. The abdomen was swoln, and its parietes infiltrated. A slight fluctuation was observed in the abdominal cavity. The vicinity of the epigastrium was painful. The appetite was good, but digestion bad. No pulsation could be felt in the radial, labial and temporal arteries; the carotid arteries exhibited a singular irregularity. The brachial beat frequently, but feebly. Its pulsations were very regular for some seconds; immediately after we distinguished nothing but a hurried and disorderly tremor, which prevented the pulsations from being counted.

From these various symptoms and the description of the disease, it appeared to me, that the principal lesion of the organ was the constriction or alteration of the orifice that leads from the auricle into the left ventricle, accompanied with a dilatation of one or several cavities.

The prognostic which I had, on his first entrance, deemed as very dangerous, appeared to be much more so, when, on his return, I observed the rapid progress of the disease during the space of four months.

The patient, having entered the hospital the 26th of October, passed the 27th and 28th in a state nearly similar. The 29th, he was remarkably fatigued with a hiccup which distressed him a long time. He suffered also pain in the whole extent of the chest, particularly in the right side. The matter expectorated resembled corrupted flesh. The urine was sparing and a little colored. The stools were liquid, like what is called scrapings of the intestines. The 30th, the lips were dry and incrustated; the pulsations of the heart wearied much the patient, and the pain of the right side was sharper. The 31st, at 3 o'clock in the morning, he died apparently suffocated, in the perfect enjoyment of his intellect.

The atmosphere, that day, was loaded with a very thick fog.

On dissection, which I performed forty-eight hours after death, the countenance was bloated, the lips purple, the skin yellow and spotted on the sides of the trunk. The chest, when struck, sounded well on the right, but not on the left; this side appeared also higher than the right. The external muscles of the thorax were infiltrated. The right cavity of the chest contained a very large quantity of bloody fluid; the lung on this side was crowded with bloody matter. Its texture resembled very much that of the spleen.

The distended pericardium occupied most of the left cavity of the chest. It pressed up the left lung which adhered to it. On opening this membranous pouch, a small quantity of yellowish fluid was perceived; adhesions were formed between this membrane and the external surface of the right auricle. Contiguous to this part was a layer of lymph somewhat extended.

The heart was more than twice its natural size, and almost full of blood. The right auricle, being greatly dilated, communicated by a very large orifice with the pulmonary ventricle which had equally sustained considerable dilatation. The parietes of these cavities were flabby and very thin; the left auricle was also dilated. Its opening into the ventricle, was oval; its great diameter might be eight lines, and the little, one line. The substance surrounding this opening was cartilaginous, and partly ossified. It presented moreover, some vegetations either soft or osseous.

The left ventricle was in its natural state. The aorta offered nothing remarkable except the diminution of its calibre, which scarcely admitted the fore-finger. The subclavian and axillary arteries were less than usual.

In the first case of the preceding article, we have seen an example of general passive aneurism, caused by a constriction of the aortic orifice, or some other analogous change.

In the second, my intention has been, to give a proof of what I have advanced, that in passive dilatations of the heart, its cavities being found, by following the course of the blood, behind the obstacle to the circulation, can only be affected by the species of aneurism of which I am treating.

In the last case cited, the left ventricle preserved its natural dimensions, because nothing was opposed to its outlet. We ought not, therefore, to consider the diminution of the calibre of the aorta, in this circumstance, as an impediment to the circulation, but as an effect of the elasticity of the arterial tube, which receiving, after the formation of the constriction of the auricular orifice, too small a portion of blood to fill its natural cavity, was retracted, and contracted on itself, and preserved, notwithstanding this constriction, a calibre proportioned to the column of blood which it had to circulate through the general arterial system.



ARTICLE III.

Of passive aneurism of the heart, or with an attenuation of its parietes, affecting the left ventricle.

ALTHOUGH the parietes of the left ventricle be endued with a force proportioned to their thickness, passive dilatation of this cavity is very often observed. When speaking of passive aneurism of the right auricle (an article will be devoted more particularly to it, because this cavity of the heart is most usually affected by this species of aneurism) I will point out the peculiarities which I think necessary to the evolution of passive aneurism of the several cavities of the heart. However, I can say here, by anticipation, the formation of passive aneurism is the same, as in the case of which I am speaking. The muscular fibres of the organ, while

there is an obstacle to the circulation of the blood, make an ineffectual pressure on the mass of fluid contained in the ventricle, and which it cannot circulate, these fibres are elongated, the cavity is enlarged, its parietes are attenuated, the dilatation formed.

Case XIX. A farrier, forty-one years of age, of a firm constitution, was, three years before his death, affected with a dizziness, cold and palpitation; he had experienced extreme melancholy, which, for some time, had deprived him of his reason. When he entered the Clinical Hospital, his cheeks were purple, the rest of his countenance pale, his features changed; the lips injected, the breathing high, short, and interrupted. The thorax when struck did not sound in the region of the heart, where we felt feeble, frequent, and long strokes; the pulse was weak, frequent, and often intermittent. Such a collection of symptoms convinced me of the existence of a passive dilatation. The patient was besides in the worst state imaginable. He died the next day after he entered the hospital.

The complexion of the corpse was pale, bloated, and emaciated. The extremities were infiltrated.

The right lung was not sound. The left lung was pressed up by the heart which occupied most of the left cavity of the thorax. The pericardium contained a little yellowish serosity. The size of the heart was enormous, its consistence tender and flabby; the color of its fibres pale; the right auricle and ventricle were very large. The left cavities, especially the ventricle, were greatly dilated; its parietes were thinned; its fibres soft, white, and easily ruptured. At the origin of the aorta were numerous points of ossification which extended over the sigmoid valves, and singularly constricted its orifice.

Passive aneurism of the left ventricle, disconnected from every other dilatation, is very rare. I have had in my practice very few instances of it; yet facts of this nature are related by different authors; but in most of the cases, passive dilatation of the left ventricle is com-

plicated with the same affection of one or of several other cavities of the heart, as I have exemplified.

ARTICLE IV.

Of passive aneurism of the heart, or with an attenuation of its parietes, affecting the right ventricle.

DILATATION of the pulmonary ventricle is commonly accompanied with that of the corresponding auricle. This fact accords perfectly with what is daily observed in subjects who have died of diseases quite different from the organic lesions of the heart. The right auricle and ventricle are found to be equally dilated by the accumulation of blood in the last moments of life.

The force of the parietes of the auricle may however be such, as to resist the effort of the blood, which, in this case, must act entirely on the fibres of the right ventricle, and cause it to become the seat of the dilatation. The induration, the change of the tricuspid valves, the partial loss of their mobility, must each contribute much to the evolution of this isolated aneurism. But both the thickening of the walls of the right auricle, and the change of the tricuspid valves, are two states equally rare; therefore passive dilatation of the right auricle generally accompanies passive aneurism of the corresponding ventricle.

However, here are two cases in which passive aneurism of the right ventricle was isolated from every other dilatation.

Case XX. A cook, aged sixty years, of a very feeble constitution, had been, for a long time, subject to colds; six weeks before the 21st of March, 1801, the day of his entrance into the Clinical Ward, he experienced suddenly, after having carried a burden beyond his strength, an extreme difficulty of breathing, and acute pain in the left side of the thorax; when he came to the hospital,

his face was pale, and exhibited the expression of a very distressing affection ; he was without head-ach ; tongue and mouth were in their usual state ; respiration was extremely embarrassed ; cough severe and frequent ; expectoration profuse and pituitous. The chest, which sounded well in every other part, was silent near the region of the heart, where we felt the strokes feeble and lengthened. The patient not being able to confine himself to a recumbent, preferred a sitting posture. The pulse was frequent, soft, small, and regular ; it however presented occasionally some slight irregularities ; he had palpitations and violent suffocations which obliged him sometimes to pass the night in his chair ; his sleep was suddenly disturbed.

The collection of these various symptoms was more than sufficient to evince to me an aneurism of the heart ; the languor of its strokes, the soft, feeble pulse, &c. were very exact marks to enable me to predict the species of dilatation.

The patient remained two months in the hospital. During which, the disease advanced rapidly. The suffocations increased, the extremities were infiltrated, the body inclined on the left side, the countenance was gradually altered.

Demulcents, diuretics, antispasmodics, afterwards more powerful diuretics, uniformly employed those two months, procured some relief, without preventing the progress of the disease. The 19th of May, the respiration was extremely difficult, the countenance bluish, and bloated, the lips purple. There was drowsiness and delirium. We felt, in the region of the heart, a simple rushing, having no resemblance to the beats of this organ.

May 22, the pulse was small, frequent, deep and irregular ; the debility was greater and oppression less ; the subcutaneous veins were turgid with blood.

From 22d, to 25th of May, the symptoms became incessantly more threatening. He expired on the 25th, at 10 in the morning.

On dissection the lips were injected, and purple. The extremities infiltrated. The right cavity of the thorax contained a pound of serosity; the left, half the quantity; the lungs were sound and crepitating, except the inferior left lobe, which was flabby, and its cells were partially deprived of air.

The pericardium contained but little fluid. The heart was exceedingly large; its morbid augmentation depended on the unusual dilatation of the right ventricle, the walls of which were greatly attenuated. Its ventriculo-auricular orifice was of great width. The right auricle, however, was of its natural size. The left cavities presented nothing remarkable. The orifice of the aorta was unequally hard, rough and constricted. The mouth and beginning of one of the coronary arteries were in a very advanced state of ossification.

The affection to which this cook became the victim, evidently originated from an acute lesion of the heart, induced by the violent effort he made to lift a burden too heavy. The disease continued but three months and a half; a speedy termination for a disease of this nature. I think I may conclude that the complaint advances rapidly whenever aneurisms succeed an acute lesion of the heart which changes at once its texture and action.

Case XXI. A coachman, aged 63, had suffered, seven months before his coming to the hospital, a slight peripneumony which disappeared spontaneously; but it left behind a partial difficulty of breathing at first, but afterwards sufficiently serious to confine him to his bed, without being able however to remain in a recumbent posture. The disease, as has been stated, commenced seven months before the patient entered the hospital. The face and lips were injected and purple. Instead of the beats, we felt a slight tremor in the region of the heart. This region when struck gave not the least sound for a great extent. The pulse was small, frequent, deep and irregular. The patient coughed frequently, and forcibly; he expectorated, with pain, a viscous matter tinged with black blood.

It appeared to me as easy to establish the diagnostic, in this case, as in the preceding ; the complaint was as far advanced ; the prognostic was equally alarming. I administered remedies in this case analogous to the preceding without any better effect.

In short, the disease progressed rapidly ; the body was daily more infiltrated ; the face became bluish, the extremities cold ; the pulse, and beats of the heart, insensible ; the cough feeble and continued ; the matter expectorated was black blood, curdled, as if decomposed. He died a month after he came to the hospital.

The complexion of the countenance and of the skin of the whole corse, was injected, or rather as if livid, bluish, as he was during life. I found a little fluid effused into the cavities of the thorax ; the lungs were hard and crowded with blood, perfectly similar to what the patient had expectorated. A little serosity was contained in the pericardium ; the heart was of an enormous size in proportion to the dilatation of the right ventricle. This ventricle formed, near the mouth of the pulmonary artery, a very wide opening, without the usual thickness of its parietes. The left cavities, as well as the right auricle, were in their natural state.

The aortic mouth was rugous, somewhat constricted, and ossified in several points.

Here the peripneumony seems to have been the cause of the disease ; for the engorgement must be considered which originated in the lung as a powerful obstacle to the circulation of the blood ; things being thus, how much must not the concurrence of efforts produced by a violent cough, contribute to originate a dilatation to which the organ might have been otherwise predisposed, either by a feeble organization, or by some previous disease ! When, in these cases, the engorgement, produced by the peripneumony, disappears with the disease, the organic lesion has often laid its foundation too deep.

ARTICLE V.

Of passive aneurism of the heart, or with an attenuation of its parietes, affecting the right auricle.

FROM what has been said in the preceding articles, on aneurism of the second species, it is easy, by particular anatomical inspection of the different cavities of the heart, and by the examination of the direct or indirect relation of their action with that of the contiguous organs, to decide which of the cavities of this viscus must become the most frequent seat of passive dilatations.

The parietes of the right auricle, being much thinner than those of the other cavities of the heart, are, by this natural structure alone, more susceptible of experiencing extraordinary dilatation; but this first cause, and several others essentially different, deserve our strict attention.

I have said that, in active aneurism, the coronary arteries, situated at the mouth of the aorta, were found penetrated even into their capillary ramifications, with a far larger quantity of blood than in the natural state; that this arterial blood swelled the muscular substance, to which it supplied more of the nutritive particles, and that it was partly from this afflux and extraordinary penetration, that the thickening followed. But it is different with the right auricle and ventricle.

Anatomical and physiological knowledge teaches that the engorgement of blood which happens in these cavities at the time of their dilatations, cannot so easily induce in the peculiar vascular system of the heart, this plethora which I have said was occasioned by the dilatation of the left cavities, which are alone capable of conveying the blood to the substance of the heart.

The numerous obstacles to the current of the blood, either in the lungs from the multiplied affections of this organ, from the so frequent derangements of its functions, or in certain points of the circulating system, from

particular changes which I shall designate in the sequel, are unquestionably mediate causes of passive dilatation of the right auricle.

Case XXII. A woman, aged forty-two years, whose father died of a complaint similar to that with which she was affected, enjoyed good health till the age of thirty-two, when she experienced, for the first time, a pain in the region of the heart, and irregularity in the action of this organ; however little she exercised, these symptoms were the more observed; and when she applied her hand over the præcordia, she felt quick and precipitate strokes. For the three subsequent years, her health was not materially altered, until the commotions, caused by the bloody scenes of the revolution, concurred to add, to the palpitations and difficult breathing, which she already experienced, other symptoms, such as trembling of the extremities, and spasms of the whole body. Many years elapsed, while the disease remained nearly stationary; but a year before I saw her, the menses having been invariably regular, were suppressed, and induced the swelling of the abdomen, and greater difficulty of breathing. Leeches were applied to the vulva; the menses re-appeared, but did not diminish the vertigo, disordered vision, syncope, debility and trembling of the inferior extremities, especially of the left side.

12th of October, 1798, she entered the Clinical Hospital. Her countenance was pale, cheeks were bloated; the under lip of a purple color; the chest did not sound when struck on the left side, in the inferior half of its extent; the respiration very laborious, could not be performed but in the erect posture of the thorax, or when the patient was lying on her back, the chest being much elevated, or inclined to the right. While she lay on the left side, she experienced a sensation of oppression, attended with sharp pain which she referred to the false ribs. Her sleep was often disturbed in the night by fits of suffocation, which suddenly awoke her; then a slight sweat covered the surface of the body; she suffered,

moreover, nausea, followed by vomitings of pituitous matter. After three months, the abdomen was swoln, the inferior extremities were œdematous and constantly cold; the appetite was weak; without thirst; a little very yellow urine was past; the menses were suppressed after two months; the pulse small, frequent, unequal, irregular, flying, impossible to be described.

The suspicion, founded on a hereditary disposition, pain and irregularity in the region of the heart, were the first signs of the disease; in short, the succession and collection of the other symptoms led me to detect the morbid organ, and species of lesion.

The patient having entered the hospital, the 4th of October, in the most alarming state, died the 9th of November: during the thirty-six days she passed here, the infiltration often disappeared, and every other symptom abated by the use of diuretics and antispasmodics; but always returned immediately after with more vigor.

I opened the body the next day, the parts most infiltrated were covered with echymoses. The right cavity of the thorax contained about six ounces of yellowish serosity; the lung, on this side, was altered, and hardened, especially in its inferior lobe. The left cavity contained no fluid; its lung was flabby, decayed, and adhering. The pericardium contained no water.

The right auricle of the heart was exceedingly dilated and distended by coagulated blood; its parietes appeared much attenuated; the right ventricle and pulmonary artery were in their natural state. The left auricle and ventricle were of their usual size; but the orifice communicating with these two cavities was uncommonly constricted by two cartilaginous tumors, so as to be incapable of admitting a body two lines thick and five or six long. These two cartilaginous, whitish tumors were smooth on their surface.

It appears well demonstrated, from the experiments of *Sabbatier*, upon the cause of the inequality of the different cavities after death, that this inequality does not

actually exist in the living and healthy man ; it is solely owing to the difficulty that the blood, returned from the various parts of the body by the venæ cavæ, experiences at the approach of death, in passing the capillary system of the lung, to enter the left cavities of the heart. According to this theory, which is proved by rigorous experiments, and solid arguments, we must admit as a cause of the dilatations of the cavities of the heart, and chiefly of the right auricle of the living man, all the diseases, both acute and chronic, of the thorax. I shall prove also, that very often, when the lung is sound, as well the dilatation of the right auricle, as of the right ventricle, may be induced by an obstacle much more remote from the heart, in the vascular system, by taking the morbid cavity as a point of departure.

Such obstacles generally act very nearly in the same manner ; viz. by opposing to the blood a resistance which it cannot overcome, and which forces it to act upon the principal agent of its impulse. But as it has been said, the situation of these obstacles may be more or less remote from the cavity whose morbid enlargement they produce. I am going, by following the natural current of the blood, to distinguish the points of the circulating system, about which, by their more frequent change, the circulation is most often obstructed, and which, consequently, must particularly favor the evolution of passive aneurism of the different cavities of the heart.

Among the number of obstacles, which usually become causes of aneurisms of the heart, I place in the following order :

*For aneurism of the right auricle only :—*The constriction, alteration, or imperfect obliteration of the right ventriculo-auricular orifice.

*For aneurism of the right auricle and ventricle :—*The same alteration of the pulmonary orifice, almost all the affections both acute and chronic, of the lung, since they all tend to obstruct, in a palpable manner, the passage of

the blood from the right cavities, into the left cavities of the heart.

*For aneurism of the right auricle and ventricle, and of the left ventricle :—*The constriction, alteration or imperfect obliteration of the left ventriculo-auricular orifice.

*For aneurism of all the cavities of the heart, collectively or separately :—*The same alterations of the aortic mouth or valves.

The obstacle which causes passive dilatation of the right cavities, and more particularly of the auricle of the venæ cavæ, may be still more remote by following the current of the blood. Thus, we cannot dispense with inserting in the number of the causes of aneurisms of the heart, the dilatations of the aorta. The co-existence of these two affections is too frequent, to relate cases here which I shall have a better opportunity to do, when treating of aneurisms of the great arterial trunk.

Neither do I believe that a particular case ought to be omitted, which appears to be very common, as two cases of the same nature now occur to my mind. The following is the epitome of one of the two, which have collectively a very close analogy.

Case XXIII. A hunch-backed man, aged about thirty-six years, came, during the winter of the year 1799, to the hospital of la Charité, with aneurism of the heart, characterized by almost all the symptoms peculiar to this disease. The spine, in this subject, suffered such a curvature, as to form an angle greatly projecting to the right, toward the sixth vertebra of the back, which was nearly displaced.

The aorta, applied upon the fore part of the vertebræ, followed exactly the contour which the spinal column described. Toward the angle I am speaking of, the walls of this artery were so folded together that the mouth of the vessel, first directed to the right, was instantly turned to the left. The heart of this subject was extremely large ; the left cavities appeared sound. The extraordinary size of the heart arose entirely from the

disproportionate enlargement of the cavities, especially of the right auricle.

The different orifices of the cavities of the heart, and mouths of the vessels, were free, and I see no cause to which the dilatation can be reasonably assigned, but that morbid curve of the aorta, which forced the blood to assume suddenly a direction almost retrograde, a direction which must remarkably obstruct the progress of the blood and the discharge of the heart.

In this subject, it would have been very interesting to compare the pulse of the upper and lower extremities. I know that modern physiologists have disputed, whether the curvature of the arteries obstructed the progress of the blood ; they thought they might conclude, from their experiments, that the effects, produced by the curvature of the vessels had been exaggerated : but they were acquainted only with natural curvatures, which are not yet considered as altogether incapable of obstructing the current of blood. A morbid curvature, like that which has just been described, has far more energy, and I regard it as a more powerful obstacle to the circulation, in proportion as the curvature of the vessel is more decided.

The various points of the circulating system which I have already examined, are not the most remote from those which may act forcibly on the dilatations of the right or left cavities. I think, that the general infiltrations, or obstacles to the capillary system, may likewise be numbered among the causes of these aneurisms. Let the obstacle, in fact, be more or less remote from the dilated cavity, the effect resulting from it is ever the same, since it is chiefly the accumulation of the blood which causes the dilatation, and since this accumulation seems to proceed almost as easily from a remote obstacle, as from one which is nearer the dilated cavity. If to the various causes just admitted, we fix the situation more in front of the right cavities, which renders them more exposed to suffer any external violence

made upon the contents of the thorax, it will be clear why these cavities are, oftener than the others, affected with the aneurism of which I am speaking.

Such are the different pathological dispositions which must favor the evolution of aneurism of the right auricle. I have already anticipated that most of the causes which are noticed in this article, are appropriate to the same affection of its three other cavities, and that the description of passive aneurism of the right ventricle, and of the left auricle and ventricle, is implicitly comprised in what is said upon the dilatation of the right auricle.

ARTICLE VI.

Of passive aneurism of the heart, or with an attenuation of its parietes, affecting the left auricle.

PASSIVE dilatation of the left auricle is more rare than that of the right cavities ; and from a multiplicity of my own observations and such as are found in authors, I think I can assert that it is more rare than the same affection of the aortic ventricle. It is, then, of all the cavities of the heart the least liable to passive dilatations. The cause of this difference is very obvious.

The left auricle conveys to the corresponding ventricle, the blood received from the lung by the pulmonary veins. This fluid, when flowing from these, seems possessed of very little impulse ; and the action of the blood, upon the parietes of the auricle, is in proportion to the degree of impulse received.

But ought not the blood, they will say, obstructed in its passage by the constriction of the orifice of the ventricle, or by the partial obliteration of the aortic mouth, to dilate this auricle as easily as any other cavity ?

I think this objection should be answered in the negative, as follows :

I suppose, first, that a constriction exists at the origin

of the aorta. In order that the blood, in this instance, may act upon the parietes of the auricle, the defect of action must be supposed in the mitral valves ; for are these valves free, the blood, obstructed by their elevation, can return but partially into the auricle, and every effort being made upon the parietes of the ventricle, the dilatation of this cavity will necessarily precede that of the neighboring auricle.

If I now suppose the constriction of the ventriculo-auricular orifice ; the passage of the blood from the auricle into the left ventricle not being free, an accumulation of this fluid in the left auricle will necessarily ensue. The blood so accumulated would not remain to produce a dilatation, did not the feeble and extensible coats of the pulmonary veins offer less resistance than the muscular parietes of the auricle ; and had not the blood, in consequence of the dilatability of these vessels, the facility of retrograding into the vascular system of the lung, and even into the right cavities of the heart. Thus the left auricle is dilated only when the resistance of its parietes is overcome by the reaction of the right cavities and of the vascular system of the pulmonary organ.

Case XXIV. A man, thirty-eight years of age, of a phlegmatic temperament, but well formed, experienced, three years ago, dizziness, palpitations of the heart, and great difficulty of breathing. He was previously attended with a slight peripneumony ; while a convalescent from this complaint, the other symptoms appeared.

When he entered the hospital, his countenance was bloated and purple ; the lips were of the same color ; the region of the heart did not sound when struck, and its strokes were long and hurried ; the difficulty of breathing increased ; the pulse soft, frequent, and irregular.

The patient being persuaded that he was affected with an asthma, did not impose on me, and a strict examination of the disease convinced me that the real affection was an aneurism of the heart, whose symptoms appeared to be too alarming to hope for a palliative cure.

I ordered leeches to be applied to the anus, which produced a salutary discharge for some days; but he was immediately seized with suffocation, which became instantly more threatening, and caused his death, twenty days after his entrance into the hospital. The patient, before emitting the last sigh, often placed his hands on the region of the heart, which he endeavored to lacerate with his nails.

On dissection, I found a quantity of fluid effused into the left cavity of the chest. The whole lung on this side was hard, engorged, and colored with a layer of yellowish lymph. The substance of the inferior lobe of the right lung was like that of the liver. In these changes of the lung, are discovered the marks of the imperfectly cured peripneumony and its effects.

The size of the heart was greatly enlarged; the coronary veins turgid with blood. Both the left auricle and mouth of the pulmonary veins had suffered great dilatation. The orifice of the left ventricle was much constricted and wrinkled; the extent of this opening had acquired a half ossified, cartilaginous consistence; the mitral valves were equally hardened.

In two other subjects, opened in the hospital, I found the parietes of the left auricle so weak and thin that the weight of the heart was sufficient to tear them. One of these cases will be given in the following article.

The different observations I have offered, constituting the history of the various dilatations of the heart, have exhibited, in most cases, the constrictions of the orifices as causes, effects, or complications of aneurisms of every species. I have superficially considered these constrictions, their causes, symptoms, and the manner of their evolution, because, by pursuing the order delineated, they will be examined in the class of the affections of the tendinous or fibrous parts of the heart which are essentially injured by the constrictions of their orifices.

CHAP. III.

ARTICLE I.

Of the signs of aneurisms of the heart in general.

To treat with perspicuity and conciseness, of the signs of aneurisms of the heart, it is necessary to consider, in the progress of the affection, its several periods. Each period has, indeed, an uncertain duration, but is very perceptible both by the different intensity of the symptoms, and by particular symptoms.* I shall, therefore, examine, 1, the signs which manifest the existence of aneurism in its first period; 2, such as announce an increase of the disease; 3, the signs indicate a state of the disease in which the life of the patient is every instant in the most imminent danger.

The most important and numerous of the signs of aneurism, originating from a subsequent lesion of the principal functions of the system, and in their various phenomena, we must select those signs which are best adapted to characterize the disease.

After having inspected the face and general external habit of the patient, the different states will be successively considered, in which, during the progress of the disease, the functions of the brain, circulation, respiration, digestion and secretions, are found, in respect to the serous exhalation. The preceding method will

* It is evidently incorrect to advance that a disease, like this, actually the same from beginning to end, except its progress, has three noted periods; yet I think I am authorised to do it when I consider that these periods, generally admitted in phthisis pulmonalis, and scorbutus, &c. are perhaps neither more distinct nor determinate; as their respective limits cannot be observed. The *principium*, *incrementum*, *status* and *decrementum* of the ancients, the *crudity*, *concoction* and *termination* of the moderns, do not appear to be terms much more correct.

have the double advantage of preventing, as much as possible, omissions, and of reflecting more light on the diagnostic of the disease.

FIRST PERIOD.

In the first period of aneurism in general, it is very often exceedingly difficult both to know and distinguish accurately the signs of the affection. To the enlightened physician, it is clear that there is a predisposition to the disease; he fears and suspects its evolution without being able to discriminate the precise state.

From a lively and protracted moral affection, from a menstrual or hæmorrhoidal suppression, &c. palpitations, pains in the region of the heart, oppression and cough supervene. Can it then be pronounced that the person, threatened with these symptoms, is affected with an aneurism of the heart in the first period? Certainly, such a decision would be too inconsiderate. Hence, let the moral affection cease and the suppressed evacuation be immediately reestablished, and every symptom of the disease will at once disappear, as is proved by the following case.

Case XXV. An apothecary, aged twenty-two years, of a bilious temperament, having been afflicted with extreme melancholy, was attacked, without any other known cause, by violent palpitations, tumultuary beatings in the region of the heart, and great difficulty of breathing. The severity of the symptoms obliged him to enter the Hospital of la Charité. He was then emaciated and of a yellow color, the mouth was bad, the tongue yellowish toward its root, respiration high and very difficult. He experienced frequent and strong palpitations. Forcible and irregular beatings were felt about the region of the heart; the pulse was hard and vibrating, but quite regular. Yet the thorax sounded well by percussion; the right hypochondrium was a little painful.

The suspicion first conceived of an organic lesion of the heart induced me to believe that a simple spasmodic

affection might originate these morbid phenomena; the disease commencing five months before, the delicate state of the liver, the yellow tinge generally diffused over the body, contributed greatly to confirm me in the belief, and the second day after he entered the hospital, the treatment was directed for this purpose; viz. demulcent drinks, antispasmodics, and baths. The patient was bled once about the fourth day; I labored to dissipate his imaginary complaint, and soon had the satisfaction to find this plan improve the patient daily. This apparently durable cure was effected within fifteen days after the patient entered the hospital.

How many analogous examples could I not present, of women who experience nervous complaints, and menstrual suppressions, whose health has returned with this necessary evacuation. However, I am going to examine the different phenomena which generally accompany the first period of aneurism of the heart.

1st PERIOD. *External examination.* The countenance, habitually very animated, exhibits often a lively changeable color, with the sense of heat in its integuments. The extremities preserve their vigorous form; yet the patients are very easily fatigued.

Percussion of the thorax discovers no sign of any preternatural dilatation; the sound is uniformly good in every part of the thorax; but there is frequently a painful sensation in the region of the heart.

1st PERIOD. *Functions of the brain.* The patient experiences frequent dizziness and obscurity of vision, giving him the sensation of warm vapors ascending from the thorax toward the head. Head-achs are usually frequent and obstinate. The patient becomes gloomy, and irascible.

1st PERIOD. *Circulation.* Palpitations are more or less vigorous and frequent; the strokes of the heart are felt in their natural position and extent. The pulse is usually very distinct, strong or weak, hard or soft, according to the species of the disease, as will be further

considered ; regular, when the aneurism is simple ; irregular and extremely variable, when complicated.

1st PERIOD. *Respiration.* Respiration difficult, which can be better defined, by saying that it is high, short, or that the patient is soon out of breath. The least exercise occasions this kind of respiration. The patient is often forced to stop, when ascending a flight of stairs, for the purpose of breathing more easily. He is very liable to take colds, which endure for months, and aggravate the disease ; the cough, in these instances, is sharp, dry, and sometimes spasmodic. Expectoration is always difficult and sparing, usually mucous, occasionally striated with blood. These symptoms often deceive physicians, who consider the affection as gouty. There is generally a sensation of stricture about the throat.

1st PERIOD. *Digestion.* In the first period of aneurism, digestion seems to have greater activity than usual. Some patients are incessantly tormented with hunger, though they consume every day a large quantity of food. Digestion is generally good ; and if the contrary happens, it is commonly produced by a violent and continued cough. Constipation is very common, and often protracted for several days.

1st PERIOD. *Secretion and exhalation.* In the first period of aneurism the natural order of the secretions does not appear to be much disturbed. No sign is yet perceived of the prevalence of serum. The urine has a brick-coloured sediment, and its quantity is always natural, except in the course of the second period, when remarkable irregularities are noticed in the secretion of urine. The preceding are the principal phenomena which aneurisms of the heart present in the first period. It is necessary to observe that I am treating here only of aneurisms, developed slowly, without violence ; the latter cause acting very differently effects in an instant the commonly slow dilatation of the cavities of the organ, and has scarcely acted, when the disease, having run through its several periods, becomes suddenly very alarm-

ing, though it is not immediately fatal. These cases are happily less frequent than the others, and the signs which commonly accompany the second period, are not often found. The signs peculiar to the third period can only then be perceived; constantly presenting this great difference, that they characterize less a chronic, than an acute affection according to the phenomena which will be indicated, as belonging more particularly to the third period of aneurism.

SECOND PERIOD.

The farther we examine the progress of aneurisms of the heart, the more evident are the signs and phenomena of the complaint. It is commonly in the second period of the disease, that patients enter hospitals for relief. If it is desirable to observe the evolution of the first period, we must examine it in habitations, where ease renders their occupants more cautious of their health, or where imperious necessity does not expose a constitution apparently injured by disease, to hasten the growth of an organic affection, which then becomes immediately mortal; while by careful attention it might have been long dormant, or radically cured.

2d PERIOD. *External examination.* The countenance is now bloated, the cheeks and lips florid, or inclining to purple. A portion of the patient's apparent health is gone; there is a swelling of the feet and ancles while standing, which commonly disappears during night.

The thorax, when struck, if there be no affection of the lungs, sounds equally clear in every part, except that of the heart, where it is usually silent, for a considerable extent.

2d PERIOD. *Functions of the brain.* Very frequent dizziness is sometimes followed by syncope. There is a violent stricture of the throat, which may be very aptly compared to the globus hystericus. The patient is instantly enfeebled, when he wishes to repose. The sleep is often interrupted during night by frightful dreams,

which occasion him to start suddenly ; he dissatisfied, and versatile, is extremely irritated with the slightest opposition.

2d PERIOD. The palpitations are stronger, more frequent, yet without my ever having been enabled to hear them, at a certain distance, as many older authors say they have observed. The strokes of the heart sometimes extend farther, often toward the right side of the chest and into the epigastrium. Many physicians often take this last phenomenon for pulsations of the cœliac artery, as being too deeply situated to render its strokes always sensible to the touch. It is only in cases of extraordinary and transient spasmodic affection, and considerable emaciation of body, that we can distinguish the strokes of this artery. Besides, the manner of examining, by directing the hand obliquely from the epigastrium toward the diaphragm, rather than perpendicularly to the vertebral column, causes the part to be distinguished whence the beating proceeds. The pulsations of the carotids and certain deep arteries of the extremities are sometimes perceived, which have likewise been very frequently taken for pulsations of the jugular veins. The pulse, in aneurism with thickening, is hard, vibrating, frequent, and sometimes serrated. On the contrary, in passive dilatation, it is soft, very frequent, weak, and easy to suppress. In each case, it presents now and then, irregularities generally occasioned by other co-existing lesions, whose influence upon the motion of the pulse I shall immediately notice. In short, very frequent hemorrhages from the nose intervene.

2d PERIOD. *Respiration.* Respiration has become extremely difficult. The patient makes long inspirations, which are incessantly repeated, because the engorged and compressed lungs can admit but a small quantity of air. He cannot breathe in a horizontal posture ; to facilitate respiration, he is obliged to assume a sitting posture and to bend the body forward, resting, as it were, the thorax upon his knees. Some

advantage may be derived from this observation against the theory of abdominal pressure of which more will be said hereafter. The patient cannot ascend three or four stairs at once without being obliged to stop quickly for the want of breath. The cough is strong and frequent ; expectoration is sometimes sparing and sometimes very profuse, mucous, and often bloody, according to the temperament of the patient. A slight hæmoptysis frequently ensues.

2d PERIOD. *Digestion.* The patient occasionally feels the necessity of food ; but he is seldom satisfied without being subject to indigestion, to vomiting excited by a violent cough, to pain in the stomach, and to greater difficulty of breathing. Some patients however experience relief from a full stomach.

The constipation, which obtained in the first period of the disease, is very usually succeeded by a looseness, which exceedingly embarrasses and fatigues the patient, especially at night, from the trouble he is obliged to take to satisfy this demand.

2d PERIOD. *Secretion and exhalation.* The urine is occasionally sparing, which renders the state of the patient more distressing ; awhile after it flows plentifully either naturally or from the use of medicine ; then the patient recovers apparent health, which seldom endures long.

Serous infiltration obtains in the lower extremities, particularly when the patient has walked, or been standing for some time.

The abdominal cavity, without being positively the seat of an effusion, exhibits, when its parietes are touched, which appear thickened, a softness and laxity, which seem to announce the proximate effusion of a fluid. Besides, the bloatedness of the countenance, paleness, and laxity of the integuments of the whole body, announce a general disposition to the infiltration which must immediately follow.

THIRD PERIOD.

The collection of the signs which the second period of aneurism of the heart exhibits, prevents the physician from mistaking the existence of this affection; viz. when the aneurism has arrived at this period, whose principal marks I am going to describe so perspicuously that the disease cannot be misunderstood: in short, though the assistance of medicine be then purely palliative, it greatly concerns the reputation of the physician, the certainty of his prognostic, and the determination which he must take as to the treatment, not to confound this disease with others which have some resemblance. I shall discourse on this last point of clinical medicine in another chapter.

3d PERIOD. *External examination.* The face in the beginning of the third period, is more bloated and infiltrated than ever. The lips, cheeks and nose are livid; the eyelids, swoln by serum, often form species of tumors which cause the eyes to appear remarkably small. Yet, toward the close of this period, the bloatedness of the face suddenly disappears, and is succeeded by emaciation. The skin is soft and apparently trembling. Livid spots, sometimes very numerous, are seen both on the sides of the thorax and on the integuments of the abdomen. The parts very remote from the centre of circulation become cold many days before death. From the thickening and infiltration of the integuments of the thorax, it is difficult to practise percussion, and its result is very often obscure; in order to be exact, it is necessary to devote very particular attention to this examination, and to be in the habit of practising it. It is then readily perceived, by striking the parietes of this cavity, that the sound heard from a solid body is dull and obscure. By this method we can nearly measure the extent of the dilatation, from the space in which the thoracic parietes do not sound.

3d PERIOD. *Functions of the brain.* Delirium sometimes supervenes, particularly at night. The

patient is attended with such inexpressible languor that he can scarcely move his limbs. The senses are blunted ; he is unable to enjoy a moment's quiet repose. Perpetual distress haunts him so incessantly, that furious despair often leads him to covet death, and to recover the use of his feeble limbs to commit suicide.*

3d PERIOD. *Circulation.* The third period of aneurism of the heart is occasionally denoted by the general disappearance of its strokes ; applying the hand over the region of this organ, scarcely do we feel an extended rushing like water, or a deep, disorderly, indescribable motion, which has no resemblance to the usual pulsations : when these strokes continue their force, they become uncommonly violent. The pulse is mostly small, frequent, unequal, intermittent, insensible, and apparently linear. The veins are swoln, especially in the neck.

3d PERIOD. *Respiration.* Suffocation is incessantly more threatening. Every forced inspiration, made by the patient, is ineffectual, and the more difficult, as he is unable to assume the posture which facilitates respiration in the second period.

The cough is dry and convulsive. The matter expectorated is sometimes profuse, and often bloody, or else pure blood, coagulated, or black as coal. At other times, though more seldom, the matter expectorated is

* *John Bell*, when treating of the malconformations of the heart, says, " We are at no period of life, from the cradle to the grave, exempted from those diseases which prevent the due oxydation of the blood. They are often born with us ; they often overtake us when advanced in life ; they cause anxiety and misery, which exceed all other distress : pain and suffering of every other kind humanity can bear, but the feeling of instant dissolution is what the noblest mind sinks under. We know by the pale and subsiding countenance how awful the inward feelings are ; and wo be to him, who has not feeling enough to sympathise with this distress, and an anxious desire to understand the cause, and to alleviate the misery, of inward diseases which he cannot cure ?

These are seducing motives, and might of themselves have drawn me on to give this slight sketch of the malconformations and diseases of the heart ; for truly, without some knowledge of the ill-organized, irregular, and diseased heart, the structure and functions of the heart in its sounder state would be but poorly understood.—T.

puriform, which has led many practitioners to take the true disease for an existing affection of the lungs, while the matter expectorated is simply mucous, and its peculiar character depends on the state of the mucous surface of the bronchiæ.

3d PERIOD. *Digestion.* The appetite is gone. Yet some of these patients are inclined to eat voraciously for the purpose of increasing the suffocation and of accelerating death. Digestion seems to be lost; and its function is not performed, or at least very slowly; for, after death, the food is usually found in the stomach without having undergone scarcely any perceptible alteration. Some have frequent watery stools; others, a constipation that does not yield to the use of clysters and other laxatives.

3d PERIOD. *Secretions and exhalation.* The urine, during the third period, is thick and sparing with a sediment. Yet it happens, as I shall take notice when speaking of the treatment, that it occasionally flows more copiously; then the state of the patient amends; but the urine is soon suppressed again, and the amendment disappears which had suddenly given the patient the greatest hope.

The serous diathesis is often excessive. The integuments of every part of the body, the muscles, cellular membrane, &c. are swoln, and dropsical. Ruptures are sometimes made on the extremities that discharge a vast quantity of water, which gives the patient momentary relief. It is common, as dissolution is approaching, to see the intumescence partially disappear; the serosity seems to accumulate in a more remarkable quantity in the great cavities, especially in the thorax. Death always intervenes to terminate the painful scene which this combination of symptoms presents. When the disease passes through its several periods, death sometimes advances slowly, and life is insensibly extinguished. Yet it is common to see it preceded by slight spasms. On the contrary, the disease having barely reached its second

period, when the patient dies (which sometimes occurs) the death is generally sudden and unexpected. On getting out of his bed, drinking, &c. he expires; and the attendants are often surprised to find him dead when he was left but a moment.

ARTICLE II.

Of the signs peculiar to each of the two species of aneurisms.

I HAVE advanced that if the two species of aneurisms admitted, presented very great differences as to their nature, they offered others equally remarkable as to their signs. I am therefore convinced that when one of these lesions exists without much complication, the living man supplies the means of knowing it. I particularized, in the foregoing article, the signs of the different periods of aneurisms in general; I am now going to attempt to draw between the signs of active and passive aneurisms, a parallel which may manifest those signs which are peculiar to each of the two species of lesion.

A. A sanguine temperament, robust constitution, vigor of age, violent character, are predisposing causes of aneurism of the first species.

a. A lymphatic temperament, feeble constitution, cacochymy, are the predisposing causes of aneurisms of the second species.

B. Active aneurism is usually the effect of an acute lesion or insensibly derived from the central organ of the circulation, caused by a violent effort, immoderate and long continued exercise, running, wrestling, coition, equitation, the bearing of burdens, use of wind-instruments, singing, crying, external contusion, very lively moral affections, &c.; hence, in most of the cases, from the partial lesion of the organ, arises the disease of the whole.

b. Passive aneurism, or with attenuation, occurs oftener, on the contrary, in consequence of chronic diseases, viz. an engorgement, debility, in short, a preternatural state of the lungs, from any obstacle whatever, that is slowly formed in the course of the circulation. Let it be observed, however, that such obstacles sometimes generate active aneurism, but attended with the predisposition indicated by A.

C. In cases of active aneurism, patients have a florid, vultuous* countenance, the eyes injected.

c. In passive aneurism, the countenance is generally pale, and languid, sometimes, however, injected and purple.

D. In the first case, the strokes of the heart are quick, dry, violent, and often to be seen. Then whatever be the pressure of the hand made over the region of the heart, it is always elevated by the motions of the organ which, according to some authors, give very often the sound of the rushing of water, heard at a surprising distance. I repeat it, I have never heard these strokes far off; but in order to hear them distinctly, I have often been obliged to listen with the greatest attention and very near to the subject; my coadjutor, *M. Leroux*, has lately made the same observation.

d. In the second, the palpitations are weak, more infrequent, and slower. On applying the hand over the præcordia we feel the impression of a soft body, elevating the ribs, without striking against them with a lively and distinct blow, as happens in the first period of these affections.

E. In active aneurism, the pulse is frequent, strong; hard, vibrating; whatever be the pressure made by the fingers on the artery, they can neither destroy its calibre,

* I mean by a *vultuous face*, the floridness of the face with its size increased, in inflammatory diseases in general; by an *injected face*, quite a different floridness of the face in various chronic diseases. The first sort of coloring seems to depend on the afflux of the blood into the capillary arteries; while I consider the second as due to the engorgement of blood in the capillary veins.

nor suffocate the strokes. The pulsations of the carotids and of the arteries of the extremities are often distinctly perceived.

a. In passive aneurism, or with an attenuation of the parietes of the heart, the pulse is weak, more or less frequent, soft, often scarcely perceptible, easy to be suffocated by the slightest pressure. On touching the arteries, it may be said that they are apparently hidden under the neighboring parts.

In each species, the pulse presents great varieties and irregularities, according to the complications of the constriction, ossification, &c. &c. and the degree of these complications.

F. In the first of the preceding diseases, the percussion of the thorax emits an obscure sound into a smaller space; because this species of dilatation is usually much less.

f. In the second of these two diseases, the left side of the thorax when struck gives out no sound for a great space; because, in this case, either the partial or total dilatation of the heart is always very remarkable.

I ought however, to premise here, that one may be deceived by concluding from the foregoing remarks, that passive dilatation ever offers a greater enlargement of the heart than does the active; sometimes, the latter is vastly increased, and attains the size of the passive dilatation.

Such are the principal signs which are capable of manifesting the active or passive nature of the heart. If one of the signs that I have indicated be insufficient to enlighten the practitioner, a collection of several cannot fail to decide him on the nature of the affection.

ARTICLE III.

Of the signs by which it can be determined which cavity of the heart is affected with aneurism.

It is evident that there are no certain signs which designate particularly the affection of each cavity of the heart. We cannot admit, with *Lancisi*, as a certain sign of the dilatation of the right ventricle, the pulsation of the jugular vein, since this phenomenon was noticed on subjects in whom the left cavities were dilated; besides this pulsation may be confounded as has been observed, with that of the carotids. These arteries have often been seen to beat violently, in aneurism with a thickening of the parietes of the left ventricle; but these strokes no more characterize the lesion of the left cavities, than those of the jugular vein do the affection of the right ventricle. Yet this sign, which often deserves but little attention, may, when connected with several others of which I am speaking, cause us safely to predict which side of the heart is diseased.

