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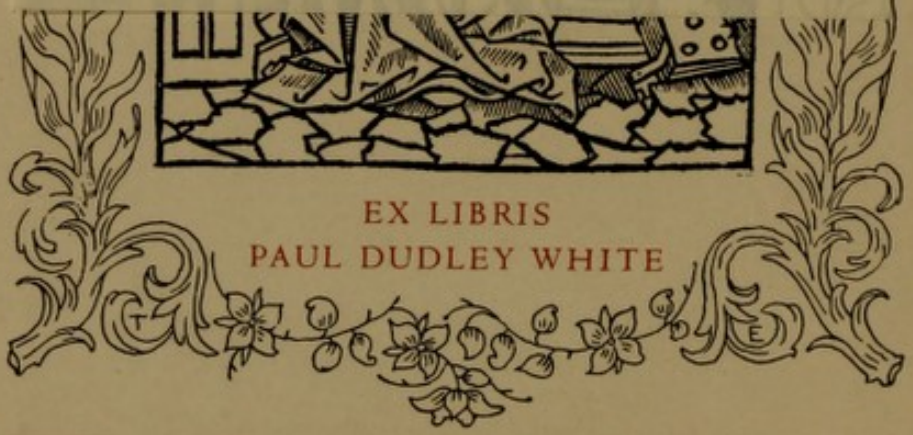

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AN

INQUIRY

INTO THE

SYMPTOMS AND CAUSES

OF THE

SYNCOPE ANGINOSA,

COMMONLY CALLED

ANGINA PECTORIS;

ILLUSTRATED BY DISSECTIONS:

BY

CALEB HILLIER PARRY, M.D.

MEMBER OF THE COLLEGE OF PHYSICIANS OF LONDON, AND OF THE ROYAL MEDICAL SOCIETY OF EDINBURGH;
AND ONE OF THE PHYSICIANS OF THE BATH GENERAL HOSPITAL.

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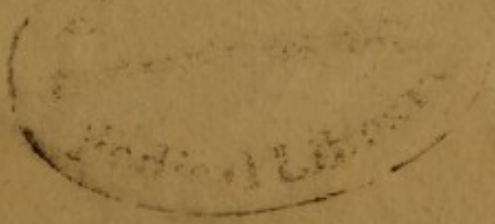

TO

HENRY REVELL REYNOLDS, M.D.

&c. &c.

DEAR SIR,

IN dedicating to you the following Essay on the Syncope Anginosa, I embrace the best opportunity of acknowledging professional obligations to you, which it is out of my power to return; and of assuring you of the sincere attachment, with which

I am,

Dear Sir,

Your obedient Servant,

C. H. PARRY.

BATH,
OCT. 31, 1799.

CHAP. I.

INTRODUCTION.

MORE than thirty years have now elapsed since Dr. HEBERDEN published a description of a disease highly alarming as to its consequences, and till then, as it should seem, unnoticed among physicians. One of the leading symptoms of this disease being a sort of undescribable anguish across the breast, he assumed that symptom as the foundation of a name, and called the disease Angina Pectoris. Since that period much attention has been paid to this subject by medical writers of all descriptions; notwithstanding which, great errors have occurred with regard to the symptoms; and the pathology has hitherto remained in a state so uncertain, as to have suggested no probable means of cure or relief. These circumstances have induced me to attempt an enquiry into the nature and causes of the Angina Pectoris, as they are deducible from the actual symptoms, and from dissections.

Such an enquiry will unavoidably involve me in the necessity of pointing out what appear to me the mistakes of some of my medical brethren, in their nosological judgment of this disease. In a personal view, this is a disagreeable task. But when I consider that truth is the sole foundation of moral and religious virtue, and therefore of happiness, my regard to personal delicacy is lost in the more general and greater obligation of publick utility. In reality, it is of little importance who is the discoverer of truths, however valuable. To mankind it suffices that the truth is actually known, and the good obtained.

The substance of the following Essay was originally read to a Medical Society* in Glocester-

* This little society, which met thrice annually during several years, at Rodborough in Glocestershire, and other places, for the united purposes of conviviality and improvement in medical science, consisted only of the following persons; Dr. Hickes, of Bristol; Dr. Jenner, of Cheltenham; Dr. Ludlow, of Corsham; Mr. Paytherus, of Norfolk-street, London; and the author of these pages. We were all virtually either school-fellows or fellow-students. The two last are to me comparatively of late acquaintance—of about twenty years: but they have been endeared to me by private and professional merits, and by habits of reciprocal obligation. Of the two first it is sufficient to say that they have been my friends for almost twice that period, acquired in the gay morning of my life, and faithfully preserved during various changes of place and fortune. My heart glows, while I pay them the tribute of esteem, which is justly due to their worth and unabated affection.

shire.

shire. In that society the influence of the heart on the animal œconomy had often been the subject of discussion. It was generally admitted that many of the cases, which are vulgarly called asthma, originated, through different media, from diseases of that organ; and it was suggested by Dr. JENNER, that the Angina Pectoris arose from some morbid change in the structure of the heart, which change was probably ossification, or some similar disease, of the coronary arteries. To some questions which I have lately put to that excellent pathologist, as to the series of observations which produced that opinion, I have received the following answer:

"The first case I ever saw of Angina Pectoris, "was that in the year 1772, published by Dr. "HEBERDEN, with Mr. HUNTER's dissection. "There, I can almost positively say, the coronary "arteries of the heart were not examined. An- "other case of a Mr. CARTER, at Dursley, fell "under my care. In that, after having examined "the more important parts of the heart, without "finding any thing by means of which I could "account either for his sudden death, or the "symptoms preceding it, I was making a trans- "verse section of the heart pretty near its base, "when my knife struck against something so "hard and gritty, as to notch it. I well remember

"looking

" looking up to the ceiling, which was old and " crumbling, conceiving that some plaister had " fallen down. But on a further scrutiny the real " cause appeared: the coronaries were become " bony canals. Then I began a little to suspect. " Soon afterwards Mr. PAYTHERUS met with a " case. Previously to our examination of the " body, I offered him a wager that we should " find the coronary arteries ossified. This, how- " ever, proved not to be exactly true; but the " coats of the arteries were hard, and a sort of " cartilaginous canal was formed within the cavity " of each artery, and there attached, so however " as to be separable as easily as the finger from " a tight glove. We then concluded that mal- " organization of these vessels was the cause of " the disease. At this very time, my valued " friend, Mr. JOHN HUNTER, began to have " the symptoms of Angina Pectoris too strongly " marked upon him; and this circumstance pre- " vented any publication of my ideas on the sub- " ject, as it must have brought on an unpleasant " conference between Mr. HUNTER and me. I " mentioned both to Mr. CLINE and Mr. HOME, " my notions of the matter, at one of Mr. " HUNTER's Sunday night meetings; but " they did not seem to think much of them. " When, however, Mr. HUNTER died, Mr.

" HOME

"HOME very candidly wrote to me, immediately "after the dissection, to tell me I was right. The "appearances in Mr. BELLAMY's case gave me "the idea that the disease arose from a determi- "nation to the vasa vasorum, and that the con- "cretions were deposits from the coagulable "lymph, or other fluids, which had oozed out "on the internal surface of the artery."

With these observations of Dr. JENNER we were well acquainted in the society. Many of them were indeed communicated to us as they arose. During their course I witnessed the remarkable case of the Rev. Mr. S****, whose body after death exhibited appearances so coincident with those which from the symptoms I had expected, and, relying on the accuracy of Dr. JENNER, had predicted, that I was induced to relate it to the society, with a variety of pathological remarks intended to illustrate Dr. JENNER's position, that the Angina Pectoris was a disease of the heart, connected with mal-organization of the coronary arteries. This dissertation was read to the society in the month of July 1788. As it appeared to me to throw some light on this disease, I always intended it for publication; but much professional occupation followed, and prevented the accomplishment of my purpose. At length, after an interval of nine years, the case of Mr. M***** occurred,

occurred, and forcibly recalled my attention to this subject, by affording another strong exemplification of the pathology of the disease in question. This instance, in conjunction with some farther experience, has at length induced me to resume my original design of publication.

I have mentioned that my paper was read in the month of July 1788. In the month of March 1794, a case of genuine Angina Pectoris was communicated to the London Medical Society, and published in their memoirs, by Dr. BLACK, of Newry in Ireland, who, on dissection, found the coronary arteries ossified. This case I may have occasion again to quote hereafter; but I think it necessary to advert to it now, in order that from a comparison of its date with that of my original Essay, I may prove it to have had no share in producing the conclusion either of my friend Dr. JENNER, or myself, as to the causes of the Angina Pectoris.

CHAP. II.

Case and Dissection of Mr. Bellamy, by Mr. Partherus;—of the Rev. Mr. S----;—of Mr. M--------.

CASE I.

"MR. J. Bellamy, aged 56, his height five "feet four inches, robust and corpulent; "his neck short, his complexion fair and san- "guine, his disposition cheerful, yet indolent; "fond of society and sedentary amusement; irre- "gular in his hours, and frequently intemperate; "had enjoyed good health from an early period "of life, subject only to an eruption of small "pustules on his back, which at times, particu- "larly during the summer months, were attended "with considerable itching, and a thin watery "discharge.

"Being called to visit him early in the morn- "ing of the 12th of August 1785, I was in- "formed by him, that the preceding evening, "after drinking port wine to excess, he had been "attacked about two hours after he had retired "to rest with a violent pain in the chest, darting "through from the sternum to the spine, accom- "panied with a sense of stricture, difficulty of "breathing, sickness and vomiting, a weak irre-

"gular

" gular pulse, pale countenance, and cold, but " profuse perspiration. These symptoms conti- " nued about two hours, when they gave way, or " seemed to do so, to the use of antispasmodics.

" From this time he became less fond of so- " ciety, and more regular and abstemious, pass- " ing through the autumnal and winter months " without any apparent diminution of his health, " and with his accustomed cheerfulness.

" In the month of March 1786, walking up a " field of easy ascent, at a short distance from his " house, he felt, on a sudden, acute pain, with " stricture in his chest, which, as he afterwards " said, very much resembled the attack in August " 1785. He returned home with great difficulty, " when, the moment he was seated in his chair, " the pain totally ceased. It however returned " the same day, though not so violently, and of " short continuance.

" For three preceding weeks he was subject to " frequent paroxysms, generally three, sometimes " more, in the twenty-four hours; but as the " pains were not acute, and soon passed away, " he did not think it necessary to apply for re- " lief, till, alarmed by a more violent attack, he " requested my attendance. I did not see him " during the paroxysm; but he complained of ha- " ving suffered an equal, if not a greater, degree

" of

" of pain and stricture than in the former attacks " in August and March.

" A regular attendance gave me an opportu- " nity of making the following remarks. During " the paroxysms he always complained of acute " pain either under the sternum, or in the back " between the shoulders, darting through the " chest in the direction of the mediastinum. Their " duration, violence, and period of return, varied " very much, except the first in the morning, " which was more severe, continued longer, and " constantly returned between the hours of two " and four. This attack always obliged him to " get out of his bed, when, placing himself in an " elbow chair, he experienced relief from pressing " his back forcibly against it.

" The going off of the paroxysms was preceded " by loud and frequent eructations. The transi- " tions from acute pain to a state of ease were so " sudden, that at times he has, to use his own " words," 'felt both extremes in the same mo- 'ment.' " During the intervals he appeared to " those who visited him perfectly well; his appe- " tite, strength, and spirits, being not impaired.

" As the disease advanced, the paroxysms be- " came more violent. He complained of pain in " the left arm, afterwards in both; and at length " his hands and fingers became affected to so great

" a degree,

" a degree, that the power of moving them was " sometimes suspended during the paroxysm.

" The age, constitution, form, and symptoms " of the patient clearly pointed out the disease to " be the Angina Pectoris, described by Doctors " HEBERDEN and FOTHERGILL. Aware of its " fatal termination, I had no other hope than that " of palliating the symptoms. For this purpose " mild aperient medicines and antispasmodics " were occasionally made use of; blisters and cup- " ping glasses, with scarification, were applied to " the back and sternum; an issue was formed in " the thigh; a vegetable and milk diet was recom- " mended, and strictly adhered to for some time. " The pain however increasing, this diet was " abandoned, and fresh meats sparingly eaten.

" The physician who attended him in the latter " period of his illness, ordered a scruple of se- " neka, in pills, and half a grain of corrosive " sublimate, dissolved in cold water, to be taken " night and morning. The first dose occasioned " great heat and pain in his chest and stomach; " so much so, that he refused to repeat it the " next morning. From this time the paroxysms " became less frequent and painful, his breathing " much more difficult, with an almost constant " cough and expectoration of viscid mucus. For " some nights he could not lie on either side, and

" required

" required his head to be raised with two or three
" additional pillows.

" During the fortnight previous to his dissolu-
" tion, a slight degree of œdema appeared in the
" feet and ancles. There were no longer any
" paroxysms of pain; but what seemed singular,
" the cough, &c. which had before constantly
" teazed him, now returned, with the difficulty
" of breathing and expectoration, only at inter-
" vals, as the pains were wont to do.

" His spirits did not, even to the last, desert
" him. He had seen a party of his friends on
" the evening of his death, with whom he had
" conversed cheerfully. He retired at his usual
" hour, had undressed himself, and in the act of
" sitting upon the side of the bed, gently slipped
" down and instantly expired.

" On the examination of the body, the follow-
" ing particulars were observed:

" In the abdomen.—The viscera were in a
" sound state, except the liver, which was paler
" in its colour than usual. The omentum, me-
" sentery, and kidnies, were covered with an im-
" mense quantity of fat: indeed the whole cavity
" seemed crouded with it.

" In the thorax.—There was not the slightest
" adhesion of the lungs to the pleura; but in each
" was a considerable quantity of water highly

" tinged

" tinged with blood. After being removed with " a sponge, it measured two quarts. The medi- " astinum and pericardium were loaded with fat. " The adipose cells of the mediastinum were very " much enlarged and elongated, forming lobules " or small bladders; from which, when touched " with a knife, the fat flowed out in the form of " oil, of a deep yellow colour. From the peri- " cardium, when opened, a considerable quantity " of air rushed out, perhaps in consequence of " putridity.

" The heart being removed, was examined in " the presence of Doctors HICKES and JENNER; " and as in the other viscera, so here, the fat was " abundantly prevailing. Part of the internal " surface of the pericardium, and also of the " aorta within it, was studded with small granula- " tions, the supposed effect of inflammation.

" Dr. JENNER, who had examined the bodies " of some patients who had died of the Angina " Pectoris, and had observed, in one, the coronary " arteries ossified, mentioned his expectation that " they would be found so in the heart then before " us. On dividing them, their coats were thick, " approaching to a cartilaginous state; and both " of them had their inner surface incrusted with " a substance not very dissimilar to the matter " which forms on the inside of the trachea in the

" croup

" croup, and which greatly diminished the capacity " of the vessels. It was traced and drawn out " from the smallest ramifications of both arteries, " even to the apex of the heart. Its texture was " firm and strong to the first bifurcation of each " artery, but became more and more tender as it " advanced, in different branches, towards the " apex.

" In the ventricles and auricles there was no " blood. The whole had the appearance of ha- " ving been repeatedly washed in water. At the " bottom of the right ventricle there was a small " patch, of an oval figure, and about an inch in " length, which recalled to my mind the slough " which collects on the surface of healing ulcers, " when the new-formed vessels have been strained " by exercise.