The strokes of the heart, which are more sensibly felt on the right side of the chest, may also be given as signs of the dilatation of the right ventricle. But this sign, like the first, avails but little alone; since the size of the heart, being considerably increased, and the deviation of the whole, or only of the apex of this organ, are so many preternatural states in which the strokes of the heart are felt, either in the anterior region, or toward the right side of the chest.


May not the constant regularity of the pulse, together with the general signs of aneurism of the heart, be given as a criterion of the dilatation of the right cavities, while without this last affection inducing uniformly a derangement in the action of the left auricle and ventricle, the blood, finding no obstacle in these cavities, may be driven into the arteries with its usual regularity? But this sign is quite uncertain, as the dilatation of the right cav-

ities is very often accompanied with a constriction at the orifice of the left ventricle, or at that of the aorta, which usually occasions an irregularity of the pulse, in proportion to the degree of the constriction.

In the organs depending on the two circulations, we observe the phenomena the most appropriate to distinguish which of the cavities of the heart is diseased. The less circulation seems to undergo greater derangements; the lungs seem to be more affected in aneurism of the right ventricle. Anhelation is generally more frequent. Hæmoptysis obtains oftener. The countenance is livid, and nearly black, on account of the stagnant blood in the superior vena cava being discharged with difficulty into the right auricle.

On the contrary, in aneurism of the left cavities, the phenomena of the disease are more manifest in the parts under the influence of the greater circulation. The countenance is not so livid as in the preceding case, but it exhibits, especially in the cheeks, a very florid color. In aneurism of the right cavities, the complexion of the skin appears to be livid; in the same affection of the left cavities, it is merely injected with a lively or very bright red. As soon as the disease has passed its first period, and arrived at the close of the second, the general bloatedness ever intervenes, whatever be the species of aneurism. But it is slower, when the left cavities are the seat of the disease; on the contrary, when the right cavities are dilated, the pulmonary engorgement, which always obtains, does not permit the blood in the lungs to be perfectly and fully submitted to the reparative power of respiration. The blood therefore flows from the lungs, and returns into the greater circulation without any perceptible alteration, viz. without having either lost or gained what is requisite during this process. The inconveniences proceeding from such a derangement in the effects of the circulation must be extremely serious; and I am inclined to believe that this cause alone may induce more immediately the serous diathesis in the cases

of dilatation of the right cavities than in those of the left cavities of the heart.



ARTICLE IV.

Of the treatment of aneurisms of the heart, according to their nature and the periods to which they have arrived.

THE various resources of medicine against aneurisms of the heart cannot be employed with equal advantage in the different periods of the disease ; neither are they indifferently applicable to active aneurisms and to passive dilatations. Under these two principal points of view, I shall examine, in the course of this article, the means which the healing art furnishes for the treatment of aneurisms of the heart.

It is the first period in which aneurisms of the heart can be assisted by medicine, as the cause then incessantly acting, may be happily counteracted. On the contrary, in the two latter periods, one must not be flattered with a radical cure, when palliatives are the only remedies to be employed.

If the different periods to which aneurisms have arrived, exhibit more or less chances of cure, their nature, as has been said, operates equally on the success of the treatment.

The cure of active aneurism, in its first period, appears, other things being equal, less difficult to effect than that of a passive dilatation. The cause of this difference is easy to assign. In the first case, there is excess of energy in the organ : on the contrary, in the second, it is in a state of debility. A debilitating method constitutes the basis of the treatment of the first lesion ; to cure the second, it is necessary to add to the organ the power which it naturally wants, or which it has casually lost. The one of these indications is accomplished with the utmost facility, which is to debilitate the patient ; the other is beyond the resources of medicine. For it is ex-

tremely difficult, or even impossible, to add to an organ, by necessarily indirect means, power which is not inherent in its organization.

Whatever be the species of aneurism to be treated, it is necessary first to attack the cause, which at the period when the cure can be hopefully attempted, has not produced in the organ every possible alteration and disorder.

Thus, if any evacuation have been suppressed, it must be immediately and perfectly restored. Is any cutaneous, gouty, or rheumatic affection turned upon the heart and its appendages, we ought to use every mean to restore the cutaneous affection to the surface of the body, the gout and rheumatism to the parts which they occupied before their metastasis, or to that where it ought to be diverted (particularly the gout) if the patient be thought susceptible of inheriting this affection, or from his manner of living, &c.

If what has been said upon the causes of aneurisms be considered, it will be a painful reflection that most of those which have been pointed out as peculiar to this disease are generally beyond the influence of medicine. Of this number are the moral affections. They act either quickly or slowly upon the integrity of an organ. By a sudden and unexpected fright, by a violent fit of anger, &c. aneurism of the heart will be immediately formed, or at least the disorder produced by these moral affections, will predispose the person under their influence, to suffer this disease, which he will be unable to avoid. How will the practitioner be able to prevent the action of such a cause? How will he oppose the quick or slow evolution of its effects? Here the inefficacy of medicine is so evident, that it is superfluous to dwell longer on this point. Some very rare cases will be excepted, the possibility of which is much more in the imagination and desire, than in the fact; I will speak of such as the loss of a place, or the part of a fortune, &c. inducing in a patient palpitations and a disorder which originates aneurism; powerful and rich friends immediately dissi-

pate the cause, together with the nervous state which it had determined. Yet this happy change cannot obtain but on the supposition that no organic lesion does exist, which is not rigidly applicable to the state in question; besides the physician scarcely ever possesses such assistance, though it be one of those indicated by medicine.

Let it now be supposed that protracted melancholy has slowly and secretly formed an aneurism of the heart. Although one be fully prepossessed, at first, by palpitations, or any other symptom, that he is predisposed to aneurism of the heart, can the physician remedy this ever acting cause? He will have the mortification to see daily unfolded, as it were, before him, a complaint which he will not be able to alleviate, since he can neither counteract its cause, nor oppose its effects but by anti-spasmodics, whose success, in the case supposed, is ever ephemeral.

Among the general causes of aneurisms of the heart, there are some, however, which may be successfully counteracted, especially if medical aid be called before the evil be deeply seated.

The attentive observation of a great number of diseases of the heart has designated certain occupations as remote and even exciting causes of aneurisms. Thus, tailors are so exposed to them, that it is common to find among those even who are not attacked by well defined organic affections of the heart, a slight irregularity in the phenomena of the circulation, which seems to be the antecedent sign of a more serious affection. The advice of a physician in this and analogous cases, may singularly contribute to avert the nascent disease. In short, what cause must be counteracted? It is found in the occupation of the individual; an occupation calculated to induce disorder in the action of the heart, in proportion to the obstacles to the circulation from the numerous curvatures of the ventral aorta and its branches, in

the forced posture which a pernicious habit causes these artificers to contract, while at work. Let us first consider the circulation confined in the inflexion of the aorta, and in the angle which the crural arteries make with the iliac ; the popliteal with the crural, &c. The artificer being constantly seated, and the inferior extremities continually inactive, when the superior have extended motions ; then let us calculate whether such circumstances are not particularly adapted to create the affection so often observed among these artificers. There are some individuals whose vigorous structure easily overcomes causes of this nature ; but there are others who sooner or later feel their destructive effects. Let the last quit their dangerous occupations, and embrace others more salutary, and every symptom of the disease will immediately disappear, whose importance is too well known to permit the least negligence in preventing its evolution. I shall not again discuss the opinion of modern physiologists, who have pretended that the curvatures of the arteries were indifferent to the facility of the circulation.

The facts which have been related in the preceding paragraph are in support of what I said above on this subject ; but others may also be adduced in opposition to them.

The state of the tailor is not the only one to which we may apply what has just been related. Tanners, curriers, laundresses, &c. &c. continually bent and supported upon a board which fixes the ventral aorta in a permanent state of compression, must be from the same causes, often exposed to the same species of affections.

Active and passive aneurisms appear equally to obtain in consequence of a permanent plethoric state ; but the same cause, as has been already said, acts in these two cases, differently, hence the same treatment will not be found equally efficacious. The rest of this article will illustrate my meaning. The powerful influence of the plethora in the formation of aneurisms of the heart, suggested to *Albertini* and *Valsalva* the curative method,

known under the name of the latter only, though they may claim it mutually. It is well known to consist in reducing the patient by numerous bleedings, and abstinence carried even to emaciation, so that he can scarcely raise his hands from the bed. The aneurism then decreases according as the patient becomes weaker, and his strength must be gradually restored by nourishment, until the *aneurismal* parts, whose natural contractility is unimpeded, are contracted and returned very nearly to the primitive state of the organ.

“My friend *Valsalva* and myself, says *Albertini*, in a memoir inserted in the Academy of Bologna, thought the method just described, the best, safest and perhaps the only one to cure these lesions. *Valsalva* was the first who had an opportunity of employing it. The success justified our expectation; and this practice has likewise succeeded with the other practitioners of Bologna. It follows, therefore, that young people, treated in this manner, before the ailment has reached its last period, were either cured or evidently relieved; and that the aged and those in whom the disease had become inveterate, had found in this method a more or less powerful obstacle to the progress of the complaint, and a prolongation of life, provided that the organic lesion had not extended so far, that the secondary diseases had already made considerable progress.”

Thus, old men in whom the disease is not too far advanced, and women of every age, have prolonged life by a method, varying very little from the preceding, longer than the physician *Antipater* did of whom *Galen* speaks. In conjunction with these and many other facts, there is an instance of a knight, who prolonged his life from sixty-five to seventy-four, in whom when dead we found on dissection the right auricle of the heart and the pulmonary artery greatly dilated, the pericardium closely united with the heart, and hydrothorax. *Albertini* relates many other analogous cases.

This method, practised with considerable success in the treatment of arterial aneurisms, would seem, according to *Albertini*, incapable in any case, of a more rational application than in that of aneurism of the heart. The contractility of its fibres being much greater than that of the tissue of the arterial parietes, excites a well founded hope for the successful attempts that may be renewed ; but in order that the application of this method be as happy as possible, it will be necessary, in the distinction of aneurisms into two species, to establish indications from which a physician cannot deviate without prejudice to the patient ; but, the diagnostic of *Abertini* and *Valsalva* was destitute of this distinction.

Hence, in active aneurism, the energy of the parietes of the organ is rather increased than diminished. If the treatment of *Valsalva* be practised in this first case, and the patient be continued, for a certain time, in the debilitated state resulting from it, it is clear that the fleshy parietes of the heart can, in the beginning of the disease, return to their natural state, because their contractility, far from being lessened, has acquired more energy.

To effect a cure in passive aneurism, it is necessary to be able to give the muscular tissue of the heart the contractility which, in this second case, appears almost annihilated. What therefore could the treatment of *Valsalva* avail, but to empty the cavities of a muscular organ, having become nearly membranous, whose walls being thinned, had lost their elasticity ?

Active aneurism appears to be the only one in which *Valsalva's* method can be successful ; it is applicable only in the first period of the disease ; in the two other periods, a palliative treatment must be used ; but as the palliative is common to all the diseases of the heart, arrived at an advanced period, to avoid repetition, I shall speak of it merely in the article on the treatment of diseases of the heart in general, though the palliative treatment be very similar to that whose utility has just been examined.

A curative method which approaches very nearly that of *Valsalva*, and which the celebrated *Morgagni* says he employed with success, consists in deriving a certain quantity of blood from the central organ of circulation, by often immersing the extremities, particularly the superior, in a warm bath. By this means, is invited into the limb immersed a much greater quantity of blood than what is natural. The heart is then more relieved, as it is freed from a greater quantity of blood. The palpitations are less frequent and strong; the relief is but momentary, and the flow of blood, artificially excited in the limb, must cease with the immersions, or shortly after.

This method is of superior utility, for the purpose of avoiding or moderating one of the paroxysms, which will be treated of in another place, which are renewed periodically in certain diseases of the heart, while life is in the most imminent danger. A few cases prove that the relief obtained by this means was more satisfactory and durable than was to be expected; but no complete cure is attested, which induces me to discard this means from the catalogue of such as will be considered palliative.

Whatever be, moreover, the success promised from the treatment indicated by *Valvalva*, and from that advanced by *Morgagni*, is it not extremely difficult to find patients who, not knowing all the danger of their complaint, are disposed to submit to a method of cure, whose nature, length, &c. are calculated to frighten the bravest? How few cases are found in hospitals, where this treatment can be practised, since patients do not present themselves until the disease is in a period too far advanced to render this treatment salutary!

CHAP. IV.

ARTICLE I.

Of the induration of the muscular tissue of the heart.

THE *induration*, of which I am here speaking, must not be confounded with a thickening which the parietes of the heart sometimes acquire in aneurism of the first species. Here, the fleshy fibres, though thicker and firmer, retain all their contractility, while the morbid state under examination, is distinguished by the more or less partial loss of muscular contractility; besides this state is very seldom attended with any dilatation.

I have frequently noticed the *induration* of the muscular tissue of the heart; but in these numerous cases, the induration had attained to different degrees. The following case, which was inserted in the Journal de Medecine (Ventôse, an. 9) will give the most remarkable example of this affection that I have seen.

Case XXVI. A washer-woman, aged fifty-five years, of a lymphatico-sanguine temperament, had suffered melancholy for a long time, consequently her health was impaired.

Five years after, (1797) her menstruation was suppressed and did not return until 1800. Then a swelling beginning in her legs, was extended to the thighs and abdomen. Respiration was difficult; a cough supervened, which, more distressing at night than during the day, deprived her wholly of sleep. When she hastened her walk, respiration was more difficult, and obscure strokes were felt in the region of the heart. A diarrhœa followed, which dissipated these symptoms. The diarrhœa ceased, and the alarming symptoms were more forcibly renewed. Then she was obliged to keep her bed; her sleep was interrupted by frightful dreams, followed by starting.

When she entered the Clinical Hospital, July 19th, 1800, her pulse was small, frequent, serrated, and concentrated; it did not present great irregularity, but that disorder so easily recognized by the experienced physician, and so hard to describe. The thorax when struck sounded in every part, except the region of the heart; the hand, when applied over this region, was elevated for a considerable extent; in the strokes of this organ, intermissions were sometimes observed, and usually great irregularity.

These phenomena suffice to manifest a lesion of the organs of the circulation; the infiltration of the abdomen did not satisfy me as to the state of the gastric system.

I considered the disease incurable and dissolution near. Diuretics and aperients were administered solely for the purpose of relieving the patient by diminishing, if possible, the infiltration.

The following days, the belly became more tense, respiration more difficult. The patient complained of suffocation, and particularly of a fixed and insupportable pain in the epigastrium, and toward the left hypochondrium; she could neither sleep nor breathe except in a sitting posture. The infiltration increased rapidly, and extended to the thorax, especially to the right side. July 29, it reached the face and superior extremities; August 9, it became general. The pulse was smaller, more contracted, intermittent, and irregular. This state continued till the 14th of the same month, when she expired in extreme agony.

On dissection, the face and neck were of a purple color. Every vein of the head and neck was turgid with blood; and all the integuments of the body were infiltrated.

The lungs, at their edges, had contracted slight adhesions with the pleura and mediastinum; they were, otherwise, sound and crepitating. A very small quantity of serum was effused into the cavities of the thorax,

particularly on the left side. The pericardium was very remarkably distended, but contained no water. The heart was much larger than it is usually in a woman of middle size; there was very little adipose substance at its base. The blood flowed from the cavities of the heart, when it was separated, in various directions. The right auricle and ventricle, together with the pulmonary artery, presented nothing remarkable, unless the pillars of the ventricle and the parietes of the auricle were of a very remarkable consistence; and the fleshy parietes, thicker than natural, were so compact that they supported themselves without collapsing; as it always happens when the ventricle is empty. All these parts were elastic; they yielded difficultly to pressure, and were spontaneously re-established. The cavity of the left auricle was dilated, and presented the same consistence as that of the right side. The cavity of the left ventricle appeared greatly distended; its parietes had at least double the usual thickness. They were supported like an arch, and actually formed a fleshy, very elastic, sounding box when struck, as if we had struck on a sort of cornet. This elasticity and property of sounding were the more extraordinary, (as the fleshy portion of this ventricle retained its natural color) and they did not appear converted either into an osseous, or cartilaginous substance, or into any thing analogous; nevertheless, on cutting it, the scalpel underwent a strange resistance, and caused a singular crepitating noise to be heard. With a left ventricle so dilated, and of so great a thickness, the patient ought to have a very large, hard, strong pulse, as all the vascular orifices were so very free; on the contrary it was small, serrated, concentrated, weak, irregular, and at times intermittent; which is very well explained by the elastic hardness of the left portion of the heart, and of the partition of its ventricles, which must give this organ but a painful, very difficult, and imperfect contraction.

There was found, in the abdomen, rather an infiltration of the viscera, than a real effusion into the cavity.

The stomach was contracted. The rest of the abdominal viscera were in their natural state.

I premised that the case just given, was not the only one of the kind which I had found in my practice. I shall not relate the others, as they afford nothing materially different. The cavities of the heart had, in these cases, walls not quite so firm, but sufficiently hard to resist pressure and crepitate under the cutting of the scalpel. The symptoms of the disease were, here, precisely similar to those described in the preceding case.

The causes of this affection appear to be the same as those which I have pointed out in aneurism of the first species in general; with this difference, however, that in active aneurism the parietes of the heart, at the time when they become thicker, yield to the reaction of the blood and are dilated; while, at the time of the induration I am speaking of, either the induration of the parietes is accompanied with a dilatation of the cavities, or else the indurated heart has preserved its natural capacity. In the first case, we ascertain that the induration happened at some period of a pre-existing dilatation. In short, the substance of the heart, in this affection, is deprived of its dilatability and contractility; properties which are no longer in exercise, because the fibres of the heart are partially solidified, consequently form a mass incapable of dilatation and contraction.

In the second case supposed, viz. of non-dilatation, the induration is the first affection evolved; and, for the causes just given, the dilatation cannot be formed.

It is extremely difficult to say what signs can characterize such an affection.

In the first period of its formation, it must present all the signs peculiar to incipient active aneurisms, because the parietes of the heart have thickness and force without having yet acquired extraordinary solidity.

The signs of several lesions of different species are united in the other periods of the disease. Let one, in the first stage of the disease, lay his hand over the region of the heart, and he will sometimes feel obscure strokes as in the case cited, sometimes quick and violent strokes as I have occasionally observed. But these last strokes cannot be produced by the action of the right auricle and ventricle only, but particularly by the left auricle, which, in this case, doubtless fulfils in part the functions of the left ventricle, through which it propels the blood into the arteries. Let one, therefore, compare the state of the pulse, which is small, weak, serrated, and almost imperceptible, with the strong tumultuous strokes of the heart, which I have observed in a similar case, he will find it without any analogy to these strokes. Will he not be inclined, from the consideration of these phenomena, to think that, beside the dilatation of the organ, there is a constriction at the aortic mouth? Here the error appears almost inevitable; and he will be obliged to embrace the opinion for that which will be the most likely to happen.

As to the treatment, were the first period of this affection known, we might perhaps succeed in preventing its evolution by a debilitating treatment, similar to what has been indicated for active aneurism. But, it must be asked, is the bad diet which induces the induration, capable of yielding to the debilitating treatment? Or is this treatment calculated to prevent the induration from forming? Here I can give nothing decided. Yet, in every case, when the complaint has advanced, the palliative is the only treatment on which there can be any dependence.

ARTICLE II.

Of the transformation of the muscular tissue of the heart into a cartilaginous or osseous substance.

AT the time of the alteration of which I have spoken in the preceding article, the muscular tissue was apparently unaltered. It even preserved its primitive arrangement and color; but the converse is in the present article, though it may be only a different degree of the same alteration. It appears then the manner of nourishing the muscular tissue has changed, and a new matter, deposited in the elementary tissue of the fibres, has transformed the fleshy mass into a cartilaginous or osseous substance.

I shall insert but one case in this article; yet to render it more complete, I shall give in the appendix to the second class several interesting cases either borrowed from practitioners, or extracted from different authors.

Case XXVII. A man, aged sixty-four years, had always enjoyed good health, until the beginning of the summer of 1798, when he was attacked with a catarrh, for which he was bled seven times, and which, after the cure, left him in a state of extreme debility.

Fourteen months after the cure of this acute disease, the patient was taken with difficult breathing, and violent suffocations, which continued nearly two months, when he entered the Clinical Hospital. Six days before this event, suffocation became so violent, that on the least exercise he was threatened with a fit. He said he had experienced no palpitations. His pulse, scarcely perceptible in either arm, was small, concentrated, and irregularly intermittent; it seemed to be suspended during two or three pulsations. When the hand was placed over the region of the heart, it was felt to beat very forcibly. This phenomenon corresponded by no means with the smallness, weakness and concentration of the pulse. The chest sounded well, except in the region of the heart,

and toward the right and posterior portion of this cavity, which was the very point attacked in the peripneumony. The legs were rather soft than infiltrated. He started often from sleep.

Although convinced of the existence of an organic lesion of the heart, it was difficult for me to decide the species of lesion ; it appeared to be a constriction involving an aneurism of the heart.

The prognostic was evidently very embarrassing. Nevertheless, diuretics procured for two months a sensible amendment. Respiration was freer ; the pulse became full, less intermittent and more regular ; but toward the middle of April, 1800, he relapsed into a more alarming state than ever. The pulse resumed its old character. Respiration was suffocating, and the quantity of urine inconsiderable. There was a new infiltration of the legs, which immediately made frightful progress, and the patient died calmly the 17th of April, eighteen months after the peripneumony, and three months after he entered the hospital. On dissection, the face, and particularly the lips, were of a darkish violet color. The lungs, otherwise sound, had contracted slight adhesions with the pleura costalis. The size of the heart was much larger than natural. The right auricle and ventricle were greatly enlarged, and the orifice of the auricle on this side manifestly dilated. The left auricle was also very large, and its communicating orifice equally dilated. The mitral valves had become cartilaginous.

The parietes of the left ventricle was at least an inch thick, and very firm. The apex of the heart, to a certain height, and in all the thickness of its substance, was cartilaginous. The inner columnæ carneæ of the ventricle had acquired a singular hardness, and approached that of cartilage, the physical properties of which it possessed.

I have nothing to add on the causes, signs and treatment of this affection to what was said on the causes,

signs and treatment of the induration of the muscular tissue.

By connecting the case related in this article with those to be given in the appendix to the second class, we shall be satisfied with the very frequent existence, perhaps, of those affections which are naturally quite surprising; these alterations appear however much less so, when it is considered that the necessary action of the organ is seldom destroyed; which would unquestionably happen, if the whole extent and thickness of the parietes of the heart had become of a cartilaginous or osseous consistence.

This consistence, in the preceding cases, and in that which will be related in the appendix to this article, is observed either at the apex, base, or some other part of the heart; but in all these cases a greater or less portion of the organ preserved its muscular texture, and the action of the portion was sufficient to give to the blood the impulse necessary to penetrate, though with difficulty, the passages of the circulation.

The slowness, weakness, and almost complete annihilation of the pulse, which obtained in all the subjects, attacked by this disease, prove that the progress of the blood was only abated; besides, the strokes of the heart were, in no instance, totally annihilated.

APPENDIX TO THE SECOND CLASS.

ARTICLE I.

Sphacelus of the extremities, considered as an effect of aneurisms of the heart, or of the great vessels.

IN article first, chap. III, of this class, which treats of the general signs of aneurisms, cases are related in the writings of certain authors, without their drawing any

conclusion from them; which cases show the co-existence of sphacelus of the extremities with aneurisms of the heart or of the great vessels.

Other authors having united several facts of this kind, have thought it necessary to invite the attention of observers to this point, by advancing that sphacelus of the extremities might be regarded as an effect of the disease of the principal agents of the circulation, and to be numbered among the signs of these affections.

Thus an observation recorded in *Fabricius Hildanus* induced *Senac* and *Lancisi* to place sphacelus of which I am speaking, in the catalogue of effects and signs of aneurisms of the heart or arteries. By the assistance of physiological explanations, which are often abused, they easily accounted for this phenomenon; they might have said, that, in this case, the circulation, in whatever way obstructed at the orifices of the heart, could not be performed but imperfectly and slowly in the vessels of the first and second order, while it is entirely destroyed in the capillary vessels; hence from this destruction of the circulation, sphacelus of the parts the remotest from the centre must follow. For the same reason when the circulation has been intercepted in a limb, by tying a ligature round its principal artery, gangrene of the fingers, and toes, or even of other parts nearer the ligature, is in some measure occasioned; but as the possibility of a fact may be very plausibly proved, this alone cannot substantiate its existence; also shall I be permitted to question whether a sufficient number of observations have been made to pronounce with any certainty on this point? My reserve in this respect, appears more justifiable, than to explain, by argument, the possibility of the fact; one may, by argument also, prove that if the explanation appear pretty well founded, it is at least deficient in the application that will be made of it in many cases of this nature. In most of the cases which have so far been noticed, the organic derangement has appeared too slight to interrupt the circulation in such a manner as

to produce sphacelus. How can we conceive, that in the case of aneurism of the pulmonary artery, for example, in the one quoted by *Fabricius Hildanus*, the circulation should be interrupted to such a degree as to produce gangrene of one hand, when I have given, in the course of this work, twenty instances of an almost total obliteration of the aortic orifice, without my having once observed the subsequent gangrene which is said to proceed from such organic affections ?

In no case which I have related, and in a much greater number still which I could have adduced on the diseases of the heart, I have never seen the sphacelus in question. I do not consider, therefore, the sudden flux from an eye in one case, and in the other the echymosis of the eyelids, as phenomena similar to that under discussion.

Notwithstanding the opinion which I have just given, I ought not to pass over the many observations analogous to that of *Hildanus* lately made at the Hotel-Dieu in Paris by M. *Giraud*, who from the approximation of his observations, thought he could establish as a proposition, that the gangrene of the extremities was, in certain cases, the effect, and might become the index to the dilatation of the heart and of the great arteries. It is unnecessary to repeat here that the proposition appears somewhat hazardous : experience is, on this as well as many other points, the sole criterion for reference.

This is the summary of the observations which gave rise to the preceding reflections.


A woman* was troubled with palpitation, frequent cough, and difficult breathing. After a very considerable time, the patient's left hand became sphacelated. Every medicine was ineffectual ; amputation was performed without utility. On dissection, an enormous aneurism of the pulmonary artery was observed.

Two analogous cases were presented, some years since, as has been stated, at the Hotel-Dieu in Paris ;

* Obs. de *Fab. de Hild.* cent. II, obs. 49.

they differed from that which I have just transcribed, as the heart was affected toward its apex. In one of these cases, the excruciating and continued pains which the patient suffered, and which could not be quieted by the most powerful remedies, decided the faculty on amputation which the patient earnestly requested; the result was not more successful than that obtained by *Fabricius Hildanus*. Death followed immediately without any alleviation of pain from amputation.

Could we acquire on the nature of gangrene in question, more correct ideas than such as we now possess; were the suspicions which have been conceived of the particular cause which might originate it, once confirmed by experience, there would result in favor of operative medicine, a precept whose utility could not be doubted; viz. that of never amputating a limb seized with gangrene, when symptoms of a disease of the heart, or of the great vessels, were previously manifested, or existed together. Hence a cruel operation would be avoided, which, in the case supposed, would be perfectly useless, since by cutting off the limb, the effect alone would be removed, but not the cause of the evil which would still continue in the affection of the principal organs of the circulation.



ARTICLE II.

Of apoplexy considered as to its connection with aneurisms of the heart, or great vessels.

THE deficiency and feebleness of the circulation, in cases of aneurism with an attenuation of the walls of the heart, have served to explain how gangrene of the extremities may be complicated with the diseases of this organ. An opposite change of the same function must now account for the apoplexy in which diseases of the

heart seem occasionally to terminate ; a termination which *Albertini*, in the *Memoires de l'Institut de Bologne*, appears to have indicated when he says, treating of polypi, "that the patients were attacked with vertigo, and sometimes with species of apoplexy, which has also happened in other complaints of the heart and præcordia."

In my practice nothing has occurred of this nature ; but different authors supply me with observations to fill up this blank. Thus, from the observations, given by *Lieutaud*, in his *History of Anatomy*, Numbers 178, 249, 254, 261, 262, 267, I shall select the following facts, the first from *Baglivi*, the second from *Laurentius*.

Case XXVIII. The celebrated *Malpighi*, aged sixty-six years, long subject to palpitations of the heart, and tormented with the gout and stone, was struck with apoplexy, followed by the hemiplegy of the right side ; forty days after, he was very well recovered, the loss of his memory and reason excepted. Three months had scarcely elapsed, when he was destroyed by a new fit of apoplexy within four hours.

On dissection, it was observed that the size of the heart was increased. The right ventricle of the brain contained two pounds of blood ; the left contained a small portion of yellowish fluid. All the vessels of the brain were varicous.

Case XXIX. A man felt an insupportable head-ach, and died shortly after of apoplexy.

The heart was large enough to contain three pounds of blood. The brain was immersed in blood.

In the work of *Morgagni* facts are found analogous to those which I have just related. In the various cases given by him and *Lieutaud*, the coexisting alterations of the heart were either of a different nature, or arrived at different periods.

Although the cases pointed out by me are quite incomplete, it is difficult to be persuaded that the preexisting affection may not have been the exciting cause of

the apoplexies which destroyed the lives of these patients. I am the more disposed to embrace this opinion, as it accounts more satisfactorily for this phenomenon.

Apoplexy, therefore, may happen, 1st, when there is an affection of the heart with a thickening of its parietes ; 2d, it may also obtain in the case of passive aneurism, in those of compression, and of constriction of a principal vessel ; or of any impediment whatever to the return of the venous blood to the heart.

When a subject is struck with apoplexy, whose heart is diseased from an excess of muscular substance and energy, it is very clear, that the resistance of the parietes of the vessels of the brain has lost relation with the extraordinary force of impulse which the heart gives to the blood ; it is necessary then either that the small vessels become more permeable to this fluid, or that the coats of these vessels be ruptured, and yield to the effusion of blood and to apoplexy.

In the second case, where the blood, propelled by the heart into the vascular system of the brain, cannot return on account of some obstacle to the circulation, things must be quite differently situated, for then the arterial system of the brain is always filled, and the venous system is not emptied ; dilatations of the veins must be formed, and perhaps of the cerebral arteries, which, augmenting daily, are distended so far as to produce the rupture of these vessels.

When we have attentively observed certain paroxysms which are reproduced in some diseases of the heart, we are much inclined to think it a momentary engorgement of the cerebral vessels, and in other cases, of the lungs, which determine the return of these paroxysms, occasionally so intense, that they seem to approach, from their peculiar nature, apoplexy ; I shall speak of it below.

I said, in the beginning of this article, that I had never observed apoplectic death evidently caused by a lesion of the heart ; I have often seen in cases of this nature, the

whole cerebral vascular system, particularly the sinuses, gorged with blood; but I have not seen any extravasated into the substance of the brain or into its cavities. I have also seen, in analogous affections, water effused into the lateral ventricles, in basi cranii; and decided infiltration between the pia mater and arachnoïdes. In fact, the last hours, sometimes the last days of life, present such patients in a *subapoplectic* state; *Case XXXV.* is an example of it. In many of these cases, death, if I may so speak, was sudden: I do not, however, presume to assert that I have observed a single case in which apoplexy was the evident effect of a disease of the heart.

ARTICLE III.

Ossification of the heart.

FROM the cases related in chapter IV. of the second class, it might have been concluded that the dilatibility and contractility of the heart, properties so necessary to the integrity of its action, may yet be found, partly, annihilated by induration or ossification, without the total interruption of the circulation being the indispensable result.

To the case of partial ossification of the heart, (chap. IV. article II.) may be added, other facts of this kind related by different authors.

Case XXX. *Haller* says, he visited a young man immediately before his death, in whom he could not feel the pulse of the radial arteries, though the pulsation of the carotids was very perceptible.

On dissection, the heart was observed to be of its natural size; the inferior part of the right ventricle was ossified; both the valves of the aorta and pulmonary artery, and the most fleshy parts of the left ventricle, were likewise ossified.

While I was preparing this article for the press, *M. Renauldin*, a respectable young practitioner, inserted a case in the *Journal de Medecine*, (January, 1806) which ought to be quoted on account of its interesting nature.

Case XXXI. A student at law, twenty-three years of age, of a nervous temperament, of a very susceptible character, greatly devoted to study protracted very late at night, living abstemiously, and drinking constantly an abundance of water, experienced, two years since, continual head-ach and frequent dyspepsy. His respiration was invariably somewhat difficult. After a while there appeared below the malleolus externus, on the right side, a slight tumor, accompanied by sharp pain and a pulsation corresponding accurately with the pulse. Soon after he was attacked with peripneumony, which yielded to appropriate treatment; but after convalescence, his health became continually so unsteady that he was obliged to keep his bed.

The countenance was pale, and the whole body equally emaciated. On the slightest exercise, he felt lively and frequent palpitations of the heart. The hand applied over the region of this organ, felt an apparent separation of the ribs; and when this region was lightly pressed, it occasioned very acute pain, which continued long after the pressure. The percussion made on this region, excited only a dull and obscure sound, while it was clear and natural over the rest of the thoracic parietes. The pulse was raised equally on each side. The patient frequently vomited the little nourishment he took. He complained of suffering extreme pain in the lower extremities. A very severe cramp seized the legs, and there was a peculiar fixed pain in both heels.

M. Renauldin was decided on an organic affection of the heart. The patient died six weeks after he was obliged to keep his bed.

On dissection, the lungs were sound, the heart exceedingly hard and heavy. When he attempted to cut the left ventricle, he found great resistance occasioned

by the total change of its fleshy part into an actual petrification which had a sabulous appearance in some places, and resembled, in others, a saline chrySTALLIZATION. These particles of sabulous matter, approaching very near each other, enlarged as they were remote from the surface of the ventricle, so that they were continued internally with the columnæ carneæ ; these last, so petrified, without being altered in form, had acquired a considerable size ; several equalled that of the end of the little finger, and appeared like real stalactites placed in different directions. The whole thickness of the same ventricle was increased. The right ventricle, as well as the large trunks of the arteries emerging from the heart, presented not a trace of derangement. The temporal and maxillary arteries, and a portion of the radial, were ossified. The brain, the viscera of the abdomen, and its vessels, were sound.

There is not an example of the ossification of the entire mass of the heart. It may even be asserted that it will never be found, not that such an ossification, rigorously speaking, may not obtain, but because death will close the scene before the ossification can be accomplished.

ARTICLE IV.

Of the degeneration of the muscular tissue of the heart into fat.

THE degeneration of the muscles into fat has been pointed out by *Haller* and several other authors, but no one has seen or described it better than *Vicq d'Azyr*.* The subject of his observation was an old man, in whom he found nearly all the muscles of the left lower extremity, absolutely converted into fat, so that he could scarcely find a vestige of them by inspecting the part they once occupied. "But what this extremity offered more curious, says he, was the disorganization of the muscular

* Vol. V. *Moreau's* edition,

fibre, and its degeneration into cellular fibres which were formed by insensible gradations. In the sartorius, if I examined from the os ilium to its insertion into the tibia, I observed all these changes with their successive grades in the most striking manner. The lower portion was so confounded with the fat which surrounded the knee, that I could not distinguish it. The adipose matter did not appear effused between the laminæ, but between the rudiments of the fibre. The limb, covered with its skin, was of its usual size and form," &c. &c.

This degeneration appears to be common to several parts which have the muscular tissue for their basis. What *Vicq d'Azyr* observed of the lower extremity of an old man, modern anatomists have observed of the heart. They will, doubtless, publish these interesting observations; I have not personally observed this change.

I advanced that such a degeneration appeared to be common to most of the muscular organs; the following facts seem to prove it.

In old men the gemini muscles are sometimes found changed in a manner altogether similar.

The muscles which surround un-reduced luxations, are also subject to this mode of alteration.

It is necessary to notice that this degeneration does not usually deprive the muscles of all their contractility, either because the degeneration is never complete, or because the muscular fibres still preserve their contractility notwithstanding this alteration. Hence, old men, whose gemini muscles were so degenerated, were not, on this account, deprived of the power to walk. We have barely observed that the muscular force was diminished; we must notice, however, that in the case of *Vicq d'Azyr*, the patient having been obliged, toward the close of his life, to use crutches in order to walk, muscular action appears to have been nearly destroyed by this mode of alteration.

I cannot tell how such a transformation can happen; I will only add a few reflections suggested by this ob-

ervation. 1st, The adipose nature of the substance of the heart, and of the other muscles so degenerated, can scarcely be questioned, since it exhibited the physical characters, and some other chemical properties of fat; 2d, the parts changed, in the case of *Vicq d'Azyr* and in others analogous, having preserved their natural form and size, it cannot be said that the alteration proceeded from the accumulation of a great quantity of fat on the parts so degenerated; 3d, in fact, the debility of the muscular organ results necessarily from this degeneration.

It is requisite to distinguish this adipose degeneration, from another morbid state, which seems to approach it, without however having a perfect resemblance. It is the state in which the heart with very fat people, and even with persons moderately fat, is found oppressed, and suffocated by an enormous mass of fat, with which it is completely covered, but particularly toward its base.

Authors have been little acquainted with the first kind of affection of the heart; but they have given numerous examples of the second.

Case XXXII. *Kerkringius* relates that, on the corse of an extremely fat child, the heart appeared to be entirely wanting, so great was the mass of fat with which it was covered. The child died in a fit of suffocation.

Case XXXIII. *Bonnet* observed, on dissecting a very corpulent man, whose death was sudden, that the pericardium and heart were concealed by a vast quantity of fat.

Many other similar examples might be given, viz. that related by *Morgagni*, who says in Letter III, Article 20, that an old man, who died in a few days from an attack of apoplexy, had the heart so covered with fat, that it appeared like a mass of fat; but a collection of a multiplicity of cases teaches us nothing more positive either upon these affections or signs by which they may be recognized.

I am personally acquainted with no fact of this nature ; I have, however, often observed hearts covered with a considerable layer of fat, but I dare not pronounce such to be a morbid state ; although I readily conceive that, in all these cases, the action of the heart has been restricted and impeded by this superfluity of fat.

Before I conclude this article, it is necessary to remark, 1st, that from the approximation of several analogous cases, sudden death seems to be the most usual effect of this last kind of affection when arrived to a certain stage ; 2d, that from many facts of this nature, related by authors as examples of hearts oppressed by fat, it is easy to distinguish the adipose degeneration, mentioned at the beginning of this article.

THIRD CLASS.

AFFECTIONS OF THE TENDINOUS OR FIBROUS PARTS OF THE HEART.

General considerations.

THE internal membrane of the heart is one of those whose nature, notwithstanding the inquiries of *Bichat*, is yet undefined. This physiologist thought it had more relation to the serous membranes than to any other species, without, however, having an entire similarity. He thought also that, whatever might be its nature, it exhibited, both in the heart with red blood, and in the heart with black blood, differences, if not of texture, at least of properties.

Over various points of the internal surface of the heart, this thin membrane is laid, glued, and as if confounded with the fibrous, or apparently fibrous parts; I say fibrous, or apparently fibrous, because anatomists are far from being agreed on their nature. Therefore some consider as tendinous, or fibrous, the whitish bands which encircle the orifices of the auricle and ventricle; while others pretend that these bands depend solely on the thickening of the internal membrane, by the addition of a certain portion of cellular tissue to this same membrane. The latter admit in the thickness, at the base, and particularly toward the loose edges of the valves, fibrous fasciæ situated between the two folds of the internal membrane; they go even so far as to describe the distribution and arrangement of these fasciæ. The former consider the same valves as formed solely by the union of two laminae, or folds, of the internal membrane between which is interposed no other substance

than a small portion of cellular tissue which serves to unite them. All, however, seem to be agreed to consider the little cords as tendinous or fibrous, which, proceeding from the columnæ carneæ of the ventricles, are inserted into the loose edges of the valves.

Without pretending to fix the indecision of anatomists on the actual nature of these parts, I shall satisfy myself by observing that there is no tissue in the human body that becomes oftener the seat of preternatural indurations and ossifications, than the fibrous tissue: we may be convinced of the truth of this remark, by considering the very frequent cartilaginous or osseous indurations of the periosteum, ligaments, dura mater, fibrous membrane of the spleen, &c. &c. &c. On the contrary, the serous tissue seldom becomes the seat of such ossifications.

If we consider, therefore, that the so frequent lesions of the orifices, valves, and tendinous parts of the heart commonly merely cartilaginous or osseous indurations, may it not be rationally concluded that the whitish bands which surround the orifices and valves, which seem to constitute a body with these same bands, whose thickness is usually greater toward their edges than in their middle, partake as much of the nature of the fibrous, as of the serous tissue, which is only superadded? Hence the parts just described are such as I number among the tendinous or fibrous parts of the heart; furthermore, whatever be the correctness of this classification, by using the term *fibro-serous tissue*, it is not so much to decide the real nature of these parts, as to obtain the facility of uniting, in the same class, affections which appear to be common both to the internal membrane and some of the subjacent parts. I am no more attached to this term than to any other, it may be thought necessary to substitute for it. To methodise the materials which I had to treat in this class, I was obliged to come to a determination, which I have endeavored should be most conformable to the results of observation.

Of all the tissues, constituting a portion of the organization of the heart, the fibro-serous is in some way the most frequently diseased. Not that it is liable to a greater number of lesions of a different nature, as all the changes of which it appears susceptible, can generally be referred to cartilaginous or osseous indurations, but because we find such indurations in most of the diseases of the heart, either as causes, effects, or as complications of these diseases,

CHAP. I.

ARTICLE I.

Of the induration or ossification of the fibrous parts in general.

It was said above, that the fibrous parts were ever remarkably disposed to be penetrated by the substances which constitute the cartilages and bones; notwithstanding this disposition, confirmed by observation, there must be still favorable circumstances, or to speak more correctly, exciting causes, for the ossification of the fibro-serous tissue. Whatever be the causes by which the vessels are more naturally destined to convey or to exude into these parts any other substance than what they ought to carry, according to the primitive laws of organization. The various periods of the natural ossification seem to differ from those of the preternatural; the latter does not seem to be obliged to go through a series of states which succeed one another regularly in the various stages of the natural ossification. The hardness of cartilage cannot assume a mucilaginous state

which previously existed, and the solidity of bone does not follow from the gradually more complete solidification of cartilage, but from a deposition of an osseous substance entirely independent of a previous cartilaginous state. What I shall have an occasion to offer in the following paragraph, will farther elucidate the preceding remarks.

Most authors who have pointed out the ossification of the sero-fibrous parts of the heart, have designated, under the name of *stone*, the result of this change, and perhaps they have assigned to such concretions the most appropriate term. Hence, in the natural ossification the bony matter is deposited in the elementary tissue, even of the fibres, which then become actually osseous; but the converse is in preternatural ossification, which seems to be rather a deposition, an incrustation of calcareous matter, since it is not in the elementary part even of the fibres that this substance is deposited, but rather in their interstices, and often upon the surface of these fibres, upon which the osseous matter was merely fixed or deposited. Let this ossification be either internal or external, its surface is generally lamellated, granular, or rugous, resembling, as I have said, far more a deposition of calcareous substance or often an imperfect crystallization, than a regular ossification. This peculiar state belongs probably to the circumstances accompanying the mechanism of preternatural ossification. Calcareous phosphat, carried by the vessels, and deposited in the sero-fibrous parts, being more equally, and uniformly distributed, would unquestionably form a smoother, more compact, and regular ossification.

It is evident, therefore, that we can easily distinguish two varieties of preternatural ossification of the sero-fibrous parts of the heart, which do not differ from the nature of the matter which constitutes them, since it is found the same, but in the manner in which the deposition of this substance is formed.

The first variety is the incrustation of the cellular or fibrous parts, from the calcareous matter which is deposited in their interstices. The ossification, in this case, is constantly covered by the inner membrane of the heart ; but on dissecting subjects, it can scarcely be touched.

To give a clearer idea of the second variety, it may be said to resemble an irregular crystallization ; then the inner membrane of the heart never covers the protuberance which always obtains.

The first is formed slowly ; the second is formed with some rapidity ; as the varying progress, of certain diseases of the heart, seems to indicate, in which such osseous depositions are generally found.



ARTICLE II.

OF THE INDURATION AND OSSIFICATION OF THE WHITISH BANDS, SITUATED ROUND THE ORIFICES OF THE AURICLES AND VENTRICLES.

SECT. I.

Constriction of the orifices of the auricles and ventricles in general.

THE white bands round the orifices of the auricles and ventricles often become the seat of a cartilaginous or osseous induration. Each of these states has been frequently observed, of which I gave several examples under the article of aneurism.*

The most interesting light in which these indurations can be viewed is the constriction which they generally occasion on the orifice affected. The formation of this constriction is easily explained by the indispensable swelling of the fibrous bands surrounding the orifices, a

* See cases XV, XVIII, XXII and XXIV.

swelling produced by the deposition of a foreign matter in these parts, without a removal of any other substance which was previously found there. The same cause that produces the swelling, must determine at the same time the contracting of the fibres by separating them from one another ; hence the constriction often observed, united to the swelling whose cause I have just indicated, frequently produces nearly a complete obliteration of the several orifices. I have frequently seen these constrictions extended so far as to be surprising that the thread of blood to which a sort of cleft instead of an orifice gave passage, was sufficient to furnish a circulation capable of supporting even a feeble existence. The tumor which induces the constriction is sometimes smooth, polished, and cartilaginous, as a model of it may be inspected, which I have deposited in the cabinet, of the School of Medicine in Paris. In other cases, this same tumor either cartilaginous or osseous, is surmounted by irregularly figured tubercles, resembling very exactly vegetations. It is common to find this constriction caused by a deposition of calcareous matter that is unequally made upon the surface round the orifice.

When speaking of aneurisms of the heart, I considered the constriction of the orifices among the principal causes of these affections. I have dwelt sufficiently upon the present subject, to dispense with referring to it in this article ; but a question arises which I have not yet treated, and which it is expedient to examine, viz. whether the constrictions of the orifices always precede aneurisms, or be sometimes only subsequent to dilatations of the heart.

I have often observed aneurisms of the heart, without a constriction of either of its orifices ; in these cases, the obstacle, the exciting cause of the dilatation, was evidently situated farther in the current of circulation. It is demonstrable that total or partial aneurism of the heart, is separable from the constriction of one of its orifices.

But can the heart be free from dilatation, when a marked constriction of one of its apertures exists? I think it can very seldom happen, particularly when the constriction is much increased; which proves that its formation is old, and its effects must have already been produced, which have terminated in the dilatation of the heart.

The enlargement of the right cavities, produced by the blood which is accumulated near dissolution, is a phenomenon which, without being perfectly analogous to the present, favors, however, the opinion which I have given.

After either active or passive aneurism has been excited by any other cause than a constriction, is it clear that this constriction can be formed in the heart already *aneurismal*? I think this must happen very rarely. A cartilaginous or osseous induration about an orifice, may obtain in this case; yet it must be rather accompanied by an actual dilatation of the orifice, than by its constriction. In fact, I have often seen the induration of the fibrous bands in a state even of manifest dilatation of the communicating orifices which they surround; but, as I made it appear above, that a dilatation existed most probably before this ossification, and the evolution of this morbid state, will have, as well in this case, as in the first, produced secondarily a constriction which, on account of the considerable pre-existing dilatation, has left the diameter of the orifice greater than natural.

SECT. II.

Constriction of the orifice of the left auricle and ventricle.

OF the two orifices of the auricles and ventricles, the left becomes more frequently the seat of induration and ossification; here such morbid changes are observed to be more completely formed. It is pretty clear that the

cause of this extremely frequent lesion of the left orifice is formed in its fibrous organization being more unfolded, which renders it more liable to receive the matter, that must transform it into cartilage or bone.

To the cases already cited, of the constriction of the left orifice, I will add another which exhibits striking peculiarities in the progress of the disease.

Case XXXIV. A forger, twenty years of age, of a very strong constitution, and sanguine temperament, entered the Hospital of la Charité, June 4th, 1792.

He said, he came on account of a dysentery with which he had been attacked since the winter, and that he had passed much blood by stool. That he was never attacked with any other disease; though he was liable to frequent hemorrhages from the nose, an inconvenience, he said, common to all his family.

After about ten or eleven months, the patient could perform no violent exercise, without feeling a stricture in the chest, and very strong palpitations in the region of the heart. The nasal hemorrhages subsided three months before his entrance into the hospital. Then the palpitations more frequent than ever, became also more violent, yet without incommoding very much the patient. He complained of nothing but the dysentery.

When I saw the patient, I suspected an organic lesion of the heart, and announced, two days after, his state, in a clinical consultation which I then held. The following is what he presented most singular.

By laying the hand over the region of the heart, lively, very quick, and irregular palpitations were felt. He could not lie on the back without suffocating; he lay very willingly on the left side; he often started out of sleep, and said he felt quick concussions in the body. The pulse was irregular and sensible in both arms; the pulsations were frequent, strong, feeble, increased; there were very irregular intermissions; in short, the pulse was so variable that it is difficult to render its character intelligible.

The disease being once known, it was easy to establish the prognosis as to the intensity of the symptoms; this was inevitable death. I omit the description of the treatment, which consisted of small bleedings, mild diuretics, antipasmodics, and other palliatives, the inefficacy of which I had previously pronounced.

The progress of the symptoms was soon very rapid, and the patient was confident from what he suffered, that he carried in his bosom the cause of his death. The suffocation which had continued for some time, became more and more quick; the lower extremities were considerably infiltrated; violent delirium intervened, and lasted nearly twenty-four hours; an extraordinary chill seized the extremities of the patient. He died the 29th of June, twenty-five days after his entrance.

The corse was generally infiltrated. A little serum was effused into the cavities of the chest. The lungs were sound; the pericardium included a little water. The heart was very large; all its cavities were turgid with blood.

The right auricle and ventricle were in their natural state, except the enlargement of their capacity, and the proportional enlargement of the opening from the one cavity to the other.

The left auricle was dilated. The communicating orifice of this auricle with the left ventricle, was unusually constricted, and formed a sort of osseous cleft through which a thin piece of money could scarcely have passed: the part of the mitral valve, adapted to the orifice of the aorta, was applied but very irregularly.

The great vessels presented nothing remarkable. The foregoing organic lesion was evidently the cause of the enlargement of the heart, and of the death of the patient.

It is manifest that the dysentery of which he complained, was not real, but the effect of plethora, induced more particularly on the vascular and venous system of the abdomen. The plethora may be easily explained. The left cavities of the heart were badly emptied, con-

sequently, the right cavities were badly filled. The blood of the venæ cavæ was accumulated; hence the sanguineous engorgement of the hepatic vessels, so frequent in the diseases of the heart; hence the hypogastric venous plethora; hence the intestinal hemorrhage, but not the dysentery.

The excessively sanguine temperament of the patient was peculiar to all his family; he was liable to epistaxis. Ten or eleven days before his death he could not perform any unusual exercise without palpitations. The epistaxis ceased, the palpitations increased, the dysentery supervened; was it more proper not to call a discharge of bloody stools a dysentery, which, otherwise, were attended neither with intestinal pain, tenesmus, nor any symptoms peculiar to this disease?

SECT. III.

Constriction of the orifice of the right auricle and ventricle.

THE orifice of the right auricle and ventricle is usually free from cartilaginous or osseous indurations. It is not, however, totally exempt, according to the opinion of the illustrious *Bichat*, given in his *Anatomie generale*. He advanced that, from the result of the observations made à l'Hôpital de Clinique interne de l'École de Paris, the orifice of the right ventricle, tricuspid valves, pulmonary sigmoid, and the organ of the pulmonary artery, were never attacked with cartilaginous or osseous indurations. The author, moreover, so fertile in his elegant physiological conclusions, yielding to the desire of pointing out striking characters to prove a natural difference between the common membrane of the vascular system with red blood, and of the vascular system with black blood, has gone too far; he might have been satisfied with saying that a cartilaginous or osseous induration of these parts has seldom been observed.

There may be seen, in the cabinets of the School of Medicine in Paris, a remarkable example of the model of the cartilaginous induration of the communicating orifice of the auricle of the venæ cavæ with the right ventricle, (as it was before observed, Sect. I. p. 162.) Here is another case of the same kind, to which I could have added several similar.

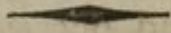
Case XXXV. A hostler, aged sixty years, of a sanguine temperament, had occasionally been subject to different affections of the thorax. When he came to the Clinical Hospital, he had been troubled with a cold more than a year, and thence he felt palpitations in the region of the heart which did not sound when struck. February 10th, 1800, he entered the Clinical Hospital in a condition that indicated the near approach of death. The leading symptoms were the swelling and purple color of the face, lips, and neck; respiration extremely difficult; the strokes of the heart much extended, were performed with some irregularity. The pulse was irregular, not coincident with the strokes of the heart. His ideas were immediately confused; a lethargic drowsiness soon after followed; then the pulse became slow, small, and irregular. He died the 13th of February, the third day from his entrance into the hospital, and a year from the appearance of the first palpitations. On the first day I announced both the kind of disease, inefficacy of medicine, and the proximity of the patient's death.

On dissection, the face was of a purple blackish color, the lungs large, adhering on every side to the inner surface of the parietes of the thorax. The heart was of an uncommon size, which depended particularly on the enlargement of the right auricle; the tricuspid and mitral valves had become cartilaginous, especially at their base, which diminished the diameter of both orifices. The pericardium contained a small quantity of serum.

The dilatated aorta exhibited, on its internal membrane, some points of ossification,

These are not the only known facts; *Morgagni* (Letter XLVII, art. 16) says he has made a similar observation.

As to the alteration of the orifice of the pulmonary artery and its sigmoid valves, I shall prove hereafter that there has been no more foundation for denying the induration of these parts, than of those just examined.



ARTICLE III.

Of the cartilaginous or osseous induration of the valves of the auricles and ventricles.

WHEN the extent of the several orifices is found in the morbid state just described, the tricuspid, or mitral valves, usually partake more or less of the same alteration. The induration of these valves is sometimes observed, without finding on the same subject the fibrous circles of the orifices in the same morbid state. There are yet circumstances where the affection is not confined to the fibrous circles and valves. The tendinous cords, arising from the columnæ carneæ, are inserted into the loose edges of the valves, and are, as well as the valves, exposed to ossification. Many facts of this nature are recorded among my cases.

In one of the cases of which I am speaking, the same affection extended farther, as one of the principal columns of the left ventricle was entirely ossified; so that, in this subject, the column, valvular tendon, and valve itself, formed one continued osseous body.

I have often observed the mitral valves in the thickening state; and frequently become cartilaginous or osseous. These different states induce in these membranous tissues a singular appearance.

When they are ossified, they seldom form a lamina, hard, smooth and continued, in the whole extent of the valve; on the contrary, it is a hard body formed by sev-

eral indurated, ossified points, which are commonly united by small semi-cartilaginous and semi-osseous laminæ; the calcareous substance which constitutes them seems to have been simply and unequally disposed between the two laminæ of the internal membrane of the heart, which form principally the auricular valves.

Most of the old anatomists admitted in the tissue of the valves, tendinous fibres, very irregularly distributed, but united in greater number both at the base of these same valves, and at the part of their loose edges, corresponding to the tendinous threads of the columnæ carneæ. The unequal distribution of the calcareous phosphat, in cases of ossification of these parts, and its deposition being made more particularly at the base and toward the edges, would seem to confirm the truth of this anatomical arrangement, so difficult to substantiate by dissection.

The points of the valves in which the old anatomists thought they formed a certain number of tendinous fibres, are such as become most frequently the seat of these incrustations; it is common, indeed, to find in the middle of the valves certain indurated, cartilaginous, osseous points: but there, they are usually smaller, and more limited, yet toward the base and loose edges they are already larger, better defined, and united so as to form a continued, unequal, osseous body.

The mitral or tricuspid valves, thus indurated, may preserve very nearly their natural form and extent, or undergo a sort of retraction by shortening, which gives them the form of an unequal, semi-osseous, semi-cartilaginous tumor, situated about the auricular orifice. I have often observed both of these dispositions; but, in every case, the valves either extended, or turgid and retracted, close the greatest part of the orifice of the ventricle. This imperfect obliteration obtains particularly when, beside the alterations just mentioned, the loose edges which form these valves, are agglutinated and united, as I have often observed.

In one of the cases in question, the union of the mitral valves, and the obliteration resulting from it, were such that a body of the size of a writing-pen could not be introduced into the orifice. In another, the aperture was scarcely three lines in diameter, and the blood, when passing it, was obliged to take a lateral direction, on account of the obliquity of the tube resembling the carotid canal of the *os temporale*, which was formed by the mitral valves being thickened, deranged, and united.

It has been previously noticed that the osseous substance was most usually deposited between the two membranous laminæ which principally constitute the valves. Yet one meets with cases where, by passing the finger over the indurated, ossified part, he immediately touches little osseous points or asperities. Then the internal membrane, naturally, very limited, was lacerated by the sharp edges of the little osseous laminæ which the contractions of the heart must cause to act incessantly on one another, or lacerated by the accumulation of the matter deposited between the laminæ of the valve.

The mitral valves have much oftener, than the tricuspid, been found in the morbid state of which I am speaking. But if one seldom meets with the ossification of the valves of the right ventricle, it does not follow that we ought to affirm that it never happens; for, beside my own cases, I have already given two more, the one *Case XXXV*, (p. 167,) the other taken from *Morgagni*, who relates that a woman, aged forty, had the valves of the right ventricle indurated and semi-osseous; a third will be added in the appendix to this class.

I advanced, under the article of aneurisms, that the constrictions of the different orifices of the heart were one of the frequent causes of these affections. When having treated of the constrictions which obtain very often at the mouth of the aorta, and sometimes at that of the pulmonary artery, I shall point out their symptoms.

CHAP. II.

Of the cartilaginous or osseous induration, of the semi-lunar, or sigmoid valves.

OF all the lesions, the most frequent to which the heart is exposed, is the cartilaginous or osseous induration of the sigmoid valves of the aorta. This morbid state is differently exhibited; sometimes the induration being quite regular is not attended with any considerable condensation; but these valves have generally undergone some derangement, the osseous matter having been unequally deposited between the two laminæ by which they are formed. This accumulation of osseous matter obtains principally toward their base. It is common to see this induration form a continued circle, corresponding to the base of each of these valves; so that by raising this osseous circle, it would be possible to remove at the same time the three morbid valves. The base is not the only part where the induration and swelling are often noticed; the little tubercle, seen at the middle of their loose edge, acquires, in many cases, a greater size than what is natural; or, more properly speaking, it is succeeded by a point of ossification, whence the osseous induration seems to arise, and to be spread over the whole extent of the loose edge of the valves, which retract and shrink in proportion as the swelling of this edge advances.

Whatever be the part of the sigmoid valves which has undergone this change, the position they invariably preserve on account of their induration, is different. They may either be found applied against the parietes of the artery, which is extremely rare; or they may remain depressed, which is the most usual.

The indurated valves remain against the parietes of the vessels, only when the size of the swelling has induced the shrinking or retraction, pointed out in this

article, otherwise they continue permanently depressed and immoveable.

The principal effect of each of these morbid states, is to produce constriction, or imperfect obliteration of the mouth of the aortic or of the pulmonary artery. The aortic sigmoid valves are more frequently found changed in this manner; the pulmonary sigmoid are so very seldom. I have observed some instances in which the change was slightly marked. *Morgagni* saw in a girl of sixteen years, sick from her birth, the valves of the pulmonary artery, so ossified, swollen and united, that their agglutinated edges hardly left an opening of the size of a lentil, for the passage of the blood. Others have also noticed this morbid state.

The constriction, or imperfect obliteration of the aortic mouth, has often occurred to my observation; but in these different cases, the disease had run through various stages, from a constriction scarcely perceptible, to nearly a complete obliteration of the aperture of the vessel.

The following case gives the most complete and singular example that I know, of these constrictions induced by the alteration of the semi-lunar valves.

Case XXXVI. A washer-woman, aged seventy-three years, entered, May 14th, 1803, the Clinical Hospital. She had always been in bad health, when at the age of sixty-seven, she experienced while walking such difficulty of breathing, that she was obliged to stop instantly. This first attack was accompanied with palpitations of the heart. The symptoms did not become alarming until the expiration of eight months when the infiltration of the extremities was so great that she was compelled to relinquish her occupation. When she entered the hospital, her countenance was livid, eyes weeping, as well the inferior extremities, as the arms, hands and abdominal parietes, were infiltrated. She suffered frequent nausea. Respiration was high, short, and interrupted; palpitations were often renewed; the chest when struck did not

sound in the region of the heart ; the pulse was quick, very weak, and irregular. What more was necessary to manifest the organ affected, and the alarming nature of the disease ?

Thirteen days after her entrance into the hospital, she, whose disease during this time had advanced rapidly, died apparently suffocated.

The countenance of the corse was unequally black and livid, the cerebral organs were sound, the lungs tender and infiltrated, and a small quantity of water in the two pleuræ. The pericardium contained nearly half a pound of serum. The heart appeared not much larger than natural. The right ventricle was tender and soft to the touch.

The left, on the contrary, opposed to pressure such elasticity and resistance, that the parietes of this cavity immediately resumed their usual state ; the substance of the left ventricle was of so firm a consistence, that it preserved nearly a cylindrical form, which was covered, on the one part, by the pericardium ; on the other part, which corresponded to the partition, projected into the right ventricle and occupied most of its cavity, whose fleshy parietes were fifteen lines in thickness.

The left ventricular orifice was furnished with several rough osseous points, which, united near the partition, formed a very considerable nucleus.

The mitral valves were indurated only in their points of contact with the partially osseous circle of the ventricular orifice. The mouth of the aorta appeared not constricted, but the semi-lunar valves, from their arrangement, nearly stopped their aperture.

These valves were not only indurated, and ossified, but thickened in such a manner, that a calcareous substance was deposited between the two membranous laminae by which they are formed. The osseous hardness which they had acquired, fixed them in a depressed state ; their loose edges approached so as to come in contact, and obliterate entirely the aperture of the ves-

sel. The blood, flowing from the ventricle, would have had but a very narrow cleft, had not one of the valves, though greatly ossified and thickened, still preserved near its base sufficient power to execute a species of elevating and depressing motion which increased one or two lines at most the opening left for the circulation.

The parietes of the right ventricle had acquired neither consistence nor preternatural thickness. The auricles were not sensibly larger than usual: but their parietes were so weak, that, in several points, they were transparent, and were lacerated with the greatest facility, on being separated circularly from the base of the ventricle.

The several cavities of the heart were distended by black blood, half fluid, and half coagulated.

When it is considered how narrow the opening is, which these constrictions leave, it is difficult to conceive how such an organic derangement can continue for years. It is evident, if such an obstacle to the circulation, were suddenly introduced into a healthy subject, death would immediately follow; but as these obstacles are slowly formed, the circulation is gradually impeded, and nature seems in some measure to be habituated to such a perversion of her laws.

The induration of the semi-lunar valves is subject to too great a variety of form and figure to render it possible to describe them all in this place. What has been said of some of these dispositions may induce one to anticipate the nature of the others. In most cases, the inner coat of the aorta, either above or below the valves, partakes more or less palpably of the principal affection. I have often seen an unequal induration extended to the origin of the vessels which form the aorta ascendens.

Before speaking of the signs of the constrictions of the different orifices, I think it necessary to treat again of the valvular vegetations, as they contribute to obliterate these orifices, and introduce into the signs of their obliterations, differences, and particular characters which ought to be understood.

CHAP. III.

ARTICLE I.

Of the vegetations of the valves of the auricles and ventricles.

UNDER the denomination of vegetations, I do not mean to speak of the eminences, or osseous asperities, but of actual excrescences or soft vegetations, whose nature would be entirely unknown, did not a perfect resemblance to venereal excrescences,* and certain approximations made from a number of observations, lead us to think that they might be syphilitic. Why then do we hesitate to believe that the venereal virus from its protean nature cannot attack organs, which seem, by their situation, to be secure from such attacks? Why not think that this virus can extend its destructive influence to the heart, or any of its parts? Is it more difficult to believe that venereal vegetations can be formed on the valves of the heart, than on the very delicate skin

* *Lancisi* mentions, (says *Scarpa* on Aneurism) that hypochondriac and scorbutic persons, hysterical women, and those who have been affected with *lues venerea*, are particularly predisposed to the ulceration and disorganization of the proper membranes of the artery. *Morgagni* has made the same remark. A great number of observations on this subject have successively confirmed this fact, and likewise demonstrated, that patients affected with *lues venerea* are much more frequently than others affected with a *steatomatous ulcerated* degeneration of the internal coat of the arteries. So great a disorder as the ulceration of a large artery ought certainly to be preceded by a state of disorganization, or of excessive relaxation of the artery, more particularly in the part corresponding to the seat or root of the aneurism, since aneurisms are observed to arise in persons, in whom it is impossible in any way to trace the origin to external violence applied to the artery, or to an increased impetus of the blood circulating in it. If the force of the circulation were capable of rupturing a great artery, aneurisms would be frequent in consequence of acute and violent fever; and if a general relaxation of the whole body occasioned the rupture of arteries, aneurisms ought to be very frequent in dropsical patients, in those predisposed to paralysis, &c.—T.

of the glans, of its little lips, of the inside of the prepuce, of the inside of the mouth, &c. and to admit obstinate and chronic head-achs, pains in the bones, and exostoses, of which the venereal cause and nature are acknowledged by all practitioners, and proved by the efficacy of the anti-syphilitic treatment used for the cure of such affections ?

Although five other cases analogous to those which I shall immediately relate, follow in support of the preceding suspicion, yet I do not think that I have collected a sufficient number of facts, to be able to assert any thing positive as to this subject ; but if we could acquire any positive knowledge of the venereal nature of these vegetations, whose diagnosis can, in some measure, be known, could we not, the venereal cause being given, attempt the use of anti-venereals, and obtain by these means, if not a radical cure, at least a palpable diminution of the morbid symptoms ?

It is believed, from these different considerations, that the history of the private life of the patient might teach us the nature of the organic affection which we must treat, and ever point out the most suitable means for its cure.

The case which furnishes the most decided example of such vegetations, has been already published in the *Journal de Med. Chirg. et Pharm.* (Brumaire, an. 9.) The following are the principal circumstances.

Case XXXVII. - A quarry-man, aged thirty-nine years, of a robust constitution, but very intemperate, exposed, by occupation, to the vicissitudes of heat and cold, suffered, at the age of twenty years, rheumatic pains, which impaired his health but for a short time.

About the 22d of November, 1800, he was attacked with peripneumony, which was, to appearance, well cured ; after his convalescence, he was, however, harrassed by an obstinate cough and pain in the right hypochondrium ; to these symptoms were soon after joined, hoarseness, vomitings produced by the violence of the cough,

and paroxysms of fever in the evening; in short, swelling of the extremities. Having left the Hospital Cochin, where he was treated for the peripneumony, he entered the Hotel-Dieu, but he departed immediately for the purpose of entering the Hospital of la Charité, which he soon quitted, and into which he was again received, June 9th, 1800. All the animal functions were benumbed; he scarcely answered the questions which were asked him; the features were altered, the countenance grown old, pale, yellowish and bloated; we saw on it some red and livid spots; the lips were injected; he could lie only on the right side; the thorax when struck sounded nearly the same in the region of the heart as in every other part. He pretended that he had felt no palpitations. The hand laid over the region of the heart felt no irregularity in its strokes, which might rationally be attributed to the considerable œdema of the parietes of the thorax. The abdomen was tense, hard, and the epigastrium painful. The liver was ascertained by the touch to be swollen and indurated. The legs were quite œdematous; on which were seen many little spots; a discharge of decomposed blood was made by the anus. The pulse was frequent, small and irregular.

The very dull sound of the region of the heart, the character of the pulse, dyspnœa, color of the lips, expression of the countenance, sanguineous engorgement of the liver, generally accompanying the diseases of the heart, induced me to suspect a lesion of this organ. The prognosis was that the patient must die soon. Medicine gave no relief. The two first days after he entered the hospital, he raised a small quantity of blood; he was much debilitated, and the 12th of June, seven months after the attack of the peripneumony, he died when asking for drink, without a symptom of distress.

On dissection, the habit of body was yellowish, œdematous, and covered with little spots, as if scorbutic, which took place upon the legs during life. The countenance was injected.

The chest sounded perfectly in the upper, but very obscurely toward the lower part occupied by a portion of the liver. On the left side, the sound was very natural. The region of the heart was more sonorous than usual, when this organ is considerably increased in size. The abdominal parietes were distended by gaz. There was a certain quantity of yellowish serum in the left cavity of the thorax.

The lungs were generally sound, crepitating, and soft, except in the back part of the right lung, which was indurated in a single point.

The pericardium contained a little water. The heart was somewhat larger than natural; at its anterior surface there was a white spot; a spot of the same nature was seen posteriorly. The several cavities of the heart were more gorged with blood, than they are seen in consequence of diseases in which the circulating system has not been deranged.

The large portion of the mitral valve, which lies before the orifice of the aorta, held no longer by the tendinous threads to the columnæ carneæ in which these filaments terminated. At its edge, become loose, many species of very irregular and long vegetations were appended, imitating certain venereal excrescences, which appeared to be particular degenerations of the tendinous filaments, detached from their columnæ carneæ. One of these columns presented two soft portions of these filaments, without leaving a vestige of the other tendinous filaments either ruptured or detached.

One of the semi-lunar valves exhibited at the middle region of its surface, corresponding to the axis of the artery, very strong vegetations, perfectly similar to those of the mitral valve.

An extent of nearly an inch square from the left portion of the auricle, to the orifice of the ventricle, was granular and rough to the touch, and offered in miniature the degeneration which had been found both in the

great portion of the mitral valve, and in one of the semi-lunar valves of the aorta.

There was much water in the thorax ; the liver was hard ; the stomach erythematous.

On examining the organs of generation, the head of the glans discovered very deep scars from chancres. It appeared that one of them was not perfectly healed.

To the foregoing case, I think it necessary to join a second, doubly interesting, since it gives a new example of the valvular vegetations, and proves, besides, that the valves of the right cavities are, though more rarely, exposed to all the affections which are noticed upon the same parts on the left side.

Case XXXVIII. A woman, aged twenty-three years, had been, from infancy to puberty, subject to frequent bleedings from the nose, and to an incessant cough. At the age of ten, she was attacked with a hemiplegia of the right side. At fifteen, she was regular for the first time ; but the discharge was immediately suppressed by a sudden chill which she experienced when she was in a sweat. This accident excited likewise an inflammatory affection of the chest, which was treated by numerous bleedings, by which the patient was but imperfectly recovered. Her convalescence continued three months, and from this period to her entrance into the hospital, she was troubled with an almost continual pain below the right breast, difficulty of breathing, incessant cough and an expectoration of a bad character. At twenty, she took a gonorrhœa, for which she in vain used many remedies, because she was affected with it when she entered the hospital.

A strong emotion of the mind, happening some time after parturition, had induced convulsions difficult to relieve by bleedings, baths, and antispasmodics ; when menstruation was again suppressed ; then followed suffocations and palpitations ; she became quite emaciated ; her countenance, at first florid, grew pale and livid. From this time, all the symptoms were more and more

alarming, and when she entered the hospital, to the preceding symptoms were joined a burning heat in the palms of the hands, without night sweats, a fixed pain in the forehead, and inexpressible anxiety; her sleep was interrupted by starting; we felt in the region of the heart tumultuary motions; she expectorated blood unremittingly; she vomited whatever nourishment she took. She could remain in her bed only when in a sitting posture, with her body bent forward; her pulse, while she continued in the hospital, was always intermittent, unequal, irregular, sometimes tremulous, and indescribable.

The character of the disease was fixed. The collection of the symptoms left no doubt in my mind of the kind of lesion.

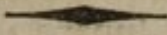
The prognosis was hopeless; yet she experienced, on the first days after her entrance into the hospital, an amendment, which soon disappeared. The disease became every instant more serious, until the death of the patient, fifteen days after her entrance into the Clinical Hospital.

On opening the body, I saw that the emaciation was very evident, notwithstanding the general infiltration; the countenance was pale and lean. Percussion of the thorax caused a very distinct sound to be heard in all its parts. The right lung adhered slightly to the pleura. Its substance, in consequence of the peripneumony, was indurated, engorged, similar to that of the liver; it contained internally several tubercles. The left lung, though diseased, was not however so bad as the right. The heart appeared to be little larger than natural; it adhered to the pericardium in nearly its whole extent; these adhesions were stronger toward its anterior part, and a little above the apex. The cavities of the organ had suffered no dilatation.

The left orifice of the auricle and ventricle was constricted, hard and cartilaginous. The mitral valves and semi-lunar of the aorta were covered with vegetations

exactly like venereal warts observed upon the glans and prepuce of persons affected with syphilis.

The orifice of the right auricle and ventricle was not constricted ; but its valves, as well as the sigmoid of the pulmonary artery were covered with as many vegetations as the same parts on the opposite side.



ARTICLE II.

Of the vegetations of the semi-lunar valves.

I HAVE had many opportunities of observing upon the pulmonary and aortic semi-lunar valves, the same vegetations or excrescences that I have noticed upon the valves of the ventricles. To the two cases inserted in the preceding article, where it must have been seen that these excrescences obtained both upon the aortic and pulmonary valves, I will join the following.

Case XXXIX. A water-carrier, aged thirty-three years, entered, July 13, 1797, the Clinical Hospital. He had, for a very long time, been subject to fits of palpitation and dyspnœa, which supervened, especially when he ascended an eminence or walked hastily. But at the time of his entering the hospital, for eight days the symptoms had assumed so alarming a character that he was every instant threatened with suffocation.

The 13th of July, the day of admission, his countenance was altered ; the legs, feet and hands were infiltrated ; respiration was excessively difficult, cough fatiguing, expectoration profuse and pituitous ; the strokes of the heart were tumultuary ; from precussion no sound issued from the region of this organ ; the pulse was frequent, a little hard, unequal and quite irregular.

The patient died, in extreme anxiety, after having been in the hospital five days.

On opening the thorax of this subject, the heart was found very large. The different communicating orifices

between the auricles and ventricles, appeared large, and rather dilated than contracted. The semi-lunar aortic valves were fringed, as if corroded, and surrounded with vegetations, like venereal excrescences.

The lungs were sound, and the thorax contained but a very small quantity of water.

In another subject, who died of a disease of the heart, I observed the three semi-lunar valves of the aorta united together in such a manner as to form but one. The loose edge of this valve was surmounted by certain vegetations very similar to those already described.

ARTICLE III.

Of the signs peculiar to the constrictions of the orifices.

THE cartilaginous or osseous induration of the orifices of the auricles and ventricles, of the mitral and tricuspid valves, of the aortic and pulmonary semi-lunar valves, and the vegetations, growing upon either the ventricular or arterial valves, tend principally to produce a more or less complete constriction of the orifices affected.

When these constrictions exist, the circulation is embarrassed, and its phenomena singularly perverted. By observing the disorder of the circulation, the practitioner may find, in the living man, I should presume, certain signs of this species of affection.

To point out with accuracy these signs, it is necessary to make a distinction between the different affections of which I have been speaking : 1st, those which produce a permanent obliteration of the orifices ; 2d, those which form this constriction but momentarily.

In the first rank, must be placed the indurations, and ossifications of the circles and ventricular valves, as the effects of this permanent morbid state are the same in

every instance, and are ever perceptible to the practitioner. In the second, must be placed the vegetations, or excrescences which are noticed upon the ventricular and sigmoid valves, whose presence is known only at intervals, when these bodies, generally floating in the cavity of the ventricle, or vessel, appear at the orifice, and edge where their base is fixed.

The signs of constriction are commonly the more obscure, as the constriction is the more remote from the beginning of the general arterial system, because it is by considering attentively the derangements which obtain in the action of this system, that the knowledge of the signs is acquired. I will explain myself: the constrictions which are formed by the ossifications surrounding the orifices or valves of the right heart, as well as of the pulmonary artery, appear very difficult to comprehend on the living subject. Where can we, in short, discover the signs proper to make them understood? The regular or perverted action of the right cavities of the heart are barely made sensible in the organs subordinate to the influence of the less circulation; likewise the disorder of the action of the left heart can be comprehended only in the nature of the arterial pulsation, or what amounts to the same, in the phenomena of the greater circulation.

Could we examine the pulsations of the pulmonary artery or its branches, as we do the pulsations of the aorta or its branches, we should recognize with equal ease, both the constrictions of the orifices of the right heart, and the same lesions when they obtain in the orifices of the left cavities; but such an investigation is impossible, and we are obliged, in this case, to examine the state of the lungs. Now, is it known, or shall we be ever able to know what disorder, or rather what modification respiration will undergo, when the lungs, from a constriction either of the ventricular orifice of the right side, or of the mouth of the pulmonary artery, will receive a less quantity of blood than what ought naturally to be

conveyed to them, and upon which respiration exercises its vivifying influence? It is supposed that a particular modification of respiration must furnish the signs which I am endeavoring to discover; but such a modification is not sufficiently prominent, and striking, or rather we are not endowed with sufficient understanding, to recognize such a peculiar modification of respiration among the multitude of signs which this function evinces in the different affections of the lungs.

If we cannot comprehend the signs of the constrictions of the right orifices of the heart, can we expect to be more successful in a particular change of the phenomena of the greater circulation? The influence of one of the two circulations over the other is such, that, the one being disordered, it is impossible for the other not to partake of the disorder. But what can be the peculiar nature of the disorder which must exist? I doubt whether observation gives the practitioner a diagnosis subtle enough to discriminate the alteration of these orifices in the particular disorder of respiration, unless he be assisted by all the concomitant signs.

By reasoning physiologically, it may be advanced that the small quantity of blood conveyed from the right cavities of the heart, into the lungs, thence into the cavities of the left heart, and filling these cavities partially, will stimulate them imperfectly; that from this insufficient stimulus will arise feeble and slow contractions which will induce debility, softness, and slowness of the pulse, &c. But, in this case, as in various others, to how many gross mistakes, would not he be incessantly exposed who should so restrict the morbid phenomena to the opinions of physiology, and who should always find in these too often hypothetical opinions, the knowledge of the phenomena which are to characterize any such affection! How often does not clinical observation overturn such theoretical speculations, as it will subvert sooner or later many others, whose foundations appear as unstable as those too frequently established by the spirit of innovation!

Therefore the collection of a great number of symptoms would be necessary to elucidate the diagnosis of the constrictions of the right orifices; the countenance must appear of a livid hue, a more marked engorgement of the general venous system, and particularly of the liver, the size of this organ increased, the dyspnœa greater and longer continued, all the signs, in fact, which can point out the affection of the right cavities, which are usually dilated in consequence of constrictions of the right orifices, are joined to the character of the pulse, which, in this case, is less irregular than in the constrictions of the left orifices, but less regular however than natural.

The obscurity, involving the signs of the constrictions of the right orifices, is not entirely dissipated, when it is requisite to recognize the imperfect obliteration of the left auricle and ventricle. Beside the general signs of the diseases of the heart, which are ever found in this case as in the first, because an aneurismal complication generally obtains, some particular signs manifest the affections in question.

Of the preceding number of symptoms is a peculiar rushing like water, difficult to be described, sensible to the hand applied over the precordial region, a rushing which proceeds, apparently, from the embarrassment which the blood undergoes in passing through an opening which is no longer proportioned to the quantity of fluid which it ought to discharge. The same rushing is also recognized, though it is much less marked, by the hand that investigates the phenomena of the pulse. This character is not likewise the only one by which the pulse announces the existence of the contraction of the left orifice; it is effectually less regular than in the case of constriction of the right orifices, but less irregular than when the aortic orifice is deranged. Besides it presents neither impetus, hardness, nor fulness, because the quantity of blood which the left ventricle propels, is proportioned to what it receives from the auricle which is imperfectly emptied; moreover, the action of this ventricle cannot be vigorous, since it is feebly stimulated.

Notwithstanding the deficient excitement of the left ventricle, it must not be believed that in this case, the strokes and palpitations of the heart are continually weak and obscure. The right cavities, and the left auricle in particular, acquire very often a thickness and force which render the contractions extremely distinct; they may even become more violent in this case than in any other, as the strokes of the heart depend on the motion of the auricles which propels this organ, and the force of this motion of the auricles augments in proportion to the difficulty they encounter in driving the blood through their constricted orifice.

When the indurated and ossified semi-lunar valves of the aorta stop a portion of this vessel, the obstacle which they form breaks the wave of blood propelled by the heart into the artery; strong and frequent palpitations supervene, because the heart is easily filled, but is difficultly emptied; thence results a more protracted residence of the blood in the left cavities, a longer application of the stimulus of the blood on the parietes of the heart, in fact, a greater irritation of the organ. The pulse, in this case, may preserve a certain degree of hardness, and rigidity, but never much fulness or regularity. This continual irregularity, often increased by the frequency and force of the palpitations will always be sufficient to establish the precise diagnosis of the constriction of the aortic mouth, or the lesion of its valves. Here is no obscurity; the physician with practice and attention ought ever to pronounce with confidence, and his diagnosis can no longer be uncertain though he should have for a guide only this species of undulation, this rushing noise, dull trembling, the characters so manifest by the pulse in every case of this nature.

Case XL. A coachman, forty-eight years of age, robust, and of a sanguine temperament, had, three months before his admission into the hospital, suffered a very severe peripneumony, treated mostly by venesection. He was hardly convalescent, when he came to the hospital, May 28, 1800. I requested him to go into the

Clinical Hall for the purpose of examining his pulse, which indicated an organic lesion of the heart.

The pulse was very full, and even rigid, on the right side; small, soft, obscure and scarcely sensible on the left; but irregular, *undulating* and *tremulous* on each side.

He was attacked with hæmoptysis and very considerable suffocation; the suffocation appeared instant; the eyes were wild, the face injected; the thorax here and there painful did not sound toward the region of the heart and the lower part of the right side. The pulse preserved the same character.

From the effects of percussion, difficulty of breathing, hæmoptysis, and characters of the pulse, I recognized the existence of a hydrothorax which I judged to be subsequent to an organic lesion of the heart with constriction of the aortic orifice.

The patient, while he remained here, was bled several times, and obviously relieved, but greatly debilitated; an obstinate costiveness required the use of mild purgatives.

Sometime after the infiltration, which already existed, increased; diuretics, aperients, and anti-spasmodics, procured but very little relief. The patient had no rest, and was obliged to sit up night and day; when the hand was applied over the region of the heart, he was endangered with suffocation. He became a victim to this series of symptoms, 15th June, eight days after his admission into the hospital, and four after the peripneumony with which he was affected.

On opening the body, there was much water in the right cavity of the thorax, but little in the left. The lungs were hard and adhering to the pleura. The pericardium contained no serum; the size of the heart was much enlarged; the right auricle and ventricle presented nothing remarkable. The left auricle was sound, with a large orifice, upon the valves of which was observed an incipient ossification. The left ventricle was hard,

thick, and very fleshy ; the tendons of the valves were nearly ossified. The aortic valves were ossified and united so closely that the end of the little finger could scarcely be introduced into the orifice of the aorta ; this artery was dilated, rugous and thickened to the end of its curvature. The left subclavian artery was about an inch from its origin so constricted as scarcely to admit the head of a large pin. The constriction was owing to the osseous thickening of the arterial parietes.

The nearly complete obliteration of the left subclavian artery explains perfectly why the pulse was scarcely sensible on this side ; but this singular character could not obscure the diagnosis sufficiently demonstrated by the other symptoms, and particularly by the continual irregularity of the pulse.

To conclude what I have to say on the signs of the constrictions, it remains for me to speak of the cases where the obliteration of the orifice is momentarily produced by the presence of an excrescence, vegetation, or polypous concretion on this part.

When these vegetations are found appended to the mitral valves, they are announced by all the signs peculiar to the constriction of the left auricular orifice, with this exception, that most of these signs are reproduced, in this last case, only at intervals more or less remote. Though, during the contractions of the left ventricle, these appendages, constantly floating at the aortic mouth, continue applied against the walls of the vessel, their effects are then very nearly the same as those produced by the simple ossification of the semi-lunar valves of the aorta, and the constriction which this ossification occasions in the aperture of the vessel ; but do these excrescences, by their weight, or any other cause, compress the valves, and appear at the aortic orifice, during the contraction even of the ventricle, it is obvious that a momentary and nearly total obliteration of the aperture of the aorta will follow. This closure intercepts imperfectly, for some instants, the passage of the blood ; thence

the successive regularities and irregularities of the pulse, the frequent and partial syncope; this momentary interruption of the circulation compels the heart to redouble its efforts to surmount the obstacle that opposes it; thence the repeated strokes and violent palpitations of this organ which cease as soon as the obstacle is removed, and which are renewed when it is reproduced; thence the impossibility, sometimes very protracted, of feeling the pulse, while within an instant, these pulsations return with momentary force, vivacity, frequency and regularity.

I have nothing to say of the signs of the pulmonary sigmoid and tricuspid valves, as I have but seldom had the opportunity of observing them; besides, I think, as it has been already remarked, that, though this morbid state should be more frequent, it would be as difficult to indicate the particular signs of the kind of affection, as it is to distinguish the constrictions of these same orifices from those of the left cavities.

APPENDIX TO THE THIRD CLASS.

To pursue the plan which I have adopted, I ought to insert here the appendix to the third class, but as I find in authors no change of the fibrous parts with which I am individually acquainted, I shall dispense with enumerating observations which would be incapable of affording instruction.

FOURTH CLASS.

AFFECTIONS CONCERNING THE DIFFERENT TISSUES OF THE HEART.

ARTICLE I.

Of carditis.

CARDITIS is arranged in some works among the inflammations of the muscles : it is inserted in this class, as I think, contrary to the opinion of many authors, that this affection does not belong exclusively and individually to one of the tissues composing this organ ; but that it concerns in as palpable a manner, the muscular, serous and cellular tissues, which constitute the texture of the heart. Perhaps, was it necessary to decide which of the different tissues is found the most affected, I might advance that the cellular tissue is more sensibly and essentially injured than any other. I shall have in the course of this article, occasion to support this proposition by some facts of morbid anatomy which are my own, and by others which will be extracted from authors who have written upon this subject, to give more weight to my opinion.

Scarcely any disease of the heart is less known than carditis. Let one try to decide which is the real tissue affected, or to discriminate this affection from several others with which it may be confounded, from pericarditis, for example, and he is equally impeded by the obscurity which has ever prevailed, and still prevails in the discussion of these questions.

The serous membranes are generally so intimately united to the organs which they cover, that their affections concern mostly and reciprocally the tissue of the

organs. Hence, does peripneumony or inflammation of the pulmonary pleura obtain until its termination, without the substance or the different tissues of the lungs partaking more or less of the inflammation? This must be exceedingly rare; and in the cases where the inspection of the dead body can be advised, there is always found an extension of the disease to a greater or less portion of the pulmonary substance. As to the cases of cure, there is no certainty. Is the affection of the serous membrane, in peritonitis, ever perfectly separated from that of the other tunics? This separation of the affections of the different tunics, has, in our time, been extended much too far; the idea may be beautiful in theory, even great advantage may be derived from it in the study of science, but in practice, it does not lead to useful conclusions. Observation is far from always supporting these general propositions and exclusive rules. Before I give the cases of the disease of which I am treating, I cannot avoid a question that has often occurred to me in the course of my practice, but a sufficient number of cases has not enabled me to solve it.

Is the inflammation of the heart always very sharp and acute, or does it not sometimes affect an insidious, hidden progress, and which it appears, if not impossible, at least very difficult, to distinguish?

I have already said that a sufficient number of cases had not been collected to answer positively either of these two points of the question. Yet, did not the disease invariably affect an acute type, how does it happen that on dissection of some individuals that died of certain diseases whose cases I am going to relate, and whose diagnosis it is impossible to establish, how does it happen, I say, that, in such subjects, the heart is observed in a morbid state which denotes actually a previous inflammatory diathesis, when the disease has presented in its progress neither signs nor symptoms, peculiar to simple *carditis*? I am going, besides, to relate three of the cases which originated, in my mind, the doubt which I

expose here ; and contenting myself with pointing out the facts I shall leave observers the task of confirming or rectifying the opinion I have presumed to utter.

Case XLI. A shoemaker, sixty-seven years old, of a sanguine temperament, was, thirty years since, subject to dyspnœa which greatly harrassed him ; he had often been troubled with colds, but never felt any palpitations of the heart.

The 24th of April, 1803, having experienced greater difficulty of breathing, he felt a very slight pain in the middle and lower part of the left side of the thorax ; two days after he spit blood ; the 29th of April, the fifth day of the disease, he was admitted into the Clinical Hospital. Then he had a slight head-ach, his countenance was animated, eye sparkling, tongue whitish, respiration a little embarrassed, thorax here and there painful. He suffered no palpitation. The pulse was weak, irregular, intermittent, and unequal in both arms. The next day, April 30, respiration was more difficult, noisy, and rattling ; he felt much more pain in the thorax ; there was delirium, attended with extreme loquacity. In the morning, he rose often for the purpose of breathing, and went to the window ; he rose again at noon, and after lying down, he expired unexpectedly the seventh day of the disease.