" In the aorta, about two inches from the se- " milunar valves, were two thickenings of its " coats, of a similar form; and between that part " and the valves were several spots of a white " colour.

" THOMAS PAYTHERUS."

CASE

CASE II.

THE Rev. Mr. S****, sixty-six years of age, of a most amiable and respectable character, was a native of Ireland, but for several years previously to his death had chiefly resided in Bath. He was of a pale complexion, tall, large, and inclined to corpulency: rather a hearty eater, but extremely temperate as to drinking. For some years he had been accustomed to drink every day the greater part of a pint of liquor, which was composed of water mixed with about an eighth part of currant gin or whiskey. Wine, and especially port, as it increased or occasionally produced indigestion and heartburn, to which he was liable, he seldom or never drank. He was of a costive habit, but never affected with hœmorroids, gout, jaundice, or any eruptive complaints. About the year 1766, he was for a considerable time troubled with a pain in the breast and arm, which seemed to yield to a long-continued blister, and the internal use of valerian. He was accustomed to take great exercise in walking and riding till the year 1780, when, by a fall on his left hip, he so far lost the motion of that joint, as to be disabled from riding on horseback, and from much exercise on foot; in consequence of which he had

recourse

recourse to the chamber horse for an hour every day, and swung heavy leaden weights every morning a hundred times, so as to heat himself considerably, and very much hurry his respiration. Notwithstanding this daily exercise, with which he rarely suffered any thing to interfere, added to as much walking as he could bear, he soon considerably increased in bulk. After the injury to his hip he became a bad sleeper, partly from occasional pain in that part, and partly from the difficulty of turning himself in bed. For about a year he had accustomed himself after dinner, to take a nap of twenty minutes or half an hour, and subsequently to that time his night's sleep had seldom exceeded three hours, till the month preceding his death, when, having voluntarily abridged himself of his afternoon's nap, he had slept rather more at night.

Seven years before his death he was attacked in the evening with a violent pain across the stomach and upper part of the bowels, which was immediately removed by a draught of warm ginger tea; as were many subsequent attacks of the same kind.

Towards the latter end of the summer of the year 1786, he was seized with a cough, accompanied with considerable expectoration, and a diminution of the strength of his voice rather than

than hoarseness, which continued through the winter, and on account of which he changed his former house in Bath for one in a higher situation, with the view of obtaining better air. As the summer advanced, these complaints gradually and entirely disappeared.

From that time he enjoyed good health until about the beginning of March 1788, when one morning he found his appetite for breakfast fail; and he was soon afterwards seized with heat, quickness of the pulse, sickness, and vomiting of green and yellow bile. For these complaints he took some warm purges, under the direction of Mr. Crook, apothecary. In two days his fever went off, and he remained well until the 14th of March, when he began to complain of some pain across the left breast, stretching along the inside of the left arm, which he said was in some measure alleviated by breaking wind upwards, and which was accompanied with no other observed symptom of disease, except some degree of lowness of spirits and frequent sighing. About this time it was remarked, that one morning, on first waking, he had a kind of noise in his throat during inspiration, as from choaking. But it was only momentary, and so slight as scarcely to engage attention. The pain continuing much the same until the 16th instant, he went to church,

where

where he was seen frequently to rub his side. He afterwards went to a neighbouring coffee-house, returned home about three o'clock, and complained that his pain had been much increased by walking. Both then, and occasionally before, he said that it stretched into the fingers of the left hand. At half past three, he ate with appetite a moderate dinner of chicken; and as the pain still continued, and he found himself low, he drank four glasses of port wine, instead of his punch, in order, as he said, to raise him. After dinner he slept about a quarter of an hour, and was accidentally waked by a servant coming into the room. His pain being still troublesome, he took at seven o'clock, by his own desire, three grains of JAMES's powder. Between seven and eight he became restless, sighed more frequently and deeply than usual; and without any other previous complaint, after he had stretched out his arms, his head immediately fell backwards over his chair, a slight and momentary noise of choaking followed, his jaw dropped, his face and hands became cold and pale, and bathed in a profuse sweat, and he was totally deprived of sense and motion.

In this state, free from the slightest degree of convulsion, but with his eyes open, he had not remained many minutes, when he was visited by Mr. RUNDELL, surgeon; who finding him almost

without pulse, concluded that he was expiring. He immediately poured down his throat such cordials as were at hand, such as the volatile alkali, and compound spirit of lavender.

I first saw him in about a quarter of an hour from the beginning of the attack. He was then recovering, began to look around him with a vacant stare, was capable of speaking, and wondered why so many persons were about him. He had no difficulty or increased quickness of respiration; no sickness; no sense of flatulency, oppression, or weakness of the stomach; no discoloration or dryness of the tongue; no pain in the head, or giddiness; no paralytick numbness or loss of motion in his limbs. His pulse was about seventy in a minute, and rather full and strong; though, according to Mr. CROOK, who soon came in, considerably less so than in his usual health. The pulsation of the right carotid artery was weak, and by no means of that bounding kind which accompanies palpitation of the heart; neither could I discover the smallest degree of that symptom by laying my hand on his breast. During three times that I felt the pulse, which probably might include one hundred and fifty strokes, I once perceived a sort of hitch, or imperfect systole of the heart.

As soon as my patient was able to answer questions readily, which was almost immediately after my

my arrival, I enquired with regard to his feelings. He complained of nothing but a dull pain extending from the sternum across the left mamma, rather below the nipple, and stretching into the inside of the left elbow. The part affected was not sore on pressure; nor was the pain increased when he either stretched out or drew forwards the arm, or when he made a deep inspiration, which he did several times at my request with ease, and seemed to take pleasure in retaining his breath. The uneasiness in his breast was greatest as he sat in his chair pretty much in the common posture, with the back a little bent, and the head somewhat inclined forwards. He made no other complaint, but frequently changed his posture, and now and then stretched out his arms in various manners, like persons yawning. He now once broke wind upwards, which he said in some degree relieved his pain. This eructation immediately followed his having taken a little of HOFFMAN's anodyne liquor. His mind was altogether calm and composed, his powers of attention and recollection perfect; and he was very soon able to stand and walk with tolerable ease.

In a short time his restlessness and sighing, together with the cold sweat, all of which had before in some measure abated, again increased. It was now determined that a vein should be opened.

This

This was immediately done. The blood flowed with tolerable freedom, and nine ounces were thus taken away. Our patient bore the bleeding well. His restlessness, and the cold sweat in which he was before bathed, were diminished even during the operation, and the pulse became fuller and stronger. He could not, however, perceive that his pain was in any degree alleviated.

About nine o'clock he was carried up stairs to his bed, into which he soon went, lay with his usual number of pillows, and did not complain that the horizontal posture increased his pain, or produced any other uneasiness. His bowels had been open in the course of the day; notwithstanding which it was thought proper to order him an immediate purge, and a tea-spoonful of dulcified spirit of vitriol in a little peppermint water, whenever he should be low, or oppressed with flatulency or pain.

At half past eleven at night I again saw him. He was lying on his back, somewhat inclined to the left side, which happened to be the side of the bed next the door; nor did he change his posture during my visit. The purge had not operated. He had taken only one dose of the dulcified spirit of vitriol, and had made at five several times a large quantity of limpid urine. The blood which had been drawn, was separated into serum and

crassamentum,

crassamentum, the latter of which was of a moderately firm consistence, and had on its surface several spots of a greyish film of coagulable lymph. Mr. S**** had still something of a cold sweat on his hands and face, but much less than at my preceding visit; and his feet were become so much warmer, that when I proposed bottles of hot water, he objected to them as unnecessary. Just before I came he had said that his arms were disagreeably cold. His pulse was now about seventy-six in a minute, much fuller and stronger than before, and only once in a considerable time interrupted by two imperfect faltering strokes, which took place in succession while he rested on a full inspiration, but did not return on his again breathing uniformly and evenly. His spirits were very good. The pain in his left breast still continued; and he now complained that it extended into his right as well as his left elbow, and that his breast was sore on my pressing it rather strongly.

I proposed a blister; to which Mr. S**** readily consented, and requested that it might be applied to the pained part of the breast. I begged that he would mention the size which would as nearly as possible cover the affected part. After a short hesitation, he determined that it should be six inches long, and three broad. Having given directions for this blister, and some other measures, I took leave of my patient.

The

The blister was soon after applied; and when it began to produce inflammation, he expressed satisfaction, and thought the pain somewhat alleviated.

In this state he continued, in cheerful spirits, but without sleep, till four o'clock in the morning, when an attack similar to that before described suddenly came on. Mr. RUNDELL, who happened then to be with a patient only a few doors distant, was sent for, and came immediately; but found that the patient had breathed his last.

The body was opened on the 18th of March, at one in the afternoon, thirty-three hours after death, by Messrs. ATWOOD and PERRY, surgeons.

It was perfectly free from putrefaction; but the blood had transuded through the vessels and settled on the skin, particularly about the neck, shoulders, and back, in large purple patches.

There appeared externally a large swelling across the epigastric region.

The cartilages of the ribs were much ossified, so as not to admit of being divided without a saw.

The integuments were thickly lined with yellow fat.

There was no appearance of disease in the muscles or pleura costalis, under that part of the thorax which the pain seemed to occupy.

The

The muscles were of a florid red colour.

The lungs were apparently sound, and entirely free from adhesion to the pleura costalis.

There was no water in the cavity of the thorax.

In the pericardium was a small quantity, not exceeding an ounce, of clear water.

The heart no where adhered to the pericardium. It was large, and much loaded with fat. All its cavities, and more particularly the left ventricle, were full of fluid blood.

The tricuspid and mitral valves were in their natural state.

In the semilunar valves of the aorta were a few very minute ossifications; and particularly the corpusculum Arantii of the inferior valve was become bony, and a small osseous speck was situated close to it on the loose edge of the same valve.

The aorta was twice or thrice the usual size, and full of fluid blood to three or four fingers breadth below the diaphragm, where it was entirely empty, and of little more than the common size. It was every where throughout that space free from ossifications. A vast number of distinct vessels running over the surface of the aorta about its arch, were injected with red blood, which in some places was effused into the enveloping cellular membrane in small roundish spots. The internal surface of the aorta had in every respect the natural appearance.

The

The two coronary arteries were ossified in the substance of their coats in various portions, from their exit out of the aorta to the distance of four inches or more, in such a manner that the ossified parts were full three-fourths of that length, and a very small silver blow-pipe could not be made to pass within their cavity.

The vena cava inferior was full of blood.

The liver and spleen were perfectly sound.

The gall-bladder did not appear to exceed the natural size; and both it and the biliary ducts were free from disease. Within the gall-bladder there was very little bile, and that of a pale yellow colour. There were in it a surprising number of biliary concretions, amounting, by the most accurate reckoning, to two thousand six hundred and fifty-four distinct stones. Three hours after having been taken out of the bladder, they weighed when washed, and wiped dry, four hundred and thirty-eight troy grains. They were all angular, but rounded smooth and unbroken, of a pale yellowish brown colour, and many of them clouded with black or dark brown. They varied much in size, so that of the smallest upwards of forty were necessary in order to counterbalance one troy grain, and the largest weighed sixty-two troy grains and six-tenths. I tried one and found it inflammable.

The stomach was extremely large, and distended with air.

The

The sigmoid flexure of the colon, for at least a foot in length, was full of scybala; and the same intestine was much contracted near its lower part.

The abdominal rings were enlarged on each side, and particularly the left; but no part of the intestine was found within the aperture.

CASE III.

MR. M**********, aged seventy-seven, of middle stature, to appearance moderately fat, and always extremely temperate as to eating and drinking, went young to the East-Indies, where he was employed in the civil department. There he was subject to head-achs, which were generally relieved by the application of leeches to his temples. After a residence of seven years, he was advised to return to Europe, in consequence of violent pains about the breast, which he was supposed to have contracted from much stooping to write. In England he remained two years, with great benefit to his health; after which he resumed his former situation in India, where he continued till his forty-second year, and then returned to his native country, which he never afterwards quitted. During his second residence in the East-Indies he enjoyed

enjoyed tolerable health, exclusively of a dysentery, and of a slight rheumatic attack in one arm, attended with fever. For the cure of the former, he adhered to a milk diet during an entire year; and the latter lasted only a few days.

On his return to England, Mr. M********** led a very sedentary life; and, after the lapse of a few years, became subject to indigestion and flatulency, much aggravated by occasional costiveness, which he found himself obliged to remove by the frequent use of gentle aperients.

But the malady, to which he was more especially liable, was occasional paroxysms of violent pain attacking successively, but irregularly as to period, duration and order, his head, breast, back, shoulders, elbows, wrists, hands and knees, attended with a sensation of great heat in the parts affected, and much soreness of the limbs after they had long suffered; but totally unaccompanied with swelling, or any other mark of inflammation. The pain in the head was sometimes in the occiput, where it was united to a sense of great weight; at other times in the eye-balls, occasionally attended with some confusion of head, which he himself expressed by saying that "his head was "half wild." No complaint, however, occurred in the head at any time when the limbs were affected. In an attack of the head, such as I have described

described, I saw him in the year 1795. He was then relieved by cupping, as he had on former occasions been by that operation, or by blistering. The general pains were at times extremely grievous to him, more especially at night, when they seemed to be aggravated by the warmth of the bed, and were accompanied with some increase of bodily heat. These symptoms being diminished by sweating, he occasionally promoted that evacuation by the use of James's Powders.

In addition to the pains which I have described, Mr. M********* was subject to cramps in the muscles of the legs; and to a great and undescribable uneasiness and distention about the stomach and lower part of the ribs, more especially after eating. This latter symptom was attended with a sense of coldness passing from those parts through to the back, and was relieved by eructations.

Mr. M********* was never affected with palpitation of the heart, and was in general free from all cough or difficulty of breathing from exertion or lying down; but for some years previously to his death he had now and then complained of a little tightness across his chest, which he explained by saying that the air of Bath did not agree with him.

It ought however to be particularly remarked, that about the year 1796, he was seized at night with

with a sudden pain in the chest and suffocation, threatening immediate death. His breast was rubbed with a liniment, and the symptoms soon vanished.

His urine was in general very high-coloured, depositing a lateritous sediment, and sometimes small calculous concretions.

On the 13th of April 1797, he was seized, while walking, with a distressing pain across the chest, accompanied, according to the description of his friends, with a difficulty of breathing, but no other symptom of disease. He took cordials, and had his breast rubbed. The pain of his breast subsided, his knees began to be affected with pain, and he gradually recovered.

On the 17th of the same month, during walking, he suffered another and more violent attack of the same kind, which went off as the preceding one.

On the 23d, without any previous indisposition, after walking round the Circus, he was, near his own house, attacked a third time in a similar manner. He reached home with considerable difficulty, cold and extremely faint; and immediately took some domestic cordial, which was followed by slight vomiting. In a short time he was visited by Mr. MAYHEW, apothecary, who found him without pulse. Soon after, he had a

spontaneous

spontaneous stool. At four o'clock I saw him. His face and extremities were pallid, and bathed in a cold sweat; and it was with difficulty that I could perceive any pulsation in the radial artery. His senses were clear, and he spoke well. He had no insensibility of the limbs, palpitation of the heart, difficulty of breathing, head-ache, vertigo, coldness in the stomach, flatulency, or nausea. The pain had then left his chest; but he was restless, and complained much of a pain in both knees, about the patellæ, which however were not red, hot, swelled, or sore to the touch. I observed him sigh once very deeply. His limbs were now rubbed with warm flannels; his feet were bathed in hot water, and two glasses of brandy were gradually given him. He swallowed it without difficulty, and said that it felt warm in his stomach; but it produced no eructation. After a quarter of an hour he answered us that he was less faint, though neither the pulse grew stronger, nor the skin warmer or more dry. At half past four he complained that the pain again affected his breast, across the middle of the sternum.