The pain of the thorax, difficulty of breathing, external view of the patient, had, from the second day, proved the existence of peripneumony ; the sparkling eye, talkativeness, delirium, seat of the pain, type of the pulse, indicated that the inflammation was extended over the heart without my suspecting the particular degeneration of the tissue of this organ.

On dissection, the countenance was unequally livid and purple ; the subcutaneous veins were crowded with blood.

The cerebral organs were sound.

The right lung, especially adhering to the pleura, was weak, quite extensible, and infiltrated. The left was covered in most of its extent, particularly

near the pericardium, with a pseudo-membranous layer several lines in thickness. The pleura costalis, on this side, appeared to have been attacked with inflammation.

The cavity of the pericardium contained about a pound of purulent, flocculent liquid. The internal surface of this membrane was invested with a false membrane whose surface was covered with little tubercles.

The heart of the natural size, was externally soft and tender. The fleshy walls of the auricles and ventricles were pale and yellowish ; it might be said that a fatty substance was deposited between the fleshy fibres which appeared removed from one another. We saw on the surface of these whitish walls, as well as in the interior of their fleshy substance, a vascular network well developed and very apparent. By slightly pressing the fleshy substance between the fingers, it was easily reduced to the consistence of pap, whose color was pale and dull. All the cavities of the heart contained polypous concretions, which were continued into the cavity even of the large vessels.

The viscera included within the peritonæum were sound. To this case, I am going to add two others perfectly analogous, and in which the diagnosis appeared as obscure as the morbid state was evident after dissection.

Case XLII. A young girl, with apparently weak lungs, was admitted into the Clinical Hospital, having a pale countenance, and œdematous legs ; she coughed often, and expectorated a puriform matter. She soon complained of the inefficacy of the pectoral remedies which I caused to be administered to her, and left the hospital.

She returned a while after, and was directed to the use of the same means, from the idea that I had retained that her thorax was affected ; but on a closer examination, I observed that her pulse was constantly small, lips injected and purple, symptoms which did not appear common in real phthises. I performed the percussion with more care, and perceived that the thorax which

sounded perfectly on the right side, was silent on the left. This remark, and several other symptoms induced me to think that the left side of the thorax was full of fluid.

The abdomen was so distended by a fluid, that I was obliged to order paracentesis, which discharged much serum, but the patient died a few days after the operation.

On dissection, I found the pericardium distended by a purulent fluid. The surface of the heart was covered with a layer of lymphatic matter ; the heart itself was small, contracted, tender, and pale on the inner part of its substance.

The internal surface of the pleura was diseased on the left side only.

Case XLIII. A woman was admitted into the Clinical Hospital, attacked with ascites, and was treated accordingly. She was often tapped without her experiencing more relief than is usually obtained from this plan in like cases. Although the symptoms were extremely obscure, it was, during the disease, my opinion that she might be attacked with a disease of the heart. The signs which generated it were the small, weak, irregular, and singular pulse. She died. I saw, on opening her body, that the pericardium, greatly distended, included a lactescent, puriform fluid ; the heart was whitish, small, apparently contracted, without consistence, and totally changed. The auricles, ventricles, and large vessels were covered with a whitish lymphatic matter. This woman suffered from seven to eight months ; the origin of the disease could not be traced ; but what the dissection of the body exhibited, leaves no doubt as to the existence of carditis that had degenerated into a chronic inflammation.

My observations on the inflammation of the heart will be confined to what has just been said, because I have made it my rule to treat only of affections with which I have been acquainted.

I do not remember, in the course of my practice, to have had the opportunity of observing acute carditis with a complication, described by many authors, which, in their opinion, is attended with symptoms particularly calculated to manifest it; but, to complete the epitome of this inflammation, I shall relate, in the appendix to the fourth class, cases of acute carditis which will exhibit the circumstances of this disease.

From the three cases just quoted, and from such as might have been added, and from the facts whose history will be transcribed in the appendix, we shall be able to draw this inference, I believe, that the morbid state of the heart of persons who have died in consequence of the acute or chronic inflammation of this organ, has peculiar characters it will be useful to delineate as facts of morbid anatomy.

In the cases of carditis, the inflammation of the serous tissue of the heart appears to proceed in the same manner as in *pericarditis*. As to the inflammation of the muscular tissue, it seems, from the cases quoted, and many more which I could have added, that this affection eventually converts the muscular part of the heart into a soft pale substance; the muscular fibres then preserve little tenacity, the cellular tissue which unites them appears loose; it is sometimes penetrated with lymphaticopurulent matter; in certain cases, it is partially destroyed; the vascular system is more apparent and unfolded than in its natural state. On viewing the entire heart deprived of the pericardium, it presents at its surface the color of a pale, yellowish fat, and sometimes a little livid. This obviously adipose substance seems to fill the interstices of the muscular fibres, which generally are rather obscure, on account of their tenuity and paleness. Perhaps this state, superficially examined, has been sometimes mistaken for a degeneration into adipose substance.

The parietes of the organ are very easily torn, and they may be reduced to the consistence of pap without practising on them great pressure.

The cavities of the heart are generally, in this case, filled with coagulated blood. Solid branches of these clots are extended even into the cavities of the large vessels. The formation of these polypous concretions is readily explained, when we consider how much force the kind of alteration which the parietes of the heart undergo, must take from the action of this organ which, towards the close of life, can no longer be freed from all the blood which the veins pour into its cavities.

If the serous and muscular tissues, in carditis, are equally diseased, the cellular element, in every instance, does not appear less affected; it may be said that it is often partly destroyed, since, on many subjects, as it will be proved by the facts related in the appendix, the muscular fasciæ have been seen loose and consequently detached, unquestionably, from the destruction of the interposed cellular tissue.

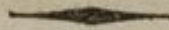
Besides, it appears very difficult, not to say impossible, to form a collection of positive signs by which carditis can be distinguished from pericarditis. Their signs and symptoms seem to be the same. May it not be said that the greater intensity of the symptoms and circumstances in the one case than in the other constitutes the difference? Nevertheless, a sharp, pungent, deep pain, in the region of the heart, more frequent syncopes, are noticed by some authors, as signs apparently pathognomonic, of the essential inflammation of the central organ of circulation; but I have seen these signs in pericarditis, in consequence of which I have found both the pericardium diseased and the fleshy substance more or less deeply changed.

Carditis may affect the greatest number of terminations peculiar to inflammation in general. The history of these terminations will be inserted in the appendix to the fourth class, immediately after the cases of acute carditis which I shall there relate.

ARTICLE II.

Of rupture of the heart.

RUPTURE of the heart may be either total or partial. By a total rupture, I mean that in which the parietes broken, or torn, present to the blood the means of escaping into the cavity of the pericardium. By a partial rupture, I intend to designate what happens only in a part of this organ; such are the ruptures that I have noticed both upon the columnæ carneæ of the inside of the ventricles and upon the cordæ tendineæ which, from these pillars, go to be inserted into the loose edges of the ventriculo-auricular valves.



SECT. I.

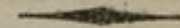
Of total rupture of the heart.

TOTAL rupture of the heart has seldom been observed in its sound state. We can, however, quote some examples of such an organic lesion, induced either by a violent effort, supported and prolonged, or by a fit of anger. The rupture, which is known by no other causes than those which I have just pointed out, must happen in the points of the parietes of the heart which offer the least resistance; thus it must obtain more frequently in the parietes of the auricles, than in the substance of the ventricles which is capable of supporting a greater effort. It seems, however, from the approximations which *Verbrugge (Dissert. Aneurism)* has made on this point, that the ventricles are oftener lacerated than the auricles, and of the two ventricles, the left, which appears, from its organization, less exposed to such ruptures, is however, most frequently its seat. These ruptures obtain sometimes at the origin of the large venous trunks, so that

the effusion of blood which follows, is poured into the cavity of the pericardium.

Observers are not rich in facts which prove the rupture of the heart, when this organ is without any previous alteration; but we find in their writings a numerous collection of cases confirming the existence of ruptures of the heart, where the muscular parietes of this organ had been before diseased.

Not either of the two species of total ruptures just mentioned has come under my observation. I refer therefore the observations which I have to relate, to the appendix of article 2d, class 4th, where it will be seen that the affections which dispose the heart to this rupture, or laceration, are aneurisms, particularly when they have made great progress, ulceration, and softening of the fleshy substance of the heart, probably follow from the inflammatory state of the organ.



SECT. II.

Of partial rupture of the heart.

THE organic lesions of the heart, which I intend to designate under the denomination of partial rupture, are, first, the rupture of one of the main pillars which extend to the internal surface of the ventricles. Secondly, the rupture of the cordæ tendineæ, which, from these pillars, are inserted in the edge of the valves which they support.

Haller, viewing, on the one hand, the weakness of the tendons of the heart, and on the other, the magnitude of the effort which they have to support, was surprised that a rupture of these tendons had not been previously observed. I do not know that any body before myself has presented a single well authenticated example of this kind of lesion.

It was delineated by *Senac*, it is true, in a very concise manner under the article of ulcers in the heart, where

he says (Vol. II. p. 386) "that the pillars of the heart are delicate in many places, and from its efforts they may be stretched too far, or be lacerated; their action may even, at their roots, force the substance of the heart, and occasion inflammations and suppuration." He has not, however, made any observation concerning this point; he quotes one from *Benivenius*, and another from *Dulaurens*, a third from *Lazarus Riverius*; but these observations are not exact. *Senac* saw the possibility of the fact which I am going to exemplify.

Morgagni is not richer in observations of this kind. He speaks only (L. XXI, art. 49) of the pillars of the ventricles which were torn with the greatest facility in the heart of a young man who died of an aneurism of this organ. This case, which has no resemblance to those which I am offering, confirms them; as from the easy laceration to the actual laceration, there is but one step; the exciting cause is only wanting; now, the violent effort of the subject of my observation, his moral anguish, &c. are the cause which the subject wanted of whom *Morgagni* is treating.

These ruptures happen oftenest from violent blows; then the individual who is attacked, passes suddenly from a state of perfect health to that of incurable disease, and in general soon mortal; such at least is the conclusion which may be drawn from the cases that I am going to relate.

Case XLIV. A man, aged thirty years, of a robust constitution, was admitted into the Hospital of la Charité at the commencement of the revolution. A while after he quit a sedentary occupation for that of courier. Devoted to this very fatiguing life, he was continually travelling in every part of Europe. When he entered the hospital, he had just performed a journey of a thousand leagues on horseback, without taking any repose; he had moreover travelled from London to Paris, and passing from Dover to Calais, he experienced, for the first time, difficulty of breathing, and spitting of blood.

Having, notwithstanding these symptoms, continued his journey, the complaint was remarkably aggravated, and when he arrived at Paris, the suffocation and pain, which he felt in the chest, increased. He was bled five times in the course of the three days he remained there; but finding no relief from the use of this and of several other means judged equally efficacious, he was brought to the Hospital of la Charité, eight days after the attack of the disease.

Then his features were changed; the extremities appeared but slightly infiltrated; the pulse was small, serrated, remarkably frequent, and very irregular; on applying the hand over the region of the heart, beside the very strong pulsations of the organ, there was felt a confused and irregular stroke, which had no resemblance to the motions of the heart.

The patient could not rest either lying, standing, or sitting; he was in a state of agitation and anxiety not to be described.

The day after his admission, the legs and thighs were exceedingly infiltrated. The features were more and more changed. During the following night, the symptoms were again aggravated; he was frightfully agitated, going into the wards, sitting, rising, as he was moved; suffocation was instant; knowing then the danger of his condition, he resigned himself to extreme despair; he died, testifying, by every gesticulation, his great desire to live.

Before I proceeded to inspect the body, I repeated what I had announced, the first day, that there existed in this patient an acute lesion of the heart, and probably a rupture or laceration of one of its parietes.

The left lung was quite sound; the right had formed slight adhesions to the pleura costalis, its superior lobe was very compact, no tubercles were observed; in the sulci which separate the different lobes, a layer of lymph was found, produced by the inflammation, which had been seated in this organ. There was a small quantity of water in the thorax.

The pericardium contained nearly half a pound of yellowish serum.

The heart had not acquired a preternatural size. We perceived, in the left ventricle, that one of the large pillars, supporting the mitral valves, was ruptured at its base. The laceration caused it to float freely in the cavity of the ventricle; there was appearance of supuration in the precise place of the rupture in the pillars of the heart, which fully proves that it was recent. Near the laceration was observed a clot covered with purulent matter, which proceeded from the lacerated surface.

It would be too tedious to particularize, how this disease, which presented some symptoms of peripneumony, and some of carditis, or acute inflammation of the heart, was however taken, absolutely speaking, for neither of these affections, but for an organic lesion of the heart; nevertheless, it appears to me useful to point out concisely why I was prevented from committing this mistake.

1st, Peripneumony, or pneumony, has symptoms of a local, fixed, inflammatory pain, which did not prevail in the preceding case.

2d, Pneumony permits the patient to lie down, which was impossible for him whose disease I have described.

3d, Pneumony generally ends, in unsuccessful cases, with delirium and in the form of catarrhus suffocativus, the bronchiæ, and trachea being filled, and the rattling is heard; but none of these symptoms obtained in the present case.

4th, In pneumony, the difficulty of breathing is usually extreme, cough frequent and quite painful with hæmoptysis, symptoms which were not seen during the affection in question.

5th, In pneumony, the agitation, anxiety, and anguish do indeed exist; but never (and I have noticed a great number of such diseases) to the horrible and remarkable degree to which they were carried in this patient.

6th, In pneumony, the patient dies on the tenth or twelfth day, when otherwise young and sound, there is seldom seen any remarkable swelling in the inferior extremities, either because this is not according to the nature of the disease, or because the patient being able to lie in bed, the swelling cannot supervene.

7th, In inflammation of the heart, or *carditis*, indeed, anguish and anxiety supervene, as in the preceding case; but frequent synopes, numerous chills, and at last, delirium, and cold sweats intervene, which did not take place in my patient.

8th, In *carditis*, the pulse has an unusual irregularity, which did not obtain in the disease of the courier.

9th, Finally, acute *carditis*, described by authors, is generally more rapid in its progress, and the swelling of the inferior extremities is never found. I return to the case which remains to be inserted in this article.

Case XLV. A turner, aged thirty-four, of a lively and passionate character, and strong constitution, making great efforts to remove alone a tun of brandy, gave himself (to use his own expression) a very violent *sprain of the kidneys*, which induced instantly considerable suffocation, and a sharp pain between the shoulders; soon after followed cough, palpitations of the heart, and extremely frequent startings from sleep. These threatening symptoms, far from yielding to the remedies used, were every day aggravated to such a degree that he was obliged to come to the hospital of la Charité, where, during his first residence, he received attention which greatly relieved him. He left the hospital, but returned four months after; the effort, which seemed to originate the disease, was twenty months prior.

March 24, 1803, the day of his entrance into the Clinical Hospital, he was in a state of extreme anxiety; respiration was *suffocative*; he felt in the region of the heart sharp pains which compelled him to shriek, particularly at night. He died two days after.

On opening the body, I found in the right cavity of the thorax two pints of serum. The lung, on this side, was sound. The left thoracic cavity contained but a very small quantity of fluid.

At the fore part of the mediastinum, was seen a purulent spot of the size of a piece of twelve sous, without alteration of the cartilage of this side, to which this species of ulceration answered. The heart, viewed with its envelope, was at least three times larger than what is natural.

On the external surface of the pericardium was seen a great number of appendages in form of a cock's comb, pale and livid at their base, and of a lively red at their summit. These excrescences were no other than adipose portions, which had undergone a particular modification. The pericardium adhered to every point of the external surface of the heart, by the medium of a very close cellular tissue.

All the cavities of the heart greatly dilated contained much black coagulated blood. The right auricle was so dilated, that its auricular appendage had entirely disappeared. The orifice of the right auricle and ventricle was exceedingly dilated; the capacity of the ventricle a little increased; the tricuspid valves and those of the pulmonary artery were sound. The left auricle and ventricle were much enlarged. The parietes of the ventricle were thickened; and the mitral valves, covered with some softish excrescences, like flesh.

On examining the tendons of the pillars which support these valves, it was noticed that two of them had been once ruptured. The extremities of these two tendons were in the place of their rupture, soft, smooth, and rounded. We did not find upon the edge of the valve the precise place where they were inserted before the rupture.

The valves of the aorta were not altered; though this artery was dilated at the commencement of its arch. There was some water in the abdomen; but its viscera were sound.

To the two cases may be added that which I related, (*Case XXXVII.*) Its history differs from these only as the same alteration seems to be effected, in the former case, by erosion, and in the two latter, by rupture.

In the two patients, of whom I have spoken in this article, the lesion appears to offer some difference, as that of the courier was recent ; while with the turner, it was older. In the one, a small portion of the organ was alone diseased ; in the other the whole of the heart, with time was altered. In both, the heart, habituated to move regularly, suffered remarkably from the rupture. In the courier, the disease advanced more rapidly, probably, because the rupture was formed in the substance of a large fleshy pillar. In the turner, the lesion, though equally dangerous, became somewhat chronic, because the rupture of the tendons only was affected. The result of this rupture was, to the first patient, a species of internal ulcer ; and to the second, an aneurismal dilatation.

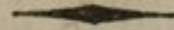
Although these patients may have experienced particular and extreme anxiety, sharp pains, and frightful symptoms, it is obvious that the action of the organ was still far less deranged than it would have been in the case in which a rupture nearly similar obtained in the substance of the valves. These membranous coverings, detached from the tendons that fixed them, might have floated freely in the cavity of the ventricle. What disorder would not such a lesion introduce into the phenomena of the circulation ?

It appears well proved, by the rapid progress and marks of the disease, that in the courier the rupture obtained suddenly ; but it was otherwise in the turner, and could not have been instantaneous : in fine, a first effort, in such affections, is often merely a predisposing cause to the rupture, which is afterwards decided by a new effort, frequently far more feeble than the first ; but then the part already debilitated by the first is unable to resist the second.

ARTICLE III.

Of tumors and other preternatural states of the heart.

THIS article is replete with numerous facts; yet as I shall relate but few with which I am personally acquainted, they will mostly be contained in the appendix under this head.



SECT. I.

WHEN treating of aneurisms of the heart in general, it was said that there was but little analogy between them and aneurisms of the extremities; I have established to a certain degree the differences between these two diseases and the points of approximation which could rationally be discovered between them. A very extraordinary, and indeed the only fact, which has occurred to my mind, proves that the heart may, beside its peculiar dilatations, become the seat of aneurismal tumors entirely like those with which the arteries of the extremities are sometimes affected.

Case XLVI. A negro, aged twenty-seven years, October 16th, 1797, was received into the Hospital of la Charité. The day he was admitted, he was in inexpressible anguish and anxiety; breathing was laborious and interrupted; he suffered little pain in the thorax, which, besides, sounded well in its whole extent; he complained of feeling a violent pain both toward the region of the stomach and of the liver; the pulse was small, serrated, weak and frequent. The next day after his admission into the hospital, he had so profuse a hemorrhage from the nose, as to hasten his dissolution, which happened the same day.

On opening the body, the heart appeared to have preserved its natural size, but the superior and lateral portion of the left ventricle, was surmounted by a tumor

almost as large as the heart itself, which, at its base, was confounded with the parietes of this organ. Before reaching the centre of the tumor, it was necessary to cut a layer like cartilage, not quite so thick as the parietes of the ventricles. The substance which formed the tumor had really the consistence of cartilage, but it preserved the appearance and color of the muscles. The inside of this tumor contained several layers of very dense cogula, perfectly similar to those which fill a part of the cavity of aneurisms of the extremities, with this exception, that the color of the apparently lymphatic layers was paler. The same cavity communicated with the inside of the ventricle, by an opening of small width, and whose contour was smooth and polished. It might be said that this tumor was formed between the fleshy substance of the heart and the membrane which is furnished by the pericardium, intimately adhering to the surface of this sack.

The mitral valves were thickened and ossified. The stomach and the small intestines contained much of nearly pure and coagulated blood, an evident consequence of the hemorrhage.

How can the formation of a tumor like the preceding be explained? Can it be ascribed to an imperfect rupture of the muscular parietes of the heart? On this supposition, would an internal layer of the muscular substance of the heart be torn by any cause whatever? Would the external layers, continued sound, have suffered a dilatation, and formed an aneurismal tumor?

I pass over the signs of the disease just described; it is impossible to point them out from a single case. In cases of this nature, the practitioner, even the most experienced, would be liable to mistake in the particular delineation which he would make of this species of lesion, unless the observation of new facts similar or analogous, should throw some light on the diagnosis.

There are recorded in some works descriptions of tumors which approximate the one which I have just quot-

ed, without having with it a perfect analogy. To satisfy the reader as to the truth of it, I shall collect, in the appendix to this article, some of the descriptions extracted from different authors.

SECT. II.

MANY cases, not less remarkable, have occurred to my observation. The two following approach so near such a point that I think it necessary to insert them in this article.

Case XLVII. A child, aged twelve years and six months, April 22d, 1797, was admitted into the Clinical Hospital. He was then in so alarming a condition that it was to be feared that his dissolution was near. The complaint with which he was troubled, according to his opinion, took place only five months before; but from the violent and repeated palpitations which he had always suffered, it might be readily decided that the heart had been much longer affected with this organic lesion.

When he was received into the hospital, his countenance was bloated, his lips were purple, and extremities without the appearance of infiltration. Respiration was particularly embarrassed; the hand laid over the region of the heart felt quite an irregular stroke, attended with a peculiar very remarkable rushing; nevertheless the pulse was of surprising regularity, but small, feeble, and easy to suffocate. Palpitations were frequent and returned by fits, accompanied with a threatening suffocation.

The patient could not rest horizontally, but found himself more relieved when sitting, and still more, bent forward. His urine was passed often and profusely. During his short tarry in the hospital, the disease made frightful progress. He used diuretics, and very powerful anti-spasmodics; but the employment of these means procured, as it was anticipated, no relief.

April 25th, he had a more severe paroxysm of suffocation than he had previously experienced, and which appeared must terminate his life; but it ceased, and he, immediately after, became sensibly better than he had been for a long time. The more alarming symptoms soon returned; and the child, admitted April 22d, died the 26th of the same month, after agonies of ten or twelve hours, during which his whole body was covered with a cold sweat, and a yellowish froth flowed from his mouth.

On dissection of the thorax, the lungs appeared natural; they were, however, somewhat tender.

The pericardium contained a small quantity of fluid. The heart was considerably enlarged, and appeared much rather to belong to a tall man of a vigorous constitution, than to a subject so young. The auricles of the heart presented nothing remarkable but their enlargement.

The parietes of the right ventricle were more thickened than they usually are. The partition of the ventricles had preserved its natural thickness; the same partition, at the origin of the pulmonary artery, was perforated with a round aperture capable of admitting the extremity of the little finger. The aperture communicated directly with the cavity of the left ventricle; its edges were smooth and whitish in their whole extent. At the upper part of the circumference of the foramen, were seen two little fleshy tubercles of a reddish color.

The parietes of the left ventricle had preserved their natural thickness. In the cavity of this ventricle, directly below one of the sigmoid valves of the aorta was observed the left aperture of the foramen of which I have spoken.

The aortic semi-lunar valve below which it was found situated, was corroded and partly destroyed. It formed a sort of little fringe which appeared at the orifice of communication, without stopping it entirely; so that the blood, propelled by the left ventricle into the cavity of the aorta, could, when this ventricle ceased to act, re-

gurgitate on account of the destruction of the sigmoid valve, into the right ventricle, by passing through the preternatural aperture, whose direction seemed however to be from the right ventricle toward the cavity of the left.

An important question which, from the details of the case, and from the inspection of the body, appears to me still undecided, is to know whether the aperture, described, existed in the subject from his birth? Then it would be an actual malformation, or whether it was accidentally formed by rupture, or erosion; in the latter case, it must be ranked among organic diseases? The smooth and apparently tendinous state of the edges of the aperture would seem to favor the first opinion; on the other hand, the erosion of one of the semi-lunar valves which surrounded the aperture, the existence of the tubercles, &c. &c. would seem to support the second.

The perforation of the partition of the ventricles has some analogy with the existence of the foramen ovale, in a man already advanced in years. The modifications which these different morbid states produce in the circulation, appear to approach so nearly, that I shall not be able to consider the effects of each of these preternatural states till I have exemplified the last affection in question.

Case XLVIII. A postillion, forty-seven years of age, having received some violent blows upon the epigastrium, experienced, during the three subsequent weeks, frequent syncopes, sharp pains in the injured region, and difficult respiration. This space, while the patient kept his bed, having elapsed, the pains were quieted, the faintings were less frequent, and subsided entirely. But the difficulty of breathing remained the same for some months; in the mean time, another accident produced new symptoms. A heavy body fell upon the epigastrium of the patient, and soon after, to the former symptoms were joined palpitations attended with dyspnoea and pulling in the fore part of the mediastinum; from which time he could not ascend several steps without stopping often to take breath.

When the patient was admitted into the Clinical Hospital, it was two years from the first accident, and sixteen months from the second. Then he appeared to be in a remarkably good state of body ; his countenance was florid, inclining to purple ; he experienced often strong and irregular palpitations, respiration was very tranquil, when he was quiet, but on the least exercise it became frequent, painful, and rattling ; the pulse was extremely irregular ; the thorax did not sound so well on the left as on the right ; no swelling of the extremities was noticed ; the appetite was good, digestion little impaired ; the urine was passed with difficulty. On my first examination I was convinced that there was a lesion of the heart ; I was more disposed to particularize the lesion of the right cavities : I perceived something remarkable in the symptoms, but I could not precisely decide the real cause.

A bleeding, aperients, and anti-spasmodics soon alleviated the first symptoms. Having remained thirty-five days in the hospital, the patient left, 14th of December, and returned three months after in a more alarming state. Beside the difficult breathing, suffocation and palpitation which first harrassed him, there supervened swelling of the legs and abdomen, together with a fatiguing and obstinate cough ; the pulse was more irregular than ever ; he was scarcely asleep, when he awoke suddenly, threatened with suffocation. During his second tarry, he used compound hydromel, aperitive tisanes, prepared squills, bitter and diuretic wine. After forty-one days employment of these means, the symptoms having become far more supportable, and the swelling of the extremities and abdomen totally abated, he left the hospital, October 17th, 1803 ; but I predicted that he would soon return.

Having attended to his occupation for fifty-two days, accidents similar to the first, obliged him again to pass three months in the same hospital, which he left, September 8th, 1803, and was re-admitted for the last time,

October 24th, 1804. Then his face was *vultuous*, of a purple and red color ; the lips were injected and bluish, the voice obstructed, respiration noisy, hissing, and performed with great difficulty ; palpitations were frequent, painful and extended, the abdomen and extremities swoln, urine sparing and turbid, sleep interrupted by repeated fits of suffocation ; the appetite continued very good.

The treatment was ordered conformably to what had been often administered to him. By the use of diuretic and bitter wine, aperitive drinks, and depletion effected either by bleedings, or by the application of leeches, I succeeded in restoring him to apparent health ever consoling to him, but never satisfactory to me. Immediately after, the most efficacious remedies acted but feebly, the serous diathesis prevailed, suffocation increased, a very sharp pain was felt toward the region of the heart ; but a blister, applied to the painful part, soon removed this symptom, which I considered as peripneumonic ; syncopes were frequently repeated, anxiety became extreme. The patient being no longer able to preserve the same position, then the employment of all the active means were suspended for the purpose of adhering to some palatable drinks.

About the 21st of March, 1804, the symptoms became still more violent ; the face lost a little of its color, and a sensible alteration was noticed in the features. March 27th, the countenance appeared far more discomposed. He expired apparently suffocated, March 29th, at 3 o'clock, A. M. He had been sick three years, and in the hospital for the fourth time more than five months.

On dissection, the countenance was uniformly bloated and purple. The integuments were extremely infiltrated ; the infiltration was particularly remarkable in the left side of the abdomen, where was observed a large tumor, quite resisting to the touch, and which was however formed only by a more considerable infiltration there than in any other part of the cellular tissue.

The thorax when struck sounded well throughout the right side, and in the upper third of the left side ; but in the lower two thirds, when struck, the sound was scarcely heard.

The cavity of the cranium presented nothing extraordinary.

The thorax being opened, the right lung appeared exceedingly enlarged, though sound, crepitating and free from adhesion ; the left lung, equally crepitating, adhered to the pleura costalis ; the pericardium much dilated occupied the greatest part of the left cavity of the thorax, it pressed up the lung, and contained at least a pint of yellow serum, in which the heart was bathed that appeared much larger than natural, notwithstanding the robust frame of the patient.

The right auricle was greatly dilated, its parietes much harder, were also thicker than they usually are ; their internal surface was furnished with columnæ carneæ as strong as those which, in the natural state, supply the inside of the left ventricle. The orifice of communication between this auricle and the ventricle of the same side, was dilated, and so large, that one could, with ease, introduce together the extremities of the four fingers. The tricuspid valves had an extent proportioned to the dilatation of the cavities and orifice of communication ; their organization was not altered. The cavity of the right ventricle was enormous ; there was a surprising disproportion between this cavity and that of the left ventricle ; the parietes of the right ventricle were much thickened, and furnished internally with columnæ carneæ more prominent and firmer than natural. The left auricle appeared to be far more enlarged than it is commonly ; but its parietes had the thickness of a single membrane, and their internal surface smooth and whitish left not a trace of the columnæ carneæ which are generally conspicuous. The partition, which separates the two auricles, had, on account of the enlargement of these cavities, acquired great extent. The fossa ovalis, which was seen on its

middle part, was two inches in diameter ; this fossa was perforated with a hole of an oval form or rather unequally circular more than an inch in diameter ; the edges of this aperture were thin, smooth, and whitish like tendon. The arrangement of these edges left it doubtful whether the hole was more particularly directed from one of these cavities into the other. The orifice of the left auricle and ventricle was a little hard and whitish ; it appeared somewhat constricted, nevertheless the end of one finger could be introduced.

The mitral valves were a little thickened and rugous toward their edges, as well as at their base. The cavity of the ventricle on this side was extremely small ; it would scarcely admit a body of the size of a walnut. The thickness of the muscular parietes was somewhat increased and harder than natural.

The diameter of the aorta, at its origin, was very small, without any other peculiarity.

The pulmonary artery was, at the mouth, and even toward its division, much dilated. Its semi-lunar valves had acquired great extent, without being otherwise altered.

The canalis arteriosus was transformed into a ligament without an outlet.

The abdominal viscera appeared generally sound. The inside of the stomach was of a very lively red ; the liver was slightly tumefied without being gorged with blood.

The perforation of the partition of the ventricles in the subject of *case XLVII.* the continuance, or rather the dilatation of the foramen ovale in that of *case XLVIII.* necessarily gave to the circulation modifications which must have arisen from several of the accidents which preceded the death of the two individuals. Now, what are these modifications and their effects to the chemical results of respiration and the phenomena of the circulation ?

If, in order to answer the first of these two questions, one examine what must be the principal effects of such

a destruction of the laws of the circulation, he will see that the whole of the blood, which after having passed through the arterial vascular system, must be conveyed by the veins into the right cavities of the heart, and by the pulmonary artery into the lungs to repair the loss which it has suffered in the general circulation, is, in this case, presented but partially to the resuscitating influence of the atmospheric air; that a portion of the blood returned to the right cavities by the *venæ cavæ*, instead of being propelled into the lung by these cavities, reenters immediately into the left cavities, in order to pass into the general circulation, before it has been previously restored by the process of respiration. It passes, therefore, into the left heart, deprived of the stimulus necessary to induce the action of this organ, and afterwards circulates through every part of the system without the vital and restorative particles.

Beside the alarming consequences which must follow from the chemical change of the blood, produced by the lesions under consideration, are effects, in some measure mechanical, which proceed from it, attended with apparently equal danger; this is the aneurismal dilatation of one or all the cavities of the heart. In the two cases which I have quoted, the right cavities were dilated, particularly so in the second case, with a thickening of their parietes; which, united to the direction of the opening, in the first case, proves very clearly that the blood was driven from the right ventricle into the left. Thus, on the supposition of the perforation of the partition of the ventricles, when the parietes of one of these cavities have, in order to contract themselves, a force paramount to that of the parietes of the opposite ventricle; the blood, instead of being propelled through a single opening, (the aorta or the pulmonary artery,) finds a double outlet; one portion of the blood enters the pulmonary artery, then the right ventricle is contracted with more force, while another portion of the same fluid passes through the preternatural opening, into the cavity

of the left ventricle. If, on the contrary, the contraction of the left ventricle be made with more energy, the blood is at once propelled into every part of the system, through the aorta, and into the right ventricle, through the communicating hole.

The same will happen when, instead of the perforation of the ventricles, we shall examine that of the partition of the auricles. Hence, if the right contract with more energy, the blood will pass into the left auricle through the foramen ovale, and into the right ventricle, which will convey it to the lungs, and *vice versa*, to the left auricle.

From these considerations, it may perhaps be inferred that in such cases I admit the passage of the venous blood into the left cavities, and its mixture with the arterial blood, without admitting the passage of the arterial blood into the right cavities, and its mixture with the venous blood. But I will observe that I have presumed to apply these explanations only to the solitary facts which I have described, and in which I believe things did so occur.

Perhaps an opportunity will present of making the inverse observation, viz. that cases will possibly be found in which either of the perforations of which I have spoken existing, the left cavities of the heart would have acquired or preserved a preponderating force; the arterial blood of the left cavities being driven into the right, the mixture of the arterial blood with the venous must necessarily follow, and not as in the first case of the venous with the arterial.

The distinctions I am making here of the different mixtures may at the first glance appear unimportant; but on a little reflection it will be easy to perceive that the mixture of the arterial blood with the venous in the right cavities, must alter the animal economy in quite a different manner from the mixture of the venous blood with the arterial in the left cavities. Hence, in the first case, (that of the passage of the arterial blood into the right

cavities which contain the venous blood) which must be the principal function deranged? It is unquestionably sanguification, or the chemical changes which the blood must undergo in the lung, because respiration, instead of acting on blood deprived, as it must be, when it enters the arteries of the lung, of several principles which it must have lost in the general circulation, will be already charged with a part of the elements which ought to be supplied by the act of respiration, with blood, in fact, which needs but half the elaboration.

In the second case, on the contrary, (that of the passage of the venous blood, into the left cavities which contain the arterial blood) the economy will be injured in the nutritive principles, because the mixture of the blood propelled by the left heart into the arteries will be but imperfectly fitted for nutrition. Therefore, it will be partly composed of venous blood, which contains fewer principles suitable to be assimilated. From these various mixtures, changes very different will naturally arise; but which, having soon become general, will perhaps approach one another in their symptoms, and be confounded in their effects: besides, what will be the consequences of these various derangements of the circulation to the excitement of the organs in general, and of the brain in particular? What will be the effects from the contact of the black blood with the parts which ought to be constantly excited by the red blood? The experiments of *Bichat** answer these questions with precision.

Moreover, in whatever manner, the disturbance of the action of the heart be represented, and, though it be clear, from the disposition of the parts, that, in the cases before cited, the blood must have passed oftener from the right ventricle into the left, than from the left into the right; the phenomena of the disease, and its determination, fully prove that a similar lesion, however formed, must sooner or later be mortal.

* B. P. R. sur la vie et la mort.

APPENDIX TO THE FOURTH CLASS.

ARTICLE I.

Additions to the history of carditis.

By collecting the following cases, I have had three different objects in view : 1, to prove by the two first cases, that carditis sometimes affects a course, hidden, obscure and difficult, not to say impossible, to be distinguished : 2, to give, in the three last cases, examples of acute inflammation of the heart : 3, finally, to prove by the greatest number of such cases, that the muscular tissue, as has already been said, does not appear to be alone affected in *carditis* whether acute or chronic.

To the *cases* XLII. and XLIII. are referred the two following extracted from the memoir inserted by *Meckel* in those of the Academy of Berlin.

Case XLIX. On dissecting a robust young man, aged 26 years, who died suddenly, without any previous pain, and was soon in a very advanced stage of putrefaction, the pericardium was full of white pus, the heart corroded by suppuration, and surrounded with much soft fat, in an inflammatory state. The muscular substance of the two ventricles was extremely relaxed and destitute of blood ; this fluid in the veins was dissolved, but the aorta included a white polypous concretion.

Case L. A man, sixty-four years of age, otherwise, very strong, but who had, during his life, made an extremely ill use of wine, complained of excessive pain some days before his death, which happened without the evidence of any other symptom. On dissection, the pericardium contained two pounds of white pus, and as well the heart, as the auricles, was covered with a purulent, tenacious crust two lines in thickness ; under the crust, the surface of the heart was corroded and inflamed. This

organ was entirely enveloped with fat which had become red by the inflammation; it was pale in its muscular substance; all its cavities were filled with thick coagulated blood, the left ventricle excepted, which contained but a little white polypous concretion.

Case LI. In the body of a man, aged fifty, that died in consequence of an inflammation of the heart, the same author observed a large quantity of pus in the pericardium, and a purulent investment which covered the heart; under this purulent layer, appeared in some places little muscular fasciæ in a very conspicuous manner; and, in these points the substance of the heart was rough and unequal; its own external membrane was so far destroyed by the suppuration, that the pus, adhering externally to the muscular fibres, had penetrated by the way of the cellular membrane, even into its interstices which it had whitened. The auricles were lined with a large quantity of pretty thick pus, and the inflamed vessels gave them a very bright red, especially to the right, which was considerably dilated, whereas the left was tender and paler.

Among the cases of acute carditis must be inserted the following.

Case LII. *Meckel*, in the work already quoted, says that a robust young man, aged twenty-two, felt sharp pains in the region of the heart, and a distress which did not permit him to attend to his occupation; fever intervened, accompanied with a hard and frequent pulse; repeated bleedings did not relieve his ailment, which had continued fifteen days when he entered the hospital, though not until the violence of the pains compelled him; they appeared shortly after somewhat abated, but the distress was renewed, and went on increasing, as far as the sixth day from his entrance into the hospital, and the twentieth of his disease, he died complaining incessantly of the pungent pain in the region of the heart.

The abdominal viscera were perfectly sound, the lungs gorged with blood; the pericardium inflamed contained

a thick yellow pus, which had caused a slight adhesion of this membrane to the heart. The surface of this organ was covered with a thick lymphatic crust, which could scarcely be separated. After having removed the pus, the surface of the heart appeared red, corroded, and divested of its external covering, and in the same state as the skin, when inflammation or suppuration has separated the epidermis. This thick pus excepted, there was nothing left like the natural fluid of the pericardium. The crusty matter which surrounded the heart, was cautiously removed in order to expose its fibres, but they were found still covered with abundance of fat under which they were hidden. The surface of this organ was uneven, the vessels inflamed, and like coverings of pus, had formed a reddish network; the auricles were also found in the same state. The fibres of the heart, being entirely separated from the fat, appeared paler even in the cavity of the ventricles, without the least inflammation, or any mark of pus, so that its texture was rather loose than rigid or in a state of contraction.

Case LIII. A woman aged twenty-four, according to *Storck*, having passed from a warm place to another much colder, felt shiverings, a very sharp pain in the left side, with great heat. To these symptoms were soon added difficulty of breathing, palpitations of the heart, and an inexpressible burning in the left side of the chest. At the same time the strength failed, the pulse became very small, the extremities cold; soon after supervened anxiety, fainting, and finally, death on the sixth day.

On the inspection of the body, the lungs were found red, engorged, and inflamed; the inner surface of the pericardium corroded or ulcerated; this membranous sack was distended with pus without consistence. The fore part of the heart was in a high state of suppuration; the base was nearly in a state of gangrene; the origin of the aorta for an inch in extent was also in suppuration.

Case LIV. We read in *Fabricius Hildanus* that a man aged forty-five, complained of a heavy fixed pain in a point of the thorax, attended with a sensation of pressure on the heart, and difficult respiration. These symptoms having continued several days, the state of the patient seemed to be amended, but an ardent fever soon followed with dyspnœa, delirium, and incessant wakefulness; syncopes succeeding one another, he died on the eleventh day.

It was observed on opening the body, that the pericardium was filled with a large quantity of pus with which the heart was partially bathed. This organ itself appeared half destroyed, and half corrupted.

Such are the cases which I thought necessary to add to what had been said on carditis. I could have increased the number; but I think those which I have related will be sufficient, to support the premises which I advanced, and which will be equally supported by what remains to be offered on the various terminations of inflammation, in the following article.



ARTICLE II.

Of the various terminations of carditis.

SECT. I.

Suppuration.

Suppuration is so frequent a termination of the inflammation of the heart, that after carditis pus is invariably found in the cavity of the pericardium; is not this supplied by the serous membrane of the heart, as it is observed when the pericardium only is inflamed? Some of the cases quoted in the preceding article, answer this objection, by shewing, in most cases of this nature, the fleshy fasciæ of the heart separated from one another, and apparently affected by the suppuration which seems

to destroy more easily and particularly, the cellular tissue that unites them. Do we not read likewise in authors of examples of pus collected in the thickness even of the muscular layers of the heart ?

Case LV. *Barrerus* relates that a young man of nineteen, affected with gonorrhœa virulenta, had an acute fever with severe pain in the hypogastrium. These symptoms having disappeared, he was attacked with violent and continued palpitation, and extreme difficulty of breathing ; the inferior extremities were œdematous ; the pulse became weak, the pains increased ; the patient died in the greatest agony.

On dissection, an abscess was discovered in the hypogastrium, between the chest and the abdominal muscles, and another abscess, more than an inch long, situated near the point of the right ventricle of the heart.

Forestus, *Fontanus*, and several other writers, have discovered abscesses about different parts of the heart.

The suppuration of this organ may therefore be formed on its external surface, as happens in *pericardites*, when the heart itself is usually inflamed on its surface ; it may yet be done or accumulated in the inside even of the muscular substance of its parietes, as the formation of the abscesses evinces which I have just mentioned ; it may finally obtain in the very cavities of the organ, as was noticed in *case XLIV.* where I found a fleshy pillar ruptured and suppurated, in the exact place of the rupture.

SECT. II.

Ulcers.

EXAMPLES of ulcerations of the heart, in consequence of the general inflammation of this organ are common ; and as was said in the foregoing article, on opening the bodies of individuals who have died of carditis, and

even of the inflammation of the pericardium, the heart is frequently observed to be in a state of suppuration over its whole surface.

But, beside these more frequent and general ulcerations, it seems from a multiplicity of facts, that other ulcerations are formed on the heart, either from a trifling local inflammation, or from some unknown cause, and induce a partial affection, which does not become fatal until the patient has passed through the several stages of consumption.

When treating, in the preceding article, of the suppuration of the heart, I gave examples of common superficial ulcerations, produced by the general inflammation of the organ ; I am now going to quote some abridged cases which seem to prove the existence of the ulcerations of the second kind, usually deeper, with which the name of ulcer seems to agree much better than with the lesions of the first.

Case LVI. On the dead body of a man who had decayed slowly, were found, according to *Fernelius*, three ichorous ulcers, and deeply excavated in the substance of the heart. He says their formation might be considered as chronic.

Case LVII. From the relation of *Marchettis*, a man, after having been long in a state of decay, died suddenly. On dissection, a large ulcer was found which had eaten not only the capsular membrane of the heart, but a great portion of the substance of this viscus ; the ulceration, having finally penetrated into the left ventricle, caused his death.

Morgagni has inserted, in his work a case entirely similar to the last.

SECT. III.

Gangrene.

GANGRENE is one of the terminations of the inflammation of the heart; but the gangrenous state of this organ is very seldom found. Authors, indeed, have given many cases of it; but in general the exposition is extremely imperfect.

I do not remember to have ever seen it: my colleague, *M. Leroux*, has quite recently had an opportunity of seeing this kind of alteration; the following is what he communicated to me.

Case LVIII. A woman fifty years of age, after five months' sickness, entered the Clinical Hospital, June 26th, 1805.

The whole habit of body was bloated; the infiltration had been increasing from the commencement of the disease, and appeared greater on the right side. The skin was light, the countenance pale. The chest did not sound in the region of the heart, where the strokes were felt long and feeble. The pulse was particularly remarkable for its weakness.

She used unsuccessfully aperients, tonics, and even some drastics; the leucophlegmatia increased; she lost her strength, and died after a month's residence in the hospital; she had then been sick six months.

On dissection, the lungs were adhering to the pleura, being infiltrated and somewhat crepitating. There were several ounces of reddish serum in the right cavity of the chest, and in that of the pericardium. The heart was twice its natural size; its substance was soft and tender; its surface presented many livid, blackish, gangrenous spots, interspersed with little whitish granulations, similar to those which are seen on the intestinal canal after a chronic inflammation; the alteration pointed out by these spots penetrated the whole substance of the heart, and, in the inside, the fleshy fasciæ were lacerated as if they had been gangrenous.