During this time, except while his feet were in the water, he sometimes reposed himself on a sofa before the fire, and at other times sat up, without assistance, and seemed to prefer that posture.

His

His feet were now taken out of the water, and as he appeared to grow weaker, it was judged prudent to carry him up stairs to his bed, which was done at a quarter before five o'clock. He had scarcely lain down when he put his hand to his forehead, which, on being asked, he said pained him. He grew more restless, turned on his right side, and then on his left; ceased to answer questions; breathed only at intervals, and at five o'clock, without a groan or convulsion, expired. In consequence of my having desired a consultation, Dr. FRASER was sent for, but did not arrive till the patient was dead.

He was opened by Mr. GRANT, surgeon, at five in the afternoon of the 24th inst. in the presence of Dr. FRASER, Mr. MAYHEW, and myself.

The body was perfectly free from putrefaction; but the skin of the back and all other depending parts was become livid, as from ecchymosis.

The integuments of the thorax being removed, the ribs on the right side appeared towards the sternum more prominent than on the left; but were considerably depressed for some distance backwards.

The cartilages of the ribs were of the usual degree of hardness.

The cavity of the thorax was small in proportion to the viscera which it contained. Within

it

it there was no undue effusion of any kind, or any adhesion of the lungs, which were otherwise in a sound state.

The blood was every where fluid, and all the muscular parts were extremely red.

The skin, muscles, mediastinum, pleura costalis, and pericardium, were every where in a most extraordinary degree imbedded in fat, which was yellow and half fluid, exsuding from the cut parts, and greasing the fingers like oil.

The pericardium contained the usual quantity of colourless lymph, and no where adhered to the heart.

The heart was somewhat larger than common, and of a moderately firm texture. I much wished to have ascertained what quantity of blood was retained in its different cavities. It being judged, however, that a proper examination of the heart and large vessels could not be made unless they were taken out of the body, ligatures were with that view made on the venæ cavæ and aorta. But after those vessels had been cut through, the ligature on the venæ cavæ slipped, and the blood, which was perfectly fluid, ran freely out of the open ends of those veins, as well as of the pulmonary veins and artery, so that all the cavities of the heart, and that of the aorta included within the ligature, were empty.

A small

A small part of one of the tricuspid valves of the right auricle was ossified.

One of the semilunar valves of the aorta was in a similar state. The two others were perfectly sound.

The aorta was firm in its texture, but unusually large; so that a ring of it, cut out at the distance of nearly two inches from the semilunar valves, formed a circle of about an inch and a quarter in diameter. Near the origin of the left subclavian artery, there were in the aorta three or four hard scales of bony matter, all together equal in size to a shilling; and another piece, almost as large, occupied nearly half of that space in the aorta which surrounded the aperture of the right carotid artery. Similar portions were found in different parts of the descending aorta. All of them were separable with the utmost care from the substance of the artery, and seemed to be connected to it only by being included within its fine internal membrane.

The heart being buried in fat, no ossifications in the coronary arteries were discoverable by the feel on the outside. But a more minute investigation being proposed, by tracing those arteries from their origin without the semilunar valves, it was found that both of them contained within their cavities hard incrustations, which were easily

drawn

drawn out, and appeared to be bony tubes, attached to their respective arteries as the osseous portions above-mentioned to the aorta. Each of these tubes was about an inch and a half in length, and had a perforation not large enough to receive the smallest probe.

All other parts of the heart and large vessels appeared to be in their natural state.

CHAP. III.

Enumeration of Symptoms in the Angina Pectoris.—Errors of Medical Writers on this Subject.——Nosological Character of the Disease.—A Species of Syncope.—*A new Name proposed;* Syncope Anginosa.

ALTHOUGH there can be no reason to doubt that mankind must have been subject to this disorder from the remotest antiquity, it is somewhat extraordinary that so many ages should have elapsed without any notice of its existence either as a distinct disease, or as a variety of one commonly known. Among the antients, I can find no trace of it in Hippocrates, Aretæus, or any other of those fathers of medical science so justly celebrated for their accurate enumeration of the symptoms of diseases. It has indeed been suggested to me by a learned physician, that this was the disorder under which Seneca, in his 54th epistle, thus describes himself as labouring. "Longum mihi commeatum dederat mala valetudo: "Repentè me invasit. Quo genere? inquis.— "Uni tamen morbo quasi assignatus sum: Quem

"quare

" quare Græco nomine appellem nescio: Satis enim " aptè dici Suspirium potest. Brevis autem valdè, " et procellæ similis, impetus est: Intra horam " ferè desinit.—Omnia corporis aut incommoda, " aut pericula, per me transierunt: Nullum mihi " videtur molestîus. Quid ni? aliud enim quid- " quid est, ægrotare est: Hoc est animam agere.— " Ego verò et in ipsâ suffocatione non desii " cogitationibus lætis ac fortibus acquiescere. " Quid hoc est? inquam, &c.—His et hujusmodi " exhortationibus tacitis (nam verbis locus non " erat) alloqui me non desii: Deinde paullatim " Suspirium illud, quod esse jam anhelitus cœperat, " intervalla majora fecit, et retardatum est, ac re- " mansit. Nec adhuc, quamvis desierit, ex naturâ " fluit spiritus: Sentio hæsitationem quandam ejus, " et moram. Quomodo volet, dummodò non ex " animo Suspirem."*

" Disease had given me a long furlough: On " a sudden it attacked me. Of what kind? you " say.—I am, as it were, consigned over to one " disease only; but by what Greek name to call " it, I know not. It may properly enough be " denominated Sighing. The attack is very short, " and like a storm. It usually ends within an " hour. I have undergone all bodily infirmities

* Seneca Lipsii, 1605, page 474, 475.

" and

" and dangers; but none appears to me more
" grievous. Why not? Because to have any
" other malady is only to be sick; to have this is
" to be dying.—But I, in the very midst of the
" suffocation, have not omitted to indulge cheerful
" and resolute reflections. What is this? I say,
" &c.—With these and similar exhortations I
" have addressed myself; silently indeed, for I
" could not speak. At length, by degrees, that
" Sighing, which by this time has begun to change
" into common breathing, has returned at longer
" intervals, has become slower, and disappeared.
" But even now, though it has ceased, my breath-
" ing is not natural. It seems to be attended
" with a sort of hesitation, and delay. Be it as
" it will; provided I do not sigh from my heart."*

Such is the pathetic description which SENECA gives of his own complaint; a complaint which, however, seems to me rather a disorder of respiration, than the Angina Pectoris. For though the Angina Pectoris may be accompanied with dyspnœa, the specific paroxysms of the Angina Pectoris, as I shall hereafter endeavour to shew, are not attacks of difficulty of breathing.

Among the moderns, the works of MORGAGNI contain three cases which bear a much nearer

* That is, I presume, from any mental anxiety.

nearer

resemblance to this disease. One of these is, I think, a real case of Angina Pectoris; and this alone I shall quote here, reserving the consideration of the others to a future occasion. " Ma-
" terfamilias duos et quadraginta annos nata, diu
" valetudinaria, diuque obnoxia vixerat paroxysmo
" cuidam ad hunc modum se habenti. A con-
" citatis corporis motibus ingruebat molestus
" quidam angor intra superiorem thoracis sinistram
" partem, cum spirandi difficultate, et sinistri bra-
" chii stupore: quæ omnia, ubi motus illi cessarent,
" facile remittebant. Ea igitur mulier, cum
" rhedâ veheretur, lætoque esset animo, ecce
" tibi ille idem paroxysmus: quo correpta, et mori
" se, aiens, ibi repente mortua est.—A thorace
" incepta dissectio est. In hoc pari utrinque copiâ,
" nec illâ exiguâ, effusum erat serum per se cru-
" entum; animadversum enim fuerat nihil sanguinis
" in pectoris incisione illuc excidisse. Sani pul-
" mones, nisi quod dissecti, ut postea vidimus,
" nimio redundabant spumoso sero. Cor potius
" magnum, et durum valde, ac robustum. Aorta
" ad curvaturam non parum dilatata.—Sed intus
" ubicunque incideres, hic illic inæqualis, nec sine
" osseis perfectis squamulis, nedum crebris incho-
" atarum indiciis.—In illoque ab ipsa origine pone
" semilunares valvulas, quæ duræ hic illic erant,
" et cum futuri ossis initiis, ad Iliacas usque
" arterias

" arterias descripta vitia animadvertimus.—Hinc " oculos ad cor referentes, et ad cætera quæ ipsi " annexa sunt, vasa, nihil usquam conspeximus " vitii, nisi quod pulmonaris venæ caudex paulo " visus est æquo major. In hoc, et in adjecto " ventriculo sanguis erat paucus, isque, ut aliis " omnibus in locis, niger, et omnino fluidus. Sed " in pulmonaris arteriæ trunco non paucus; quan- " quam in ventriculo dextro, ejusque auricula " nullus; facile quia per venam cavam, paulo " ante infra jecur incisam, defluxerat."*

" A mother of a family, 42 years of age, long a " valetudinarian, had been long subject to attacks " of the following kind. From bodily exertions " there arose a sort of grievous anguish within the " upper part of the breast on the left side, with " difficulty of breathing, and numbness of the " left arm; all of which readily ceased, when she " ceased to move. This woman, while travelling " in a carriage, and in high spirits, was suddenly " seized with one of these paroxysms, and, crying " out that she was dying, immediately expired. " The thorax was first opened. In its two " cavities there was an equal and no small quan- " tity of serum, originally bloody; for it was " observed that no blood had fallen in from the " incision of the breast. The lungs were sound,

* De sedibus et causis morborum. Lib. II. Epis. xxvi. §. 31.

" except

" except that, on being afterwards dissected, they " were found to contain a redundant quantity of " frothy serum. The heart was rather large, " and very hard and robust. The aorta at its " curvature was considerably dilated.—Within, " wherever you cut into it, it was here and there " rough, and not without both beginning ossifica- " tions, and perfect bony scales. The same de- " fects were observable in the trunk of the artery, " from its origin behind the semilunar valves, " which were here and there hard, with marks of " incipient ossification, even to the iliac arteries. " From hence turning our attention to the heart, " and the other vessels connected with it, we saw " no where any blemish, except that the left au- " ricle was somewhat larger than natural. In this, " and in the annexed ventricle, the blood was in " small quantity; and there, as well as every " where else, black and fluid. There was, how- " ever, a considerable quantity in the trunk of the " pulmonary artery; but none in the right ven- " tricle and auricle, because it had run freely out " of the vena cava, which had just before been " cut into below the liver."

This is the only relation which I can find of any example of the disease before us previously to Dr. HEBERDEN, who first published his observations on the Angina Pectoris in the second volume

volume of the London Medical Transactions, and added a case and dissection, with farther remarks, in the third volume.

In the same volume are observations on this disease, with a case and dissection, by the late Dr. WALL, of Worcester.

The late Dr. FOTHERGILL, in the fifth volume of the London Medical Observations and Enquiries, has communicated to the publick three other cases of the same disease, with two dissections, and remarks.

The case of Mr. JOHN HUNTER, so minutely detailed by Mr. HOME in his introduction to the posthumous work on Inflammation of that eminent physiologist, has in it some symptoms analogous to those of the Angina Pectoris; though it was complicated with circumstances arising from other causes, which evidently produced, or had a great share in producing, the fatal termination.

Dr. PERCIVAL, of Manchester, has published, in the third volume of the Edinburgh Medical Commentaries, a very concise history and dissection of a case which was probably Angina Pectoris.

In the first volume of the Memoirs of the Medical Society of London, there is an equally short history, by Dr. JAMES JOHNSTONE, of the symptoms and dissection of a patient, probably labouring under the same disease; and in the fourth

volume

volume of these Memoirs is that excellently marked case and dissection, by Dr. BLACK, of Newry, to which I have already alluded.

These, so far as I am able to discover, are all the cases, or real histories, of the disease which have hitherto appeared. It is true that various histories and treatises have been published under the name Angina Pectoris, and to these I shall hereafter more particularly advert, at the same time assigning reasons why they appear to me to detail diseases totally different from that which is described by MORGAGNI, and Drs. HEBERDEN, WALL, FOTHERGILL, PERCIVAL and BLACK, and which proved fatal to my two patients.

The following history of the symptoms of the Angina Pectoris is derived partly from the authors whom I have mentioned, and partly from considerable experience of my own in this disorder.

Persons affected with this disease are said to be usually turned of fifty years of age.* This however is not universally true, as appears from the authors to whom I have referred; and I have lately seen a very clearly marked example of the Angina Pectoris, in which the age of the patient scarcely exceeded forty years. The disease generally attacks persons of the male sex; and, of them, those who are inclined to corpulency.

* Medical Transactions, vol. ii. page 63.

The

The first symptom is an uneasy sensation, which has been variously denominated a stricture, an anxiety, or a pain, extending generally from about the middle of the sternum across the left breast, and, in certain stages of the disorder, usually stretching into the left arm a little above the elbow. In some few examples the pain, stricture, or anxiety, is in a certain degree felt also across the right breast; and occasionally, though I believe rarely, has extended itself to one or both wrists. According to Dr. HEBERDEN, "The os sterni "is usually pointed to as the seat of this malady; "but it seems sometimes as if it was under the "lower part of it, and at other times under the "middle or upper part, but always inclining more "to the left side; and sometimes there is joined "with it a pain about the middle of the left "arm."‡ On another occasion Dr. HEBERDEN speaks of it as "a pretty full pain in the left arm "a little above the elbow, which perhaps in half "a minute spreads across the left breast, and pro-"duces a little faintness."* Dr. WALL observes, that "in most, if not all the persons whom he "had attended in this disease, the pain under the "sternum constantly extended itself on each side "across the breast in the direction of the pectoral

‡ Medical Transactions, vol. ii. page 63.

* Ibid. vol. iii. page 3.

muscles,

"muscle, and affected one, or commonly both "arms, exactly in the place where the muscle is "inserted into the os humeri."* In the first, in order of description, of Dr. FOTHERGILL's cases, the sensation is said to be "a kind of stricture "surrounding the chest, principally in a line with "the mammæ. A sharp pungent pain, most "particularly affecting the parts under the left "breast, extending itself upwards on that side, "and down the inner part of the left arm, to the "elbow."‡ In Dr. FOTHERGILL's second case, we are told that the course of this "stricture" or "pain," was across the breast, and down both arms "to the elbows."‖ My patient Mr. M. complained of no pain in either arm; and from this case, as well as from the experience of Dr. HEBERDEN, it appears, that this symptom, though of frequent occurrence, is by no means essential to the Angina Pectoris. It is probably no more necessary to that disease, than a pain at the top of the right shoulder to inflammation of the liver.

The pain which I have described occurs in paroxysms, and, in the early periods of the disease, is seldom produced without some apparent cause,

* Ibid. page 13.

‡ London Med. Observ. and Enquiries, vol. v. p. 236.

‖ Ibid. vol. v. p. 242.

such

such as walking, particularly up hill or up stairs, against the wind, or in a quick pace. On these occasions the patient feels as if persisting in the exertion would produce a total suspension of the powers of life. He therefore stands still, or turns from the wind; on which the uneasy sensation soon vanishes. We are told of one patient, who appears to have been in other respects a man of unusual firmness of mind, that he had the resolution to continue walking, and that he found the pain go off after it had affected him from five to ten minutes.* This sensation in the breast often admits of temporary relief from the evacuation of wind by the mouth,‖ and is altogether so free and distinct from any difficulty of breathing, that patients during the paroxysm make a deep inspiration with the utmost ease, and, in some instances, appear to be fond of sighing deeply, and of retaining their breath. In some cases, it is either conjoined with an unequal pulse; or affects persons who are subject to that symptom. In other cases, the pulse has been habitually so little changed, as to lead to the opinion that the heart in no respect primarily suffers. But whatever may be the state of the pulse as to regularity, I believe we shall

* Medical Transactions, vol. iii. page 3.

‖ London Med. Observ. and Enquiries, vol. v. page 237.

always

always find it become more or less feeble according to the violence of the paroxysm.

In the slighter cases, and in the first stages of this disorder, the fit seldom comes on but from the exertions which I have mentioned; and as it is probable that experience of their mischievous effects will cause these exertions to be as much as possible shunned, patients will continue many days, and sometimes weeks, without any attack of the disease. It has been observed that paroxysms are most apt to occur from walking after a meal. In general they are not excited by exercise on horseback or in a carriage, or by some short and partial though strong exertions of the body itself, as in talking, laughing, coughing or vomiting. They have been by some thought to occur most frequently in the extremes of hot and cold weather; but in many instances there has been no perceptible difference in this respect.

As the disease advances, or in violent cases, the paroxysms sometimes come on, or are much increased, from certain passions of the mind; from slow walking; from riding on horseback, or in a carriage; from swallowing, speaking, coughing, or straining at stool; and sometimes also they attack the patient from about two to four o'clock in the morning, or while sitting or standing, without

without any previous exertion or obvious cause.* The paroxysms now also become more violent, and do not so readily recede. During the fit the pulse sinks in a greater degree; the face and extremities become pale, and bathed in a cold sweat, and for a while, perhaps, the patient is deprived of the powers of sense and voluntary motion. At length, after the disease has recurred more or less frequently, sometimes during a space of many years, which admit of the patient's death from a variety of other causes, a more violent attack, of the nature which I have just described, puts a sudden period to his existence.

These are the essential symptoms and more obvious causes of the unmixed Angina Pectoris.

I have before remarked that many cases have been related as of the Angina Pectoris, which have no just claim to that title. Whether this be true with regard to a case by MORGAGNI, in the 43d section of the 16th epistle in his second book, De Morbis Thoracis, is somewhat doubtful. "A Bolognese nun, while sitting up in bed and "dressing herself, was suddenly seized with a

* In my patient Mr. S**** even the first attack of pain was not said to have been brought on by walking, though it was evidently increased by that exertion. It continued also for nearly three days from its commencement till his death, notwithstanding a state of perfect rest at various periods during that time.

"sort

" sort of oppression about the heart, and subse-
" quent fainting. From that time the oppression
" never ceased to be aggravated whenever she
" spoke or moved too much. The colour of her
" face was good; her sleep undisturbed; her
" bowels and menstrua natural; her respiration
" equally easy whether she stood, or lay on her
" back, or either side; her pulse neither tense
nor hard, nor vibrating, nor in any respect
" unequal; no palpitation or great pulsation in
" the breast; no pain in the region of the lungs.
" ALBERTINI (who had pronounced the disease
" to be a dropsy of the pericardium) formed his
" opinion from the following circumstances; that
" the patient felt her heart to be loaded, as it
" were with a rock placed on it; and that when
" silent and at rest she remained free from the
" oppression of which we have at first spoken, but
" when she began to do any thing, or talked a little
" longer than usual, she was immediately seized
" with this anguish, which she used to describe by
" comparing it to that pressure and constriction
" which one feels from being squeezed by a great
" croud of people. This oppression of the heart
" was also accompanied with slight faintness; and
" the pulse was always feeble, even while she was
" at rest.—The patient, as ALBERTINI had pre-
" dicted, was at length worn out by the disease.

" Every

" Every thing in the thorax was found in a healthy " state, except that the pericardium was distended " with nine ounces of water."—" Monacha erat " Bononiæ—aquâ ad uncias novem."

These symptoms are certainly, at first view, very similar to those of the Angina Pectoris. There is however this essential difference, that in the intervals between the paroxysms of the Angina Pectoris, when pure and uncomplicated, there is rarely any obvious affection of the pulse; and no sense of weight about the heart, or any other disorder; while in the simple dropsy of the pericardium, the pulse is, I believe, invariably changed; and the sense of weight or pressure on the heart, though always aggravated by exertions, constantly more or less exists, whether the patient move or be at rest. It seems to me that this case of Morgagni is a striking example of pure hydropericardium.

Another case in Morgagni, lib. ii. epist. xvii. §. 17, has much less resemblance to the disease of which we are treating. " A man fifty-five years " age, for ten years had been subject to various " diseases, and (among others) to the dropsy. Of " this he was cured the year before he died, but " still retained a difficulty of breathing, which " was aggravated by motion, not without a certain " anguish of the heart. In the neck and temples, " the arteries evidently bounded. The pulse was

" hard,

" hard, rather slow, vibrating, never intermittent,
" never unequal. He lay equally well on both
" sides. He coughed frequently, and expecto-
" rated small quantities of a serous matter. At
" length he began to be affected with faintings,
" and became gradually worse. Towards the last
" his face swelled. He died suddenly." " Vir
" quinquaginta quinque annorum—subito est
" mortuus."

This was a case of complicated and constant disorder, arising, as appeared from the dissection, from universal adhesions of the pleura, indurated bronchial glands, aneurysmal dilatation of the aorta, which had produced an absorption of part of the fourth vertebra of the back, and extravasation into the left side of the thorax.

Among the cases related by more modern authors, I may first advert to that which forms the 6th article in the third volume of the London Medical Transactions; and which was an inflammation and suppuration between the two bags of the pleura, where they constitute the mediastinum. This case resembled the Angina Pectoris in no other respect than in beginning with a pain, which was seated about the middle of the sternum, attacked in paroxysms from exercise, and was at first unaccompanied with fever. We do not, however, find, that exercise or any other cause ever

produced that inexpressible anxiety of the breast, or sensation as though life was just receding, which constantly accompanies the fits of the Angina Pectoris. To this we may add that the Angina Pectoris is in no stage attended with inflammatory fever, and that both its termination, and the appearances, on dissection, of those who die of it, are totally different from those related in the paper to which I refer.

Equally dissimilar also to the disease which I have described are those three cases by Drs. Macbride and Smith, of Dublin, in the fifth volume of the Edinburgh Medical Commentaries. They are evidently cases of palpitation of the heart, such as every physician of extensive practice must have often seen. In almost every violent case of this kind, there is a pain of the chest and elbows, as in the true Angina Pectoris. Nor is it difficult to understand how a rapid and irregular transmission of blood through the carotid and pulmonary arteries should produce that laborious respiration, turgescence and redness of the face and eyes, and head-ach, which are mentioned in the cases referred to. In the true Angina Pectoris, on the contrary, as we have seen above, there is neither dyspnœa nor palpitation of the heart.

In the third volume of the Edinburgh Medical Commentaries, there is a case so slightly sketched, that

that no certain conclusion as to its real nature can possibly be formed. It has not enough of the positive marks of the Angina Pectoris; and as the fits were from the beginning accompanied with shortness of breathing, the disease was probably of a different kind.

In the ninth volume of the same Commentaries, is related a case, denominated Angina Pectoris. The patient suffered attacks of the fits only twice or thrice a year; and it does not appear that they were either brought on by exercise, or accompanied with that peculiar feeling of a negation of being, if I may so express it, or of departing life, which always attends the Angina Pectoris. The disease was evidently a mere affection of the respiratory organs, a violent spasmodic asthma, characterised by simple difficulty of breathing, which never occurs in the pure Angina Pectoris.

It is not easy to decide as to the nosological arrangement of a case, described in the fifteenth volume of the Edinburgh Medical Commentaries. The patient had an habitual cough, with quick pulse; and the paroxysms were relieved by expectoration. The leading symptoms appear therefore to have been rather of the pulmonic kind, than of the Angina Pectoris.

A patient, whose case is inserted in the first volume of the Memoirs of the Medical Society of London,

London, had been long afflicted with a constant pain in the left side, followed by cough, dyspnœa, difficilis decubitus, and fever, and with a tumor in the left hypochondrium a little before his death. On dissection, five pints of fluid blood were found in the pericardium. While I mention this case, I must do the author the justice to acknowledge, that as the name Angina Pectoris does not occur in the body of his paper, but only exists in its title, the appropriation of the term may possibly not have been his own.

In the case of J. Simkins, in the same volume of Medical Memoirs, we see an example, in addition to those which I have before cited, of pain across the breast down to the wrists, produced by quick motion, or going up hill, and accompanied with a violent palpitation of the heart and difficulty of respiration, mistaken for a case of Angina Pectoris.

The case of Samuel Newman, in the third volume of the London Medical Memoirs, is palpitation of the heart, with difficulty of breathing.

Dr. Butter, in a treatise on the Angina Pectoris, published in the year 1791, has taken much pains in describing a disease, in which the patient is afflicted with pains irregularly affecting the head, throat, breast, and other parts, and complicated with dyspnœa, cough, palpitation of the

the heart, flatulency, vomiting, vertigo, and globus hystericus. It would be doing this author injustice not to give part of his description in his own words. " The most common course of the " pain, when seated in the prominent part of the " sternum, is along the side of the neck, between " the wind-pipe and the sterno-mastoid muscle, all " over the shoulder blade, over the top of the " shoulder, and down the arm to the wrist, but " oftener to the finger ends. Sometimes, however, " this pain does not extend beyond the sternum; " and then none of the parts mentioned are af- " fected in the fit. The pain in the breast, as " hath been said, is often preceded by other " symptoms. The common ones are, a heat in " the part where the pain is to take place, and " which gradually increases till the pain begins; " also, wind ascending from the intestines into " the stomach, either in consequence of a general " inflation of the bowels, or by a succession of " balls formed in the guts, the lower one always " dispersing as another above succeeds, until at " last there is one high enough to empty itself " into the stomach. All this is done without " any noise. If at any time the ball or knot " disperse with a noise, no succeeding one fol- " lows, nor any fit for that time.—The pain of " the breast is also accompanied by particular " symptoms.

" symptoms. Those vary according to the situ-
" ation of the pain. When the pain is in the
" hollow part of the sternum, the concomitant
" symptoms are uncommon inflation of the breast,
" faintness, violent palpitations, great fullness and
" other uneasy sensations of the bowels, intole-
" rable heat of the palms and soles, and often
" heat, weakness, and pain from the elbows, very
" rarely from the shoulders down, with some-
" times a sense of discharging vapour at the finger
" ends. When this pain extends round the ribs,
" it is usually accompanied with insensibility which
" terminates in sickness and retching, and in the
" vomiting of phlegm and indigested offensive stuff."

After these quotations, I need make little farther comment on the pamphlet of Dr. BUTTER. They are sufficient to shew that, however his disease, to which he has given the name of *Diaphragmatic Gout*, may exist as a case of dyspepsia or hysteria, it has no relation to the Angina Pectoris.

From the detail which I have given, it appears that there have been published not more than ten essays relative to the true Angina Pectoris, containing only as many detailed cases, and nine dissections, of persons dying of that disorder.

We cannot wonder that an experience so contracted should have left some symptoms of the disease unnoticed, and much uncertainty with re-

gard

gard to the distinctions and pathology. These deficiencies, I trust, will be in part supplied by the cases which I have related. In Mr. BELLAMY, the Angina Pectoris appears to have been much complicated with another disorder, from which its symptoms are scarcely separable; but the two last cases are by far the most simple of any which have been detailed. They had medical assistance the soonest after the commencement of the paroxysm, and proved fatal after the smallest number of attacks. Mr. S**** may be almost said to have twice died; so that the circumstances accompanying the fatal termination were capable of being ascertained in the most exact manner.

He had the common symptom of a pain affecting the sternum, and extending from thence across the lower part of the left mamma, first into the inside of the left elbow, and afterwards of the right elbow. This pain was relieved by eructations. He had no dyspnœa, or palpitation of the heart. His pulse was weak and small; and had, at long intervals, an occasional imperfect stroke. These symptoms have already been mentioned by authors as generally occurring. The following circumstances I cannot any where find described.

My patient's disorder was increased by bending the trunk of the body forwards; and it was probably from some relief which he experienced that he

he was fond not only of straitening the spine,* with the head somewhat reclined backwards, but also of stretching out his arms in the posture of yawning. He sighed frequently, and seemed to take great pleasure in resting on a full inspiration, which afforded a momentary relief to the uneasy sensation in his breast. Is it possible that this symptom, which is not remarked by any of the writers on the Angina Pectoris, was wanting in those cases which fell under their notice? I am disposed to think that it was not; because it has been very observable in several examples which I have known of patients labouring under this disease; and my learned friend, Dr. FALCONER, with whom I have conversed on this subject, assures me that it was particularly remarkable in two instances which were some years ago under his care nearly at the same time, and which ended in sudden death. With regard to Mr. M*********, I have mentioned that I once heard him sigh very deeply. This remark, written on the day of his death, is a strong evidence of a natural propensity to sighing in this disease, because, as I must acknowledge that the precise nature of the complaint did not strike me at the beginning of my visit, which was not made till the powers of the constitution were nearly

* Since writing the above, I observe that Dr. HEBERDEN has noticed the ease which patients obtain by "straitening the vertebræ of the thorax." Med. Trans. vol. ii. page 64.

ex-

exhausted, I did not look for that symptom; of which any degrees, which were not very conspicuous, would certainly have escaped my attention. The remark is also of great importance in another view, as it shews the worst state of the Angina Pectoris to be unaccompanied with any difficulty of breathing.

In my description of the symptoms of the Angina Pectoris, I have mentioned the weakness of the pulse. On the subject of this disease in general it may be observed, that physicians have seldom been witnesses even of its more common paroxysms, and still more rarely of those which have been so violent as immediately to threaten, or actually to destroy life. On these occasions, the history of what occurs is generally derived either from the patient himself, or from unskilful attendants. Hence no account has hitherto been published of the circumstances which immediately precede, and accompany, the fatal termination; and hence arises the present uncertainty of physicians as to the real nature of the disease. Thus when Dr. HEBERDEN asserts that the "pulse is, at "least, sometimes not disturbed by this pain, and "consequently the heart is not affected by it,"* we may reasonably conclude that this eminent physician, who acknowledges that he seldom heard of his patients' last attacks till they were

* Medical Transactions, vol. ii. page 65.

buried,

buried, saw them only in slight fits, or, from his distance in that wide field the metropolis, did not reach them till their attacks had nearly subsided. This conclusion is indeed, I think, indisputable; for it cannot be imagined that the most alarming circumstances of a disease, which he was labouring to exhibit to the public, as a sort of new medical phænomenon, would have been undescribed by so accurate an observer as Dr. HEBERDEN, if he had ever witnessed them. Add to this, that the strength of a pulse is in a certain degree comparative, having reference to its usual state in the particular person who is the subject of the enquiry; so that in the more slight attacks, at least, it is necessary that a physician should have this relative knowledge, in order to form a proper judgement. Dr. BLACK acknowledges that he had "few opportunities of making observations "on the pulse during a paroxysm;" but adds, that "in the intervals it was natural both as to strength "and frequency."‡ Dr. WALL remarks of his patient, that "his pulse was never irregular, "but always small," and that "during the pa-"roxysm, it sunk so much under the finger, that "it could hardly be felt."* I have lately had a patient, long subject to attacks of a very pure Angina Pectoris, who permitted me to accompany

‡ Memoirs of Medical Society of London, vol. iv. art. xx.