The orifices of heart were free, the aortic excepted, whose opening was constricted by osseous concretions which filled the spaces of the sigmoid valves, and kept these valves in a permanent state of tension and immobility.

The internal surface of the aorta was interspersed with little ossified spots. The superficies of this artery was apparently livid. The blood contained in the cavities of the heart and vessels was black and fluid.

The liver, black and marbled, was gorged with blood.

The stomach was internally of a livid color ; its inner membrane was easily separated from the others, when it was scratched with the nail. The small intestines presented sphacelated spots, like those which were seen on the heart ; they penetrated every covering of the intestines which were thickened, without being ulcerated.

Although the state just described may appear gangrenous ; from the condition and constitution of the subject, and from the symptoms and progress of the disease, I cannot consider this gangrene as a result or effect of the inflammation, of which scarcely a trace remained on the heart, but rather a state of mortification, produced by extreme debility. In fact, this gangrene appears to have greater analogy with the spontaneous gangrene or that of old age, than with any other species of the same affection.

The following cases will prove that the gangrene of the heart may arise from different causes, since in one of these cases, it appears to have been induced by a pestilential fever, and in the other, by particular inflammation of this organ.

Case LIX. *Deidier* relates that a woman of thirty years, of a sanguine temperament, was attacked with a pestilential fever. A bubo formed in the axilla, and death immediately followed a lethargic sleep.

On dissection, a vast quantity of black grumous blood filled the heart ; the left auricle presented marks of gangrene.

Case LX. *J. Bauhine* quotes the case of a man who had a slight fever, attended with a trifling cough, together with pain in the thorax and upper part of the belly ; to these symptoms were joined syncopes which soon destroyed the patient. The lung was apparently decayed ; the cavity of the thorax was full of putrid and coagulated blood ; the pericardium contained more than one *measure* of pus, nearly all the substance of the heart was destroyed and putrefied.

It is difficult to comprehend how the gangrene of an organ, like the heart, whose action is indispensable to life, can be extended so far as to occupy all its substance before the approach of death. I am much inclined to think that many practitioners have mistaken for a gangrenous state of the heart a softening of its substance, which is observed in consequence of carditis. Besides, if I were not apprehensive of increasing these cases too far, it would be easy to prove that many of the old authors were ignorant of what they called a gangrenous state of the heart.

ARTICLE III.

Rupture of the heart.

THE rupture of the heart has seldom been noticed in its sound state. Nevertheless some examples of it are quoted, as having happened from a violent effort, from a fit of anger, from a fit of epilepsy, or from coition. The rupture, depending on no other causes than the foregoing, would appear necessarily to obtain more frequently in the parietes of the auricles, which are weaker, than in the more resisting substance of the ventricles. But, according to the observations made by *Verbrugge* (see page 197) it seems to be the converse. Thus, by comparing a number of cases, he thought himself authorized to conclude that the left ventricle was oftenest lacerated ;

others have observed marks of similar ruptures situated at the origin of some of the large venous trunks ; so that the effusion which commonly follows from them, takes place in the cavity of the pericardium.

The collection of facts which substantiate the rupture of the heart is but small, this organ being otherwise in its natural condition ; yet we find, in authors, a great number of instances of a rupture of the heart, especially where its muscular parietes were previously diseased.

The affections which dispose the heart to this laceration, are, as I have before said, aneurisms, ulcerations, softening of the fleshy substance, and violent contusions.

Case LXI. A hypochondriacal old man, according to *Morgagni*, (let. XLIV, art. 15,) was seized with a violent pain which seemed to rise from the abdomen to the thorax, attended with difficult respiration, and spasms : he died on the third day.

On dissection, he found the blood effused into the pericardium, through three holes, which penetrated into the left ventricle, which had attained to such a state of dilatation, that its cavity was three times the natural size.

Case LXII. A man, according to the same author had had ulcers in his legs which were closed ; he experienced after dinner in particular, pains in the chest, uneasiness, and vapors which seemed to ascend to the head. He died suddenly in one of these fits.

The pericardium was found full and apparently distended with black coagulated blood, which was effused through a laceration, made in a point where the fibres of the heart were seen corroded and formerly ulcerated.

It is very evident that death must always ensue from the effusion of blood produced by this accident. It ought to be noticed that death which is sudden in most cases does not supervene immediately in a few. Several cases prove that it does not happen sometimes till the second or third day, doubtless because the blood in these cases, is merely effused through a very narrow

and oblique laceration, consequently slowly and in small quantity.

It has thus far been my design to speak only of spontaneous ruptures or lacerations of the heart, but not of the wounds or perforations of this organ. It is because I did not wish to confound these lesions together that I have not communicated some facts analogous to what *Fanton* relates, who saw a man wounded in the heart live till the twenty-third day, though the left ventricle had been pierced, and the internal fibres corroded and destroyed.* This case, at first appears astonishing, yet it is not entirely so, since it is more than probable that in this individual the perforation of the parietes were incomplete; that besides we may be confident, on examining a great number of cases of this nature, collected by *Senac* and *Morgagni*, that wounds of the heart, even such as pierce it through and through, do not always induce instant death, and, farther, that they are not indiscriminately mortal in every case.

As wounds of the heart belong but indirectly to my subject, I shall confine myself to what has just been said.

ARTICLE IV.

Additions to the article tumors and various affections of the heart.

THE case which resembles the most that which I have quoted in case XLVI, is thus announced in *Les Mélanges des Curieux de la Nature*.

Case LXIII. On opening the body of a man who died suddenly, a membrano-fleshy tumor was found superadded to the heart, which it both resembled in its form, and equalled in size. The tumor was surround-

* *Charles Bell*, in his *Operative Surgery*, gives a case of a soldier under *Sir John Moore*, who was wounded at *Corunna*, and lived fourteen days after the ball had pierced the right ventricle of the heart.—T.

ed with varicous veins, which, being ruptured, caused a hemorrhage that filled the pericardium with blood.

We read also in the same work, that in a very similar case, there was discovered at the base of the heart a tumor of the size of a pigeon's egg, surrounded by several other smaller tumors, which were all, as well as the principal one, smooth and united at their surface, and contained in their cavities, a fluid like lees of wine.

Other tumors have again been observed on the external surface of the heart. Though they appear to have no relation to the one of which I have given a description in the body of this work, I do not deem it improper to insert the following example.

Case LXIV. Morgagni, in his XXI. letter, art. 4, relates that a man, aged seventy-four years, who frequented taverns, and had, toward the close of his life, become subject to pneumonia, was admitted into the hospital in Padua, without experiencing any other symptoms of a diseased heart. He died, and on opening the body, there was observed at the posterior part of the left ventricle, two breadths of a finger above the apex of the heart, a tubercle of the size and form of a cherry, one half of which was buried in the substance of the heart, the other rose above its surface. This tumor resembled the hydatids noticed on the surface of the other viscera; on puncturing it, a small quantity of serum flowed out.

What *Morgagni* says of this tumor does not prove it to have been a real hydatid.

The observations of *Rolfinkius*, who saw many hydatids surrounding the heart, do not appear more exact. It is possible that these pretended hydatids were merely simple cysts, which might have been developed on the surface of the heart, as they are formed in the inside of this organ. The only example which I know of such internal cysts has been deposited by *M. Dupuytren*, in the *Journal de Medicine*, Brumaire, an. 11.

SECT. I.

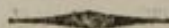
Addition to the article perforation of the partition of the ventricle.

WHEN I observed the perforation of the ventricle in case XLVII. I then knew of no other analogous case, except the one quoted by *Senac*, Volume II, p. 414; but since that period, two cases nearly similar to the one I have described, have been observed, the one by *M. Dupuytren*, the other by *M. Beauchene* the son.

The following case is related by *Senac*, from *Pozzis*.

A man, aged twenty-seven years, was troubled with palpitations; repeated bleedings procured some relief, but he died in a syncope.

The heart was of an extraordinary size; both ventricles were reduced to a single cavity which contained sixteen ounces of blood; the muscular substance was extremely decayed; the coronary arteries were very much lengthened, and so constricted that they could not receive the blood; the vena cava was much dilated, and formed a sort of reservoir, or auricle, in which the blood was accumulated.



SECT. II.

The continuance of the foramen ovale in the adult man.

I GAVE an example of the existence of the foramen ovale, and its dilatation, even in the adult man. I find in the XVIIth let. of *Morgagni*, a case which has, with the one I have related, sufficient analogy to be inserted in this appendix.

A girl, who, from her birth, had always been sick and languid, respiration much embarrassed, and skin of a livid color, died at the age of seventeen.

The heart was small, its apex rounded, the left ventricle was of the form which usually distinguishes the

right, while the right was organized as well as the left naturally is; but the latter, though larger, had nevertheless thicker walls; the right auricle was also far more fleshy and twice the size of the left. The foramen ovale formed between these two cavities an opening of communication, capable of admitting the little finger. Only one of the three tricuspid valves had its due proportions, the other two being smaller than they usually are. The valves of the pulmonary artery were, at their basis, in the natural state, but were found cartilaginous toward their upper margin, and exhibited in this part an osseous point; they, by their loose edges, were so united together, as to leave for the passage of the blood merely an aperture of the bigness of a lentil. This aperture was furnished with membranous productions, like flesh, situated so as to supply the valves, by permitting the outlet of the blood, and preventing its return.

SECT. III.

The closing of the foramen ovale in the fœtus.

THE closing of the foramen ovale in the fœtus has been less frequently observed, than the existence of the same opening in the adult. This difference, doubtless, obtains on account of still-born children being more rarely opened, or of their dying shortly after birth. The preternatural condition which engages my attention, seems to involve symptoms more immediate and weighty than that which I have just considered.

Vieussens, in his treatise on the structure of the heart, Chap. VIII, p. 35, relates the history of a child externally well formed, which had, from its birth, difficult respiration, voice weak and hoarse, the color of the whole habit of body leaden, the extremities cold, and which lived only thirty-six hours.

The lungs were greatly tumefied, and extremely gorged with blood; both the right ventricle of the heart, and

the pulmonary artery much dilated ; not a vestige of the existence of the foramen ovale was found.

The blood, in this child, not being able to pass from the right auricle into the left, as it happens in the natural state of the foetus, was obliged to pursue the same course as it does in the adult ; but how could this fluid penetrate the lungs in the collapsed state in which they were found at this period of life, without meeting with an obstacle almost insurmountable ? Hence the dilatation of the right ventricle and pulmonary artery ; hence the engorgement and induration of the lungs, as well as the obstruction of the sanguineous vessels of this organ. The danger of this preternatural state would probably have been far greater, had not the canalis arteriosus remained to supply, at least in part, the natural and necessary opening which was wanting in this child.

SECT. IV,

A preternatural state, in which the aorta arises from both ventricles.

I GAVE, in the preceding paragraphs, the description of several pathological states of the heart, the more surprising as they seem to subvert entirely the natural order of the circulation. To render the picture of these sports of nature more complete, which appear to destroy every physiological opinion, I deem it necessary to treat briefly of a case related by *Sandifort*, in his work entitled, *Observations anatomico-pathologiques*.

A child, having enjoyed good health during the first year of its life, was in the beginning of the second, attacked with all the symptoms which characterize the most alarming disease of the organ of circulation. This affection, which would be too long to detail here, became, for the twelve years that the patient lived, more and more dangerous. After this interval, it fell a victim to a disease which, from its nature, seemed that it must have taken place much sooner.

On dissection, it was observed, beside the existence of the foramen ovale and dilatation of the right ventricle, that the aorta, instead of rising from the left ventricle only, had a mouth in each of the ventricles.

A case, very similar to the preceding, was seen by *Steno*, and related by *Th. Bartholin*, in the acts of Copenhagen; but his subject was an embryo that exhibited too great a malconformation, to be precluded from the rank of monsters.

The two cases, quoted above, from *M. Dupuytren* and *Beauchene* the son, presented a similar malconformation.

I shall not try to explain the astonishing modifications which the circulation must have undergone in the preceding case; I have enlarged sufficiently upon the singular derangement which must follow from these different morbid states. I will let the physiologists decide how far these very extraordinary cases attack the established laws of the circulation, and especially the theory which now serves to explain the influence of respiration on the renovation of the blood.

ARTICLE V.

Of worms found in the heart.

I COULD enlarge this appendix with numerous cases extracted from different authors, who have pretended to find worms in the cavity of the pericardium or in that of the heart; but as most of these accounts appear to partake more of the marvellous than of the truth; and besides, I am acquainted with no modern practitioner to whom a similar fact has occurred, I shall dispense with relating the observations which are recorded in several works of morbid anatomy.

I will only observe that a prejudiced mind can easily find worms in the heart, when opening dead bodies, by mistaking for these insects white cylindrical or flattened concretions of lymph which are extracted from the vessels where the white part of the blood is coagulated, and which perfectly resemble *lumbrici*. Perhaps this circumstance might have imposed on some of the ancient authors, who, in this instance, as well as many others, shew themselves in general greater friends of the marvellous than we now do.

FIFTH CLASS.

OF ANEURISMS OF THE AORTA.

General considerations.

ARTERIAL aneurisms have been, in surgical nosologies, divided into two large classes under the denominations of *true* and *false* aneurisms.*

* Professor Scarpa says he "has ascertained in the most certain and unequivocal manner that there is only one kind or form of this disease, viz. that caused by a solution of continuity or rupture of the proper coats of the artery, with effusion of blood into the surrounding cellular substance; that aneurism, in whatever part of the body it is formed, and from whatever cause it arises, is never occasioned by the dilatation, but by the rupture or ulceration of the internal muscular coats of the artery."

The following extracts from his Treatise on Aneurism will afford the reader a very just view of the professor's theory, which, according to him, is founded on demonstration.

"It is a great error, if I may be permitted to say so, although one which has been for a long time introduced into medicine, to suppose, that the aneurism of the curvature, or in the trunk of the aorta, produced by a violent and sudden exertion of the whole body, or of the heart in particular, and preceded by a congenital relaxation of a certain portion of this artery, or by some internal morbid cause, capable of weakening its coats, ought always to be considered as a tumor formed by the distention or dilatation of the proper coats of the artery itself, that is of its internal and fibrous coats. In opposition to this doctrine, which has been generally adopted in the schools, there is nothing in all pathology, which, in my opinion, can be more easily demonstrated than the contrary, or that the aneurism of the curvature, or in the thoracic or abdominal trunk of the aorta, is not produced by a dilatation, but by a corrosion and rupture of the proper coats of the aorta, and consequently by the effusion of arterial blood under the cellular sheath, or any other membrane which covers externally the injured artery. If the aneurism which sometimes occurs in the aorta, immediately after this artery passes out of the heart, be sometimes preceded by a certain degree of dilatation of the artery, this, properly speaking, is not essential to constitute the disease; both because this dilatation of the whole tube of the artery is not a constant occurrence in aneurism; or rather, in most cases, the aneurism of the curvature

If it be agreed, 1. to call the aneurism *true* in which all the coats of the artery are thought to be dilated; 2. to

of the aorta occurs without this artery being at all, or sensibly dilated beyond its natural diameter; and also, because, in those rare cases, in which the aneurism is preceded or accompanied by a certain degree of dilatation of the whole diameter of the curvature of the aorta, there is a very marked and evident difference between an artery simply enlarged in diameter, and the capsule which forms the proper aneurismal sac."

"But if any one, who is not prejudiced in favor of the common doctrine with regard to the nature and proximate cause of this disease, will examine, not hastily and superficially, but with care and by dissection, the intimate structure and texture of the aneurism of the aorta, unfolding with particular attention the proper and common coats of the artery, and in succession those which constitute the aneurismal sac, in order to ascertain distinctly the limits of both, he will see clearly that the aorta, properly speaking, contributes nothing to the formation of the aneurismal sac, and that, consequently, the sac is merely the cellular membrane, which in the sound state covered the artery, or that soft cellular sheath which the artery received in common with the neighboring parts; which cellular substance, being raised, and compressed by the blood effused from the corroded or lacerated artery, assumes the form of a circumscribed tumor, covered externally, in common with the artery, by a smooth membrane, such as the pleura in the thorax, and the peritonæum in the abdomen."

"Of all the causes capable of producing the rupture in any part of the proper coats of the aorta, especially the internal, I have great reason to believe, that the slow morbid, *ulcerated, steatomatous, fungous, squamous* degeneration of the internal coat of the artery, has a share in it much more frequently than violent exertions of the whole body, violent blows, or an increased impulse of the heart. The artery is nourished, and increases in the same manner as all the other parts of the animal body, it is vascular and organized, and therefore must be subject to the diseases to which vascular and organized parts are liable. And it is a fact, of which no doubt can be entertained, that the proper coats of the aorta, and especially the internal coat, are subject, from a slow internal cause, to an *ulcerated* and *steatomatous* disorganization, as well as to a *squamous* and *earthy* rigidity and brittleness. Read upon this subject what has been written by *Bonetus, Lieutaud, Morgagni, Haller, Lancisi*, by *Guattani, Matani, Borsieri, Desault*; and farther, let any one, skilled in the dissection of the human body, consult his own observation, and it will appear, that these morbid degenerations of the internal coat of the arteries are very frequent, especially in the curvature, thoracic, and abdominal trunks of the aorta. And this is not to be considered as a peculiarity of the coats of the artery; for we have cases of *ossifications* of the pericardium and of the heart, from internal unknown causes, &c."

"These morbid states of the artery always commence in the internal coats which in the sound state is filled by a fine down, called by Haller the *cellulosa secunda* of the artery. At the beginning of the disease, the internal coat of the artery loses, for a certain space, its beautiful smoothness, and becomes irregular

call the *false circumscribed*, when one of these coats is ruptured or lacerated, while the others, or merely the

and wrinkled. It afterwards appears interspersed with yellow spots, which are converted into grains, or earthy scales, or into *steatomatous* and *cheese-like* concretions, which render the internal coat of the artery very brittle, and so slightly united to the adjoining muscular coat, that upon being merely scratched with the knife, or by the point of the nail, pieces are readily detached from it, and on being cut, it gives a crackling sound, similar to the breaking the shell of an egg. This ossification of the artery cannot be said to be proper to old age, since it is sometimes met with in patients who are not much advanced in life. The whole of the side of the artery, in that part which is occupied by the morbid affection, is, for the most part, hard and rigid, sometimes soft and fungous, and, in most cases, the canal of the artery is preternaturally constricted. In the highest degree of this morbid disorganization, we find on the inside of the artery, true *ulcerations*, with hard and fringed edges, fissures, and lacerations of the internal and fibrous coats of the artery. Some have thought, that when this steatomatous, earthy induration of the coats of the artery happens, and produces a constriction of the canal of the artery, it contributes very much to the formation of aneurism above the place of the stricture, in consequence of the resistance which that stricture opposes to the blood sent from the heart."

"From all that has been hitherto said with regard to aneurism in general, and more particularly that of the aorta, it appears to me, that we may with certainty conclude, 1, that this disease is invariably formed by the rupture of the proper coats of the artery. 2. That the aneurismal sac is never formed by a dilatation of the proper coats of the artery, but undoubtedly by the cellular sheath which the artery receives in common with the parts contiguous to it; over which cellular sheath the pleura is placed in the thorax, and the peritonæum in the abdomen. 3. That if the aorta immediately above the heart appears sometimes increased beyond its natural diameter, this is not common to all the rest of the artery, and when the aorta in the vicinity of the heart yields to a dilatation greater than natural, this dilatation does not constitute, properly speaking, the essence of aneurism. 4. That there are more of those marks regarded by medical men as characteristic of aneurism from *dilatation*, which may not be met with in aneurism from rupture, including even the circumscribed figure of the tumor. 5. That the distinction of aneurism into *true* and *spurious*, adopted in the schools, is only the production of a false theory; since observation shews, that there is only one form of this disease, or that caused by a *rupture* of the proper coats of the artery, and an effusion of arterial blood into the cellular sheath which surrounds the ruptured artery."

Dr. William Hunter, in 1752, communicated his ideas on aneurism, which were received by physicians with great satisfaction and improvement; for, it seems, they had before no very clear conception of the nature of the disease. His division is mostly adopted by *Corvisart*, which, as will be seen by the following quotation, differs very much from *Scarpa's*. Who can decide when such eminent and experienced teachers disagree?

cellular, have suffered dilatation, the greatest number of aneurisms of the aorta appears to belong to the class of

“May not some of the disputes about the nature of aneurisms be settled, by dividing them into three kinds, rather than into two, as authors commonly divide them? Thus, aneurisms are either, 1, *true*, that is, by *dilatation*; or, 2, *false*, that is, by *rupture*; or, 3, *mixed*, that is, partly by rupture, and partly by dilatation.

There is no such a disease as the *true* aneurism. This proposition, though generally allowed, has been denied by some writers, who have imagined that, in every aneurism, the arterial coats are ruptured, not stretched. But nothing is more plain than that the coats of the artery are stretched in five of the cases that I have examined and still preserve. That they were stretched in the above case, every one readily allowed who saw the dissection. But what proves it beyond doubt, is the preternatural distance of the three ascending branches from each other, which could not have been, if the coats had not been stretched there.

The coats of arteries, like other parts, may grow thicker in substance, at the same time that they are stretched in dimension. This was actually the case, though in no great degree, in all the aneurisms of the *aorta* that I have seen, and is commonly enough the case in all encysted diseases.

The length and shape of the dilated part is very different in different aneurisms of the *aorta*. In all the five which I have met with, and which are now before me, the dilatation begins with the artery at the heart. In one of them it continues only to the origin of the left subclavian; in another a little beyond that part; in a third and fourth, it is continued half way down the thoracic portion of the *aorta*; and in a fifth, it is continued almost to the bifurcation of the artery in the loins. In two of them, the common trunk of the right subclavian and carotid is likewise considerably enlarged. In two of them the shape is oblong and uniform; in those, the shape is more circumscribed and irregular, with particular cells or enlargements, as if the coats had been there weakened by some partial rupture or otherwise.

In the aneurism of the *aorta*, the arterial coats are apt to be stretched more in proportion, and to form particular cells, where they meet with firm resistance, than where their support is more soft and yielding. Though at first sight this must seem problematical or improbable, I believe it will be found true. In four of the five cases that have fallen under my examination, it was very plain that the anterior part of the curvature of the *aorta* was protracted into a *sacculus*, with a stricture between it and the rest of the aneurism. Here I presume the arterial coats must have been weakened by pressure, and the resistance of the *sternum* and ribs must have made the protruding part swell out in its lateral circumference; whence a stricture between this *sac*, and the rest of the aneurism, and the appearance of the whole as of a double aneurismal *sac*, one part communicating with the other by a narrow orifice. That this peculiar *sac* was not formed in consequence of a rupture in the artery at that place, was plain from the different degrees of it in these four different cases, as well as from an obvious continuity both of the surface and substance of the artery, in all of them. Med. Observations and Inquiries, vol. I. p. 341, 342, &c.—T.

those which are denominated *true* : I say the greatest number, because some aneurisms of this great arterial trunk approach to a certain point the *false*, whose main character I have with brevity just shewn.*

Before I treat of the causes, effects, signs and method of cure, applicable to the true aneurism, I think it necessary to make a few observations concerning the false aneurism.

ARTICLE I.

Of the false aneurism of the aorta.

THE cases in which the organic lesions are observed, which I define under the name of *false aneurism* of the aorta, are so frequent, as to deserve the more to fix the attention, as, although analogous to the false aneurisms of the extremities, the theory, which serves to explain the nature of the formation of the latter, seems in some measure insufficient to account for the evolution of the former.

Before I commence the discussion which this view of the subject presents, I think it proper to quote some facts in morbid anatomy which establish the existence of aneurisms of the aorta, to which I give the denomination of *false*.

In the collection of cases of morbid anatomy, modelled and arranged in the cabinets de l'École de la Médecine

* It will doubtless be noticed, that I do not give here a precise definition of the *false* and *true* aneurisms; because, we are now more ignorant than ever of the accurate sense of these terms, especially since professor *Dubois* and *M. Dupuytren* have presented to la Société de l'École de Médecine, some anatomical preparations which seem to prove what several authors had before advanced, that, in some cases, the internal membrane of the arteries might form a hernia through a rupture of the fibrous coat, and, from its extension, cover the whole internal surface of an aneurismal sac. I will further observe that it is extremely difficult to believe that the organization of the internal membrane of the arteries can be sufficiently extended to cover, without being lacerated, the internal surface of certain aneurisms of the aorta, which are sometimes very large.

de Paris, are found placed two affections of the aorta, which appear to me to deserve, in many respects, the name of *false* aneurisms.

One of these preparations, marked No. 26, represents a heart surmounted by the arch of the aorta. This artery, from its origin to the end of its curve, appears to have suffered a dilatation which is, however, inconsiderable; but on the right side of the convexity of this curve, is seen a tumor of the size of a racket ball, (*d'une balle de paume.*) The parietes of this sac, externally whitish, are, within, unequally marbled into a grey or violet color. The thickness of the parietes is about two lines. The cavity of the tumor opens into that of the aorta, through a hole of a circular form, which is eight lines in diameter; the margins of this hole are smooth, round, and seem to be of the same thickness as the parietes of the vessel. The parietes, at the place of the opening, are not more dilated than in every other part, and do not form a kind of cul de sac at the bottom of which the opening in question is made; it might rather be said that the communicating hole, between the artery and aneurismal sac, had been apparently made with a punch; so that, situated above the orifices of three arteries which form the aorta ascendens, this opening, had it been smaller, might be taken for the opening of a fourth arterial trunk ranged on the same line, a mistake in some degree excusable, since it is not uncommon to see the right subclavian and carotid arteries rise separately from the aorta, instead of proceeding, as it is generally observed, from the common trunk of the arteria innominata.

The second of the anatomical preparations is inscribed under No. 27. It displays an aneurism quite similar to the preceding; its position is nearly the same. It is much smaller, not exceeding the bigness of a walnut. It opens into the cavity of the aorta through a hole proportionally as large as that which remains in No. 26. The aorta, in the last case, is not so much dilated as in the first.

A case still more remarkable, is the following.

The aorta, in this anatomical preparation, being very well preserved, appears to retain its natural state, as far as the articulation of the last dorsal vertebra, with the first of the loins ; even in this point the arterial tube is not dilated ; we observe only, at the posterior part of the cavity of the artery in the place corresponding with the vertebral column, an opening of an oval form, being eight lines in height and about five in breadth, with its margins smooth and round. This opening leads into the cavity of an aneurismal sac of the size of the first. The parietes of this sac are, in their whole extent, the posterior part excepted, formed by a membrano-fibrous substance, thicker than the aorta itself. These sero-fibrous parietes are succeeded posteriorly by the anterior surface of the bodies of the twelfth dorsal vertebra, and of the first of the loins which are both almost totally consumed. Between two depressions produced by the destruction of the bodies of the two vertebræ which I have pointed out, are seen projecting the inter-vertebral ligamento-cartilaginous substance which has continued in all its perfection.

All these osseous parts were, in the inside of the tumor, directly in contact with the blood which it included ; but as the cavity of the tumor was extended farther upward than downward, the jet of blood which supplied the opening of communication, acted merely on the parts situate immediately behind it, viz. on the body of the twelfth dorsal and first lumbar vertebræ.

The mode of formation of such tumors appears not to be explained in a satisfactory manner, by saying that the affections are induced by an actual effusion of blood into a cavity that this fluid makes in the neighboring cellular tissue whose united laminae form the parietes.

Perhaps it is correct that the formation of the aneurisms of the extremities be thus explained ; the profusion of cellular tissue, found in the vicinity, may, in this case, be compressed, flattened, and transformed into a mem-

brane ; it is found, as it were, situated between two compressing powers, which are, on the one hand, the pressure of the blood ; on the other the resistance of the blood and surrounding parts ; but is this exactly the state, at the time of the evolution of an aneurism of the aorta, and of the species which I have just described ?

The aorta, in the different cavities of the body through which it passes, is, in almost every part of its tract, so insulated, comparatively to the other arteries, one can scarcely calculate upon the support which the surrounding parts must give to its cellular coat, which is, therefore, even abandoned to its whole extensibility. At the time of the rupture of the aorta, when death does not immediately supervene, an aneurismal sac must then be formed, whose size would instantly become enormous. Now, this does not very often occur, as the three foregoing cases otherwise prove, in which the aneurismal tumors had not acquired a very remarkable size.

How then can we account for the formation of the aneurisms of the aorta which I have called *false* ? I declare this has ever been, and continues to be to me a mystery ; nevertheless, the two abridged cases which I am going to relate, might, if they were supported by others of a similar nature, lead to a more satisfactory explanation.

Case LXV. In the body of a large, but emaciated man, who died in the winter of 1799, in the hospital of la Charité without my having been able to distinguish the nature of his complaint, which had not been in my power to follow, particularly, I observed, after having laid open the chest, and found the heart and lungs in good order, at the fore part of the curvature of the aorta, a small tumor of the bigness of a walnut, of a blackish color, which I took at first for an engorged bronchial gland ; but by penetrating its substance with a scalpel, my attention was fixed by the resistance which I experienced in cutting the external membrane of this tumor. I examined it closely, and ascertained that it was a real

fibrous sac which, by its base, adhered intimately to the parietes of the aorta, with which it appeared, in some measure, confounded. It was formed by an external membrane, evidently of a fibrous nature, being about two lines in thickness. This species of cyst contained a substance not so hard as tallow, and of a deep red color, otherwise very similar to clots of blood, a long time formed, which adhere to the inside of the parietes of aneurismal sacs.

I was apprehensive, therefore, that this cyst communicated with the cavity of the vessel to which it was attached; but it was impossible to find the communicating aperture; the external layers of the aorta at the place corresponding to the cavity of the cyst were destroyed, and the thickness of the parietes of the vessel was, in this part only, much thinner than at any other.

Having laid open the aorta longitudinally, I observed no communicating aperture, but a greyish, livid spot, which answered to the basis of the cyst.

Curious to prosecute the dissection of the aorta in this subject, I discovered it, by cautiously advancing from the thorax toward the abdomen; I was equally surprised to find on the artery, above the trunk of the cœliac, a tumor somewhat smaller, but in every other respect like that which I have already described.

In 1786, dissecting for other purposes, a subject exceedingly advanced in years, I then made a similar observation on the ventral aorta, which presented two or three tumors entirely like the preceding; I saw also one or two on each side of the primitive iliac arteries. I inspected these tumors no farther, but I am confident of their being altogether like the one in question.

I know not whether other practitioners have noticed cases of this nature; but should they find similar tumors, would they not have an easy and satisfactory explanation of the formation of the affections which I have called false aneurisms of the aorta?

Hence, I am much inclined to believe that had the subject of this case lived longer, the tumors which I observed, and which had already wasted a great portion of the thickness of the parietes of the aorta, would have eventually pierced this artery; then the blood could have passed freely into the cavity of this cyst, quickly transformed into a sanguineous tumor, which would have augmented in proportion as the blood had effected the dilatation of the fibrous sac.

The aneurismal tumors described, p. 239, appear to me to have great analogy with those which I have just considered; but with this difference, that in the former the communication was already formed, while in the latter, the cavity of the vessel, having yet no communication with the inside of the cyst, would have finally been formed, if the patient had survived longer.

If my observations should hereafter be confirmed by many others of the same nature, the mode of the evolution of certain aneurisms of the aorta will be very different from that which is commonly admitted.

Therefore, these aneurisms, far from being developed from the inside to the outside by the dilatation of one or all the arterial coats, are on the contrary formed from the outside to the inside by a sort of corrosion of the same coats. Besides, the aneurismal sac, instead of being furnished by one or several dilated arterial coats, would be wholly formed by an adhering, fibrous, membranous sac, but extraneous to the coats of the artery.

ARTICLE II.

Of the true aneurism of the aorta.

SECT. I.

General considerations.

By examining, on the one hand, the size to which aneurisms of the aorta generally attain ; by considering, on the other, that the true aneurisms of the arteries of the extremities remain true only while they are but little enlarged, we should be inclined to believe that the parietes of the aorta are susceptible of a greater dilatation than those of the other arteries, before they suffer the rupture which obtains, when the extensibility of the arterial parietes has reached its boundary. Nevertheless, if we first compare the diameter of the aorta with that of the other arteries, which are the most liable to aneurismal dilatations, viz. the popliteal ; we may infer from the comparison, that the aorta does not probably become proportionally more dilated than the other arteries, before it loses the principal character coincident with the true aneurism, viz. the integrity of all the coats of the vessel.

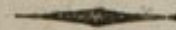
The true aneurisms of the aorta apparently pursue the same course as those of the other arteries, not only in their evolution, but in their termination, which presents no other differences than those which pertain to the various relations that these vessels have with the neighboring parts.

Hence, in the cases of true aneurism, it is when the dilatation of the parietes of an artery, of a limb, is carried so far that the internal coats are ruptured, and a mortal hemorrhage would immediately ensue, if the neighboring cellular membrane and contiguous parts did not obviate the effusion of blood, by forming for this fluid a new sac in which it accumulates, and forms a tumor much larger than that which previously existed.

It is absolutely thus with the true aneurisms of the aorta. When the distention of the parietes of this artery is carried so far that they can yield no farther, the rupture of the attenuated coats succeeds, unless death should previously supervene. This rupture occasions, as in the first case, an effusion of blood ; but in the great cavities the surrounding parts and the neighboring cellular membrane cannot prevent the effusion of blood, as in aneurisms of the arteries of the extremities.

There is therefore this difference only between the rupture of a true aneurism of the popliteal artery, and that of a true aneurism of the aorta, as in the first instance the laceration of the coats changes a true aneurism into another tumor in like manner sanguineous, which has been called a consecutive false aneurism, while in the second, instantaneous death is the inevitable effect of the same rupture.

There is positively no difference in the progress of these two diseases. Could we, therefore, suppose the aorta surrounded with a mass of cellular membrane, muscles and teguments, the rupture of a true aneurism of this artery would be no more dangerous than that of the popliteal artery, because of the greater quantity of blood which might be furnished to the new tumor both from the calibre of the aorta and its being nearer to the central organ of the circulation.



SECT. II.

Of the causes of the aneurisms of the aorta.

WHATEVER be the resemblances of the true aneurism of the aorta and that of the other arteries, the causes of the first may be referred to two principal heads which I am going to consider.

To the first is referred whatever belongs to the derangements of the circulation ; as, 1. the augmentation

of the impulse of the blood ; 2. the obstacles to the progress of the blood beyond the part that is dilated.

To the second, whatever may induce or favor any debility, or disorganization in the parietes of the vessel, as violent efforts, blows applied upon the chest, the translation of morbid matter, and its attachment to the parietes of the vessel, &c. &c. I will concisely examine each of these causes, and relate at the same time a few cases, which, without being tedious, will serve for a history of the signs, effects, and different terminations of the disease.

A. The augmentation of the muscular power of the heart interrupts the relation which ought to exist between this organ and the aorta, into the cavity of which it propels the blood with too great impetus. The parietes of the artery being then too weak, surrender insensibly to the too lively impulse of the blood, and this cause, incessantly acting, produces the dilatation.

The following case embraces the history of an aneurism of the aorta that appears may be attributed in part to this cause.

Case LXVI. A rubber, aged forty-eight years, experienced for the space of three months difficulty of respiration ; he ascribed this inconvenience to a catarrh which he then took. During the three months he was bled once, without any relief ; he felt, likewise, an internal pain between the shoulders ; hoping to find repose beneficial, he left off his usual employment, but the violence of the complaint soon obliged him to enter the hospital.

The leading symptoms which then appeared, were the bloatedness of the countenance more evident on the right side than on the left, the face of a violet color, the elevation of the left parietes of the thorax, the infiltration of the extremities, extreme difficulty of respiration, which was high, frequent, short and hissing ; the inspirations never appeared to be perfectly made ; the thorax when struck did not sound in the least on the middle and su-

perior part of the left side. By laying the hand over, and even above the region of the heart, we felt a trembling, and a rushing which exhibited to the touch, what is felt by applying the hand over the thorax of the dying who have the rattle. The patient could neither lie in bed, nor take a moment's rest.

From these various symptoms, it was easy to discover an aneurism of the aorta, arrived at such a point as to endanger every instant the life of the patient.

The next day after his admission, the state of the complaint became far more alarming. He sat up during the day, with the body exceedingly bent over the thighs. He died the same evening, in a fit of suffocation.

On dissection, I found the cellular tissue of the thorax and neck infiltrated.

The right cavity of the thorax contained about a pound of serum; the left, less than half the quantity.

The right lung was infiltrated; the left appeared small and compressed toward the upper part of the thorax.

The pericardium contained a small quantity of serous fluid.

The right auricle was perceptibly dilated and turgid with blood; the right ventricle was smaller than natural; the left without being dilated, presented the parietes far thicker and stronger than they usually are.

The arch of the aorta had become the seat of a considerable aneurism which had contracted with the trachea such adhesions, that the fore part of its rings was flattened. The parietes of the aneurism were so thin in the place corresponding with the trachea, that they were lacerated by the slightest effort which was made to remove the adhesions that were formed. The membranes of the artery were apparently destroyed in this part, and succeeded by those lymphatico-sanguineous layers which, in aneurisms, are alternately applied against the internal surface of the parietes of the sac. Had not the patient died in a fit of suffocation, the laceration of the aneurismal sac would have probably destroyed him from a hemorrhage by the trachea.

The blood, in this subject, could not pass without great difficulty into the pulmonary artery which was compressed at its origin by the aneurismal tumor of the aorta. Hence proceeded the sanguineous engorgement of the right cavities, induced, on the other hand, by the afflux of the blood which the venæ cavæ returned to the right auricle. This engorgement was to the return of the blood into the heart, clearly, a considerable obstacle, or delay, which must necessarily act upon the circulation.

From these causes, the blood, forced, as it were, to regurgitate, suffered at the same time, in the principal trunks of the aorta, and particularly in its arch, an almost insurmountable resistance; it is easy to conceive the purely mechanical effects of such an obstruction; the efforts which the blood then makes laterally against the parietes of the aorta prevail against the resistance of the latter, and produce its dilatation.

B. Among the causes of the aneurisms which belong to the derangements of the circulation, I have considered the obstacles situate beyond the dilated part. Treating, in the preceding paragraph, of the obstacles to the return of the blood to the heart, and of the consequent retrocession of this fluid, I implicitly explained how the obstacles situate, in the current of the circulation beyond the dilated part of the aorta may induce these dilatations. In this instance, it is invariably the species of opposition that obtains between the column of blood propelled by the heart and that which stagnates or regurgitates into the great vessels, which decides the lateral efforts adapted to produce the dilatation of the aorta, in that point of its parietes which happens to be the weakest, admitting, however, that the parietes of the heart are sufficiently vigorous to overcome the reaction which must be made on them; for if they were too weak, it would necessarily be the heart, but not the aorta, which would become the seat of the dilatation.

The obstacles to the circulation of the blood are extremely numerous, without speaking here of those which

are formed in the trunks of the great vessels and their main branches ; how much consideration do not these resistances deserve, taken even in the capillaries, either from corpulency, tumors, spasms, or infiltrations, which, though often subsequent, may sometimes generate this state ?

C. To the second order of the causes of aneurisms of the aorta, I have referred whatever may induce or barely favor any disorganization, viz. a debility of the parietes of the vessel, as violent efforts, blows upon the outside of the chest, the agitation of coughing, the conveyance and attachment of the morbid matter to the parietes of the artery, &c.

Case LXVII. A sawyer of marble, aged forty-seven years, of a strong constitution, carried, the 4th of August, 1800, about seventy pounds in weight, when, endeavoring to avoid a carriage which was passing near him, he fell suddenly backwards ; though he partially saved himself by the support of one hand, and remained some time in this forced position before he was assisted. He continued his work for four days, after which there supervened a slight difficulty of breathing ; he felt simultaneously palpitations in the superior and right portion of the sternum, symptoms which induced him to enter the hospital the 12th of August, eight days after the accident which seemed to have originated the disease.

At this period, there was seen a small tumor on the right side of the sternum, on a level with the articulation of the first piece of this bone with the second. The tumor did not discolor the skin ; we both felt and saw the pulsations coincident with those of the pulse, for the space of nearly three inches in length and two in breadth. Respiration was much embarrassed.

The existence of an aneurism of the aorta being discovered, a bleeding was performed which gave momentary relief to the patient. The tenth day of the disease, he complained of pain in the shoulder and numbness in the right arm,

The eleventh day, a second bleeding rendered the breathing more free. The following night, if the patient be believed, a very large prominent tumor externally, but compressing the lung within, was observed toward the left breast and axilla. He thought he felt the passage of a fluid from the right tumor into that on the opposite side; at the same instant he was seized with great oppression and fainting.

These symptoms soon subsided; then the left tumor disappeared entirely. Is this phenomenon, related by the patient, to be considered as real or fictitious?

Thirteenth day, the difficulty of breathing had abated; but the pain in the shoulder was greatly increased.

I regret that I could not have investigated this case farther; but as the disease was very nearly stationary, the patient desired to leave the hospital, which he did on the 23d of August, the nineteenth day from the accident.

This case is interesting in several respects; first, as to the rapidity with which the tumor appeared externally, what seldom occurs until the lapse of a greater or less space of time; second, in respect to the numbness and pain of the arm on the side of the tumor, phenomena most likely resulting from the compression of the nerves, by the aneurismal tumor. Here the pain was moderate, as the tumor had not acquired an uncommon size, there was merely a simple numbness. But it will not be surprising, in other cases, where it may be larger, to see very sharp pains and complete paralyzes occur, against which no remedy can be successfully employed on account of the cause being out of the reach of medicine. These pains and paralyzes arise from causes perfectly analogous to such as induce the same symptoms in the inferior extremities, when certain scirrhuses of the womb, or rather of the ovaria, obtain.

D. Acute or chronic diseases of the lungs, appear to contribute powerfully to the formation of aneurisms of the aorta, either because they act upon the parietes of the vessel through the medium of the blood, whose cur-

rent is invariably in this instance impeded or abated, which occasions the engorgement of the vascular system, or because the parietes of the artery partaking of the affection of all the parts contained in the chest undergo some morbid debility. These cases are so common that it is needless to enumerate examples.

E. Numerous observations lead us to believe that the cutaneous, scorbutic, venereal poisons, &c. may, if they do not occasion aneurismal dilatations, at least introduce into the system a singular disposition to these affections. Numberless facts are adduced in support of this opinion; indeed, there are rare cases, in which it is difficult not to admit an aneurismal diathesis. I wish to speak particularly of those where two or more aneurisms are observed in the same vessel, at near and very great distances from one another, since my friend and colleague, *M. Leclerc*, has informed me that he has observed, in the same subject, an aneurism of the primitive carotid artery, and another of the radial artery.

These species of aneurisms have been observed, not only on the arteries of the extremities, but on the trunk of the aorta.

Case LXVIII. I have now before me an anatomical preparation in which the heart appears not to have acquired a larger capacity than what is natural. The aorta, at the heart, preserved its usual diameter, but an aneurismal tumor arises from the fore part of the summit of its curve, larger than the fist; the base of the tumor occupies the upper part of the arch of the aorta, to the extent of nearly two inches and a half. The aorta, before entering the tumor, is somewhat dilated; on the contrary, when it emerges it appears slightly contracted. Twelve or fifteen lines below the first aneurismal sac, on the posterior part of the aorta, is seen a second tumor of the same nature with the first, though much smaller, about the size and form of a small kidney. During the year 1803, I observed a similar case, which is nearly as follows.

Case LXIX. A cook of S. M. house, thirty-eight or forty years of age, of a violent, sanguine, temperament, felt, for a long time, obscure palpitations toward the epigastrium, difficulty of breathing, and pain in the kidneys ; he ascribed these different symptoms to rheumatism.

This patient had been troubled with a hydrocele of the tunica vaginalis, on which my colleague, *M. Boyer*, operated and radically cured. Fifteen days after, the cook was apparently in very good health, when on trying to go to the ward-robe, he died suddenly.

I found, on opening the thorax in the right side of this cavity, a red mass of coagulated blood, swimming in a yellowish serum ; the clots and serum which formed this effusion were nearly six pounds. The heart was sound. The arch of the aorta had become the seat of an aneurismal dilatation, remarkable for its size. The origin of the aorta descendens suffered from this dilatation ; the calibre of the aorta appeared afterward to be contracted for the purpose of passing through the diaphragm, but soon after it passed through this muscle it was dilated again to form an aneurismal tumor somewhat smaller than the first. This tumor commenced above the trunk of the cœliac artery, and elevated the aponeurotic centre of the diaphragm which served it as a covering, and had finally wasted and perforated this aponeurotic centre, which presented two lacerations through which the blood was suddenly effused into the right cavity of the chest, as has been described.

How can the formation of such frequent aneurisms be explained, without admitting an organic debility in the parietes of the arteries, a disposition calculated to suffer the dilatations in question ?

Admitting the previous existence of the aneurism of the pectoral aorta in the first case, and of the ventral aorta in the second, these primary affections may be considered as obstacles to the circulation, and apply to the evolution of the first, the mechanical explanation of the

opposition of the two columns of blood, which then are making lateral efforts upon the parietes of the arterial tube; but if this opinion were adopted, it would first be necessary to explain why the primitive aneurism was not the largest, since it had to support, for a longer time, the effort of the blood, and why the tumors, situate upon the arch of the aorta, which on this hypothesis, should be the most recent, had acquired a size three or four times larger than the pectoral tumor in the first case, and equal to the aneurism of the ventral aorta in the second. It appears to me far more rational to admit the peculiar disposition, the aneurismal diathesis which was before mentioned.

F. I have not particularized the effects of the contusions which, when the aneurismal tumor follows immediately after the blow received, probably act by lacerating a part of the thickness of the parietes of the vessel. When contusions do not induce the evolution of aneurisms till a considerable lapse of time, it is probable that the contused and apparently disorganized parietes have lost a portion of their force and elasticity, and that the blood gradually distends these parietes which are destitute of a sufficient reaction.

G. The violent and continued cough ought to be inserted among the causes of the aneurismal dilatations of the aorta. If it be not alone sufficient to induce this disease, it cannot be denied that it acts a very important part as to the rapid advancement which it may give to the affection.

I do not pretend that I have treated of all the causes of the aneurisms of the aorta; a volume would hardly suffice to embrace the numerous considerations which the history of this disease requires; to confine myself to the limits assigned to this article, I have accomplished my plan by pointing out the principal and most prevalent of these causes; besides, I proposed only to communicate such cases as are my own, and particularly to mark the points of approximation which

aneurisms of the aorta present with the diseases of the heart, the main design of my inquiries, and of the present work.



SECT. III.

Of the effects of aneurisms of the aorta.

THE effects of aneurisms of the aorta may be considered under two principal points of view.

1. In respect to the derangements which they produce in the phenomena of the circulation, and the dangerous effects which the injury of this function occasions.
2. Relatively to the mechanical effects of such tumors.

As I shall treat of the effects resulting from the derangements of the circulation in the corollaries, they will be omitted in this chapter, where I shall barely explain the mechanical effects of aneurisms of the aorta.

The mechanical effects of these tumors vary, according to their position, size, form, and relations with the surrounding parts.

Whatever be their position in the thoracic or abdominal cavities, aneurisms of the aorta are externally exhibited, or they occur more particularly in the inside of these cavities, and in each case they produce different effects which I am going to examine.

In general, patients bear far better the morbid effects of aneurisms of the aorta when these tumors appear externally, than when they are concealed in the inside of a great cavity, as the pressure of the viscera is much less in the first case than in the second.

Aneurismal tumors of the thoracic aorta appear externally only by elevating the solid parietes of this cavity, or by consuming entirely the osseous parts which obstruct their evolution. Some authors have admitted, in order to explain the wasting, or destruction, which is

sometimes very quick, of the surrounding osseous parts of the aneurism, the presence of a corrosive, ichorous humor, first supplied by the parieties of these tumors, and exciting in these parts an erosion, or sort of caries. Attentive examination alone of the bones, partially destroyed by tumors of this nature, leads us to think that the process is quite different, and that it is rather an actual wasting produced by the continual pulsation of the like tumors, and by the constant pressure which they make upon the osseous parts. If, besides, inspection alone did not suffice to prove what I have advanced, is not the almost constant integrity of the cartilages, and especially of the ligamento-cartilaginous inter-vertebral substance, a proof that this destruction is not made by erosion, but by pressure or wasting? If a corrosive, ichorous humor, the agent of such destruction, the cartilaginous, but particularly the ligamento-cartilaginous substances, would be injured as much as the osseous parts.

It is granted that, in the cases of wasting of the neighboring bones, the parietes of the tumor undergo likewise a momentary thinning; but, as *Verbrugge* has well observed, beside the elasticity which renders the wasting of these parts more difficult, their nourishment which is effected with more activity than that of the bones, repairs also more rapidly the losses which they have sustained.

Were there need of other proof that the want of elasticity, or suppleness, is the cause of the destruction of the bones, I should quote cases in which certain bones, the clavicle, for instance, have remained unhurt, merely on account of the laxity of their cartilages being so great as to permit them to be luxated.

When aneurismal tumors of the aorta are concealed in the inside of the thorax (for I am more particularly engaged with those of this cavity) their effects vary according to their relation with the adjacent parts or organs.

The principal effect from the presence of these tumors, which prevails uniformly, is the difficult respiration, the

inevitable consequence of the permanent compression and sanguineous engorgement of the pulmonary organs.

An other analogous effect, but which determines phenomena more appropriate to the disease is the compression of the inferior portion of the trachea, which produces a rattling, a peculiarly well known hissing, and which perfectly indicates that a part of this aerial tube is intercepted by the pressure of some preternatural body.

The deformity of the same tube is also one of the frequent results of the affections of which I am speaking. It is useless to say how much this deformity may vary in different circumstances.

The perforation of the same tube is sometimes observed. Then several cartilaginous rings have been destroyed, and when the perforation is complete, either a mortal hemorrhage, followed by an effusion of blood into the trachea, instantly destroys the patient; or a sort of stopple formed by coagula, is fitted to the existing apertures, and brings so feeble an obstacle to the hemorrhage, it is surprising that certain patients, who are found in this state (as in *case* LXVI. for example) do not die instantly.


I once saw a mortal hemorrhage, produced by the rupture of an aneurism of the aorta into the trachea; *M. Boyer* has made the same observation. *M. Dupuytren* has seen a like hemorrhage from the œsophagus. Similar cases are perhaps not so rare as it is thought, and many hæmoptyses and fatal vomitings of blood probably arise from no other causes.

The compression of the great arterial or venous trunks is likewise one of the consequences of the presence of an aneurismal tumor in the superior part of the cavity of the thorax. There is a recent example of a death apparently apoplectic, occasioned by the compression which an aortic aneurismal tumor made upon the end of the vena cava descendens, whose aperture was reduced to extremely small dimensions.

It is unnecessary to explain how this kind of apoplexy could have happened in this instance. A cursory view of the circulation in general, and of the return of the blood to the heart in particular, is sufficient to account for the phenomenon.

One may often ascribe to the presence of a similar tumor the inequality of the pulse in both arms, the debility, and even the insensibility of the pulsations of the left radial artery, for example, united with the force and evolution of the pulsations of the same artery on the right side; a phenomenon that does not however belong exclusively to aneurisms of the aorta, as *case XL.* proves.

I shall not extend the examination farther than I proposed to do, of the general effects of aneurisms of the aorta. When they commence in the abdominal as well as thoracic cavity, they compress the viscera in their vicinity, and the alteration of the functions or secretions of which these organs are the agents is invariably the necessary result.



SECT. IV.

Of the signs of aneurisms of the aorta.

THE exposition of the signs is reduced to the approximation of the symptoms described in the cases related before, and to the recapitulation of the effects of which I treated in the foregoing article.

The state to which the aortic aneurismal tumors have attained, sensibly modifies the degree of certainty of the signs of these affections. The diagnosis is invariably attended with some obscurity, when the dilatation is not exhibited externally, while it is evident when the tumor is presented to the eye and touch of the practitioner.

In the first case, where the dilatation forms no tumor externally, most of the signs of aneurisms of the aorta are liable to be confounded with certain other af-

fections of the thorax. As I have, if I may so speak, enumerated the signs, by relating the cases of this disease, I shall be satisfied with indicating here those which may, though the aneurism is not presented to the eye, point out or even manifest its existence, and distinguish it from the other analogous affections.

Among these signs, if I am allowed the expression, pathognomonic, I insert that peculiar hissing mentioned in the article of the effects, a hissing which exists merely when the place which the tumor occupies, determines the compression of the trachea, namely, when the aneurism is seated in the arch of the aorta. I ought not however to forget to assert that aneurisms of the arch of the aorta are not the only tumors that produce this sort of peculiar hissing. The following case recommends, on this subject, a wise reserve.*

Case LXX. A young woman, desiring to take down a kitchen utensil placed over her head, threw this part violently back through fear of falling. At the time of this effort, she felt internally, on the lower part of the neck, a sort of laceration which gave her very acute pain. This pain, for several days, was fixed in the part where it was first felt. Afterwards, the voice began to be hoarse, and immediately on the alteration of the voice supervened a complete aphonia. The preceding symptoms were attended with an extraordinary difficulty of breathing, and considerable emaciation: the patient experienced also the sensation of a hard body situate be-

* The noise heard from an aneurism of the arm. When the ear is applied to the arm, so as to touch the tumors, the pulsation, tremulous motion, and thrilling noise are most distinctly perceived. They are also rendered very perceivable by keeping the one end of a long iron probe in contact with the tumors, while its other end is held between the teeth, or applied to the ear.

This thrilling noise is alternately higher and lower by regular jerks corresponding to the pulsations of the artery. Some gentlemen compared it to the noise of a whirligig; others to that of a nut-mill; others to that of a woollen spinning-wheel; others to the waves of the sea; others to a boiling tea-kettle. The patient himself says, that when he leans his head on the affected arm, he hears like the buzzing of bees, &c. *Med. Obs. and Inquir.* Vol. III. p. 115.—T,

hind the sternum, to which she attributed her dyspnœa. During respiration, the species of hissing before spoken of was heard; but, in this subject, it was far more acute than in the other cases. The pulse was weak, but regular. The thorax did not sound perfectly in every part.

The careful consideration of every symptom, the absence of every sign of aneurism, made me suspect that a body of a peculiar nature compressed the trachea toward its extremity. After a while, the patient, as it was easy to predict, became a victim to the effects of the complaint; and I saw on dissection, that I had been right in my diagnosis, for a tumor similar to an indurated bronchial gland, of the form and size of an almond, had not only compressed the trachea, but even destroyed several of the cartilaginous rings of this canal.

I return to the signs of the affection. A peculiar rushing which is sometimes felt above the place where the heart is naturally situated, this organ beating in its usual place; the obscurity of the sound that the upper and middle part of the thorax gives when struck; the smallness and irregularity of the pulse in some cases, in others its inequality in both arms, are so many phenomena which may be numbered among the signs in some measure pathognomonic of aneurisms of the aorta, since most of them belong exclusively, or are common only to the analogous affections of the central organ of the circulation.

In the following case most of the signs of aneurisms of the aorta will be found collected.

Case LXXI. A man, aged forty-nine years, of a healthy complexion, was admitted into the hospital, October 24, 1799. Ten years before this date, he began to feel palpitations of the heart, which returned almost every fifteen days, and sometimes continued several days in succession. During the space of nearly three years these palpitations subsided; respiration remained, nevertheless, greatly embarrassed, and the patient experienced suffocation from the slightest exertion. The other functions were perfectly executed.

Four months before he entered the hospital, the difficulty of breathing became so great that he could not assume a recumbent posture without being threatened with suffocation. He was often obliged to pass the night in an arm-chair, without being undressed, which contributed considerably to induce the swelling of the lower extremities.

When he came to the hospital, his countenance was slightly red and bloated. The chest sounded well toward its posterior regions; but its sound was obscure in the anterior and superior part. Respiration was interrupted, high, difficult and hissing; he had a cough which provoked a tedious expectoration of viscous matter; the application of the hand upon the region of the heart and above, evidently felt strong, frequent and vigorous strokes, while the pulsations of the radial, ulnary, labial arteries, &c. were weak, small, concentrated, irregular and frequent; the pulse presented the same phenomenon on both sides. The urine was very copious and of a deep red color.

I drew from him two palettes of blood. I prescribed *vin-scillit : et hydromel ; compos : et nitri*. Very surprising relief was obtained by the bleeding. Respiration became much less hissing; the patient could take a little repose. The strokes in the region of the heart were felt in a less extent, but they continued to be extended toward the upper part of the thorax; the pulse became less obscure; the infiltration of the inferior extremities disappeared; he was better for some days. The patient could walk and sleep well, when, 4th of November, about 8 o'clock in the evening, he was seized with a violent cough, attended by an expectoration of blood, which suffocated him immediately. The blood, which was expectorated, might be estimated at three palettes; it was of a vermilion color, and contained much air.

On dissection, the mouth was filled with a frothy saliva, but not bloody. Only a reddish serum proceeded from the larynx and trachea without any clots of blood. The

lungs were perfectly sound, and without adhesion to the pleura. A little yellow serum was effused into the left cavity of the chest. The cellular tissue under the sternum was emphysematous; the heart was in the natural state, but the arch of the aorta formed a tumor almost twice as large as the heart itself, from the middle of which arose the carotid and subclavian arteries. The pulmonary artery adhered, by means of a very close cellular tissue, to the right side of this tumor. The aorta descendens presented nothing remarkable. I could not discover on the parietes of the aneurismal sac, the laceration through which it was supposed that the blood escaped.

The trachea, in the part which corresponded to the dilatation of the aorta, was compressed from the left to right, in such a manner that it had assumed the form of a Roman S.

If, notwithstanding the signs previously pointed out, as, in some measure, peculiar to aneurisms of the aorta, concealed in the cavity of the thorax, there are yet many cases in which the diagnosis of this disease remains uncertain; it is not so with those in which the aneurismal tumor is presented to the eye and touch of the practitioner; then the history of the causes, progress and effects of the disease is decided as to the aneurismal nature of the tumor, which, however, presents peculiar characters that, in many circumstances, would suffice alone to distinguish it. Most often, therefore, one feels, and even can perceive strokes coincident with those of the heart; at other times a peculiar rushing that can belong only to an arterial tumor, especially if one feel, as it generally happens, the heart beating in its natural place, beside the throbbings which the tumor of the aorta causes to be felt in another part of the thorax.

Before I attend to the treatment of aneurisms of the aorta, it is deemed expedient to relate the case which follows, with the more propriety, the preceding articles, as it presents collectively nearly all the effects, and most of the signs belonging to the disease.

Case LXXII. A saddler, thirty-eight years of age, having been, for some time, extremely incommoded by pains of the stomach, attended with a desire to vomit, excited, by means of a simple mucilaginous drink, numerous and fatiguing vomitings which relieved him at first so sensibly, that he recurred three or four times to the use of the same means, from which he always obtained equal success. A year after this sort of treatment, he was attacked by an obstinate catarrh whose cure he left to nature; but there supervened immediately after on the left side of the sternum a tumor which appeared to be of a considerable size. The period of its appearance was marked by very great difficulty of respiration and by his inability of walking fast, without being instantly threatened with suffocation. Then the tumor was probably mistaken by the physician whom he consulted, as after he had bled the patient several times, he applied a blister even upon the convexity of the tumor.

After resting nearly six months, the tumor suddenly disappeared, and he found himself in a condition to resume his customary occupation, feeling only some distant palpitations.

Eight months after this apparent cure, and fourteen after the appearance of the tumor, he was making a violent effort to raise the main braces of a carriage, the instrument which he used was suddenly broken, and he fell forcibly ten steps. The tumor instantly reappeared. Its external size was then equal to a hen's egg. It increased so during the first days that he judged it expedient to enter the hospital, to ask assistance, which was administered with some success, as he left soon after. But he returned several times, because to the exceedingly short relief which he obtained, soon succeeded a relapse more dangerous than the first attack.

Finally, two years after the origin of this complaint, the patient having made a recent effort, the tumor acquired very soon the size of an infant's head, he came

for the last time to the hospital with his respiration extremely difficult and hissing, not being able to use the least exercise ; he was tormented with such a violent dry cough that every instant a rupture of the tumor was to be feared.

The strokes coincident with the pulsations of the arteries, which were easily felt, by touching the tumor at the time of his first residence in the hospital, had become very obscure. The outside of the tumor projected, without having discolored the skin. The patient could not lie on his back without aggravating every symptom. His condition, during the first days of his fourth admission, seemed to be a little amended, he even enjoyed for a month apparently good health ; afterward his countenance was suddenly discomposed, respiration became hissing, and impossible in any other situation than in a sitting posture ; the anxiety was inexpressible, expectoration sanguineous, pulse very distinct ; the face was suffused with a deep violet color, the appetite was totally gone ; venesection gave no relief. Finally, the patient passed, in two days, from a state with which he was incessantly pleased, to that of suffocation which soon terminated his life.

When I inspected the corse, the countenance was pale, the lips and *alæ nasi* livid, the jugular veins prominent. The circle of the tumor at its base was four inches in diameter ; it projected two inches before the sternum. The skin which covered it preserved its natural color, to the exception of a few veins which were apparent. The surrounding cartilaginous and osseous parts were quite moveable. The legs were slightly infiltrated.

The cartilages of the ribs being cut, and the sternum rendered moveable, we saw within and behind this bone a tumor far larger than the external. The internal tumor, adhering by its anterior part to the posterior surface of the sternum, compressed, by its posterior part, the trachea toward its division, and even the origin of the

bronchiæ ; these different tubes, being flattened, had scarcely an antero-posterior diameter of six lines in extent, while the transverse appeared at least twice the extent. The cellular tissue which united the trachea to the tumor was compact, apparently changed and of a livid color. To the lateral parts of the aneurismal tumor were applied and connected the anterior edges of the lungs. A portion of this tumor was included in the pericardium to which it closely adhered.

On cutting the anterior parietes of the external tumor, they appeared to be about three lines in thickness. Immediately below these parietes was found a mass of fibrous substance, red externally, and greyish internally, disposed in a layer two inches thick. Between these clots, and a similar layer of matter applied to the lateral parietes, was found a small quantity of fluid blood.

The aneurismal sac being emptied, a first cavity appeared at the bottom of which there was a circular opening with smooth margins, and of two inches and an half in diameter ; this opening communicated with another aneurismal dilatation of a larger size formed by the aortic parietes themselves ; so that the anterior aneurism seemed to be formed by a rupture, while the most internal was a real dilatation of the whole arch of the aorta. The internal surface of these dilatations was rugous and unequal, hard, and apparently scaly.

Beyond the dilatation, the aorta descendens presented, in its superior portion, no other alteration than some blackish spots that seemed to belong solely to the internal membrane. There was observed on the middle, anterior and left side of this same artery, a small aneurismal sac of the size of a large chesnut, which communicated with the cavity of the aorta by a circular opening that occupied the whole base of the tumor. The arteries, forming the aorta ascendens, were not dilated.

From the above description of the aneurismal sac, it is clear that it was separated into three very distinct apartments. The first formed the inside of the promi-

ment tumor before the sternum. This apartment was separated from the second by the projecting edges of the sternum, which was partially destroyed, as well as the cartilages of the ribs. Neither of these hard parts presented any marks of caries, but they were wasted, and entirely covered with a sort of internal membrane of a very considerable thickness. The second apartment extended from the posterior surface of the sternum to the circular opening, which was observed, as has already been said, on the parietes even of the aorta. Finally, the third was formed by the cavity of the dilated aortic tube.

The pericardium adhered to every part of the surface of the heart, but the adhesions were here looser, there closer. This last organ had acquired a great size. Besides, its cavities, and the valves of the different orifices were nearly in their natural state.

The lungs were sound, but somewhat turgid with blood. A quantity of water was observed in the cavities of the pleura.

The viscera of the abdomen were sound. The liver was a little enlarged, and when cut, a considerable quantity of black blood was discharged.



SECT. IV.

Of the treatment of aneurisms of the aorta.

WERE it possible to distinguish aneurisms of the aorta in the first periods of their evolution, the immediate and rigid application of the treatment of *Valsalva*, described p. 135, might become efficacious and even curative; but, on the one hand, patients do not attend to the treatment of the disease, till it has made great progress; on the other hand, the signs of this affection are not manifest, till the complaint is incurable.

The means afforded by medicine to counteract internal aneurisms, already attained to an advanced period, are, for the most part, merely palliatives, and belong to that class which I shall point out for diseases of the heart in general. I think it expedient, therefore, to refer to the corollaries, where I shall treat of the most efficacious means of cure.

It will suffice to point out here, as means calculated for the preceding aneurism, a severe regimen, moderate exercise, as great tranquillity of mind as possible, frequent bleedings, arm-baths, pediluvium; and when the aneurism projects outwardly, topical astringents, ice-water, oxycrat, tin dust, pulverized cinchona, &c. &c. applications commended by some of the ancient authors, and renovated by the moderns, and perhaps, too generally neglected now, especially if they are employed merely as palliatives.

A precept not less useful which is given by nearly all practitioners, and which cannot be too often repeated, is to abstain from all strong compression upon aneurismal tumors of the great vessels, when they appear externally.

Inattention to this precept has frequently produced the most fatal effects.

Aneurisms of the aorta are, of all the diseases of the heart and great vessels, those in whose progress paroxysms are most often observed. Though I must speak, concisely, of the general treatment of these paroxysms, let it here be said, in anticipation, that they merit the greatest attention of the physician, since, by bleedings, derivative baths, and other analogous means, the paroxysms may be immediately dissipated, which, left to themselves, often become suddenly fatal.

COROLLARIES.

ARTICLE I.

Of the causes of organic diseases of the heart, in general.

AN organic disease exists, whenever an organ or solid is, wholly or partially, so altered in its natural condition, that its regular and easy action is injured or deranged in a permanent and sensible manner.

The causes, capable of disordering the organs in their natural condition, are exceedingly numerous ; the vital energy counteracts some, though not all of these causes : it restrains them for a while, but it cannot always destroy them.

The perfect concurrence of the regular action of all the organs, constitutes life and health ; but each organ takes a more or less active part in the completion of life. The natural action being increased in an organ, by causing it to play a more energetic part, renders it, notwithstanding its appropriate organization, more exposed to the common law of the alteration of organized bodies in consequence of their action.

In the continuance of the action of the heart, a continuance of action unexampled in the animal economy, we must then perceive a principal cause of the frequency of its diseases ; and how astonished we are at this frequency ! From the *punctum saliens*, observed by *Harvey*, in the unformed rudiments of the embryo, to the *ultimum moriens*, or the impotent palpitations of the right auricle of the heart of a man who expires at the utmost boundary of life, this organ has been incessantly

in motion, and beaten millions of times. Indeed, from this reflection alone, if any thing must astonish, it is because the heart is not oftener found diseased than it is. Again, if the various circumstances of life conspired to solace its action : but, on the contrary, the crying of infancy, laughing, weeping, singing, the use of certain instruments, dancing, running, wrestling, various efforts, diversity of attitudes, disposition of the clothing, the abuse of a thousand aliments and drinks, venery, every art, every craft conducive to the existence or pleasure of social life ; this assemblage, ever reascent, and another a hundred times more numerous, from the moral affections, all seem finally to conspire against the liberty of its preservative and vital action.

If the impenetrable force of life do not permit me to exaggerate the preceding reflections, they must at least suffice to evince the frequency of the diseases of the heart, by the multiplicity alone of their causes.

The causes may in general be divided into three principal kinds. They are hereditary, innate or accidental ; the last may be divided into external and internal.

Hereditary.—It is evident that one may inherit the temperament of his parents, the strength or feebleness of their constitution, general or particular malconformation, which are peculiar to them ; and without speaking here of certain diseases, viz. the gout, herpes, &c. &c. it may be advanced that from the malconformation derived from one's parents, springs the germ of every species of organic disease.

Galen, devoted to his imagination, conceived the idea of a perfect temperament ; and that belonged to the individual in whom all the elementary parts of the organs were found in such proportion, that a perfect organ was formed, and in whom likewise all the humors were the best both in quantity and quality. The solids, fluids, and their mutual relations, were so arranged that there was no defect, nor predominance, but in the whole a perfect equilibrium. This ideal temperament is remote

from the effective temperament. No one is born with this organic perfection. Every one of us comes into the world more or less imperfect, whence arises a certain defect of equilibrium in the functions. Some derive from their parents organs which, on the first occasion, or from the first cause, will be affected with diseases whose germ they are carrying, and to which they are hereditarily exposed. Let it, for example, be the phthisis pulmonalis. The child born of consumptive parents will have in the structure of the thorax, lungs, internal texture, the excitability of these organs, and in the humors, &c. whatever is calculated to dispose to phthisis; it will sooner or later be affected by this disease, to which it will fall the victim, as its parents have done.

The complexion, features, form, gestures, habits, tastes, propensities, aversions, voice, the weakness and different alterations of the sight and hearing, the stature, defects of organization; in a word, all the physical and moral properties are transmitted from parents to children.

Why, in one family, do the children, more particularly, or entirely, receive from the father the form, features, temperament, diseases, &c.? Why, in another, do we see, on the contrary, the mother impress on the children that she bears, her physical, moral, and even morbid resemblance?

How many opportunities has not the attentive observer of seeing, in families, children who imitate both father and mother, and who derive from the one the form, from the other, the constitution, diseases, &c.?

For the purpose of explaining these facts, it is absolutely necessary to admit that the one or other of the parents, has, in certain cases, a preponderating influence in the begetting, which in other circumstances they share mutually. I am also fully convinced that were not a crossing of temperaments and constitutions continually happening; did not the energy of the one correct the feebleness of the other; did not the vigor and preponderance of the one stifle, if I may be allowed the ex-

pression, the germs of weakness and disease, which the other must introduce, there would be incessantly before us generations, for ages, of consumptive, asthmatic, gouty, &c. &c. as there would be also individuals sound, vigorous, and enjoying perfect health.

Let us investigate, upon this subject, the ideas generally diffused among the vulgar, and without allowing them any blind confidence, we shall see every man afraid of being affected with the same diseases, and of dying at the same period and of the same kind of death as his parents. Whence have originated ideas that are so prevalent, unless from the experience of ages ?

Besides, are not these popular ideas proved by medical observation ? Does not the consideration of the temperament, constitution of parents, and of the diseases which they have suffered, and of which they have died, serve forcibly to manifest the temperament, constitution, and diseases of the subjects exposed to observation ?

I have given for an example the phthisis pulmonalis, because the inheritance of this disease is more frequently acknowledged ; I could have, from my observation, and the authority of many reputable physicians, quoted a great number of diseases both acute and chronic, apoplexies, megrims, ophthalmies, certain complaints of the throat, numerous acute or chronic diseases of the thorax and abdomen, hepatitis and other affections of the liver, and most cutaneous diseases ; finally, I could have quoted the diseases of the heart in particular.

I am authorized from numerous facts to believe that those diseases are or may become hereditary. How many facts quoted by *Senac*, *Morgagni*, &c. could I not transcribe here ! How many observations peculiar to myself could I not relate ! The forty-seventh proposition of *Lancisi's* work, on aneurisms, is calculated altogether to prove the hereditary diseases of the heart ; he says that, in the same family, the great-grand-father, grand-father, father and son, were successively affected with aneurisms of the heart. In one of the memoirs of

L'Institut de Bologne, *Albertini* speaks of a very old woman, who had lost five brothers, in the flower of their age, of diseases of the heart, and who herself struggled for more than thirty years against a similar disease.

Inheritance of diseases cannot be called in question. It has been admitted in many; and I think that it ought to be admitted in the greatest number even in certain cases, which, from their nature seem to be the least susceptible of it. The more I attend to my observations, the more convinced I am of this truth. Organic diseases, especially, have this character, and the lesions of the heart are far from being an exception to this almost general rule.

Innate.—A child may contract, in its mother's womb, the defect of proportions, texture of organs, and changes even which originate diseases. Farther, each organ in itself may be good, and nevertheless too strong or too weak relatively to the other organs of the fœtus; it may, if it be not entirely imperfect, have the germ of a future disorganization. A man may be born with a bad stomach, liver or kidneys, whose organic power, or particular vitality be not the best possible, or not found in relation with the energy or superior goodness of the other viscera, &c.

It is pretended, that, in this instance, the vital principle tends incessantly to destroy this innate cause of organic disease, to strengthen the organ which is too weak, and to enfeeble that which is too strong; in fact, to establish the equilibrium which is wanting. But this opinion, supported by the animists, especially, is systematic; impartial observation contradicts this exaggerated solicitude of nature, this spiritual repairer, and corrector, if I am allowed the expression, of the vital principle.

By a very plausible argument, one could even support the opposite opinion, and prove that then the strong prevails over the weak, and renders it a victim.

Admitting that the vital principle acts the same in every instance, it cannot, if it protects, and supports or-

gans which are too weak, defend them against the attacks of disease. The muscular force of the heart is excessive, it having no longer any relation with the parietes of the aorta, the dilatation of this artery will ensue; the heart, on the contrary, is too feeble, in its organization, to overcome completely, the resistance which a more vigorously organized vascular system will oppose to it; the cavities of the heart will soon become the seat of aneurismal dilatations. It will be absolutely so with the reciprocal relations of the other organs.

Among the general causes of which I am treating, must be inserted the morbid humors, and different poisons which have a singular influence on the evolution of organic diseases; let us take, for example, herpes, whether pustular, or exedens, that is properly attributed to a peculiar acrimony; let this herpetic eruption turn inward upon a sound viscus, it will immediately become a cause of an organic disease. How can these engorgements, and internal scirrhi, be otherwise explained, which are evidently owing to some morbid humor, repelled and thus become the germ of an organic affection? To what other cause can the evolution of numerous disorganizations of the heart be ascribed? The corrosion of the internal surface of the viscera, and vascular coats, the remarkable spots of their internal membranes, the corrosion of the internal coat of the intestines in certain fevers, &c.; followed most probably by the repulsion, metastasis or deposition of a cutaneous, or venereal humor, &c. &c.

I could have enlarged on the humoral causes of the organic diseases, were it not exceeding the limits which I defined; causes too much neglected now by the modern solidists, and whose frequency I think I have demonstrated in my lectures.

External accidental.—The catalogue of the external causes of organic diseases is very great. Blows, falls, wounds, contusions, running, wrestling, dancing, playing on wind instruments, &c, the abuse of spirituous

liquors, pleasures of the sexes, the want of sleep, rest, exercise, &c. are causes which produce the evolution of organic diseases.

A blow on the upper part of the sternum may not only determine the alteration of this bone, but even induce a disorganization or peculiar weakness in the parietes of the aorta, viz. in its curvature, which will soon occasion an aneurismal dilatation. Is not a cicatrix followed by a wound, a disorganization of the skin? The same thing happens internally; thus a wound of the lungs, liver, or spleen, leaves, in these parts, a disorganization which, though slight, may become a cause of an organic disease.

Singing, crying, running, the efforts made to lift burdens, wrestling, and leaping, are still, I repeat, frequent causes of organic diseases of every kind. Nearly all the aneurisms of the heart and aorta, and other diseases of the same parts evidently arise from a cause analogous to those which I have just pointed out. It is common to see people die of the phthisis laryngea who follow the occupation of street-criers; finally, all the professions, arts and crafts expose more than half of those who practise them to organic lesions.

Internal accidental.—While the influence of the atmosphere, seasons, &c. gives constitutions, and epidemics, every thing, or almost every thing, may internally become a cause of organic diseases.

The habit of life may be placed at the head of these internal causes. I said above that there was no perfect temperament, that all the organs were either stronger or weaker; these organs not having an equal reciprocation of action, and an accurate equilibrium, derangements must ensue, first in the functions, and then in the organs which are their principal agents. Hence it may be advanced, that by simple exercise, without committing any excess, such individuals will necessarily live but so many years. Have we not a striking example of this truth in persons attacked with hereditary phthisis? With great care, and attention, they may sometimes pro-

long their lives one or two years, and perhaps a little more; but, whatever be done, they always die in the flower of their age. In the same manner, a heart, stomach, or liver, too weak or too strong, in proportion to the rest of the system, or imperfectly organized, will perish, nevertheless each will have lived its whole period.

To acknowledge and declare these truths does not injure the favorable opinion which is formed of the art; on the contrary, it is making a good use of one's information to employ in appreciating the results of the organization; but the art cannot go beyond the means prescribed by nature; it is therefore to assist, but not to limit and restrict art, that I advance, it cannot cure every thing.

What has just been said, it is presumed, is sufficient to prove, that in proportion to the species of organization bestowed by nature, the consequence even of life, after having produced the organic diseases, is the cause of death.

All the causes of the affections of which I am speaking, are not evident; some are unknown which are spontaneously developed, without our being able to find to what cause they may be attributed.

Among the multitude of persons apparently well organized, there are a few in whom a disease of the heart, or some other organ, is developed without any sensible external or internal causes, without being induced by the profession, accidents, or moral affections.

Acute diseases frequently become causes of organic diseases, not only of the part that has been the seat of the acute affection, but also of the contiguous organs. Thus phrenitis leaves derangements of the meninges or brain, whence follow loss of memory, imbecility, and fatuity; pleuritis, adhesions of the pleura pulmonalis with the pleura costalis; *pericarditis*, the adhesion of the pericardium to the heart, &c. Peripneumonia may occasion aneurisms of the heart, which are developed, because the circulation of the blood is obstructed, or


the inflammation was extended over the heart itself, this organ has been weakened by the disease of which it has participated.

Chronic diseases act among these numerous causes, a still more important part, as their effects are more prolonged, and constant. Hence the different asthmas, all the natural or morbid derangements of respiration determine oftenest dilatations of the heart or great vessels. In short, let these derangements of respiration be produced by the sanguineous, or serous engorgement, by debility, by an habitual or periodical nervous constriction of the pulmonary organ, there continually results, to the impulse of the heart, an almost insurmountable difficulty to the penetration of the blood into the pulmonary capillary system, rendered inert, by the diseases of the lungs, and perhaps by the alterations which this system has secondarily undergone. Hence it happens that after every kind of asthmas, acute peripneumonias ill cured, chronic peripneumonias, and certain phthises, the heart is often found affected with a greater or less dilatation.

The moral affections have still a powerful influence on the evolution of diseases, and particularly on that of the organic lesions of the heart. This organ is the point in which the effects of all the moral affections, gay or melancholy, seem to be concentrated. No moral affection can be experienced, without the acceleration, diminution, or derangement of the motion of the heart; let its power be increased, paralysed or destroyed, pleasure, pain, fear, anger, all the sensible affections, in fact, make it palpitate, or suspend its action. The unexpected news of pardon strikes a criminal dead who was going to be executed. A lover dies at the very moment the flame of his passion was to be satisfied; the one is destroyed by terror; the other apparently thunderstruck with a paroxysm of passion; the passions of the latter are weaker; he is inclined to melancholy and less sensible affections, but protracted; the action of the heart in this individual is not suddenly paralysed as in the first; yet as

it is but slowly altered, the organic disease that must ensue, is not the less dangerous.

The bloody scenes of the revolution, ruin of fortunes, emotions, and chagrin which followed, do, at this period, furnish numerous proofs of the influence of the moral affections concerning the evolution of the organic diseases in general, and of those of the heart in particular. How many persons previously opulent, have we not seen, in the hospitals, reduced to beggary, desire, as a termination of their afflictions, a sudden death which the organic lesions of the heart brought too slowly for their gratification !



ARTICLE II.

Of the signs of the diseases of the heart.

THOUGH it be invariably in the phenomena of the circulation and respiration that it is necessary to investigate the signs the most appropriate to manifest the diseases of the heart, there are, however, other inquiries which the practitioner ought not to omit, as they are capable of throwing great light on the diagnosis of the same affections ; thus the knowledge of the *facies propria* of these diseases is so important to him who practises medicine, that, in many cases, from it alone, one can pronounce that there is a disease of the heart or its appendages, without delineating the peculiar species of lesion with which these organs are affected.

To be explicit on the history which I am going to give of the signs of these diseases, it is expedient to follow nearly the same order that I did when treating of the signs of aneurisms. I shall consider, therefore, 1. the expression of countenance, the external state of the body and the means which may be externally employed for the purpose of becoming acquainted with the diseases of the heart ; 2. I shall examine in detail the various derange-

ments observed in the circulation ; 3. such as happen in respiration ; 4. I shall take a cursory view of the state of digestion ; 5. I shall treat of the influence of the affections of the heart on the secretions and functions of the cerebral organ.

Facies propria, the exterior state, and external means of diagnosis.

The figure, physiognomy, and the *facies propria*, are, to the able practitioner, the safest guides to arrive at the diagnosis of diseases both acute and chronic ; but it is particularly in diseases of the heart, that it is necessary to weigh attentively this sign which, I repeat, is alone, in many cases, capable of manifesting them.

When an organic lesion of the heart has made but little progress, the countenance does not always present well marked characters ; those which might be pointed out are very often susceptible of being confounded with such as announce only the predisposition to these affections. Thus, in persons of a sanguine temperament, the sudden and transitory redness of the face, attended, especially in females, with a sense of stricture in the throat, with laborious respiration, and slight and frequent palpitations, are signs which announce at once either the beginning of a disease of the heart, or a plethoric state very suitable to facilitate the evolution of these affections which, in their origin, are sometimes announced by the phenomena which I have just mentioned.

But when the complaint has progressed, the *facies propria* is the more expressive, as the disease is the more advanced. In general, the countenance becomes bloated, it is *vultuous*, but not exactly as in acute diseases ; the size of the face is even greatly enlarged, but less discomposure is observed, and less alteration in the features. The countenance is generally of a purple color ; the whole venous system may be said to be injected. The lips and nose present this purple or violet tinge in a more

striking manner. It is nevertheless true that the aspect of the countenance just described, is not absolutely observed in all cases. There are some in whom the lymphatic constitution of the subjects causes the countenance to preserve a paleness, attended with the usual bloatedness. There are others, finally, who are affected with an organic lesion, though excessively severe, too recent to produce the bloatedness of countenance; but then a change and peculiar discomposure of all the features characterize perfectly the disease.

The examination of the rest of the body is equally important as to the diagnosis; hence the engorgement of the general venous system, often fully exhibited on the surface of the body, especially of the jugular veins, which are sometimes very prominent; their pulsation, which is occasionally observed, and which is perhaps often confounded with that of the subjacent carotid arteries, the character of the pulsation of the heart or great vessels, frequently sensible to the sight, either in the region of the heart or neighboring parts, above the sternum, in the right side of the thorax, toward the epigastrium; the irregularity of these pulsations, a sort of rushing, a peculiar disorder of the circulation, when there is a constriction of the orifices; the state of the parietes of the thorax, sometimes more round and prominent than natural, and which seem to be continually raised, or from time to time, by a body contained in the cavity which they encircle; the tumefaction of the abdomen, occasioned by the presence of an effused liquid; the engorgement of the liver, the often very perceptible augmentation of its size, an engorgement evidently produced by the accumulation or stagnation of the blood, which cannot return to the heart without embarrassment; the swelling of the extremities in consequence of the infiltration of which they become the seat, are so many symptoms presented to the observation of the practitioner to direct his inquiries, and to put him on the way to discover the nature of the disease.

Among the external means of knowing the affections of the central organ of the circulation, the percussion of the thorax ought to have a distinguished place. This means, of which I have made a successful application in numerous instances, has particularly assisted me, whenever, in my practice, I have desired to ascertain the healthy or diseased condition of the organs of the circulation. Such is even the degree of precision by this means, that I have often been able to determine accurately, (the opening of the dead has proved it) the degree of dilatation of the heart by measuring it, if I may be allowed the expression, upon the extent of the parietes, in which no sound, or barely a dull one, was heard by percussion. After the death of subjects, I have frequently had an opportunity of knowing the truth of the diagnosis, which I had established by the assistance of percussion.

This means, distinguished by *Avenbrugger* under the name of *percussion*,* consists in striking the parietes of the thorax with the extremities of the fingers united; then if the lung is sound, or filled with air, if any foreign body, solid or fluid, does not occupy the inside of the cavity which is struck, the noise that the percussion occasions has been compared, (an exaggerated comparison) to an empty cask when struck; in this case, on the contrary, either a solid or fluid fills one or both of the cavities of the thorax, the parietes of this cavity give in the whole extent occupied by the foreign body, an obtuse sound, which has been said to resemble that which the thigh produces when struck in the same manner. The noise which the percussion of the thorax causes to be heard in certain diseases of the heart, is sometimes not quite so sonorous as in the natural state, yet is the index of a preternatural state, though not so clear in the contained viscera. Practice teaches us to

* After this work, I shall publish a new translation of that of *Avenbrugger*, with enlarged commentaries. It will be in the press on the appearance of this work.

comprehend the degree of sound which denotes a thorax whose contents are in their natural condition ; it also teaches to estimate, in some measure, the solidity of the body, which prevents the thorax from sounding ; but by exercising his judgment on the degree of sound, one must be very careful to calculate the natural thickness of the integuments and their exceedingly frequent infiltration, circumstances which, in many cases, may have induced a belief that the thorax sounded ill, when the obscurity of the sound depended merely on the state of these parts.

The exactness of the preceding means being known, it is surprising that the satisfactory results from percussion have been put on a parallel with the uncertain means, lately proposed under the name of *abdominal pressure*. Had not the celebrated *Bichat*, the inventor of this practice, been too soon removed from medical science, of which he would have one day been the ornament and honor, as he was endued with a mind too strong and correct, not to acknowledge from farther observations, the uncertainty of this means, especially in the organic lesions of the heart.

When pressing the epigastrium downward and upward, says the author of the memoir on abdominal pressure, patients suffer the same distress as they experience on being placed in a horizontal position ; the suffocation increases according to the degree of pressure that is made ; the contractions of the heart become stronger ; the livid color of the lips and other parts of the face are likewise greater.

Were the effects, according to this author, certain and uniform in the cases of aneurisms of the heart, abdominal pressure would be really useful ; but impartial observation does not give the same results.

This operation, far from creating greater distress, or aggravation of the symptoms, is, to many patients, a sure method of procuring relief which continues as long as does the abdominal pressure. This assertion is so

directly contrary to that of the author of the memoir, that it is expedient to give here the authority of *Morgagni*, who, in his XXVIIth Letter, No. 13, quotes two cases of aneurisms of the heart, discovered after the death of the subjects who were, during life, relieved by making or causing a strong pressure to be made either on the abdomen or thorax.

How otherwise, from the theory of abdominal pressure, can we account for the relief which many patients, affected with organic lesions of the heart, experience by sitting up, day and night, and so bent forward, that the abdomen is compressed by the thighs? Does not this posture alone induce a real abdominal pressure even stronger and better supported than can be effected by the process recommended? Such is however the attitude which many of these patients prefer and continually keep; then the anxiety is more supportable, and all the symptoms appear moderated. Repose, which is impossible in any other posture, becomes easy to them.

Some patients, indeed, experience when the stomach is filled with food, greater difficulty of breathing, and greater uneasiness in general; but this is not uniformly the case, as I have seen subjects in whom repletion of the stomach caused an evident abatement of the symptoms in the diseases of the heart with which they were attacked. I remember to have been consulted, some years ago, by a person who was affected with one of the most decided diseases of the heart that I have ever witnessed. One of the most striking peculiarities which the disease presented, was the ease with which he palliated symptoms otherwise insupportable, by loading the stomach with a large quantity of food. Though, in this instance, it may be said that the weight of the stomach drew the diaphragm down, it is clear that the fulness of the stomach from the large quantity of food, pressed up more or less the diaphragm toward the thorax, which must contract the dimensions of this cavity, and act like abdominal pressure, which produced in this subject effects contrary to those which have been announced.

I do not, however, pretend to deny, that by pressing the abdominal parietes toward the thorax, or what amounts to the same, by contracting this cavity, respiration remains unembarrassed ; this is evident, because the phenomenon may be observed in the healthy as well as diseased, that I deem it unimportant, and that, in particular cases of diseases, it is not presented with a degree of evidence sufficiently clear to be numbered among the proofs to establish the presence of the organic affections of the heart. I have often been convinced at the bedside, of the truth of what has been said in the preceding paragraphs. I have seen, moreover, that great difficulty was often experienced in putting this means in practice, both on account of the infiltration, which is frequently very great, of the abdominal parietes, and of the enormous tumefaction and distention, of the abdomen, from the serum which is there accumulated, especially when the disease is advanced.

State of the circulation.

Most of the derangements in the circulation, occasioned by the diseases of the heart, are exhibited externally by phenomena sensible to the sight or touch. I could not have dispensed with treating of many of these phenomena in the preceding article, but having merely indicated them, it is necessary to return to the details upon which I should not have entered.

The alteration in the functions of the organ of circulation is known either by inspecting the heart by the touch of the region which it occupies, and in which its strokes are felt more or less regular, its palpitations strong, weak, regular or tumultuous, or by examining the various characters of the pulse in different branches of the arterial system.

It is important to discriminate here the palpitations of the heart, its contraction, and trembling, which are sensible only to him who experiences them, from the

strokes which appear more or less forcibly to the observer, either by the touch when he supports his hand upon the region of the heart, or to the eye alone when the parietes of the thorax, epigastrium or left hypochondrium, are raised. The first of these phenomena are often merely the effects of prejudice, while the second most frequently give the certainty of the existence of one of the lesions of which I have treated in this work. The former, in fact, denote, in most cases, only a transient spasmodic affection, while the latter are actual symptoms of a fixed organic lesion, which is invariably very severe.