* Medical Transactions, vol. iii. page 16.

him

him during a walk up hill, in order that I might be witness of what occurred during the fit. When the paroxysm was thus excited, I could perceive no symptom of disorder, in addition to the uneasiness in the breast, except a gradual and most evident diminution of the strength of the pulse; and I have no doubt that we shall invariably find the pulse become weaker in proportion to the violence of the paroxysm. This conclusion meets with abundant confirmation from the phænomena attending the final paroxysms of the two last patients, whose cases I have related above, and in this view those cases fill up an important chasm in the history of the disease.* In the case of Mr. S****, both of the paroxysms, or rather both of the exacerbations, (for from the time the pain was first felt, the whole might be strictly called one paroxysm) may be considered as having been of the same kind, and differing only in degree. In the first exacerbation, the uneasy sensation in the breast, together with the sighing and frequent change of posture, increasing, his head fell backwards over his chair, a momentary stertor or noise in inspiration succeeded; his lower jaw fell; his face and limbs became pale, and bathed in a cold sweat; the pulse became weak and almost ceased, and he was deprived of sense, and all

* Dr. Black's account of the symptoms attending the fatal paroxysm of his patient, is unfortunately very short and defective.

power

power of voluntary motion. When he recovered to a certain degree from this attack, he had no symptom of disease, except the pain in his breast and sighing, a weak and sometimes faltering pulse, languor, coldness, paleness, and profuse sweating. A new exacerbation proved fatal some hours after, doubtless by a mere aggravation of the former symptoms.

In Mr. M********* there was neither dyspnœa nor palpitation of the heart. The symptoms of disease were pain in the breast, vomiting, languor, restlessness, weak pulse, coldness and paleness of the face and extremities, with profuse sweating. These symptoms increased, till he died, without a struggle.

From this relation I think it is evident that the Angina Pectoris is in reality a case of fainting; the Syncope, genus 44 of Dr. CULLEN's Nosology; which he defines to be—" the motion of the heart diminished, or even for some time ceasing." " Motus cordis imminutus, vel aliquamdiu qui-" escens." All the circumstances in the Angina Pectoris preceding the actual Syncope are approaches towards it; and in every uncombined and recent case, like those which I have described, the patient probably dies with no other symptoms than those which shew an irrecoverable diminution of the motion of the heart.

I foresee

I foresee that some persons will object to my excluding Dyspnœa and Palpitation of the Heart from among the characters of the Angina Pectoris.

In answer to this objection, so far as it respects Dyspnœa, it may be remarked, that it is no easy task for a patient accurately to describe feelings which suddenly overwhelm, and, for a time, nearly extinguish the powers of life. Mr. M********* is said, in my description of his symptoms, to have had in his attack of the 13th of April, a difficulty of breathing; but as nothing of that kind occurred in either of the two subsequent attacks, its existence in the first was probably imaginary. The patient, who writes an account of his own disease to Dr. HEBERDEN, says of his pain, that "it produces either a little faintness, or a thick-"ness in his breathing." But he immediately adds, "at least I imagined so."* Dr. WALL, in the case which he has published, calls this symptom "a violent dyspnœa, or rather a sense "of suffocation."† Dr. HEBERDEN, who says he has seen fifty cases of the Angina Pectoris, expressly asserts, that except the pain affecting the breast, "the patients are at the beginning per-"fectly well, and, in particular, have no shortness "of breath, from which it is totally different."‡

* Med. Trans. vol. iii. p. 3. † Ibid. p. 15.

‡ Ibid. vol. ii. p. 60.

The

The two patients mentioned to me by Dr. FALCONER, as well as the greater number of those whom I have attended, were so far from being affected with any difficulty of inspiration, (or of expiration as mentioned by Dr. BUTTER) that they frequently made deep inspirations, and retained their breath, not with reluctance, but with much pleasure. It is evident, therefore, that in these cases there was neither difficult nor hurried respiration.

That some examples of Angina Pectoris may be accompanied with Dyspnœa, I do not deny; nor indeed can there be any necessary exemption of this kind, unless the Angina Pectoris must certainly preserve the patient from difficulty of breathing; the contrary of which is so far true, that the causes producing one may give occasion to the other. But Dyspnœa is no more essential to the Angina Pectoris, than Ascites is to Peritonæal Inflammation, though the former is in reality a frequent consequence of the latter. If, therefore, in one case out of three related by Dr. FOTHERGILL, we find mention made of "a dis-"order occasioning on motion much difficulty of "breathing," which terms he afterwards, when describing more particularly, changes to "the "hazard of immediate suffocation," we cannot wonder, when we learn that the dissection exhi-

bits

bits in the cavity of the thorax two quarts of a watery fluid.*

In reality, the two last cases which I have related, and which, by proving so quickly fatal, afforded little room for any accidental morbid effects, are of themselves sufficient to demonstrate, that the pure Angina Pectoris is altogether free from any disorder of respiration; and I have little doubt that when the genuine Angina Pectoris is complicated with Dyspnœa, as in the instances of Mr. BELLAMY, Mr. HUNTER, and others, that symptom will be found on dissection to have arisen from the coincidence of indurated valves, effusion of a fluid, or some similarly acting cause.

Besides difficulty of breathing, I have also refused to admit Palpitation of the Heart among the symptoms of the disease of which we are treating. By Palpitation I understand a violent and irregular action of the heart; "Motus cordis vehe-"mens, abnormis,"† of Dr. CULLEN. In the Angina Pectoris there is often an imperfect systole, or contraction of the heart, which shews itself in a faltering and unequal pulse. Dr. FOTHERGILL says, he has very seldom met with this disease,

* Med. Obs. and Inq. vol. v. p. 235, et seq. It ought to be remarked here that this description is in the words of the patient, and not taken from Dr. FOTHERGILL's own observation of the symptoms.

† Genera morborum. Palpitatio, G. LIV.

"but

" but it was attended with an irregular and inter-
" mitting pulse, not only during the exacerba-
" tions, but often when the patient was free from
" pain, and at rest."* The same symptom is evidently alluded to, though not understood by Dr. HEBERDEN's correspondent; but according to the remark of that author himself, which I have already quoted, " the pulse is at least sometimes " not disturbed by this pain;" and in the case given by Dr. WALL, he asserts, that " the pulse " was never irregular." In three instances I have observed the faltering stroke which I have already described. But all this is totally different from palpitation, or a vehement motion of the heart, and is certainly included in the words " motus cordis imminutus," which is part of the character of the Syncope.

The coincidence between the symptoms of the Angina Pectoris, and those of common Syncope, as enumerated by HOFFMAN, is so striking, that I cannot avoid citing his description of the latter. The following are the circumstances which he relates, as occurring at different periods of that disease. Restlessness and anxiety about the præcordia, paleness of the cheeks and lips, weakness and lowness, and at length a total failure of the pulse, suspension of respiration, coldness and shrinking of the extre-

* Med. Obs. and Inq. vol. v. page 244.

mities,

mities, cold sweats about the temples, and lastly, a total loss of sense and motion. He says, that these symptoms are without tremor or convulsion; and adds, that deep sighs accompany a return of the senses. "Inquietudo et circa præcordia "anxietas, debilitas pulsuum et raritas, extre- "morumque refrigeratio—cum faciei, labiorum et "genarum pallore.—Partes extremæ naturali des- "titutæ calore intensius frigent.—Homines animi "corporisque viribus deficiunt—absque convul- "sionis aut tremoris apparentiâ immobiles jacent; "respiratio et pulsus intercipitur; artus refriges- "cunt et collabuntur; facies est Hippocratica, et "copiosus sudor ad tactum frigidus circa tempora "erumpere deprehenditur. Superatis—syncopes "accessionibus, sensus inter alta suspiria paullatim "redeunt."* HOFFMAN concludes his discussion on the nature of the Syncope with the following "definition: "Est itaque Syncope motus cordis "ad tempus sufflaminatio, cum ingenti virium et "tam animi quam corporis functionum defectu."‖ 'Syncope is a temporary cessation of the motion 'of the heart, with a great failure of the strength, 'and of the mental and bodily functions.'

Nor is the description of Syncope, by Dr. CULLEN, less worthy of quotation in this place.

* HOFFMAN Opera, Edit. Genev. 1748, tom. iii. page 268.

‖ Ibid. page 270.

"This disease, says he, "sometimes comes on "suddenly to a considerable degree, but some- "times also it comes on gradually; and in the "latter case it usually comes on with a sense of "languor, and of anxiety about the heart, accom- "panied, at the same time, or immediately after, "with some giddiness, dimness of sight, and "sounding in the ears. Together with these "symptoms, the pulse and respiration become "weak; and often so weak, that the pulse is "scarcely to be felt, or the respiration to be "perceived; and sometimes these motions, for a "certain time, cease altogether. While these "symptoms take place, the face and whole sur- "face of the body become pale, and more or less "cold, according to the degree and duration of "the paroxysm. Very commonly, at the begin- "ning of this, and during its continuance, a cold "sweat appears, and perhaps continues on the "forehead, as well as on some other parts of the "body. During the paroxysm, the animal func- "tions, both of sense and motion, are always in "some degree impaired, and very often entirely "suspended."*

There is one other symptom which I have hitherto omitted to mention, and which points out the identity of the Angina Pectoris with the

* Practice of Physic, vol. iii. page 198, &c.

common

common Syncope. I mean sickness in different degrees, which is remarked by Dr. CULLEN,‡ as sometimes occurring in the latter disease; and which, in the case of ordinary fainting, is familiar enough to every one's observation. Dr. HEBERDEN's correspondent, in his last fatal attack of the Angina Pectoris, was affected with vomiting;* and the same thing happened in the case of my patient Mr. M**********. We may, perhaps, expect to meet with vomiting only in the more violent degrees of the disease in question; but it is probably this symptom, in conjunction with the seat of the pain, which has induced superficial observers to denominate the last attacks of the Angina Pectoris—gout in the stomach.

From the preceding observations, I think it evidently appears, that the Angina Pectoris is a mere case of Syncope or Fainting, differing from the common Syncope only in being preceded by an unusual degree of anxiety or pain in the region of the heart, and in being readily excited, during a state of apparent health, by any general exertion of the muscles, more especially that of walking.

On this principle I would thus venture to insert this disease, in Dr. CULLEN's Nosological System, under the trivial name of SYNCOPE ANGINOSA.

‡ Ibid. page 200. * Med. Trans. vol. iii. page 7.

G. XLIV. SYNCOPE.

Motus cordis imminutus, vel aliquamdiu quiescens.

I. IDIOPATHICÆ.

1. Syncope (*cardiaca.*) *Ex vitio cordis, vel vasorum vicinorum.*

a. *Anginosa.* A corporis motu inter ambulandum sæpe oriens; præeunte angustia, vel dolore, pectoris notabili, per mammam sinistram præcipue porrecto; sine cordis palpitatione.

Angina Pectoris Auctorum.

b. *Palpitans.* Sine causâ manifestâ sæpe rediens, cum palpitatione cordis vehementi in intervallis.

2. Syncope (*ocasionalis*) ex affectione totius systematis manifestâ.

II. SYMPTOMATICÆ, sive symptomata morborum, vel totius systematis, vel aliarum præter cor partium.

Besides some other changes in Dr. CULLEN's original classification, I have, in this new arrangement, inserted the Syncope Anginosa as a variety of the Syncope Cardiaca; and I have given the trivial name *palpitans* to that arising from the more common diseases of the heart, because the latter is usually attended with palpitation, which I have marked as wanting in the former.

For

For the present I have also assumed as a fact what I have already hinted, and shall hereafter endeavour to render probable, that the Syncope Anginosa arises from an organic disease of the heart.

If, in the nosological character, I have omitted the extension of the pain from the breast to one or both arms, I have done so not only because this symptom accompanies many other temporary or permanent disorders of the heart, but because, as I have before proved, it does not always occur in the Angina Pectoris.

These disquisitions have, I trust, enabled us to fix on a character of the Angina Pectoris, so simple and precise, as not to allow us to confound any pure case of this malady with any other in the whole system of diseases. According to this character, it is a case of FAINTING; OR A GREATER OR LESS DIMINUTION OF THE MOTION OF THE HEART, FREQUENTLY EXCITED BY THE ACTION OF WALKING, AND PRECEDED BY A VIOLENT STRICTURE OR PAIN IN THE BREAST, STRETCHING CHIEFLY ACROSS THE LEFT MAMMA, WITHOUT PALPITATION OF THE HEART.

CHAP. IV.

Causes of SYNCOPE *in general.—Dissections.—Prædisposing Causes.—Exciting Causes.—Causes of* SYNCOPE ANGINOSA.*—Diseased Coronary Arteries of the Heart.*

IN the preceding chapter, I have attempted to prove that the Angina Pectoris is only a species of Syncope; a disease in which all the symptoms clearly arise from diminished energy of the heart. This is the Proximate Cause.

Let us now enquire into the Remote Causes; and here it will be proper to begin with examining what light can be thrown on this subject from dissections.

These are abundantly dispersed through the works of medical writers, though with such defect of arrangement, as to be, in their present state, of little general utility. It will be no unprofitable task to place, under one view, all the examples of idiopathic Syncope, which I have been able to collect, arranged under the head of that particular organic injury, to which, though perhaps complicated with many others, the disease appears to have been principally owing. To these examples

ples I shall annex such references to the authors from whom I have taken them, as may enable the reader to consult at his leisure the original cases.

It will, however, be necessary for me previously to observe, that I consider any Syncope as strictly idiopathic, which arises from a mechanical disease about the heart or large vessels, although that disease may not have commenced there, but may have been communicated from some other part. This remark may be exemplified in the case of pneumonic inflammation extended to the pericardium, or of hydrothorax produced by pleurisy.

Dissections in Idiopathic Syncope.

I. Inflammation of the Heart or Pericardium; or its Consequences, Exsudation, Adhesion, or Suppuration.

From Bonetus's Sepulchretum Anatomicum.

Lib. ii.	Sect. 4,	Obs. 2	—	P. Salius Diversus.
—	—	4	—	Fabricius Hildanus.
—	8,	41	—	Willis.
—	9,	18	—	Zacutus.
—	10,	2	—	Johan. Bauhinus.
—	—	13	—	Zacutus.
—	—	15	—	Idem.
—	Addit. Obs.	2	—	Job Meckeren.
—	—	5	—	Hollerius.
—	—	6	—	Lower.

From

From Lieutaud's Historia Anatomico-Medica.

Lib. ii. Obs.	16	—	—	Riverius.
—	517	—	—	Storck.
—	529	—	—	Malpighius.
—	672	—	—	Hasenohrl.
—	673	—	—	Storck.
—	683	—	—	
—	693	—	—	E Diar. Erudit.
—	702	—	—	Lancisius.
—	757	—	—	Panarolus.
—	922 (a)	—	—	Lancisius.

From Senac's Traité du Coeur.