On applying the hand over the region of the heart, it is perceived that the series of the dilatations and contractions of this organ is unnatural; its pulsations present a greater variety even than the species of lesions which they indicate. Thus, in the dilatations in general, the strokes of the heart are usually felt in an extensive space of the parietes of the thorax; they are sometimes felt, and even seen toward the epigastrium, and it is clear that this phenomenon has often been taken for the pulsations of the cœliac artery, of which so many have spoken, but which so few have observed. In active aneurisms, the strokes of the heart are frequent, strong, vigorous, regular and vibrating; the hand that is examining, is struck with a hard and violent blow. On the contrary, in passive dilatations, these strokes, though as extended, are softer, slower, and equally regular. In the cases of constriction of the orifices, of induration, or ossification of the valves, &c. they present a momentary power, sometimes weakness, generally an intermission, irregularity, undulations, rushing like water, and trembling, such a variety of symptoms as it is impossible to describe. When there is a certain degeneration of the fleshy substance of the heart, into fat or bone, a softening of its fibres supervenes, which is the usual consequence of carditis; its strokes are weak, slow, and very frequently almost insensible, &c.

It is important to notice here that, in order to distinguish well these various characters, we must avoid the examination of the heart, at the time when the palpitations, a symptom common to almost all the diseases of this organ, obscure all its motions. It is necessary to select the interval between the palpitations, or else to notice the momentary tumult which they induce ; without this precaution, the touch of the region of the heart would give but uncertain and almost insensible results.

The touch is not the only sense by the employment of which the disorderly strokes of the heart may be established ; the practitioner's eye is often a witness. These strokes are sometimes visible for a very remarkable extent ; but the indices furnished by the sight, are in this case far more uncertain, far less exact than those which are acquired by the touch. It is, indeed, possible, by the first only, to perceive the strokes, or palpitations of the heart, as general signs of disease ; but, by the touch, the particular characters of intermission, irregularity, a noise like the rushing of water, shivering, and undulation, are known, and on the observation of these particular phenomena, is founded the greatest exactness of the diagnosis.

Some authors assert that they could hear, in certain diseases of the heart, the noise produced by the violent strokes of this organ, even at a small distance from the patient's bed. I have never had an opportunity, I repeat it, of ascertaining these unquestionably rare observations ; I have barely heard these strokes by applying my ear close to the patient's thorax.

The state of the pulse, in the first periods of the diseases of the heart presents some peculiar characters either by themselves or by comparison of their relation with the nature of the strokes of the heart.

Hence the force, continuance, and vibration of the pulse being greater than the habit of the subject can bear are originally very palpable signs of aneurisms, with a thickening of the parietes. A greater weakness and soft-

ness of the pulse than the common state of the person permits, are early signs of passive dilatations, when there is no more relation with the extent of the strokes of the heart.

Thus, trifling inequalities, slight irregularities of the pulse, or transient palpitations raise a suspicion of an incipient ossification, or constriction.

Let these inequalities, or irregularities, be united with the frequency and disorderly state of the pulse, and you will conceive the suspicion well founded, of the co-existence of the active aneurism with the constriction of one of the orifices; unite, to these irregularities, the habitual weakness and softness of the arterial pulsations, and you will have the indication of a passive aneurism complicated with a constriction. If to these different signs you finally add the consideration of the *facies propria*, dyspnœa, cough, suffocation being more prevalent when walking, or ascending an eminence, starting from sleep, and infiltration, and you will have a concise, but faithful picture of the general and particular signs of the principal diseases of the heart.

Though the various degrees of these lesions are distinguished, as it were, merely by the different intensity of the symptoms; when the complaint is so far advanced that the patients are obliged to apply to hospitals for relief, the physician, I presume, will be able, with his eyes shut, to find by the pulse, signs which will fix his attention upon the nature of the lesion, and develope, in most cases, the morbid state of the principal organ of the circulation.

Then the pulse affects, in fact, every possible state. It is strong, hard, vibrating, generally frequent, and regular in active aneurisms free from complication; soft, slow, sometimes frequent, regular, and easy to be suffocated in simple passive aneurism; irregular, unequal, and undulating in every case of permanent constriction; intermittent, and irregular for a space; and an instant after, quite regular at the time of the momentary con-

strictions produced by vegetations, moveable concretions, or analogous alterations; feeble and hardly sensible in the indurations, ossifications, softening and other degenerations of the muscular fibre; quick, rapid, irregular, apparently convulsive, and confused in cases of rupture of one or several fleshy fasciæ.

How many varieties in the characters of the pulse must not the different combinations give which are forced from the union of these numerous affections? I have just given examples of them; it is not possible to describe them all; from habit and experience we shall be rendered capable of knowing the vast variety. Besides, there is generally in the state of the pulse something unintelligible, and which is much better felt than described. Among many persons attacked with this affection, their pulse presents a difference of force, weakness, irregularity or inequality. Again, but these cases are rare, though the disease be very evident, the pulse continues its regularity to the end; then an accurate acquaintance with the disease must be derived from the study of certain other symptoms, in order to distinguish the absence of a constriction, ossification, or of any complication whatever.

From the state alone of the pulse, and various characters just mentioned, especially from its continued irregularity, can the diagnosis of an organic affection of the heart be established? I answer in the affirmative, in case the disease has advanced; I think I can go farther, and say that the action of the heart is so essentially established in the beginning even of its affections, that by studying cautiously, at this period, the state of the pulse, which must afford signs of the disease, that is, if I may be allowed the expression, yet merely sketched; once confirmed, the pulse only must announce its existence to the enlightened and observing physician.

One of the most singular characters that the pulse presents in certain cases of diseases of the heart, is its being different in the arms, being sensible in the one, and

insensible in the other. It is surprising that physicians have not attended to this singularity, when by feeling the pulse in both arms of the patient, they found it strong or weak on one side, while on the other its character was quite different; that the pulse on the right side, for example, had often a certain force, when it was impossible to find or feel it on the left side. A physician is called on account of a supposed asthma, hydrothorax, or any other affection either acute or chronic; he observes that the pulse is not the same on both sides; the patient says that it has been so for a long time; after the convalescence of the patient, the pulse preserves the same character. Why then in this character is not the sign of an organic disease of the heart, or great vessels observed?

It is obvious that an anatomical variety, the obliteration of an artery, and its ossification, sometimes explain this phenomenon. I have given an example of it; but its presence belongs very frequently to organic lesions of the heart or great vessels, as it will be proved by the following observations:

1. An aneurismal tumor of the heart, or great vessels may have such a disposition, as to compress either of the subclavian arteries, and prevent so great a quantity of blood from passing into them as in their natural state; one of these vessels may possibly be obliterated by this compression.

2. I have occasionally seen in aneurisms of the aorta, the mouth of the same arteries constricted by the very frequent tumefaction, of the internal surface of the parietes of the aorta, and about the arterial orifice which is in a state of ossification. It is necessary to remark on this subject, because the arterial trunks which leave the arch of the aorta, when the latter is the seat of an aneurismal tumor, are very seldom liable to this dilatation.

3. I lately saw a patient affected with an aneurism of the aorta, where the insensibility of the pulse in the

right arm, arose from the presence of a valvular spur, hard, and apparently cartilaginous, situated quite forward in the arteria innominata, and which, by its disposition, turned the whole column of blood into the carotid, and obstructed its entrance into the subclavian of the same side. I shall relate this observation in the article where I shall describe the usual progress of the diseases of the heart.

4. The insensibility of the pulse may also arise, I repeat it, from the obliteration of the radial artery, from its complete ossification which is ascertained by the touch, from its deviation, or any anatomical variety; but these last cases are uncommon, and it is generally in an affection of the heart and great vessels that the causes of this singular character of the pulse are found, which ought to be inserted among the least equivocal signs of the affections under consideration.

State of respiration.

If the incessant derangements in the phenomena of the circulation, the knowledge of which is acquired by the examination of the strokes of the heart, or the phenomena of the pulse, furnish a series of pathognomonic signs, as it were, of the diseases of this organ; the state of respiration, and derangement observed in this function, separately considered, barely give the physician equivocal signs of these same affections, as they are in general, common to many diseases of the thorax.

It will be seen, in one of the following articles, that the approximate points which the derangements of respiration establish between almost all the diseases of the thorax, which have caused the diseases of the heart to be confounded with some other affections with which I shall compare them, less with the design of exaggerating the errors committed, than of trying to indicate the means of avoiding them, and distinguishing the different affections of the thorax, which are too often confounded.

In the number of diseases of the heart, some appear suddenly, others are insensibly formed. In the first, such as appear suddenly in consequence of a violent effort, or blow, &c. respiration is sensibly altered immediately after the cause has acted; and the difficulty of breathing is the first symptom that announces the near and perhaps instantaneous evolution of the disease.

It is different with the organic affections of the heart, whose formation is slow, and if I may be allowed the expression, insensible; in this case, perhaps there are signs which great perspicacity could discriminate, but they are however always very obscure.

As soon as the complaint has advanced, the derangements of this function are obvious, or even continue to increase. Then there is a slight, but habitual difficulty of breathing; when the patient wishes to hasten his walk, he is obliged to stop immediately for the want of breath. The same symptoms are often repeated, if he practise an occupation somewhat laborious, or if he wish to ascend a flight of stairs. The patient thinks there is no longer any relation between the quantity of air inhaled by the lungs and the capacity of this organ; he tries in vain to breathe more easily; he hastens inspiration, but respiration is then embarrassed, high, short, and interrupted.

To these different states of respiration may be added a sort of hissing mentioned when treating of aneurisms of the aorta, and which develops more particularly the presence of this last organic lesion.

Every position that patients attacked by organic affections of the heart, take in their beds, does not equally favor the act of respiration. To lie on either side is indifferent to the patient. Sometimes lying on one side is easier; but I have not observed that it was oftener on one than on the other. He finds in general, much less difficulty of breathing, when, sitting, he leans backward, and the trunk bent so as to make the anterior part of the thorax project forward. By this forced position he obtains relief which permits him to rest. This position,

however, is not the only one that is favorable to respiration, for often persons affected with the same kind of disease, it is as favorable to assume a position which is almost opposite ; they rest bent forward, with the abdomen upon the thighs, and the thorax close to the knees. I have seen patients continue this posture for several days in succession, it being the only one which they could bear.

It is possible that, in the diseases of the heart, the difficulty of breathing proceeds entirely from the mechanical compression of the lungs, by the enlargement of the heart, or the evolution of an aneurismal tumor ; this is true in some cases, but in a greater number, the difficulty of respiration appears to belong solely to the accumulation of the blood in the vascular system of the lungs, from the embarrassment which it suffers on returning into the cavities of the heart, deranged wholly or partly in their natural organization.

Of the state of digestion, secretions, and functions of the brain.

To follow with precision the method pointed out, I must now treat, in order to complete the history of the general signs of the diseases of the heart, of the state of digestion, secretion, and functions of the brain ; but when speaking of the signs of aneurisms of the heart, I explained at considerable length, the alterations which these different functions undergo during the various periods of the diseases of the heart. Having nothing to add to what has already been said upon these articles, and the alteration of these functions being the same in the different species of lesions, I will refer to Article 1st, Chap. III. of the Second Class, where the explanation of the derangements will be found which, in the cases of diseases of the heart, obtain in the functions of digestion, secretion, and in those of the brain from three causes : 1. its sanguineous engorgement ; 2. the serous

infiltration and aqueous effusion ; 3. the alteration of the arterial blood into black, consequently being no longer able to produce the same excitement I shall have an opportunity of recurring to these different points in the following article which is naturally connected with the present.

ARTICLE III.

The progress of the diseases of the heart.

THE history of the progress of the organic diseases of the heart embraces their evolution, state and termination ; but these affections run through the different periods sometimes in a very long, at others in a very short space of time. Therefore, the diseases to which the heart is liable may be divided into acute and chronic.

In the class of acute diseases should be inserted *pericarditis* and inflammation of the heart ; affections which cannot rigorously be called organic, as they become such merely by some of their degenerations. In the same class may be placed also certain partial ruptures similar to that which I exemplified in *Case XLIV.*

Among the chronic affections are numbered most of the lesions of which I have spoken in this work, and which, increasing slowly, have but a very remote termination from the moment when the cause acted which excited them.

When the diseases of the heart are of the number of those which I have said assume most frequently an acute character, their progress is that of acute diseases in general, but with this difference, that their beginning is more alarming, progress more rapid, and termination more troublesome, in proportion to the importance of the organ affected, or rather to the disorder and derangement of the function which it has to perform ; of which *Case No. XLIV.* is a striking example.

Such of the affections as are slow and chronic in their progress, are far more numerous ; now, it is this slow progress that I am here describing, though I have already given several examples of it in the course of the present work.

From what was said, when treating of the signs of the diseases of the heart, it was obvious that the beginning of these organic diseases was the period that presented the most uncertainty in the signs, consequently the most obscurity in the progress of these affections.

If the disease be hereditary or innate, the subject, from infancy, is troubled with the most usual symptoms, which first appear, as palpitations, soon out of breath, &c. &c. Such subjects seldom attain to a very advanced age ; some of them survive but a few days ; though it is generally from fourteen to sixteen that they fall victims to the affection with which they were born, or which commenced in their earliest infancy.

When the disease is neither innate nor hereditary, its evolution, commonly facilitated by the natural constitution of the individual, obtains either insensibly or more immediately from the action of any occasional cause whatever ; whether moral, as terror, or melancholy ; whether physical, as an effort, contusion, disease of the lungs, &c.

Let the evolution of the disease be insensible, or derived from an evident occasional cause, the first symptoms always belong to the derangements of the circulation, or respiration. It is commonly during a hasty walk, or violent exercise, that this complaint exhibits the first sign of its evolution or presence. Thus, an individual, being otherwise in health, will from walking or any other exercise, be suddenly stopped by a previous dyspnœa, accompanied or followed by palpitations more or less violent ; these symptoms will soon disappear, and leave the patient in a state of apparent health, until, in the same circumstances, and often from similar exciting causes, the same symptoms are re-produced.

After two or several attacks of this kind, which the patient generally considers as transient indispositions, he often enjoys such health that he would entirely forget the first inconveniences which he has experienced, were they not sooner or later renewed with the same characters, in order to disappear a second, or third time, and to be reproduced under the same forms, but with far greater severity, and from analogous, though slighter causes.

To this still more advanced period, the disease seems concentrated even in the organ affected; neither an alteration of the other solids, nor degeneration of the fluids, has supervened in the animal economy; in fact, the dizziness, head-ach, and difficult breathing, cannot induce them to think that the disease has become general, and they are the farther from indulging this thought, as the external condition of the body, far from announcing the evolution of a mortal affection, seems most usually to exhibit evident marks of firm health, in the vigor of the extremities, corpulent habit, complexion of the face, increase of the digestive power, &c. especially in the active diseases; but immediately the symptoms, deemed by the patients as slight indispositions, are more frequently and forcibly renewed; the countenance, at first sensibly injected, is still deeper colored, becomes *vultuous*, and more bloated. The inferior extremities swell, especially when the patient is erect, but diminish at night from a horizontal posture. He then remains in a state which seems a mean between health and disease. The duration of this uncertain state depends on the vigor of the individual constitution, on the profession which he is practising, on his moral affections, and all his actions.

But, after a longer or shorter time, new symptoms are connected with the first, which are more striking; vigilance caused by terrifying dreams, the patient figures to himself that he is on the brink of a precipice, pursued by assassins, &c. the waking suddenly, night mare, increased difficulty of breathing, palpitations of the heart that are frequent, hard and violent in active aneurism,

but soft and extended in passive dilatations ; irregular when it is formed from constrictions or ossifications ; unequal, intermittent, and quite unsteady, when there is a rupture of the columnæ carneæ, an excrescence or loose concretions ; weak, and insensible when the muscular substance is ossified, or has degenerated into fat, or become soft ; the characters of the pulse correspond very accurately with the palpitations of the heart.

Such are the symptoms which mark, in some measure, the second period, to which succeeds a new state of the disease from day to day more alarming. This third period is marked only by the increase of all the symptoms, and especially of the serous diathesis, which, in the second period, was distinguished by the swelling of the inferior extremities ; to this swelling succeeds an infiltration far more considerable which is extended not only to the extremities, but to the integuments of the whole body ; the infiltration is carried so far, as sometimes to form, upon the inferior extremities, clefts which discharge a large quantity of serum. The serous diathesis is then so established that the serous cavities are filled with a greater or less quantity of fluid. Hence the thorax and abdomen are filled with serum, which by the methodical treatment, that I shall point out, is evacuated with some ease in the early stages of the effusion, but which afterward, and especially toward the termination of the disease, is quite difficult, if not impossible to relieve.

The time patients remain in the advanced state under immediate consideration is longer or shorter ; but after several alternations of being better and worse, they are generally immoveable ; with the body bent forward, or assuming every other forced posture, the face bloated and livid, the lips blackish, the features altered, the eyes often concealed by the tumefaction of the eyelids ; respiration being short, interrupted, impossible ; continued cough, with spitting of blood or an abundance of mucus ; the parietes of the thorax and abdomen distended with the

serum ; the arms and legs deformed by infiltration ; the pulse unequal, irregular, very intermittent, wavering, insensible, sometimes with a slight delirium, at others, in a subapoplectic state ; they seldom yield to the rupture of an aneurismal tumor, but usually to instant suffocation, still more seldom to lingering pain, during which the patient seems to be gradually extinguished.

Such is the customary progress of the affections whose history I have given ; these diseases, however, though passing with few exceptions through the same periods, are marked by similar paroxysms between them, which are renewed with so much regularity, as possibly to confound them with certain affections which have periodical fits like the asthma. To render the reader capable of comprehending the close resemblance that exists between these diseases, I am going to relate the most singular case within my knowledge, of an aneurism of the aorta, whose symptoms were extremely analogous to those of the convulsive asthma.

Case LXXIII. A terrace maker, aged fifty-six years, of a bilious temperament, had, to his fiftieth year, constantly enjoyed good health ; at this date, he was seized with a periodical discharge of blood from the anus, re-appearing every month, during two or three days, after having been announced by sharp abdominal pains, which disappeared as soon as the discharge was established.

Fifteen months before he came to the Hospital of la Charité, he fell from the height of six feet, which occasioned a sharp pain in the right side of the thorax. The pain soon disappeared.

In the course of the year 1803, he was attacked by a catarrh prevailing then at Paris. After the cure of this complaint, he was incessantly troubled with a cough.

Five months before he was admitted into the Clinical Hospital, he was, when walking, seized with so violent a dyspnœa, that he was obliged suddenly to stop. This indisposition terminated within a few hours, and changed into a general chill, followed by heat and sweat-

ing. After this period, the fits of suffocation were frequently repeated.

Two months after the first appearance of this symptom, and three months before his admission into the hospital, the discharge, which was made monthly by the anus, was suppressed; respiration became more difficult, and manifested a species of hissing during inspiration, which daily became more and more laborious. Finally, October 6, 1804, he came to the hospital, with his lips injected, face pale and yellowish, body somewhat emaciated, the mouth slightly clammy, and tongue whitish; the inspiration was painful and hissing, especially during the paroxysms; the thorax when struck sounded well in every part, except toward the upper part of the sternum; the cough was frequent, expectoration mucous, striated with blood; he could breathe only when sitting; the pulse was soft, very frequent, and full on the left side, but almost insensible on the right. The abdomen was in good order; the urine flowed profusely; the stools were infrequent; the sleep interrupted by sudden starts; the left arm, thigh and leg, œdematous.

Some of the symptoms seemed to indicate an asthma, or some other analogous affection. Nevertheless, the patient's countenance, the thorax being destitute of sound, the peculiar difficulty of breathing, characters of the pulse, and starting from sleep, left hardly a doubt of the nature of the disease, and I announced the existence of an aneurism of the aorta.

Most of the symptoms which I have just described, continued through the day; nevertheless, they all assumed far more intensity, and constituted, at certain hours, real paroxysms, which were not absolutely regular, whose exacerbation supervened between eight and nine o'clock in the morning.

While he was at the hospital, the fits were more or less frequent; he had two or three during the day, and as many at night. They continued from one, two, or three quarters of an hour; motion commonly excited

them ; sometimes they supervened after the patient had taken food ; those in the morning being the most regular were reproduced without any occasional cause ; during these fits, the difficulty of breathing augmented, the inspiration was noisy and hissing ; the pulse was smaller and more irregular ; it was almost insensible on the right side. In the course of the fit, there were convulsions of the whole body ; the face was covered with sweat and of a purple color. In the most severe fits, the patient lost his senses. In fact, after the fit, the thorax was long painful. He always predicted the approach of the fits by a dizziness, a tingling in the ears, heat about the head, &c. In the fits, sometimes violent and tumultuous palpitations of the heart were felt. Eructations were also frequent ; he experienced flying chills. In the violence of certain fits, he fell senseless, with his head upon his knees ; finally, during the last fits, the urine flowed involuntarily.

While the patient resided in the hospital, he became gradually weaker ; the infiltration was not great, and it was remarkable only on the right. His appetite was gone. He died in a fit, November 24th, at ten o'clock, P. M.

On dissection, the countenance was pale, the body emaciated ; the thorax when struck gave out in every part a dull sound, especially on the left side.

The cerebral organs were in a healthy state.

The trachea, opened above the superior edge of the sternum, was full of a frothy fluid, and of very hard, long fibrous substances like straps of leather.

The lungs were sound, crepitating, without adhesions, together with a small quantity of water in the left cavity of the thorax.

The heart was somewhat larger than natural. The aorta, on its proceeding from the left ventricle, was dilated, and formed an aneurism whose cavity was capable of containing a body larger than the fist. The parietes of this sac, formed by the coats of the artery, were

thickened ; without having suffered any rupture, they were merely rugous on their internal surface. This tumor pressed the trachea above its division, and also the bronchiæ, so that these tubes were quite flattened ; their inner surface corresponding to the close adhesion which the tumor had contracted with them, was a little red, without any very evident alteration of the texture of the internal membrane.

The vessels, arising from the arch of the aorta, had their ordinary calibre ; only we saw, quite forward in the arteria innominata, a spur, callous, and very long, which might do the office of a valve, and prevented the column of blood, which entered this vessel, from being conveyed to the side of the subclavian, and forced it to be directed entirely into the carotid artery.

The radial artery of the right arm was bifurcated toward the inferior part of the radius, which, joined to the small quantity of blood that the subclavian received, explains fully the characters which were observed of the pulse on the right side.

All the other viscera were sound.

It is very difficult to explain what, in cases of this nature, excites the fits and their periodical return, and why the tumor making on the trachea a permanent pressure did not cause continued suffocation. These fits were doubtless renewed when the tumor was filled, and engorged with a greater quantity of blood. But to what cause can we attribute this engorgement of the tumor, this periodically greater accumulation of blood ?

Such paroxysms are more frequently observed in cases of aneurisms of the aorta ; but I have noticed them several times, in diseases of the heart, especially when constrictions take place at one of its orifices.

ARTICLE IV.

Of the prognosis of the diseases of the heart.

WHEN the diseases of the heart assume an acute or chronic character, the prognostic is always very perplexing. Nevertheless there are important modifications to make to the general proposition which I have just announced.

In order to establish, with exactness, the prognosis of the diseases of the heart, it is necessary to distinguish these diseases into several kinds : they may be divided, 1. into acute, 2. into chronic organic, 3. into organic properly called.

1. The acute diseases of the heart cannot with propriety be inserted among organic diseases ; those which come under this denomination, are acute *pericarditis*, and *carditis*, or inflammation of the substance of the heart.

In respect to the prognosis, these diseases follow the same order as do all acute inflammations in general ; the greater danger that they bring with them, in many cases, is the only point in which the prognosis differs. It generally varies as do the same degrees of these inflammations.

When acute *pericarditis* is not announced in the beginning by strong symptoms, or severe accidents ; and a marked disturbance in the action of the heart does not signify that the organ itself is sensibly affected ; and the contiguous viscera, as the lungs, &c. seem not to participate of the inflammation ; when the subject is besides, sound and well organized, then a pretty favorable prognosis may be formed ; hence it is not extraordinary to see *pericarditis*, which is otherwise one of the severest affections, attain, by the combined efforts of nature and art, to a happy termination.

But the cases in which the solution of the disease is satisfactory, are not the most common ; it seldom hap-

pens, therefore, that this inflammation is found distinct from those of the pleuræ costales, diaphragmaticæ, mediastinæ, pulmonales, and from the same affection of a greater or less portion of the substance even of the lungs, and of the surface of the heart itself, which in every instance, is more or less inflamed ; then, the disease either terminates in death, or is transformed into one of those alterations which I have designated under the name of *chronic organic*, according to the purulence of the pericardium, the adhesion of this membrane to the heart, its chronic inflammations, &c. &c.

The prognosis of the inflammation of the texture of the heart, or of *carditis* united with the same affection of the other viscera of the thorax, or destitute of complications, is always most perplexing, not to say mortal, in all cases. Seldom, therefore, does the inflammation of the parts, whose muscular substance constitutes the basis, obtain without its terminating in suppuration, and the suppuration of the organs contained in the great cavities of the body is generally mortal.

It is my belief that acute *carditis* has never been seen to reach a perfect solution ; and when cases are quoted, all doubts are not removed ; some very justly remain as to the actual seat of the inflammation, which cannot invariably be well ascertained.

Hence this inflammation almost always terminates fatally ; but the death which it usually occasions may happen instantly or somewhat slowly. Thus, *carditis* has been known to become fatal in a very few days ; while in other instances, when the disease has attained to its highest degree, the most alarming symptoms partially disappear, and a sort of convalescence is established ; sometimes even the patient is restored to apparent health ; he then flatters himself with a near and perfect cure ; but the more intelligent physician perceives only a transformation, or degeneration of the disease into another affection slower, but not less severe, as a *chronic organic* disease is then established, mortal in all cases.

Among the acute lesions of the heart, considered relatively to the prognosis, ought to be inserted the partial ruptures mentioned in this work, and the rupture of a fleshy pillar of the heart, and of the valvular tendons.

The rupture of the fleshy pillars of the heart, (*Case XLIV*,) seems to assume all the most sensible characters of an acute disease; this is at least the inference that must be drawn from the consideration of the assemblage of accidents to which the courier became the victim.

The prognosis, in the cases where this lesion is manifest, will therefore be desperate, and the physician must announce the fatal event of the disease, which occasions death sooner, as the lesion happens suddenly in a sound organ.

The rupture of the valvular tendons appears, according to my observations, to be not so severe and so immediately fatal as that of a portion of the muscular substance. Hence in almost all cases in which this rupture has been observed, an organic disease of the whole of the heart has invariably followed, without any acute affection of this organ.

The prognosis of the entire rupture or laceration of one of the cavities of the heart is here omitted; such accidents are hardly ever known but from their effect, which is sudden death, or at least exceedingly quick.

2. The diseases of the heart to which I give the name of *chronic organic*, are almost all from the effects, consequences or degenerations of acute inflammations whose prognosis has just been mentioned; of this number are the serous or purulent effusions into the pericardium, the adhesions of this membrane to the heart, the ulcerations of the surface of this organ, its chronic inflammation, the softening of its texture, &c.

These various affections are almost all, let it be repeated, the results of acute inflammations of the heart. Thus, when *pericarditis* has reached so far that the symptoms usually become more moderate, the disease

seems sometimes to lose its intensity ; but it is evidently protracted farther than there was reason to expect ; then the affection acquires different characters which, on account of their being less severe, are not less embarrassing to the eye of the experienced physician. The prognosis, at first uncertain, though always dangerous, even in the beginning of the disease, less detrimental when the inflammation, carried to its highest degree, is suddenly moderated ; it becomes more and more unfavorable when the concurrence of particular signs announces that the disease is mistaken, that it degenerates, that a serous or purulent effusion is formed in the pericardium, or the disease assumes some other troublesome termination.

If the physician has not been able to decide as to the danger of the affection which has preceded that whose prognosis he wishes to establish, the inquiries which he will be obliged to make for the purpose of gaining a knowledge of the disease, will learn him also what prognosis he ought to form.

3. If, in order to treat of the prognosis of the diseases of the heart, I had divided them into curable and incurable ; among the first, might have been inserted with the acute inflammations, most of the diseases *properly called beginning organic*, which would undoubtedly yield to care, and medical aid, were the first symptoms of these diseases, to the patients themselves, sufficiently evident and strong to induce them to apply for assistance on the first appearance of the disease ; for, as it has already been said, there are physical and moral signs, by the benefit of which the experienced and attentive physician may well suspect their formation.

But, if these organic lesions are old, if they have made evident progress, if all the functions which are connected with the circulation, suffer already from its alteration, then the prognosis is altogether desperate ; the physician has no longer to estimate the danger of the disease ; whenever he ascertains its existence, he recog-

nizes a mortal affection; and his experience can enlighten him only in estimating the time that the patient will be able to lead a lingering life, and in the choice of the means capable of rendering it the most supportable.

It is from the character, intensity of the organic lesion, the constitution of the individual, his manner of living, &c. &c. that the physician can pronounce concerning the fatal, near, or more or less remote, period of the subject exposed to his observation.

If the attack of the organic disease has been sudden, if, from the beginning, it has assumed some dangerous symptoms, if a very great disturbance of the circulation announces a deep lesion of the principal organ of this function, the prognosis will be far more troublesome than had the disease been more moderate in its attack, and presented different or opposite symptoms.

Relatively to the constitution of the individual, if it is vigorous, if the subject is in the flower of his age, if he is free from the various degenerations of the humors, without violent passions, obedient to good advice, &c. it will be found that the termination is not so soon fatal as in the contrary conditions.

Finally, as to the manner of living, if the patient is devoted to vice, debauchery, and every kind of excess; if, from his condition, he is exposed to hard labor, to the inclemency of the atmosphere, to laborious exercise, and to lively moral affections, &c. it will hasten so much the end of his life; while by the means of sobriety, temperance, and care, he will not only prolong his days, but will be able even to prevent, for years, the organic disease, to which sooner or later he will fall a victim.

ARTICLE V.

Of the treatment of the diseases of the heart.

FROM what has been said of the nature and prognosis of the diseases of the heart in general, it was obvious that their treatment must be different according to the known curability or incurability of these affections; that the same mode of treatment cannot agree with every species of these diseases in particular, &c.

As to the nature and different degrees of the diseases of the heart, the means that may be used are either *curative*, or simply *palliative*, from the consideration of their different species, the treatment, in these affections, as in all others, ought to be appropriate to the nature of the disease. Thus, in a great number of organic lesions of the heart, for instance, in active aneurisms, the indication to fulfil is to diminish the powers of the patient in general, and the superfluous vigor of the organ affected in particular. On the contrary, in other affections of the same organ, viz. passive dilatations, it is far more necessary to support and increase the powers of the individual, for the purpose of restoring indirectly to the heart such as it needs.

These considerations induce me to pursue, in order to compose the history of the treatment of the diseases of the heart, a method similar to the one delineated when treating of the prognosis. I shall examine therefore in order the various methods of treatment suitable, 1. to *acute* diseases of the heart; 2. to such as have been designated under the name of *chronic organic*, which are generally degenerations of acute diseases; 3. finally, to the organic affections properly called, with excess or defect of power, suspected or manifest, complicated with some poison, according to the periods to which they have reached, &c. &c. I shall conclude, with some observations, upon the regimen, exercise and influence of the passions in these different diseases.

Having, at the end of each chapter of this work, spoken of the treatment of the affections whose history I have given in the different articles of the chapters, what will be said here of the treatment of the diseases of the heart, ought to be considered merely as a sort of recapitulation.

1. The treatment of acute *pericarditis* and *carditis*, the only real acute diseases of the heart, is composed of a series of means like those used in acute inflammations of the viscera contained in the thorax; to develope the nature of the treatment which is calculated to counteract one of these phlegmasiæ is to indicate that which is suitable to all. Scarcely do any particular circumstances produce slight modifications in the employment of means whose efficacy is better established.

The foundation of the treatment of acute *pericarditis* always depends on the collection of antiphlogistic remedies; acute *carditis* must also be treated in the same manner. General and local bleedings in the beginning, to be repeated, if they do not occasion any sensible amendment, and the pulse preserves its first characters; blisters applied upon the painful part, less with the intention of exciting a profuse suppuration, than of determining a powerful revulsion; the drinks aqueous, demulcent, and antispasmodic, in order to quench the incessant thirst peculiar to these affections, &c. &c. such are the means that observation indicates as efficacious in the diseases under consideration.

I have placed general bleedings at the head of the means which have been indicated, because their utility is declared by all practitioners, and they ought invariably to precede the local, for the purpose of diminishing the irritation. It is nevertheless necessary to observe, that I have in every case of acute inflammation of the organs of the thorax, caused the painful part to disappear more quickly and completely by local bleedings, made upon the painful part even with leeches, than by general bleedings, after the employment of which I have more than once been obliged to recur to local bleedings, which pro-

duced very soon the effects which were sometimes obtained with difficulty from the first.

Blisters applied upon the painful part, in *pericarditis* and *carditis*, have not in general an action so quick and salutary as in pleurisies and pleuro-peripneumonies; they afford, however, in almost all cases evident relief, though it is not always permanent, and this is particularly remarkable in the inflammation of the substance of the heart. Sometimes, therefore, notwithstanding the rigid and close application of these means, the disease exceeds the bounds of its usually favorable terminations; then, as I have already said, the intensity of the symptoms obviously abates, but it is for the purpose of assuming a slow or chronic character, which announces both the degeneration of the disease, its transformation into one of those whose treatment must constitute the subject of my second division.

The rupture of a fleshy pillar of the heart is an affection that I have invariably enumerated among the acute lesions of this organ. The requisite treatment warrants this classification. The means which will produce the most relief will ever be suitable to combat an essential inflammation; I speak here merely of relief, because I doubt of ever obtaining even an apparent cure; experience having convinced me that this rupture assumed all the characters of an affection which must soon have the most fatal termination.

2. Of the number of chronic organic diseases are, as was before remarked, the chronic inflammation of the heart, the effusion of pus or serum into the pericardium, adhesions of this membrane to the heart, &c.

The slow inflammation of the heart presents an obscure diagnosis; it is difficult to ascertain its existence, and counteract it by a suitable method of treatment. It is rather a slow and almost morbid process, that establishes a degeneration of the substance of the organ, than a well characterized disease. Chronic inflammation may, however, be known by a fixt, dull pain in the

region of the heart, which is commonly more increased by muscular motion, than by the action of respiration; by a slight concentrated and permanent hardness of the pulse; by a *febrile diathesis*, which supervenes when the inflammation has continued for some time; finally, by shivering, horripilatio, and other signs which announce in a more advanced period that one of the degenerations mentioned is established. If it is manifest that the inflammation still exists, the antiphlogistic treatment, indicated in the preceding article, may, with some modification, be usefully practised; but if, on the contrary, one of the degenerations is formed, every thing leads us to believe that the treatment will be hurtful.

When treating of hydro-pericardium, I said, and will here repeat, that the means which constituted its treatment were such as were opposed to dropsies in general, and as I shall immediately describe more particularly; I said also that tapping, which had been proposed in this case, was an operation whose inutility seemed to be proved, and from the partial success usually obtained from the paracentesis of the other serous cavities, and from the complications which ever render the dropsy under consideration far more dangerous. I added that the operation, weighed abstractly from its consequences, did not appear free from danger and uncertainty, as the results of the operation practised by the celebrated *Desault* incontestably prove.

The curative treatment of the adhesion of the pericardium to the heart, does not promise greater success. There is no known method of destroying such lymphatic, cellular, often close, and ever more or less chronic adhesions. Medicine, in this case, as in most of those which I shall soon point out, affords no means of curing this hidden complaint; but it may be of great utility in mitigating the effects, obviating the accidents caused by the lesion, and finally, teaching patients the rules of diet and regimen which they cannot trespass

without endangering or shortening life. These general ideas will be elucidated in the sequel of this article.

3. To describe with precision the treatment of the organic diseases of the heart, it is necessary as it has been done for the diagnosis of aneurisms, to understand the different periods in these diseases; without such a division, which is admitted merely for method, it is difficult to arrange the series of means which may be used for the radical or palliative cure of these affections.

The organic diseases of the heart, of which it remains to speak, are chiefly active or passive aneurisms of this organ, constrictions and ossifications of its different orifices, &c. &c.

1st PERIOD. I examined very particularly, (Class II. Chap. III. Art. IV.) the means proposed for the radical cure of aneurisms in their first period, abstractly from the complications which often raise an insurmountable obstacle to their cure. After having (p. 131, and fol.) passed in review some causes of diseases of the heart which I considered as irremediable, and designated others which are not, as I think, beyond the resources of medicine, I discovered the advantages and inconveniences of the various curative methods, proposed by different authors. I particularly described the essentially debilitating method, which is known in medicine under the name of *Valsalva's method*, and pointed out the cases in which its employment seemed to promise the most favorable results. I will add, that many authors, whose authority appears irrefutable, have obtained from this plan great benefit. But whatever be the efficacy of this treatment, the extreme debility, the annihilation, as it were, to which it is necessary to reduce an individual, otherwise apparently healthy, are so many considerations which require great caution in its employment. Though I have undoubtedly had many opportunities of practising it, I have always abstained through fear of shortening the days of a patient attacked, indeed, with a mortal disease, but which might lead him slowly to the tomb.

The consideration of this method of treatment naturally induces me to speak of the derivative method advised by *Morgagni*.

I have estimated the virtue of these various means, whose separate employment, combined or modified, constitutes the treatment of the majority of the diseases of the heart in their first period. In chap. III. art. 1st. p. 175, I related what might be expected from the anti-syphilitic treatment applied to cases in which the history of the disease taught that an affection of the heart might originate from a venereal taint. In support of this doctrine, I could quote the authority of *Morgagni*, *Lancisi*, *Matani*, and many others. I slightly touched upon the employment of cauteries in these affections; I consider them as capable of being useful only in cases where an habitual, itchy, or herpetic humor, has been suppressed, and whose suppression coincided with the primary symptoms of a disease of the heart or great vessels. The inoculation of the suppressed itch would produce yet better effects; violent palpitations in consequence of numerous itchy pustules, have been removed by reproducing the itch in the person in whom it had been suppressed.

Vesicatories, rubefacients, and sinapisms, are very advantageous in the curative treatment of a disease of the heart, suddenly developed in an individual liable to rheumatism, or gout acquired or hereditary; in these cases, they should be applied to the arms, thorax, and still better, to the previous seat of the gout or rheumatism. The happy effects daily derived from these means, whenever the gouty or rheumatic humor is turned upon the viscera, render it certain that, in diseases of the heart produced by the same causes, very satisfactory results are obtained from them; experience has moreover evinced this point of practice.

The explanation of the palliative means which are to counteract these affections in their second or third period, convinced me ought to be referred to the article of the

corollaries, as these palliative means agree equally with the same periods of all the diseases of the heart. Therefore, the palliative treatment alone will engage my attention during the residue of this article, by treating it successively in the second and third periods of the diseases of the heart.

2d PERIOD. Patients are usually admitted into hospitals in the second period of the affections of the heart; the first has been often marked only by some slight indisposition, which, as it has already been said, does not appear to patients themselves sufficiently alarming to submit voluntarily to a rigorous treatment, and, for a stronger reason, to *Valsalva's*, which is far more formidable than the disease itself, of whose danger, indeed, they are almost entirely ignorant.

In the second period, the complaint has extended its roots too deep; medicine can now barely attempt to prevent, or, more properly, retard the farther progress of the affection, quiet the concomitant symptoms, and palliate, in some measure, the derangements which it occasions.

In the second period, the habitual injection of the countenance, dizziness, palpitation, and a sort of periodical plethora, require very frequent bleedings either with the lancet, or application of leeches to the anus, which generally produce in the patients, a more immediate and salutary discharge. The relief which they receive renders it desirable often to repeat the same remedy; but these bleedings must ever be employed with discretion; it is with this method as with tapping in case of ascites, in consequence of a diseased liver, or any other organ; to the momentary relief that follows, immediately succeeds a greater effusion, a more perplexing condition. Thus being somewhat reserved in the use of bleeding, in the second period, occasions extreme debility, advances or augments the serous diathesis to which these patients are already exceedingly disposed.

Morgagni's method, the frequent immersion of the arms in warm water, pediluvium, finally, whatever in-

duces a sanguineous revulsion, by determining, from the sanguineous engorgement of the extremities, the depletion of the heart and great vessels, finds here a more useful application, as the means may, to a certain point, supply the place of bleedings, in cases where it is prudent not to practise them too frequently; but all these means barely procure a temporary relief.

The stricture of the throat, certain spasmodic vomitings, fits of a convulsive cough, finally, a peculiar state of general irritation, are symptoms which are often noticed in the second period, and which are successively combated by antispasmodics and carminatives, whose formulæ are familiar to every practitioner.

The urine becomes sparing, the inferior extremities œdematous, and the belly swoln, but these symptoms yield with facility at this period, to diuretics, nitrated aqueous drinks, and hydromel, prepared with squills.

In general, the second period is marked by continual alternations of the disease and apparent health, patients are admitted into hospitals, with an injected, livid countenance, head-ach, difficult respiration, the strokes of the heart strong, extended, irregular, &c. &c. according to the kind of lesion; but by the well directed use of the means enumerated above, or others analogous, indicated by particular circumstances, for instance of hydragogues, in cases where a gastric obstruction is united with the other symptoms, or when they are aggravated by an obstinate constipation, one is very often able to restore the patient to a state of health which he is ever inclined to mistake for a perfect cure, but which is soon disordered by the slightest fatigue, or irregularities in regimen; in a word, by the most trifling causes.

3d PERIOD. Among the numerous symptoms of the organic diseases of the heart, arrived at the third period, there are but a few which it is important to remedy, and against which the palliative treatment, the only one that can be employed, must be more particularly directed.

The subapoplectic disposition, frequent palpitations, violent strokes of the heart, continued or periodical suffocation, dropsy of the cavities, general leucophlegmatia, are the principal symptoms which it is important to remedy.

At this stage of the disease, unfortunately, the means whose efficacy is the most certain in other circumstances, become, in this, too often futile.

The means evidently calculated to calm or dissipate the symptoms which I have above enumerated, may be collectively considered under two principal points of view. 1. It is by analogous and even similar means, that it is possible to remedy the subapoplectic state, frequent palpitations, violent strokes of the heart, as well as continued or periodical suffocation; 2. general and particular dropsies, subsequent to diseases of the heart, require other medical treatment which must also be indicated.

Among the various means suitable to counteract the primary symptoms, which seem in a more particular manner less owing to a general plethora, than to a sanguineous engorgement of the cerebral or pulmonary vessels, and cavities even of the heart, must be inserted the very cautious application of all the means which were deemed as particularly useful in the second period. Thus, general bleedings, and slight, sparing local bleedings, made in the arms; on the anus, by leeches; on the neck, by the same means, when the subapoplectic state is threatening; on the thorax, when it is generally painful, which I have sometimes observed.

In the same circumstances, and from the same indications, frequent bathing of the arms in warm water, and pediluvium must also be attempted; this practice is very useful, particularly when the paroxysms are often repeated; employed to prevent, or moderate the paroxysms, some happy effects ensue, especially if it is aided by antispasmodics or anodynes.

In this period, the serous diathesis is generally united with the preceding symptoms; and in most cases, it is exceedingly prevalent; the extremities are not only distended, and deformed by serum, but the principal cavities are more or less drenched by it.

The medicines, which, in the second period, acted efficaciously, were very often inert in this; it is necessary to recur to more active, but whose effects are far less satisfactory. Nevertheless, one employs with some success, though ever ephemeral, bitter, tonic, nitrated drinks, such as *hydromel compos: et nit:* according to the prescription of the Hospital of la Charité, into whose composition enter the alder-root, the tops of hyssop and *glecoma hederacca*, with purified honey; *preparations of squills*, as the *oxymel* and *wine of squills*. I have generally employed with success, the *bitter and diuretic wine* of the same formulary, composed of *cinchona*, *cort-wintera aromatica*, *lemon*, *root of angelica*, *dried squills*, *leaves of wormwood* and *balm*, and *juniper berries*, *infused in white wine*; this medicine very readily restores the flow of urine, and abates the general serous diathesis and all the symptoms which it brings in its train. I have often prescribed the *bolus compos-saponis*, whose preparation consists of white soap, pulverised jalap, aloës and sirup of nerprun. I have also used *Bacher's tonic pills*, composed of the extract of myrrh, black hellebore and powder of *carduus benedictus*; finally, I have frequently employed the *sirup of nerprun*, and in general all the hydragogue remedies, modified according to the various indications of the disease.

By the administration of the above medicines differently combined and modified, I have often succeeded in dissipating, in a very short time, the infiltration, leucophlegmatia of the extremities, and in abating the effusions that existed in the thoracic or abdominal cavities, by rendering the evacuation of urine more profuse, and the serous stools more copious and frequent.

I have sometimes facilitated the evacuation of the infiltrated serum by slight punctures in the thighs or legs, when no spontaneous outlets were formed; but I have always practised this method with great precaution, having observed that wounds produced by such punctures, very frequently became gangrenous, and preserved this character till death, notwithstanding the most skilful dressings.

But, in general, the cure obtained by these different methods is comparatively short; the calm that succeeds their employment serves to deceive the patients, who, flattering themselves with being entirely restored to health, resume their manner of living, their customary exercises and occupations; though after a certain time, and often very short, the same symptoms return, the patient becomes gradually worse; the administration of the same medicines gives him equal relief two, three, or four times, then follows a new relapse, more dangerous than the preceding; finally, after a greater or less number of relapses, in proportion to the vigor, constitution of the subject, &c. death terminates a series of symptoms which the healing art was too feeble to counteract.

The regimen, in diseases of the heart, must be severe; the food light and taken in small quantity at once; patients must abstain from spirituous liquors, &c. &c. The mistakes in the regimen generally occasion such frequent relapses in the advanced periods of the disease; as the disease is not cured, time alone would be sufficient to produce them; but it seldom takes its natural course; its progress is commonly hurried by the mistakes in the regimen, in exercise, and by the moral affections; while by observing a proper regimen, abstaining from all violent exercise, and fatiguing employments, with tranquillity of mind, persons attacked with the organic lesions of the heart might sometimes exceed the mean term among the probabilities of human life.

ARTICLE VI.

Of the signs which distinguish the organic lesions of the heart from certain diseases of the thorax.

SECT. I.

Method of distinguishing the acute affections of the heart, from various acute inflammations of the thorax.

THE acute inflammations of the pericardium, or of the heart itself, partake of the characters of the pleurisy, or peripneumony, with which they are very often complicated.

But, let these acute diseases of the heart be separate, or let the complications just mentioned exist, it is by the assistance of the signs we must distinguish both their existence in their insulated state, and their different degrees of complications.

In the first article of the first class, I enlarged upon the consideration of the distinct signs, in order to dispense with recurring to them in this. I likewise formed, page 201, a very extensive parallel between the signs of sudden ruptures of one or several fleshy pillars of the heart, and those of peripneumony and carditis. I shall therefore refer to these different articles, and barely attend, in this, to the signs which necessarily distinguish asthmas, or dyspnœas which are analogous, and hydrothorax from the organic lesions of the heart.



SECT II.

Method of distinguishing the organic lesions of the heart, from the different asthmas.

THE compression of the lungs, by an aneurismal tumor or dilatation, and the sanguineous engorgement of the same organ, are, in the diseases of the heart and great

vessels, the essential causes of the difficult respiration and of the dyspnœa that invariably attends them. This peculiar embarrassment of respiration is one of the primary symptoms which strike the observer, when he approaches an individual afflicted with a lesion of the heart. A physician of little experience, or who is satisfied with a superficial examination for the purpose of establishing his diagnosis, or decided for such or such a kind of disease, fails not, from the observation alone of this principal symptom, and of the degree even to which it seems to have reached, to pronounce that the patient is attacked with a dry or humid asthma, or some other chronic lesion of respiration, under the names of dyspnœa, asthopenœa, &c. ; he commits this mistake with the more facility, as, being persuaded of the justness of his first decision, he neglects to make further inquiries which might convince him of the nature of the disease.

The physician who will not decide prematurely, will find every particular sign which will furnish him with correct ideas on the nature of the disease, in the constitution of the individual, in his physiognomy, and history of the previous symptoms, in the manner of attack, and evolution of the affection, in the observation of the pulse, except the fits of coughing, and in the results of the percussion of the thorax.

By the history of the evolution of the disease, he will understand whether it be the heart or lungs, which first gave signs of alteration in the function of which it is the agent. Hence the disease, whenever it belongs to the heart, begins by irregular strokes, palpitations, contractions, &c.

In case of asthma, on the contrary, the lungs, without the circulation appearing sensibly disturbed, give the first signs of disease, by a lesion of the respiration which is sometimes manifested slowly, at others with great quickness, which afterwards increases insensibly, and finally attains to the point of suffocation during the fits,

By striking the thorax, it will be ascertained that in asthmas, this cavity, far from announcing by its want of sound, the evolution of an organ, the presence of a foreign body, either fluid or solid, appears, on the contrary, to sound even better than in its natural state; while in almost all the affections of the heart, the region of the thorax usually occupied by this organ, and sometimes even the neighboring parts, sound but very ill, and often not in the least.

The attentive observation of the pulse is undoubtedly the means the best adapted to make the distinction which I wish to establish of these different diseases.

How can one, therefore, confound the regularity joined to the quickness, which are the characters that the pulse assumes during the paroxysms of asthma, with its too great force or weakness, its hardness, vibration, irregularity, inequality, insensibility, &c. and as many other modes of acting, as are in the cases of lesions of the central organ of the circulation, even except the times of the paroxysms?

Will the periodical return of the paroxysms be offered as one of the characters peculiar to distinguish the asthma from the disease with which I am comparing it? But this method will often become deceptive, because the affections of the heart, or great vessels, have sometimes very evident paroxysms, whose progress is periodical and sometimes regular, as I have proved in the article assigned to describe the progress which the organic diseases of the heart follow in their evolution, periods and termination.

It results from what has been offered, that dyspnœa, with which the subjects are afflicted when attacked by a disease of the heart, must not be confounded with the different asthmas which depend on the alteration of the texture, properties or condition of the lungs; that, notwithstanding these two diseases have often been confounded, of which the one is purely symptomatic, secondary and subsequent, yet we have easy and certain

means of distinguishing them ; that these distinct signs are principally furnished by the history of the evolution of the disease and its progress, by the employment of percussion of the thorax, and by the comparison of the different phenomena which the pulse presents in these various affections, when this parallel is formed by an experienced and intelligent physician, who examines the phenomena without prepossession.



SECT. III.

The method of distinguishing the diseases of the heart, from hydrothorax.

FOR the want of accurate knowledge of the signs on the organic diseases of the heart, these affections have often been confounded with hydrothorax. The mistake, having been committed by a great number of physicians, is very manifest in certain works, where are quoted, as cases of hydrothorax, actual histories of organic lesions of the heart, palpable from the collection of the symptoms peculiar to these affections ; while hydrothorax, deemed as essential, was, in this case, merely subsequent.

If one compare the attack, progress, and termination of confirmed hydrothorax, with signs of the diseases of the heart noticed in the same periods, he finds in the diagnosis numerous differences which do not permit him to confound these diseases ; and the approximation of the symptoms observed in a vast number of essential cases of hydrothorax, leaves no doubt of the facility which he must have in distinguishing these two diseases which are destitute of resemblance ; let us draw their parallel.

Therefore, in the essential, *uncomplicated*, hydrothorax, the countenance is pale, fatigued, emaciated, without being bloated ; the eyes are dull, and languid, the

lips pale and apparently thinned. In all the diseases of the heart, the face is florid, purple, bloated, often even infiltrated; the eyes are red, lively, and weeping; the lips tumid, purple, or blackish.

In hydrothorax, the chest, on the side of the effusion, is commonly more convex, or round; the intercostal spaces are invariably toward the end of the disease, enlarged by the separation of the ribs; this side is also œdematous. Nothing similar obtains in the diseases of the heart and great vessels; an aneurismal tumor is sometimes seen to raise the parietes of the thorax, and project externally; but the tumefaction, produced by this disease, happens only in a single point, and never occupies an entire side of the thorax, as in the first instance.

The integuments of the chest on the diseased side, in hydrothorax, are, especially toward the end, œdematous, and infiltrated; and this infiltration, united in a small number of cases, with that of the arms on the same side, is insulated from that of the lower extremities, and from the general serous diathesis. In the diseases of the heart, the parietes of the chest are infiltrated only as far as the disease, from its continuation, has occasioned general leucophlegmatia.

The percussion of the chest, in hydrothorax, practised by putting the patient in a sitting, or recumbent position, uniformly induces a noise similar to what the thigh does when struck; the want of sound is barely observed on the diseased side of the chest, and when the cavity is partially filled, the absence of sound is noticed, the patient being seated, on a level with the fluid effused. In the diseases of the heart, percussion affords quite different results. The chest does not sound anteriorly toward the region of the heart, for a greater or less extent, but over the residue of the parietes of the thorax, even on the left and behind, the sound is usually natural, as, in these different regions, the lungs are very rarely found altered.

In hydrothorax, patients always lie horizontally, sometimes on the side of the effusion ; some on the sound side, but most part on their backs ; nothing is exclusively uniform in this respect. In diseases of the heart, the position is never horizontal ; the patients, extended on the back, elevate the chest so as to be, as it were, sitting in their beds ; at other times, they sit altogether, often inclined forward. It is uncommon to see any of them, though sitting, turn on either side, excepting when they are near their dissolution.

In hydrothorax, the patient enjoys, till death, all his senses, and intellectual faculties. In diseases of the heart, especially toward the end, patients very often have troublesome dreams, and slight delirium ; and are sometimes in a subapolectic state.

In hydrothorax, one feels in the region of the heart, soft, feeble, tranquil, regular, sometimes slow, or partially frequent beatings, but it is always free from palpitations. In diseases of the heart, the beatings are dry, vibrating, extended, frequent, irregular, intermittent, rushing like water, variable, as the lesions themselves ; but the palpitations are incessantly more or less strong and frequent.

In hydrothorax, the pulse is very often full, softish, slow, tranquil, and regular ; weaker and more frequent in proportion as the disease advances, but always remarkable for its singularity. In diseases of the heart, the pulse exhibits opposite characters ; it is hard, full, vibrating, frequent, irregular, very intermittent, undulating, often changing, almost insensible, &c. &c.

In hydrothorax, respiration, though short and embarrassed, is performed, however, with sufficient tranquillity ; the cough is inconsiderable, and dry, neither is the expectoration profuse, or remarkable for any peculiar character ; there is no sudden wakefulness. The urine is generally natural. In diseases of the heart, respiration is invariably difficult, interrupted and much embarrassed, especially when the disease is in an advanced period ; the

cough is often violent, obstinate, and quite fatiguing ; expectoration very profuse, mucous, viscous, and sometimes bloody ; sleep is instantly disturbed by starting ; the urine is often almost entirely suppressed ; its secretion is always very irregularly performed ; it is turbid, brick-colored, with a sediment.

In hydrothorax, the disease advances slowly, and regularly, without any very perceptible alternations for the better or worse ; the symptoms are always the same ; the patient approaches his dissolution quietly, as well as gradually, without any obvious agitation or anxiety. In diseases of the heart, the patient is sometimes well, and sometimes ill ; there are intermissions, sometimes even very long, in the symptoms, or rather in their severity ; the progress of the disease is unequal, except toward its termination ; death supervenes after terrifying and distressing agony, scarcely ever with any apparent tranquillity, but sometimes suddenly ; at other times the patient is in a subapoplectic state, or often in a dreadful state of anxiety.

In cases of hydrothorax, after death, the countenance is found externally emaciated, and discolored, the thorax more protuberant on the side of the effusion, the integuments of the same side infiltrated, the abdomen without effusion, the extremities wasted, but free from infiltration ; internally, there is invariably a considerable quantity of water in one of the cavities of the thorax, sometimes it is completely filled ; the lung is collapsed, and compressed in proportion to the serum effused, scarcely crepitating, pale, as if macerated ; the heart is rather diminished than increased in size, empty, and without any internal lesion ; there is hardly ever any effusion into the abdomen. In diseases of the heart, the countenance is broad, bloated, livid, infiltrated, the veins of the neck are often prominent ; the abdominal parietes elevated by the serum contained in the cavity, all the integuments swoln by the infiltration, remarkable, especially in the extremities ; the quantity of water effused into the tho-

æax is usually inconsiderable; and when hydrothorax intervenes, which is infrequent, a serous effusion always takes place at the same time in the abdomen, with a general phlegmasia; the lungs are livid, and gorged with blood; the heart invariably presents evident marks of a lesion.

If I now compare the assemblage of symptoms just pointed out for the uncomplicated hydrothorax, with those which reputable authors, for instance, *Cullen*, have described as peculiar to this affection, it will be easily proved that both he and they were mistaken in many cases.

Hence, dropsies of the chest in which were observed several of the characters which he attributes to this disease, were, I dare affirm, real organic diseases of the heart, complicated sometimes, in their last periods, with a subsequent hydrothorax, generally attended, as I have said above, with the dropsy of the other cavities, and the general serous diathesis.

Most of the characters, which *Cullen* attributes to dropsies of the chest, are either insignificant or spurious. They are called insignificant when they are insulated, viz. the dyspnœa and paleness of the countenance, are found in many other diseases of the thorax, as well as œdematous extremities which are otherwise very rarely observed in hydrothorax. I consider as spurious, in the same disease, starting from sleep, palpitations, irregularity and intermission of the pulse, even in an advanced period, decumbence *forced* on the affected side, a symptom that is not usually noticed, except perhaps toward the termination of the disease.

Cullen asserts that he never was assisted, in the diagnosis of hydrothorax, by percussion of the chest; by this omission, he was deprived of a method which, certainly, would have enabled him to rectify his observations on this point of practice.

The distinction which I have made between the essential hydrothorax and dropsy of the chest the most often

subsequent to the diseases of the heart, appeared to me requisite to establish, because, in the first of these affections, the general remedies against the watery effusions, as well as those which are peculiarly applicable in case of hydrothorax, may be employed with some success; while in hydrothorax called subsequent, no cure must be expected, since it would be necessary to begin by attacking the organic lesion, which is generally incurable.

These two species of dropsy of the chest differ still in their causes. Those of the essential hydrothorax are often obscure; nevertheless observation has established some which seem to prevail in most cases; such are suppressed perspiration, repelled humors, iced drinks, when the body is in a sweat; bleedings often repeated, inflammations of the parts contiguous to the pleura in particular; finally, whatever tends to destroy directly the equilibrium which ought naturally to exist between the exhalation and absorption of the surface of the pleura.

In the subsequent hydrothorax, the efficient cause is much the same; the equilibrium is always wanting in the action of the exhalents and absorbents; such an alteration in the natural action of these vessels is probably occasioned by the influence which is exercised, over the surrounding parts, by the lesions of the heart, of which hydrothorax is so frequently the effect; or still more obviously by the derangement of the laws of the general circulation, viz. of the capillaries, and afterward, of the exhalents; by the degeneration of the blood into serum; because this degeneration is always previous to the derangement of the exhalation, &c.

But how do the organic lesions of the heart act so powerfully over the evolution of the serous diathesis in general, and of hydrothorax in particular? Is it because the blood not circulating freely either in the great vessels, or capillaries, engorges and distends them; their pores then being more open, the serum of the blood is filtered and effused in greater quantity? Would not this

phenomenon rather belong to a sort of decomposition of the blood, necessarily resulting from the derangement of the circulation and respiration, or from the concurrence even of these two functions, perhaps to all these causes united? Notwithstanding the advancement in physiological knowledge, the history of the accidental or morbid exhalations, does not yet appear sufficiently improved to explain these facts in a satisfactory manner.

The difference in the causes of the essential hydrothorax, and symptomatic hydrothorax, furnishes means of distinguishing these affections, some are found strikingly marked in the number of the signs of the diseases of the heart, signs which are produced in every case of hydrothorax subsequent to these diseases. The complete parallel which I have already drawn of these affections, seems to have proved it to a demonstration.

From what has been said in this article, it may be asserted that, of a given individual, the signs of hydrothorax in general being known, it is merely by the negative signs, the absence of all the signs peculiar to the diseases of the heart, that it can be determined whether hydrothorax be really essential; for, if only one or several of these signs prevail, it may be ascertained without fear of a mistake, that the effusion is subsequent.



SECT. IV.

Method of distinguishing the sanguineous engorgement of the liver, subsequent to the diseases of the heart, from the other affections of the liver.

IN consequence of the derangements of the circulation, and particularly of the difficult discharge of the inferior vena cava into the right auricle, the liver, in diseases of the heart, undergoes peculiar alterations which, in cases where the serous diathesis has become general, may have sometimes caused a deception.

Hence, in most of the diseases of the heart, the liver becomes the seat of a sanguineous engorgement, which I have ascertained on dissection, and which gives to this organ, especially in the last periods of the diseases, a size far greater than in the natural condition. Then it is easy to feel the tumor through the abdominal parietes; it is even sometimes so large, that the sharp edge of the liver often projects much beyond the inferior margin of the parietes of the thorax, while the convexity of the same organ, pressing up the diaphragm, and ascending toward the right cavity of the thorax, prevents the lower region of this cavity from sounding by percussion.

A physician called to a patient attacked with an organic lesion of the heart, which has already occasioned an effusion into the abdominal cavity, may, if he be unacquainted with the history of the attack and progress of the disease, mistake the subsequent engorgement of the liver for an essential organic affection of this organ, and regard the dropsy, from the disease of the heart, as produced by the alteration of the liver, of which he is convinced from the touch. I have seen such mistakes committed.

This mistake does not occasion any great inconvenience in case of an indolent sanguineous engorgement, like the preceding; but, when, as I have often observed, this engorgement is attended sometimes with a very sharp pain in the region of the heart, which pain is increased by the touch of this region, it may happen that the physician in this case thinks to find either an acute or chronic inflammation of this organ, which he would in vain attempt to treat by repeated bleedings, either general or local, or by other antiphlogistic means. Such a mistake might prove fatal to the patient whom a long and rigorous antiphlogistic treatment fatigues exceedingly, especially in this advanced period of the disease, when a few leeches suffice to produce a relief that is but momentary.

One will always be able to avoid these mistakes, 1. by not entertaining, on the first view of such disease, the exclusive idea of a dropsy, or any other analogous affection; 2. by cautiously informing himself of the known causes, nature of the attack, and progress of the disease; by weighing with attention in every case of general or particular dropsy, the phenomena of the circulation, both in the strokes of the heart and characters of the pulse.



SECT. V.

Method of distinguishing the symptomatic palpitations in diseases of the heart, from the other palpitations.

IN most of the diseases of the heart which have been examined in the present work, the palpitations were evidently symptoms which were produced with more or less energy in almost every case. The palpitations have been considered by many authors as essential diseases, of which they have made every species distinguished by their nature, or causes that had induced them. Others, without regarding them exactly as essential, have tried to invert causes which they have ascribed sometimes to an inspissation or acrimony of the blood, sometimes to an excess or bad quality of the bile. The latter have suspected the vitiated state of the stomach and several other viscera of the abdomen; the former have regarded the palpitations as being generally produced by the nerves, &c. &c. every author has had, on this subject, a different opinion.*

* The intercourse and communication between our material and immaterial parts, is a difficult and intricate subject to enter upon. All philosophers who have ventured to go beyond the threshold of inquiry in this department, have been bewildered, or returned no wiser than when they began. Nature seems to have endued particular portions of our frame with a more exquisite connection with our mental part; and subject to a closer sympathy with our passions. Many external signs correspond with our internal emotions. It is a difficult

I am far from denying the sympathetic influence which one organ exercises over another, consequently that of the different viscera of the thorax or abdomen over the

task, if at all possible, to wear the smile of gladness when the heart is sad. A nervous constitution is ill qualified to disguise its feelings. Persons accustomed to study the variations of feature in the human countenance, such as physicians, sometimes acquire a wonderful expertness in developing the passions. This physiognomonic experience is of great utility in the practice of medicine; it is the gift of genius; and in this respect, the physician, like the poet, may be said to be, "*nascitur non fit.*" The want of this eminent quality of intellect, makes the laborious plodder a dangerous visitor at the sick bed, particularly to the nervous patient; nature refuses to draw her veil aside to a clumsy observer; who being denied access to her mysteries, is very apt to pervert the purpose of what she discovers.

But there is a species of sympathy among certain organs of our body that points out a more intimate connection with the mind than what is possessed by others. The lungs and *heart*, in the thorax: the stomach, intestines, liver, and all the viscera subservient to digestion, have an innate sympathy with our emotions. During strong impressions on the mind, the *heart* beats quick and tremulous, and is said to palpitate; the motion of the ribs and diaphragm grows irregular and voluntary; and the action of the lungs so unequal as to make respiration hurried and convulsed; hence, sobbing, sighing, and panting, take place. The effect of violent passions on the chylopoetic viscera, is to destroy appetite, disturb digestion, invert the peristaltic motion of the stomach and bowels, and render the alvine discharge variable and irregular. The biliary secretion is also inconstant, and perhaps altered in quality: the hepatic, cystic, and common ducts, may be affected with spasms, inverted and obstructed; thus jaundice, and vomiting of bile are no unfrequent attendants of violent emotions. The ancients held the liver to be the seat of cholera and jealousy, hence the poet says,

Cum tu Lydia, Telephi
Cervicem roseam, et cerea Telephi
Laudas brachia, vae, meum
Fervens difficili bili tumet jecur.

HORACE.

The kidneys, ureters, and bladder, are all subject to this sympathy, from similar causes, as appears by violent pains, strangury, and total suppression of urine: the color of the urine is variable; and the quantity is sometimes profuse, at other times deficient. These affections of the urinary organs are among the surest diagnostics of nervous diseases. On the whole, all the more violent emotions strongly affect all these organs, which form a chain of feeling with one another, of a more exquisite kind than is to be found in any other part of the system, or from any other disease. The degree of the effect on these parts will be in proportion to the sensibility of the temperament; and in many subjects we find hysteric fits, epilepsy, and other convulsions, tetanus, menorrhagia, amenorrhœa, take place in an instant, from mental sympathy. Trotter's View of the Nervous Temperament, p. 81—84. T,

heart in particular ; but in the present case, the theory of the sympathies, invariably obscure, notwithstanding the researches of the moderns, appears to have been too often laid under contribution to furnish explanations which the deficiency of accurate knowledge on the diseases of the heart, prevented from inspecting and finding in these same diseases.

I might with reason be accused of exaggeration, did I not, by attributing almost all the palpitations to the diseases of the heart, here distinguish the slight, feeble, evanescent palpitations, whose cause, being usually moral, is known, from the strong, violent, frequent, almost continued palpitations for months, and years, the causes of which are often obscure and generally remote, and which are, let me repeat, symptoms of the diseases of the heart.

To consider the palpitations generally or in all cases, as signs of present or future diseases of the heart, would be to commit a mistake which an impartial and attentive physician will avoid ; a mistake the more reprehensible, as it would excite despair in the minds of a multitude of persons momentarily affected with palpitations that are totally destitute of danger.

To delineate, as far as possible, the precise characters of the two kinds of palpitations under consideration, is, I think, a point whose importance is proved by the arguments which have already been adduced, and by the inspection of the complaint which may be occasioned by him who, confounding the differences which obtain in the nature of the various palpitations, would make none in their treatment.

The causes of the palpitations may often establish between them sufficiently conclusive and distinct signs. Hence, the moral affections, violent exercises, obstacles to the circulation, induce in such a subject palpitations which disappear as soon as does the cause ; while in others the same causes produce palpitations, which, from their vigor, continuation, permanence, &c. will quickly

evince that the organization of the heart has been deranged by the cause which originated them.

Among the causes of the palpitations, some appear in all cases to act more vigorously, and to produce more palpable effects, therefore they lead us to prognosticate more ill of their consequences. Such are, for example, the palpitations produced by the metastasis of any humor to the heart, by moral affections extremely lively and prolonged, and by a long suppression of an habitual sanguineous evacuation, &c. &c. In general, it may be advanced that the severity of the palpitations, or more properly speaking, the danger which results from them, is ever proportionate to the vigor, violence, and continuation of the existing causes.

We discover, in the nature of the palpitations, the signs the best calculated to show the distinctions which I have said ought to be made. But how many varieties, or shades do we not notice in the palpitations from the noisy, tumultuous, convulsive beatings of a heart attacked with active aneurism, to the feeble palpitations occasioned by an agreeable, mild, moral affection, to the trembling of the heart deprived of blood after profuse or continued hemorrhages!

Whatever attention these considerations may merit, one will generally be able to distinguish the palpitations which are evanescent, slight, commonly separated from every other accident, and most often produced by some trifling moral cause, by a momentary plethora, &c. from the symptomatic palpitations which accompany most of the diseases of the heart, and which, from their long continuance, violence, frequency, and coincidence, with a multitude of other symptoms peculiar to the same diseases, seldom leave any doubt as to their cause, or danger which they occasion, and as to the means of cure which may be practised with more or less success.

I should digress from my subject by entering here upon the treatment of the first kind of palpitations, and such as depend solely on slight causes and as have no

dangerous characters; I can merely refer the reader to the numerous authors who have written concerning them, warning him, however, to be guarded against the dangerous and irrational employment of the means indicated and extolled for these symptoms, namely, bleedings, anti-spasmodics, corroborants, preparations of iron, stomachics, purgatives, &c. &c. means alternately employed by different physicians, according to the opinions which they have formed of the causes of the palpitations.

ARTICLE VII.

State of the subjects that have died of the diseases of the heart.

WHEN death, the two frequent termination of diseases of the heart, has approached, some of the signs, characterizing these affections during their progress, are still found on the dead bodies of such subjects. Thus in a certain number of subjects who have died of various diseases, an experienced practitioner can almost to a certainty distinguish that of an individual who died of a disease of the heart, by the bare inspection of the external state of the dead body; it is, therefore, apparently useful, in order to complete the history of what belongs to these diseases, to indicate the peculiar characters which the dead bodies of subjects present whom they affected. I shall first consider the external state of the dead body, and then make a succinct recapitulation of what is generally observed on dissection.

SECT. I.

The external state of dead bodies.

THE countenance, usually bloated, and vultuous, preserves nearly the color it presented during the disease, viz. red, violet, marbled, and livid; in other subjects it

is paler, and the violet and marbled color is barely perceived on the lips, *alæ nasi*, eyelids and on the lobe and posterior edge of the ears. The lips appear tumid, turned out and thicker than in the natural state.

Purple spots are often seen on the neck, and the projection of the external jugular veins swoln from so great a quantity of blood, that I have often been able, by pricking them, to make the blood jet, and even this jet fill several palettes of blood, with a force and continuance very rare in this bleeding during life. May not this phenomenon sometimes deceive, and cause for an instant a real death to be considered as only apparent? In the days of ignorance and superstition, the anatomist who performed a similar dissection would have been prosecuted. The fate of *Vesalius* is well known.

The external examination of the thorax sometimes discovers a tumor in cases of aneurisms of the aorta. By striking the parietes of this cavity, one invariably obtains the different results which he has before obtained on the living subject, and the chief of which is the absence of sound in a greater or less extent, toward the region of the heart, according to its size, &c.

The parietes of the abdomen are usually distended, and show every sign of ascites. Nevertheless some persons die of a disease of the heart, in whom the effusion does not happen, because the progress of the disease has been too rapid for the formation of the serous diathesis, and for the origin of particular dropsies.

The extremities are likewise generally tumefied and infiltrated; but this disposition does not prevail so frequently in the superior as in the inferior extremities, which sometimes presents clefts which are never observed in the superior extremities.

SECT. II.

Internal state of the dead bodies.

Cavity of the skull.—The organs contained in the skull do not present, in consequence of the diseases of the heart, characters which can be considered appropriate to these affections, as the small quantity of serum, sometimes found between the meninges, in the ventricles of the brain, toward the basis of the cranium, and a certain degree of softness in the cerebral substance are phenomena which are equally noticed in consequence of some acute and almost all chronic diseases in which the serous diathesis has prevailed.

Can I make a more important estimation of the very large quantity of usually fluid blood, which is often supplied by the discharge of the numerous sinuses of the dura-mater? Although this accumulation result from the impeded circulation of the blood, produced by the disease of the heart, so that a subapoplectic state very often ensues from it, during life, but seldom complete apoplexy; and one cannot attribute it exclusively to these affections, since he finds it in several others, either primarily or subsequently.

Cavity of the thorax.—The inspection of the thoracic cavity containing the organ essentially and primarily affected, particularly elucidates the inquiries of the physician; hence, he discovers in the structure of the heart, every species of alterations; here, serous and purulent effusions; there, either active or passive aneurisms of the heart; sometimes, constrictions of the orifices, excrescences, and indurations of the valves; finally, a catalogue of different affections of which I have given an ample history in the respective articles of this work.

To avoid repetition, I deem it inexpedient to enlarge farther on the induration and sanguineous engorgement of the lungs, on the infiltration, maceration and a species of flattening of these organs and trachea in cases of tu-

mors, aneurismal dilatations, and a greater or less serous effusion into the cavities of the pleura.

Abdominal cavity.—Neither do I think it expedient to revert to the frequent serous effusion into the abdominal cavity, to a sort of maceration which the intestines sometimes undergo, to their blackish color that seems to result from this process, &c. I shall merely offer a few reflections on two principal phenomena which appear to merit particular attention: 1. is the presence, though infrequent, in the stomach and the rest of the alimentary canal, of a coagulated substance, of a reddish brown, resembling blood which has suffered a certain degree of alteration; 2. the sanguineous engorgement of the liver, which ordinarily renders this organ larger, and sometimes imparts to it even such a sensibility that the slightest touch of the hepatic region induces extreme pain. Hence the mistake, which I have seen in practice, of physicians who announced the presence of a disease of the liver, from an extremely erroneous diagnosis, which they explained in favor of the dropsy, of the embarrassed respiration by the pulling of the diaphragm, &c. &c. a mistake which has already been related in Article VI. Sect. V. of the corollaries.

1. In several bodies of individuals who have died of diseases of the heart, I have found the stomach almost filled with coagulated blood of a deep color, which continued through the whole extent of the small intestines. Thus, I have often observed in cases of scirrhus stomach, that this cavity contained a thick fluid quite analogous to the preceding; but, more attentively examined, some difference was discovered; it was not in fact coagulated as in the first instance, and it resembled far more a blackish fluid, which suspended a large quantity of sooty matter, of the color of burnt coffee.

If, in cases of ulcerated scirrhus of the stomach, this matter was found to be sanguineous, we might think it was furnished by the vessels of the ulcerated scirrhus surface; but the manner of their formation is more

difficult to explain when this sort of sanguineous effusion is observed to result from diseases of the heart.

It has been said that the vasa brevia furnish sanguineous effusions of this nature, by the means of the communications which they form between the spleen and the great bulging end of the stomach; but, by endeavoring to weigh this explanation, I can hardly conceive how so large a quantity of sanguineous fluid could be effused into the sound stomach through vascular pores. Indeed, when I have observed these singular effusions, it was never in my power, however careful I might be in my researches to detect the orifices through which such effusions were made. Is it not more rational to suppose that the liver which is invariably, in the affections of the heart, more or less engorged; that the liver, I say, by means of the direct communications of the hepatic arteries and veins with the pori biliarii, is discharged, when the accumulation of blood is too great, into the hepatic duct, which pours this sanguineous fluid into the beginning of the duodenum, whence it may partly regurgitate into the cavity of the stomach? I offer, moreover, this opinion at random and for what it is worth.

Whatever be the opinion received on this subject, these facts and reflections are perhaps calculated to throw some light upon the black disease of the ancients, in which I have not yet been able to find a vestige of communication of the vasa brevia in the stomach, &c.

2. The sanguineous engorgement of the liver is the second phenomenon on the consideration of which I must be prolix. This engorgement obtains in almost all the diseases of the heart; but it is not always found in the same degree. I have seen it carried so far, that a very slight incision in the liver was sufficient to cause a gush of black and sometimes extremely thick blood. In general the size of the organ is sensibly augmented. The engorgement may be known even during life, and then the patient sometimes feels a pain usually weak, but which may become very sharp by moderate pressure.

The sanguineous engorgement of the liver, which was mentioned in a preceding article, may likewise, be very well explained by the difficult discharge of the vena cava into the right auricle, and of the hepatic veins into each other ; hence the marbled blackish color of the liver ; hence a retrograde series of engorgements of the venæ mesaraicæ, colicæ, hemorrhoidales, and capillaries of the intestines, and sometimes their blackish color ; hence, the momentary relief which the application of leeches almost invariably procures.



ARTICLE VIII.

Of the condition of the blood after the death of the subjects who become victims to the diseases of the heart ; and of the poly-pous concretions.

THE alteration of the different tissues of the heart produces, in the action of this organ derangements which necessarily disturb the circulation. This function disturbed in a central point, consequently in the great arterial and venous vessels, and in the capillaries, causes chemical and physical changes in the constitution of the blood, which remain to be considered, and which merit the more attention, as some of the physical alterations, viz. the coagulation of a portion of the blood before death, have been numbered among the diseases of the heart.

The chemical composition of the blood is undoubtedly altered by the organic affections of the heart. We want, indeed, on this point, a series of experiments to prove to the eye the truth of my assertion, but every thing concurs in its favor. How can we conceive, therefore, that the blood can preserve its natural condition, when the circulation, for several months, or even several years, is disturbed, and, as it were, vitiated ? How can we con-

ceive it to be indifferent to the physical and chemical constitution of this fluid, to the quality, quantity, proportions of its elements, to its fluidity, plasticity, and laws of its formation, reparation, &c. to be or not to be moved by the force of a given measure and rule! Can it not be ascertained, on the contrary, that the more this measure and rule shall depart from the natural and necessary laws, the more vitiated will be this fluid, and the more deranged will be the secretions, excretions, assimilation or nutrition, &c. &c.?

Are not the component parts of the blood, in fact, altered, at least in their reciprocal proportions, when it becomes watery, and almost colorless; especially if we compare this state to the same fluid that, in certain diseases of the heart, engorges the liver, and is then nearly the consistence of sirup?

If, we daily find, in diseases of a different nature the blood so altered that it retains neither its natural color, nor consistence; for a still stronger reason its chemical alteration must obtain during the existence of the diseases of the heart which, from the derangements of the circulation, always induce the imperfection and even total disorder of sanguification. *Senac* saw on a subject whom he was bleeding, "the jet of blood condensed when flowing from the vessel; it fell in the dish like a coiled rope: its surface was whitish." *Bichat* found the blood contained in the whole system of the vena portæ, sensibly altered and decomposed. I have observed a more prevalent alteration and decomposition. In the case quoted by *Bichat*, the obvious deprivation of this fluid was confined to the system of the vena portæ. In the case which I saw, the degeneration of the blood was general, since, in the person who was the subject of it, the blood, as well in the cavities of the heart, as in the great arterial trunks, and the smallest arteries of the extremities was of a light purple color, and the grumous consistence of the dregs of wine. Some authors say they have seen this fluid very thick, quite discolored,

&c. I do not insist farther on such alterations, because, in most of the cases which I could quote, the existence of an affection in the organ of the circulation is not mentioned. Besides, I have been desirous of making this kind of digression merely to enable the reader to appreciate the too bold opinion, which unquestionably precludes every idea of a humoral degeneration, and particularly of that of the blood.

The condition of the blood, found in the hearts of those who have died of affections of this organ, appears to be generally the same in the various cases of analogous lesions. But more satisfactory information which I have acquired from a series of observations made on this subject in the Clinical Hospital, is comprised in what follows :

A. After the organic affections of the heart, the blood is accumulated in its cavities in greater or less quantity ; I do not know that, in a single instance of a diseased heart, it has ever been entirely deprived of blood.

B. Its quantity, though not remarkable in some cases, is in others, increased so far as to fill, even to distend the different cavities of the heart, and give it a hardness which it is difficult to overcome by pressing this organ with the fingers.

C. However considerable be the quantity of the blood contained in the heart, it is yet different in the twofold relation of its color and consistence. The blood always participates of the general serous state of the body, when the disease has continued long enough to occasion the serous diathesis. Then the cavities of the heart include a very thin, discolored, fluid blood. In a patient who died in consequence of a passive dilatation of the left ventricle, this fluid appeared of so faint a color, that it scarcely reddened a piece of white linen which imbibed it.

D. At other times, and the case is very common when the patient has not been long troubled with the disease, or when the serous decomposition cannot be formed, all

the blood contained in the heart is taken for clots whose parts are discharged with difficulty, when the section of the great venous trunks is made. The color of these clots is usually of a dark red. A more exact idea cannot be given of this state, than by comparing it as to the color, consistence and tenacity, to goose-berry jelly a little too much boiled.

The color of the blood has been asserted to be different in each side of the heart. This difference, which is observed, while the subject is living, in the blood of the arteries and veins is not perceptible in the heart after death ; this is at least what I have learnt by comparing the blood in each side of the heart in a vast number of dead bodies.

Such are the very frequent states of the blood, resulting from the organic diseases of the heart ; but there is one which I have not yet considered, and which deserves the more to fix the attention, as physicians have made it a subject of discussion, on which their opinions have not been fully decided.

E. The polypous concretions observed by many practitioners, have been regarded by some, as an effect of death ; by others, as substances morbidly formed during life. These two opinions differ essentially, as it is evident, since in the one these substances are the effects of death ; while in the other they may be, and are often its cause. Such a diversity of opinions undoubtedly arises from both parties having considered the concretions in a too general point of view, and their not having been able to distinguish the polypus whose formation is recent and subsequent to death, from those which begin at a time when the individual is yet enjoying life. The limits of this Essay are too circumscribed, to admit of my enlarging much on the discussion of these opinions, I think it my duty to support that which appears the most reasonable ; because polypous concretions are generally formed several days, and even sometimes a long while before death, especially in hearts where an

obstacle, at the entrance of the aorta, prevents a free egress of the wave of blood, particularly when the subject is young, robust, and when the blood has a greater or less plasticity. This opinion is founded on numerous facts which are my own, and of which I am going to relate two cases.

Case LXXV. In the right ventricle of a heart which was affected by an aneurism with a thinning of the parietes of the organ, I saw in the Clinical Hospital, the inside of this right ventricle doubled in every point of its internal surface, with a white, thick, fibrous layer of lymph, possessing a singular tenacity; this substance had formed adhesions so close with the columnæ carneæ of the right ventricle, that they appeared to constitute a part of them, and from which it was very difficult to entirely separate them. The blood contained in this polypous sac was half fluid and half coagulated. I was able to empty the cavity of the fluid blood and of the clots, and inspect the internal surface of the polypous layer which was smooth, and hardly tinged with the blood which it previously included.

Case LXXVI. In another subject who died in the same hospital, in consequence of a disease of the heart, I found in the cavity of the left ventricle, a thick, hard concretion of lymph, adhering closely to the middle part of the surface of the partition of the ventricles; after having detached this substance which I effected with considerable difficulty, I saw that in the place where these adhesions were formed, the columnæ carneæ were effaced in a compass proportioned to the polypous concretion just described, which proves that the substance was formed and fixed in this place, long before death, and that by dint of pressure on the part of the organ which contracts upon the blood to be expelled, the fleshy network had disappeared; the pressure necessary to efface so perfectly the columnæ carneæ, must have been long and permanent.

In several other instances, I have demonstrated to the students who attended my clinical lectures, polypous concretions usually of a yellowish white, of a fibrous structure, so firm, tenacious, and adhering so closely to the internal fibres of the heart, that I cannot hesitate to admit, as a fact established by experience, the formation of such concretions, often long prior to the death of the individuals in whom I have observed them. The presence of which concretions I have sometimes announced before dissection, from the nature of the symptoms peculiar to the diseases of the subjects.

Symptoms of diseases of the heart may arise from the presence of these bodies; but they do not appear striking enough to enable the practitioner to establish in every case, an accurate diagnosis of the affection. The presence of polypous concretions in the heart very commonly induces none but momentary symptoms in their return. They, floating in the cavities of this organ, occasion a palpable derangement in the phenomena of the circulation, only as far as the wave of blood carries them either to the orifice of the auricle and ventricle, or to the mouths of the great vessels. Then obstructing partially or totally the diameter of these apertures, they excite palpitations, and syncopes, which are often but momentary, as they cease simultaneously when these concretions leave the orifices obstructed, in order to float, as before, in the inside of the cavity which contains them.

I have, however, had an opportunity of seeing some of these polypous concretions which, from their being fixed on a point, were capable of producing continued symptoms. This happens particularly, when as I have often noticed, one of these concretions is attached to the valvular cords and to the valves themselves, to which they strongly adhere; then they must prevent the exercise of the functions of these membranous substances, rendering them almost immoveable from the preternatural adhesions which they are establishing between them

and the parietes of the heart, to which these concretions adhere on the other part.

The accumulation of the blood, its long residence in the cavities of the heart, and a peculiar disposition of this fluid which is opposed to the serous condition in which it is sometimes seen, appear to be the principal causes of the formation of the polypi. The accumulation being greater, and the longer residence of the blood in the heart, are very frequently occasioned by a lesion of this organ, or its appendages, which embarrasses the circulation. It may happen also that the excitability of the organ, or the stimulant virtue of the blood being diminished, may still be causes of the accumulation and coagulation of the blood in the heart which, in each case supposed, gives to this fluid an impulse too weak and inefficient for the perfect performance of the circulation.

From what has been advanced, it cannot be very difficult to distinguish the polypous concretions formed long before death, and which may be considered as a disease of the organ, in proportion to the accidents which they induce, from the coagulations formed either in the last moments of life, when the heart has scarcely any longer power to empty itself, or shortly after death, or in the space of time which elapses between it and dissection.

These last coagulations, being red, and very frequently gelatinous, resemble, in many respects, the first; they differ, however, as it is far easier to break them with the fingers, and as they seldom contract adhesions with the internal surface of the organ, or the adhesions are extremely slight.

These coagulations are not only found in the cavities of the heart, but there are also observed in the cavities of this organ, strips of lymph or fibrin, whitish, cylindrical, usually much smaller than the tube which includes them, reaching into the aorta, into its branches, and even into the minor order of vessels; coagulations which are, like the last mentioned, produced, on the approach of

dissolution, by the attraction of the particles of the fluid, which are no longer sufficiently agitated by the dying action of the organ.

I here conclude what I proposed to say, from Professor *Corvisart*, upon the diseases of the heart ; I presume the reader will find in the course of the present work, proof of the doctrine advanced in the preface, that, in the actual state of medical science, there are few subjects so complete as the one entrusted to me for publication : What remains, therefore, to be desired in the knowledge of the signs and prognosis of these diseases ? Indeed, very little.

The history of the causes of the organic diseases of the heart appears to me to be one of the points that yet leave much to be desired. Hence, upon the accurate knowledge and clear distinction of these causes, we may hope one day to establish the most rational treatment of these affections. Hence, how many correct ideas would there not be concerning the causes the most frequent and the most adapted to produce them, according to the age, sex, constitution, &c. valuable to direct the physician in the choice of the means which would be decidedly employed in these different circumstances ? These reflections will be still much more important, if it be considered that, in the present case, the treatment of the causes is the only one actually efficacious ; and that the treatment of the symptoms, to which the practitioner finds himself too soon reduced, never offers any but means whose effects are neither certain nor durable.

It is well known that women who, in general, exercise more moderately, have less rigidity of fibre, a greater mobility of the system, and more lively passions with more superficial impressions, are far less frequently than men attacked with the organic diseases of the heart ; that, among the latter, they who are vigorous, and in the flower of their age, are the most subject to them : children are seldom troubled with these affections. But what are their most frequent causes, against which the greatest

precaution must be observed? What is the influence of the atmosphere on the progress of the disease, and on the more or less immediate death? From numerous observations, the author is satisfied that such patients supported with great difficulty very foggy, humid atmosphere; that the symptoms were then aggravated, death happened sooner, and often suddenly, when the disease was advanced.

Perhaps the history of the extraordinary lesions which I have described will become still more accurate by the comparison of other analogous facts farther observed; perhaps some will likewise be discovered which the author has not had an opportunity of noticing; on this point he is far from having uncommon pretensions.

The diagnosis, in the diseases of the heart, appears to be now carried to a degree of precision at which it has not yet arrived in many other diseases.

As to the prognosis, it has unfortunately too great certainty, as soon as the disease is decided; the termination is always death, and the art of prognosticating is no longer here, I repeat it, that of distinguishing the curable from the mortal disease; but rather that of estimating how long the energies of life can struggle against the principle of destruction.

But it is different with the treatment of the diseases of the heart. Here is probably the department in which the most remains to be performed. Means have been proposed which have not been perhaps tried with sufficient perseverance; there may be others whose discovery is not yet made, and in the investigation of which the good of humanity ought incessantly to labor: but I mistake; reason repels, in this case, the wish of philanthropy. By what remedy, therefore, shall we ever be able to confirm, in its natural state, a heart whose organization is undoubtedly altered? How can the formation of these alterations be retarded? By what method can we expect to dissolve the ossifications, and preternatural incrusta-

tions, which constrict, and even obliterate almost entirely the different orifices of this organ.

I speak it with sorrow : the known means presented by medicine in these diseases, are barely calculated to retard or render the last moments of life more supportable ; and those which medicine may hereafter afford, exaggerated by the love and desire of good, are perhaps in the main merely consoling chimeras, which a moment's reflection will dissipate.

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