Tom. ii. Page	333	" Lower rapporte," &c.	Lower.
—	334	" Un homme sujet," &c.	
—	334	" Le coeur n'avoit pas," &c.	
—	432	"Suivant le temoignage," &c.	Fanton.

From Morgagni de sedibus et causis morborum.

Lib. ii. Epist.	24, 2,	" Vir annos natus," &c.	
—	25, 17,	" Præfectus arcis," &c.	

II. Dilatation, or Enlargement of the Heart.

From Bonetus.

Lib. ii. §. 8,	Obs.	15	—	Otto Heurnius.
—	—	17	—	Grembs.
—	Addit.	Obs. 3	—	Blancard.
—	Ibidem		—	Idem.

From Lieutaud.

Lib. ii. Obs.	40	—	—	Dionis.
—	408	—	—	Lancisius.
—	414	—	—	E Miscel. curios.
—	442	—	—	Ibidem.

Lib.

Lib. ii. Obs. 483 — — Riverius.
— 581 — — E Diar. Erud.
— 588 — —
— 801 — — Ex Act. Paris.

From Senac.

Tom. ii. Page 396 " Une fille mourut," &c.
— 434 " Les efforts, &c." Harvey.
— 452 " Une fille," &c.
— 470 " Un homme," &c.
— 501 " Voici un autre," &c.

From Morgagni.

Lib. ii. Epist. 17, 21 " Pauper annum agens," &c. Valsalva.
— 18, 2 " Sutor annos natus," &c."
— 24, 13 " Vir consistentis ætatis," &c.
— 25, 2 " Juvenis duodetriginta," &c. Valsalva.

III. Flaccidity, or Decay of the Heart.

From Bonetus.

Lib. ii. §. 10, Obs. 1, — Cornax.

From Senac.

Tom. ii. Page 432, " L'Observation," &c. Fabricius Hildanus.

IV. Dilatation of the Aorta, or other large Vessels.

From Lieutaud.

Lib. ii. Obs. 814, — — Ex Act. Paris.

From Morgagni.

Lib. ii. Epist. 25, 10 " Mulier Paupercula," &c.

From

From Ruysch Opera Anatomico-Medico-Chirurgica.
Tom. 1, Obs. 38.

V. Ossification, Induration, or Contraction of the large Vessels, or their Valves.

From Lieutaud.

Lib. ii. Obs. 556 — — Mangetus.
— 584 — —

From Senac.

Tom. ii. Page 400 " Je l'ai vue telle," &c.

From De Haen.

Ration. Medendi, Pars 9, Page 11 ad 15.

VI. Ossification, Induration, or Contraction of the Heart or Pericardium.

From Lieutaud.

Lib. ii. Obs. 562 — — Thuanus.

VII. Tumours, or Extraneous Substances in the Pericardium.

From Bonetus.

Lib. ii. Sect. 9, Obs. 18 — Zacutus.
— 10, 15 — Idem.

From Lieutaud.

Lib. ii. Obs. 718 — — E Miscel. curios.
— 719 — — Lanzonus.

VIII. Superabundant Fluid in the Pericardium.

From Lieutaud.

Lib. ii. Obs. 620 — — Storck.
— 621 — —
— 648 — —
— 847 — — Wepfer.

Lib. ii. Obs.	849	—	—	Storck.
—	877	—	—	E Miscel. curios.
iii.	55	—	—	

From Senac.

Tom. ii. P. 358 " Un jeune homme," &c. Reimannus.

From Morgagni.

Lib. ii. Epist. 25, 15 " Monachus cum aliis,' &c.

From Hoffman.

Tom. iii. P. 275 " Vidua generosa quinquaginta," &c.

IV. Superabundant Fluid in the Thorax.

From Bonetus.

Lib. ii. Sect. 10, Obs. 5 — Laurentius.

From Lieutaud.

Lib. ii. Obs.	580	—	—	Mangetus.
—	865	—	—	Ex Act. Chir. Paris.
—	906	—	—	Crendel.
—	932	—	—	E Diario Med.

From Ruysch.

Tom. i. Obs. 69.

Among the morbid appearances after death, in the case of idiopathic Syncope, I have not inserted the want of pericardium, recorded by BONETUS, from ZACUTUS. This pretended mal-confirmation being clearly shewn by HALLER,* to be mere adhesion of the pericardium to the heart, I have placed the cases of ZACUTUS under the head of Inflammation of those parts.

* Halleri Elementa Physiologiæ, edit. 4to. tom. 1. p. 289.

I have also omitted to specify an appearance on dissection, to which anatomists were formerly accustomed to annex very important consequences. I mean polypose concretions in the cavities of the heart and larger vessels. It seems, however, to be now generally admitted, that these concretions do not exist in the living body, but that they are mere coagulations, after death, of blood of a particular consistency. Among these polypi may be classed the appearances of pieces of fat, boiled bacon, worms and snakes in the heart; the existence of which has been with such confidence asserted by some of the older anatomists.‡

Substances of a similar kind in the pericardium, and resemblances of hair attached to the heart, were probably mere exsudations of coagulable lymph, in different forms, from the surface of the heart or pericardium, in consequence of inflammation.

From the view which I have given, it appears that the principal deviations from the state of health are,

‡ It is curious to see how prone we are to take conclusions of reasoning for matters of fact. "That which I have seen with "mine eyes, and handled with mine hands, I dare confidently "avouch, and boldly put down for veritie." So said GERARD; and from thus seeing and handling, boldly put down for veritie, that Brent geese were produced from the shells called barnacles. JOHNSON'S GERARD, page 1588. I spare the application to certain recent medical conclusions, avouched with equal confidence.

In

In the Heart,

Inflammation and its consequences;
Dilatation or enlargement;
Flaccidity or decay;
Ossification or induration.

In the Pericardium,

Inflammation and its consequences;
Dilatation;
Ossification or induration;
Tumours or extraneous substances;
Superabundant fluid.

In the Aorta, and other large vessels,

Dilatation;
Ossification, induration or contraction of the vessel or its valves.

In the Thorax,

Superabundant fluid.

While I thus arrange the Syncope under specific heads of mechanical disorder, it must not be supposed either that the morbid appearance, which stands at the head of each division, is always simple, or that the Syncope is itself unmixed with other symptoms of disease. On the contrary, the Syncope is generally combined with Palpitation or Dyspnœa; and one disorder of parts is almost universally complicated with some other. Thus enlargement of the heart is often conjoined with weakness and thinness of its parietes, and still more

frequently

frequently with dilated aorta, and both with superabundant water in the thorax; dilated aorta with ossification or induration of the same vessel, &c. This coincidence throws great impediments in the way of accurate pathological investigation. In the mean while, some general conclusions may be drawn as to the operation of these different remote causes of Syncope.

With regard to the first general head, it is evident, that all the appearances of disease are reducible to a state of local inflammation, the existence of which may for the most part be tolerably well ascertained by a state of pain, fever, and other circumstances usually attending acute disorders in the thorax. As this state, however, has no connection with the species of chronic Syncope, which is the immediate object of this essay, I shall not enter into any discussion of it here.

SENAC, who in his Traité du Coeur has beaten the field of enquiry with great diligence and success, begins with laying down, among the causes of Syncope, a congestion of blood in the cavities of the heart, impeding its proper action. This cause ALBERTINI considers as peculiarly apt to occur, when the heart is enlarged, and as it were tottering under its own weight; and the same effect is produced, according to that author, by dilatation of the aorta and pulmonary artery.

SENAC

SENAC himself seems to think, that mere dilatation of the heart, unless conjoined with obstructed valves, or lungs, or with flaccidity of its substance, will not produce Syncope, till at a late period, when the vital powers are otherwise much diminished. From the instances which he adduces, it indeed appears, that the heart, when dilated, has frequently its muscular structure proportionally thickened, the immediate consequences of which are rather strong and inordinate action, or palpitation, and disordered respiration, than Syncope. He is of opinion, however, that flaccidity, or wasting of the Parietes of the Heart, which often attends dilatation of that organ, is frequently the occasion of very violent Syncopes.

MORGAGNI remarks, that a "heart, affected "with dilatation, is on that account more apt to "have its action suspended; being, as it were, "overloaded, and soon, on the occurrence of any "accessory cause, oppressed with the weight of "stagnating blood."* In another place he observes, "that a dilated heart easily yields under "the weight of the oppressing blood, more espe-"cially if any other cause occurs which lessens "its expulsory power."‡ Of the four cases of Syncope with enlarged heart, which I have adduced from that author, the two first had weak-

* De Sed ret Caus. lib. ii. epist. 18, 3.

‡ Ibid. lib. ii. epist. 25, 3.

ened

ened parietes, and dilated and indurated aorta. The third was complicated with water in the pericardium; but in the fourth, which is from VALSALVA, no mention is made of any morbid appearance about the heart, except a great enlargement of the right auricle. In this last case, however, there was the coincidence of water between the meninges of the brain, which might have been an accessory if it were not the only cause of death.

In five out of the seventeen other examples which I have given of enlarged heart in cases of Syncope, namely, LIETAUD, lib. ii. obs. 40, 414, 801; and SENAC, tom. ii. pages 470 and 501, the heart is represented as having its muscular substance, especially in the dilated part, thin, lax, or soft. It is said to be thicker than usual in three cases, which are, BONETUS, lib. ii. §. 8, obs. 15, and addit. obs. iii; and SENAC, tom. ii, page 434. In this case, however, which is taken from HARVEY, it is worthy of remark, that whatever might be the appearance of robustness in the heart, its fibres must have been far from firm and cohesive; for the patient died suddenly of a spontaneous rupture in the left ventricle.*

In the remaining nine cases no information is given us as to the state of the parietes.

* Harveii Opera a Colleg. Med. Lond. edit. tom. i. page 127.

The

The same silence is, in general, observed with regard to the condition of the aorta, and other large vessels, except so far as respects their valves, or immediate orifices into the heart. Examples of induration of those parts may be seen in BONETUS, lib. ii. sect. 8. addit. obs. 8 and 17; LIEUTAUD, lib. ii. obs. 581 and 588; and SENAC, tom. ii. page 396. In the single instance, LIEUTAUD, 801, we are told that the aorta was dilated.

MORGAGNI contends, that the dilatation of the aorta arises from the momentum with which the blood is impelled into it from the heart, and therefore that this state of dilatation must precede that of the heart. He supposes also, that when the aorta is either dilated or indurated, it loses its propulsive power. Hence a resistance is made to the free evacuation of the heart, in which a portion of blood remains, and in process of time causes it to dilate, that is, renders its cavities more capacious. "Veri tamen simile est, factam "prius fuisse arteriæ magnæ, quam ventriculi "unde oritur, dilatationem. Dilatatus enim cum "tantâ parietum extenuatione ventriculus non "videtur posse ea vi sanguinem extrudere in ar-"teriam, ut hanc dilatet: Hæc dilatata, simulque "cartilaginea, videtur utique ita sanguini in venas "usque propellando minus apta esse, ut compul-"sum a ventriculo cum propterea ex aliqua dum-

" taxat parte admittat, partem reliquam in eo " restitare cogat, ipsumque dilatare." Lib. ii. epist. xvii. 22. Again, in the following section of the same epistle. " Cæterum hic arteriæ " aortæ dilatationem libentius tribuerim vi nimiæ " qua cor, mole auctum, sanguinem in illam con- " trudebat.—Positâ autem ad aliquod tempus istâ " aortæ dilatatione, verisimile est ventriculos quo- " que cordis ab restitante sanguine fuisse non nihil " dilatatos; ut molis augmentum non crassitudini " solum parietum, sed et amplificationi ventricu- " lorum deberetur."

Ossification, rigidity, or contraction of any kind, in the large vessels or valves about the heart, or too great laxity of the valves, will have a similar effect in preventing the free evacuation of blood from the cavities of the heart, and therefore in dilating them.*

The truth of these observations seems to be confirmed by the following collection of examples, which are all that I can find in LIEUTAUD, of chronic enlargement of the heart without Syncope.

* If, according to Mr. BELL's opinion, it be true that, in young persons, the aorta contracts itself in order to accommodate itself to the small quantity of blood thrown into it by a heart previously deficient in expulsive power, and that, in old persons, the heart and aorta yield and dilate together, these are only various modes of explaining that weakness of the heart which I am attempting to establish.—See Mr. JOHN BELL's Anatomy, vol. ii. page 223. and seq.

Lib.

Lib. i. obs. 642, 854,* 959,* 1765.* Lib. ii. obs. 18,* 44,* 56, 70, 135, 155, 213, 231, 348,* 405, 405,(b)* 405,(c) 405,(d)* 406,* 407,* 407,(a)* 407,(c) 409, 410,* 411,* 412, 413, 415,* 416, 417,* 418,* 418,(a) 418,(b) 419,* 420, 422, 423,* 424,* 425,* 426,* 427, 430, 430,(a) 430,(b) 432, 433, 434,* 435, 437, 438, 439, 440, 441, 443, 444,* 445, 446, 565, 575, 575,(a) 575,(b) 575,(c) 576,(a) 578, 579, 580,(a) 582, 583, 586, 587, 593, 596, 596,(a) 598, 600, 601,* 602, 603, 604, 605,* 605,(a) 606, 613, 615,* 618,* 622,* 624, 628,(a)* 635,* 638,* 639,* 662,* 1701.*

Of the above 92 examples of enlarged heart in chronic diseases, without Syncope, 58 had evident obstruction of the free passage of blood from the heart, by means of morbid contraction or induration of some of its valves, or the neighbouring large vessels, or undue dilatation of those vessels, or variously diseased lungs; and it is curious to observe, that in almost every instance, where any discrimination is made in the description, that side, or even that cavity of the heart, which in the course of circulation was nearest before the obstructed part, is said to have suffered the greatest degree of dilatation. It appears that this coincidence of dilatation with retardation took place in nearly two thirds of the cases above cited;

cited; and when it is considered in how slight a manner the dissections were probably made by many of the older anatomists, and how concisely they are recorded by LIEUTAUD, it would be very premature to conclude, that in the remaining 34 cases, marked * in my list, no similar disease existed, because none is mentioned.†

But though it is probable that these causes always tend to produce dilatation of the heart, a few cases are to be found, in which that effect had not already taken place at the time of the patient's death. These, as I am able to collect them from LIEUTAUD, are the following: Lib. ii. obs. 107, 560, 563, 571, 575,(d) 576, 585, 589, 590, 591, 594, 595, 599, 614, 661. In all these cases but the two last, in which the aorta was dilated, the semilunar valves or arch of the aorta were indurated, ossified, or otherwise obstructed; and yet we are not told of any enlargement of the heart.

It is necessary for me to observe here, that from all these lists of morbid appearances, I have endeavoured, as far as I have been able, to exclude those cases which constitute what is by

† My avocations will not allow me time to examine the cases in their original authors; but any one who is otherwise situated, may advantageously collate them with these abstracts by LIEUTAUD. Let him do so with regard to the cases taken from BONETUS, who is much more full, and, probably, faithful, and he will have abundant proof of the conciseness and even inaccuracy of LIEUTAUD. In the mean time the abstracts of the latter author are sufficient to establish a general principle.

modern pathologists more strictly called aneurysm, in which the dilated part forms a kind of sack, with the parietes variously thickened, lamellated, or otherwise diseased.

We have seen that in 34 cases of enlarged heart without Syncope, no mention is made of any disease of the large vessels or valves. It must, however, be remarked, that in eight of these cases, obs. 410, 417, 418, 425, 605, 618, 622, and 701, there was superabundant fluid in the thorax. Now it is certain that this fluid, by compressing the lungs, must in some measure impede the influx of the blood into the pulmonary artery, and the evacuation of the pulmonary veins, and thus accumulate blood in the right side of the heart. Dr. BAILLIE says, that in a case of this kind, he has "seen a lung so compressed as not to "be larger than the closed fist."* In this way hydrothorax may produce enlargement of the heart. If, however, on the contrary, we contend that the watery effusion was the effect rather than the cause of enlargement, it seems probable, from analogy, that such an effusion was produced by the strong action of the parietes of the heart on its contained blood, which it was unable easily to evacuate by the common out-lets. Thus, in either view, we are led to the probable conclusion, that

* Morbid Anatomy. edit. 1. page 40.

enlargement

enlargement of the heart is connected with undue accumulation of blood in its cavities. This principle obtains additional confirmation from what may be observed when we analyse the remaining 26 cases which I have quoted. In two of these, obs. 407 and 639, the heart is said to have had weak parietes; and in seven, namely, obs. 348, 405,(d) 423, 424, 426, 628 and 638, the dilated part is stated as having been distended with blood; and in three others, lib. i. obs. 854, lib. ii. obs. 70 and 615, we are told that the pulse was very weak or intermitting; so that out of the whole 92 cases, there remain only 14, in which direct mention is not made of some circumstance, from which it may be justly presumed that the expulsory power of the heart, comparatively with the quantity of blood to be expelled, was considerably diminished.

I have dwelt the longer on these morbid appearances, though not occurring in persons who were said to have had faintings, because they throw strong light on those circumstances which produce the *motus cordis imminutus*, which is one degree of Syncope itself.

It remains for me to consider some other causes of Syncope, which are, ossification, induration, or contraction of the heart, or pericardium; tumours, or extraneous substances in the pericardium; superabundant

perabundant fluid in the pericardium; and lastly, superabundant fluid in the thorax. It is evident that all these causes tend to produce compression, and prevent the ready diastole of the heart. The pulse must therefore be small and weak, and the general circulation languid; and if the remote cause operate to a certain extent, or be conjoined with others, the motion of the heart must entirely cease. To this, perhaps, it may be added, that pressure on the muscular substance of the heart, acting as an unnatural stimulus, may occasion irregular contraction, and, at length, irremoveable inaction of its fibres. SENAC quotes two instances, in which fainting immediately followed touching the heart with the finger, or probe, through an aperture in the thorax and pericardium.* I have it in my power to confirm these facts by my own observation. A person long subject to palpitation, with enlarged heart, to such a degree as to produce considerable absorption of the ribs, was always affected with intolerable anxiety and faintness, when I pressed with my fingers on the extenuated part corresponding with the apex of the heart, so as to compress that organ.

Besides the causes which I have specified, the reality of which is confirmed by every day's observation, there is another which deserves attention; I mean, præter-natural fatness of the

* Tom. ii. page 343.

heart;

heart; which is found sometimes to occur in cases of patients affected with disordered action of the heart, and is mentioned by SENAC,* and other authors, as tending, by its weight and pressure, to impair the functions of that part. While I write this, I have a patient, about fifty years old, who has, within these few years, exchanged great activity of life for equal indolence, and has consequently become extremely fat; who is frequently affected with such tremors of the heart, and tendency to Syncope, without palpitation, pain of the breast, irregularity of pulse, difficulty of respiration, or uneasiness in the horizontal posture, that I am strongly inclined to attribute the disorder to no other cause than the præternatural fatness of the heart.

All these causes, existing in or near the heart, may be considered as powerfully predisposing it to that diminution of energy, which constitutes the Proximate Cause.

Besides these Predisposing Causes, experience points out other circumstances, as Accidental, Occasional, or Exciting causes of Syncope.

Of these causes, the chief are, certain circumstances of sensation, including the existence, and even the sudden cessation of bodily pain; the emotions of grief, joy, fear, disgust, and sym-

* Liv. vi. chap. 5.

pathy,

pathy, more especially when suddenly excited; affections of various other parts of the body, particularly the alimentary canal; exposure to great external heat; different degrees of bodily exercise; the action of kneeling; the rising into an erect posture, after long confinement in bed by disease; the sudden removal of the fluid in the ascites, and of the fœtus in delivery; want of food; sudden or great evacuations of blood; violent evacuation by stool.

I have for the present thrown these causes together, with little regard to method; nor indeed have they hitherto been observed with accuracy sufficient to admit of their being arranged with precision. The enquiry is, however, highly important, and may, perhaps, be assisted by the following suggestions.

Of the exciting causes of Syncope, the most simple seems to be the sudden evacuation of blood, of which every medical practitioner has seen numerous examples in the common operation of blood-letting. It has been customary to explain Syncope, thus produced, by supposing that it depends on the abstraction from the brain of that blood which is essential to its due energy; in consequence of which, the heart, deprived of its proper nervous influence, no longer acts with the necessary force. This appears to be the opinion

of

of Dr. CULLEN,* and, I think, of MORGAGNI;‡ and those, who thus reason, believe they draw a conclusive argument in favour of their theory from the relief which, in Fainting, is so quickly obtained from the horizontal posture.

To this theory, however, there seem to be insuperable objections. The apoplexy, which, by compressing the brain, destroys the nervous influence, occasions nothing in the heart like the Syncope. On the contrary, it appears very speedily to increase the fulness, and generally, at the same time, the frequency of the pulse. Neither is any such effect produced on the heart of a living dog, in whom all communication between the brain and heart has been destroyed by dividing the par vagum and intercostal nerves on each side of the neck.

The more obvious functions of the brain are the faculties of sense and voluntary motion; and it is admitted that these functions cannot continue without a due circulation of blood through the vessels of the brain. It is also acknowledged that the contractions of the heart and arterial system immediately depend on the stimulus of the blood. This stimulus consists in the chemical nature of the blood, and in its distending force, exerted on tubes re-acting by mechanical and

* Practice of Physic, vol. iii. page 203.

‡ De Sed. et Caus. lib. ii. epist. xxv. 5, 11. muscular

muscular power. Now if the action of the heart and arteries be so far diminished, as to weaken in a considerable degree the general circulation, and to convey to the brain less blood than is necessary for its due functions, the faculties of sense and voluntary motion will be impaired; and thus will be produced all the phænomena of Syncope.

According to this explanation, the origin of Syncope is in the arterial system; and the brain is affected only secondarily, in consequence of the want of blood determined to it by the heart. It is true, indeed, that certain sensations and passions, as we have before observed, produce Syncope; and as these are affections of the mind, it is obvious that the original operation of the causes producing them is on the brain. But I contend that they would not occasion Syncope, without an intermediate and corresponding diminution of the action of the heart and arteries, operating in the manner which I have already explained. In other words, the brain is in these cases nothing more than the medium of sensation to the arterial system, which is then affected with that inaction which constitutes Syncope.

The principles which I have endeavoured to establish, afford an easy, and, as it seems to me, a just explanation of the circumstances of Fainting from the common operation of bleeding. By this

this operation, the proper stimulus of the arterial system being suddenly diminished, the heart, contracting more feebly, propells its contained blood with insufficient momentum. Hence follow the want of a due determination of blood to the vessels of the brain, and a consequent diminution of its ordinary functions, sense and the power of voluntary motion. Now it is this diminution of the powers of sensation and voluntary motion, which constitutes the obvious perception of Fainting; the primary inaction of the heart being, in slight attacks, scarcely perceiveable by the patient in any other way, except in that by which it would equally discover itself to another person, I mean the weakness of the pulse. In this state, if the patient lie down, the blood going in greater quantity to the head, restores the senses, and the power of voluntary motion. The flux of blood now ceasing, and the loss already sustained being in a short time equally diffused throughout the system, the inaction of the heart and arteries is soon followed by such an increase of irritability, as, under the new circumstances, is sufficient for the purpose of healthy circulation. That the horizontal posture does actually, in this case, determine more blood to the head than the erect posture, is highly probable; because we observe, that, in common health, stooping produces a redness of

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the cheeks, a sense of fullness in the head, and sometimes bleeding at the nose; and in morbid determinations of blood to the head, the symptoms are increased by lying down, more especially if the head be unusually low.

It is a strong confirmation of this doctrine of Fainting, that it may be prevented or powerfully counteracted, in the case of hæmorrhages, by those means which obviously act as gentle stimuli on the heart and arteries; such as the internal use of ardent spirits in certain quantities, the hope of obtaining some valuable end, and moderate bodily exertion. The last of these means operates by urging the venous blood forwards to the heart; and all evidently excite the heart to contract more strongly than before.

The truth of this theory of the general affection of the vascular system is demonstrated by what actually occurs in most cases of blood-letting, even when the effect does not amount to Fainting. When the vein is first punctured, the blood springs out with considerable force, but by degrees runs slowly, and perhaps in drops, down the arm. After some time, the stream is again renewed. This succession is more strongly marked if the patient faint; in which case the flow of blood entirely ceases till the Faintness subsides. All these circumstances of diminished momentum are obviated by stimuli. The

The phænomena of Fainting will admit of some illustration by being contrasted with the Hysterical Stupor, which by superficial observers is often mistaken for the true Syncope. But while both states agree in the common circumstance of a suspension of the functions of the brain, in the hysterical stupor the colour often remains in the face, the extremities are warm, the pulse is sufficiently strong and regular, and there is every proof of perfect circulation. In this case, the brain, having suffered an undue excitement by the impulse of blood into its vessels, falls into a proportionable degree of that state which, by Dr. CULLEN, is termed *Collapse*, and by Dr. JOHN BROWN, *Indirect Debility;* but the action of the heart is maintained in its just vigour.

By the term *Excitement*, I understand the performance of the living functions of any part or the whole of an animal. That which produces excitement is a *Stimulus*. The excitement of a muscle consists in the actual contraction of its fibres; and a stimulus, is that which causes it to contract. By the words *Irritability* or *Excitability*, I mean the capacity of excitement; in a muscle, the capacity of having its fibres contracted by the application of a stimulus.

Of the irritability of muscles, it is known, that in different circumstances of the same and different animals,

animals, it is extremely various, both as to the facility and force of contraction; but the laws of these variations are not as yet laid down in such a manner as to admit of general application. Thus much is acknowledged, that after an indefinite degree of excitement, a muscle falls into a state of inaction or quiescence, without which it seems to be incapable of suffering the same degree of contraction from the same stimulus. This fact has been long known, and, as I have before observed with regard to the brain, has been expressed by different authors in different words. Another position, that certain causes act by directly diminishing the excitability of muscular fibres, without previous excitement, has been denied.* If, however, any cause, without having previously increased the action of a muscle, not only immediately diminishes its action, but renders it less susceptible of excitement on the application of stimuli,

* This is the opinion every where inculcated in the system of Brown; a system just, but not original, in its first principles; in its detail generally defective, and scarcely less often false. Among its defects may be pointed out its almost total want of specific distinction between stimuli; and among its more positive, and still more dangerous errors, the constant mistake of actual excessive excitement for a state of direct debility. This latter error I exemplify in those diseases which are called nervous; in the gout; in almost every case of hæmorrhage, and even in certain stages of typhus itself. Let us take the case of what is called the nervous, or spasmodic asthma. It is produced or aggravated by

stimuli, I think we have, at present, a right to presume that such a cause directly diminishes muscular irritability. It will be obvious, that from the class of such causes, if they exist, I exclude all those which clearly act by the mere negation or abstraction of stimulus. Exactly conformable to my description of such positive powers is the distilled water of the Lauro-Cerasus, if we may trust the account given us by FONTANA of its operation on leeches, and on the hearts of certain animals separated from their bodies.* The same may be asserted of the passions of sympathy and fear, when those passions produce Syncope, without previously increasing the action of the heart. It is true, indeed, that Dr. JOHN BROWN con-

by stimulating passions; by heat of weather, of rooms, of clothing, or of ingesta; by all kinds of muscular exertions, as in walking, laughing, or speaking; by much solid food, especially of the animal kind; by aromatics, volatiles, and alkohol taken into the stomach; and by various stimulating effluvia inhaled into into the lungs. It is generally accompanied with more or less of fever; and often disposed to become peripneumony. On the other hand, it is relieved by gentle evacuations; by rest; by inanition; by cold drink, and especially by breathing cold air, (which is certainly not the more efficacious in proportion to its oxygen;) by expectoration; and, most speedily of all, by spitting of blood. Who that attends to these circumstances will deny, that the spasmodic asthma is a case of morbid excitement; of blood driven with undue force into the vessels of the lungs, and so accumulated there, as to compress the air-vessels, and thus mechanically impede free inspiration?

* Fontana on Poisons, English Edit. vol. ii. pages 352, 354, 355.

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siders fear and grief as the mere abstraction of confidence and joy. But besides that it is difficult to prove the constant influence of these stimulating passions upon the human mind in many of the ordinary situations of life, it is certain that they do not exist in ideots or infants; and it is a conclusive argument against this hypothesis, that during sleep, when it must be acknowledged that there is a total abstraction, not only of confidence and joy, but of all other perceptions, the action of the arterial system is carried on uniformly and strongly, and without the smallest tendency to Syncope. Shall we, on the other hand, conclude, that fear and grief are positive sensations, producing indirect debility in the brain, and, through the brain, in the heart? We have no right to draw this inference from the phænomena: For, as I have before observed, the indirect debility of the brain in the epilepsy and hysteria, which is evidently much greater than that which any one can suppose to arise from fear or grief, does not occasion Syncope: Neither is this effect produced by apoplexy, or by dividing the nerves leading to the heart. On the whole, I cannot help reverting to my former conclusion, that certain perceptions of the mind immediately diminish the excitability of the heart; and if they do so without causing actual increase of contraction in the

heart, it would be an abuse of language to say that, with regard to the heart, they are stimuli. It would be saying, in other words, that a stimulus, or exciting power, is that, which, when operating on muscular fibres, directly diminishes excitement.* Should it be contended, that this excitement consists in certain invisible *oscillations*, or *vibrations*, the excess of which may produce greater indirect debility than any muscular contraction—to such an argument it will not be expected that I should make any serious reply. In all our pathological reasonings, the rule which we ought to observe is, to examine, not the occult operation of a cause on any part, and more especially a distant one, but the sensible operation of that cause on the part which is the immediate subject of consideration. In this way alone will

* The only use of such a general arrangement would be to confound powers, the sensible operation of which is totally opposite. On the other hand, let us see what sort of figure would be made, conformably to the spirit of this system, by the only sub-division which could prevent the most mischievous errors in practice.—
EXCITING POWERS.

I. Those which directly produce Excitement.
Essential oils.
Volatile alkali.
Heat, &c.

II. Those which directly diminish Excitement.
Foxglove.
Tobacco.
Distilled water of the lauro-cerasus.
Squill, &c.

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our examination lead to any practical, and therefore useful, conclusions; and on this principle, without enquiring what is the metaphysical action of the various exciting causes of Syncope on the brain, I shall endeavour to arrange them, as they may be found to diminish the motion of the heart, either immediately, or by means of previous undue excitement, or excessive action.

In attempting this arrangement, I must, however, confess, that I am by no means in possession of facts sufficient to enable me to ascertain the operation of all the exciting causes of Syncope; and I cannot decide whether even that occasioned by fear itself, may not follow palpitation, or increased action of the heart. The division, which I have proposed, may, however, serve as a practical rule of classification for future observers.

The first set of Causes of Syncope, are those which immediately diminish the motion of the heart. Among them are

Loss of blood.

Violent evacuation by stool.

The sudden removal of the fluid in the ascites.

The expulsion of the fœtus in delivery.

I have already endeavoured to explain the operation of blood-letting, and I think the three succeeding causes chiefly act by the sudden abstraction of pressure on the descending aorta, in

consequence

consequence of which the quantity of blood in the heart is diminished, and the heart and brain insufficiently stimulated, so as to produce the phænomena of Syncope.

Emptiness of the alimentary canal, from want of food, may act partly in the same way, and partly by defect of stimulus on the heart, as forming a part of the whole system.

Certain sensations; as some kinds of pain? and particular mental affections; as fear? grief? and sympathy? To this head may perhaps be referred certain affections of other parts of the system, more particularly the alimentary canal; as of the stomach from sickness, the distention of wind, or a violent blow.

Among the causes which diminish the action of the heart, after having produced excessive contraction, are

Certain sensations. And here I must again mention bodily pain, which, on some occasions, evidently excites violent palpitation of the heart, and consequent Syncope. The sudden cessation of pain seems to produce the same effect, by means of that quiescence which follows the quick removal of an undue stimulus. Of this kind may be the letting out the pus from an abscess, and, perhaps, in some degree, the expulsion of the fœtus. It may be doubtful, whether the act

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of kneeling, which often makes delicate females faint, operates as a sensation, or as a species of bodily exertion; but I believe that, in such cases, the first effect is always palpitation of the heart.

Certain mental affections: as anger; joy; disgust; and horror.

Different degrees of bodily exercise, proportioned to the state of the patient. It is well known, that muscular exertion stimulates the heart by accelerating the motion of the blood in the veins; and in chlorotic females, and other persons accustomed to a sedentary life, very slight exertions generally produce great palpitation, and, frequently, succeeding Syncope. Patients, weakened by violent diseases, and who have been long confined to their beds, often faint on merely raising themselves into an erect posture.

When external heat occasions Syncope, it is very evidently after having previously quickened the circulation.

These are the chief causes of Syncope, as learned from experience; but analogy points out other powers as capable of producing, or of contributing to produce, the same effect.

Among these, that which is most to my present purpose is fullness of blood, of which I have in some degree already spoken. This may be supposed to be general throughout the system, or

confined

confined to the heart and large vessels. I have already shewn how such a local accumulation of blood is produced by various affections of the heart and neighbouring parts; but there are certain occasional causes which seem capable of acting in the same manner; such as tight ligatures about the trunk of the body, and undue distention of the alimentary canal. These causes seem to operate by mechanical compression on the lungs, or descending aorta. The usual effect of such powers may be to weaken the heart, by having previously overexcited it; but I am in possession of some observations, which prove that this is not always true. In patients, whose hearts have been beating with undue quickness and force, I have often, in a few seconds, retarded their motion many pulsations in a minute, by strong pressure on one of the carotid arteries. An instance of this kind occurred in the case of the late Admiral K. S******, who laboured under a hemiplegia, succeeding violent apoplexy. His pulse was quick, and already very full and tense. Pressure on one carotid almost instantly reduced the pulse fifteen or twenty beats in a minute, without having previously increased either its frequency or strength; and the pulse returned to its former state as soon as the pressure was removed. Dr. FRASER and Dr. EWART were witnesses of this fact, which

was

was repeated more than once with the same effect. I shall hereafter have occasion to give some proofs, that this compression of the carotid does actually accumulate blood in the aorta and heart. In the mean time, there can be no great difficulty in understanding how either the elasticity or living force of a muscular part may be overcome by extreme distention; and it is obvious, that the occasional causes of accumulation, which I have specified, must act with augmented force on parts already predisposed by disease.

After having thus discussed the nature and causes of the Syncope in general, I return to the more particular consideration of that species, which I have denominated Syncope Anginosa.

On this subject I have already hinted at a kind of mal-organization of the heart, very cursorily adverted to by pathological writers; I mean *Ossification* of the *Coronary Arteries*.

This disorder is slightly mentioned by BELLINI;(*a*) is said to have been once seen by DRELINCOURT;(*b*) as often by THEBESIUS,(*c*) by CRELL,(*d*) by BIANCHI,(*e*) by DEIDIER,(*f*)

(*a*) De Morbis Pectoris, edit. 1714, page 616.

(*b*) In BONETI Sepulchret. Anatom. lib. i. §. 12, Add. Obs. 8.

(*c*) Disput. de Circulo Sanguinis in Corde, §. 4.

(*d*) Observat. de Arter. Coronar. instar ossis induratâ; inter HALLERI Disp. Med. tom. ii.

(*e*) PLANCI Epist. de Monstris.

(*f*) SENAC Traité du Cœur, liv. vi. chap. viii. §. x.

and

and by MORGAGNI.(g) Two cases are also recorded by HALLER,(h) and two by SENAC;(i) and references to some other examples, are given by HALLER.(j)

CRELL has written an entire dissertation, "de "arteriâ coronariâ instar ossis induratâ," which is to be found among the Disputationes Medicæ, collected by HALLER.

This dissertation, however, after having described the state of the heart, and more especially the coronaries, is, notwithstanding its title, nothing more than an enquiry into the seat of ossification in the arteries in general; which the author concludes to be between the muscular and internal or nervous coat. HALLER is of the same opinion;(k) and I have already mentioned, that this was the seat of the ossification, both in the coronaries and aorta, in the case of Mr. M. No examination was made with this view in the case of Mr. S. The ossification seems to have been similarly situated in Dr. BLACK's patient.(l) In CRELL's subject, there was a curious appearance. In some parts of the coronaries, when punctured,

(g) De Sed. et Caus. lib. II. epist. xxiv. 16.
(h) Opusc. Pathologica, Obs. 50, 51.
(i) Liv. vi. Chap. v. §. ix.
(j) HALLERI Element. Physiog. Not. in. lib. IV. sec. III. §. 31.
(k) Opusc. Pathолog. Obs. 51.
(l) Medical Memoirs, vol. iv. page 269.

there

there flowed out, from between the nervous and muscular coats, a substance like thick pus, or lard, which seemed to be the osseous matter in a soft state; while in other places it was hardened into bone, probably from the absorption of the fluid part.(*m*)

Among the examples of ossified coronaries which I have quoted, there is unfortunately no relation of the accompanying symptoms, except in three instances, which are those by BIANCHI, and DEIDIER, and one of those by SENAC. The work of BIANCHI, "de Monstris," in which is this case, I have had no opportunity of consulting; but we are told by MORGAGNI,(*n*) that the patient had palpitation of the heart. To DEIDIER, also, I have access only through SENAC. "In "an old man," says he, "the aorta ossified, and "the coronary artery, cartilaginous and half osse- "ous on the left side, had forced the apex of the "heart towards the middle of the breast. The "palpitation was therefore inward, and answering "to the xyphoid cartilage." "L'Aorte ossifieé "dans un vieillard, et l' artere coronaire, carti- "lagineuse et à demi osseuse du côté gauche,

(*m*) I every where, throughout this treatise, call this substance osseous or bony, in compliance with common language, without pretending to ascertain its chemical nature, which I have never examined.

(*n*) MORGAGNI de Sed. et Caus. lib. II. epist. xxiv. 17.

"avoient

" avoient obligé la pointe du cœur à se porter " vers le milieu de la poitrine. La palpitation " etoit pour lors interne, et répondant au cartilage " xyphoide."(o) SENAC says of the first case which he records, " A Recollet Friar was subject " to palpitations. The coronary arteries, ossified, " formed branches resembling those of coral." " Un Recollet étoit sujet à des palpitations. Les " arteres coronaires ossifieés formoient des ra- " meaux semblables à des branches de coraìl."(p)

In these three cases nothing is said of any complaint but palpitation; and as this is expressly mentioned, and is so easily distinguishable from all other symptoms, we have no reason to doubt its existence. But in the two first cases there were other considerable morbid appearances. Thus in DEIDIER's patient, the aorta was ossified, and the heart displaced; and BIANCHI's patient had not only ossification of that artery, but the heart in general, and more especially the right auricle, was extremely enlarged.(q) We have already seen that these disorders are of themselves sufficient to produce great palpitation of the heart. In SENAC's Recollet Friar, no disease of the heart is mentioned, but ossification of its coronaries. Have we, however, a right to deduce any negative

(o) SENAC Traité du Cœur, liv. vi. chap. viii. §. x.
(p) Ibidem, liv. vi. chap. v. §. ix.
(q) Apud MORGAGN. lib. ii. epist. xxiii. 9.

conclusion

conclusion from this case, contained as it is in the few words which I have quoted above, and which do not even enable us to decide, whether the dissection was actually seen by SENAC himself?

We are told by CRELL, that the patient, whose heart he examined, was a man of about 70 years of age, and that he died suddenly.

These are all the facts which I can discover in authors, relative either to the existence or the effects of ossified coronaries, exclusively of those by Drs. FOTHERGILL and BLACK. No farther examples are cited by LIEUTAUD; and this mal-organization is not even mentioned by Dr. BAILLIE, in his Morbid Anatomy; or in the recent anatomical work of Mr. JOHN BELL, who asserts(*r*) with his usual unreserve, that "the Angina Pectoris, in its first attack, is no organic disease." Hence it follows, according to his opinion, that the organic injury of the heart, is the effect and not the cause, of that malady. Let us see how far this assertion agrees with facts.

In a person evidently dying of Angina Pectoris, in the year 1775, Mr. HUNTER found the coronary arteries ossified; but, as far as I can learn, did not consider this state as having any important influence on the patient's health, and says nothing of it in any of his lectures or publications.

(*r*) BELL's Anatomy, vol. ii. page 223.

Then

Then Dr. JENNER discovered ossified coronaries in the heart of Mr. CARTER, of Dursley; and, concluding that there was some relation between that disorder and the disease in question, predicted a similar appearance in the instance of Mr. BELLAMY. Here, however, as we have seen in the dissection, there was some difference; but such as, I think, confirms the opinion, that a principal cause of the Syncope Anginosa is to be looked for in disordered coronary arteries. Next followed the case of Mr. S., which appeared to me so clear an instance of Angina Pectoris, that, relying on the sagacity of Dr. JENNER, I told Mr. ATTWOOD, and Mr. PERRY, previously to the dissection, that we should find the coronary arteries ossified. We did so; and these gentlemen now remain in Bath, witnesses of the truth of what I relate. Afterwards Dr. BLACK, of Newry, found ossified coronaries in a case of Angina Pectoris, marked by indisputable characters; and his description, in the judgment of some persons, will have the more weight, if any thing can add weight to the assertion of a man of veracity, because he had no pre-conceived opinion on this subject, and lays no stress on that morbid affection as a cause of the disease.(s) In the mean time,

(s) Tho' he calls it, in another place, "the very remarkable "ossification of the coronaries." Med. Mem. vol. iv. page 270.

Dr.

Dr. JENNER conversed with myself, and many others of his friends, on the symptoms of Mr. HUNTER, and foretold diseased coronaries. Mr. HUNTER died; and the coronaries were found ossified. Lastly, in the recent case of Mr. M., Mr. GRANT, when about to open the body, asked me, in the presence of Dr. FRASER, and Mr. MAYHEW, apothecary, what appearances of disease I expected. I answered, that we should find dilated aorta and ossified coronary arteries. The event justified the prediction.

It appears, then, that from the whole mass of medical and anatomical writers, previously to the last edition of SENAC's Treatise on the Heart, in the year 1773, not more than twelve or fourteen instances can be collected, in which the coronary arteries were found ossified; but that, since that period, seven instances have been seen of obstructed coronaries, in six of which they were ossified; all in cases of Angina Pectoris, and four actually predicted. From this view of the facts, I cannot avoid concluding, that there is an important connection between the rigid and obstructed state of these vessels, and the disease in question. It is, however, incredible, that this organic injury should be the effect of the disease, according to the opinion of Mr. BELL: For, in that case, in Mr. S., who had but one paroxysm, and in whom

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the principal trunk of each coronary was a bony tube, the whole process of perfect ossification must have been compleated in 48 hours.

To this theory of the cause of the Syncope Anginosa, it may be objected, that in six genuine cases of that disease, which I have already mentioned, from MORGAGNI, HEBERDEN, WALL, FOTHERGILL, PERCIVAL, and JOHNSTONE, no ossification of the coronary arteries was found on dissection. I answer, that, probably, in these cases the coronaries were not examined. The most accurate anatomists seem not to have been in the habit of looking for this organic injury. I have already stated the conviction of Dr. JENNER, that the coronary arteries were not examined in the first dissection by that excellent anatomist Mr. HUNTER, and the accident by which Dr. JENNER discovered them to be ossified, in the case of Mr. CARTER. SENAC, in the second of his cases, says, that he first found these arteries ossified only by the resistance which they made to an injection;(*t*) and in Mr. M., though we expressly sought for this disorder, yet we could not discover it by the feel, and should have concluded that the coronaries were not diseased, had I not proposed that they should be traced by dissection from the aorta. These facts prove that they have

(*t*) Traité du Cœur, liv. vi. chap. v. §. ix.

in

in general not been thought of, or have been sought for in a way which could seldom lead to their discovery. In reality, in old persons, dying suddenly, in the midst of health otherwise good, the heart usually abounds with fat; and we have seen from the dissections, that this is peculiarly the case with persons dying of the Syncope Anginosa. To this add, that the coronary arteries are not, in point of situation, relieved from any solid part, or suspended in loose cellular membrane, but lie nearly imbedded in a firm muscular substance. From these circumstances united, I will venture to assert, that it will be seldom possible to discover ossification of the coronaries, without either cutting down to them, or attempting to introduce some substance into their cavities. If I am wrong in concluding that these vessels were not examined in either of these ways in the dissections to which I allude, gentlemen, who attended some of those dissections, are probably now living, and have it in their power to correct me. It is obvious, however, that no negative proof can in future be admitted, unless the examination be made in the manner which I have proposed.

A second objection to the influence of ossified coronary arteries in producing Syncope Anginosa, may perhaps be grounded on the impossibility, that a temporary disease should arise from permanent

nent mal-conformation. This objection, however, argues a very imperfect observation of the animal œconomy. Is it not certain that paroxysms of the epilepsy, occurring at long intervals, and with perfect intermediate health, have often arisen from exostoses, and other mechanical diseases within the cranium? Nay, have we not seen, in many of the cases above cited, that various organic diseases about the heart itself may subsist without producing constant interruption of its functions? In reality, these organic disorders may be considered as being within certain limits mere predisposing causes; that is, which produce such a degree of the proximate cause, as does not constitute apparent disease, but requires, for this effect, the co-operation of some remote, and, as it is usually termed, exciting cause. This position will obtain additional confirmation, as we proceed in our inquiry into the action of the causes of the Syncope Anginosa.

The authors who relate the cases, which I have adduced, of ossified coronaries, however slightly they may have observed the accompanying symptoms, have not been wanting in their theoretical remarks on the probable consequences of this morbid change. Thus Bellini considers it as likely to produce intermitting pulse, by preventing the ready flow of blood into the substance of the heart;

heart;(*u*) and SENAC concludes, that it will prevent the heart from readily dilating and contracting itself.(*v*) It is curious that HOFFMAN, who, as it should seem, was totally unacquainted with the phænomena of ossified coronaries, lays it down as a principle, that one cause of Syncope is the want of a proper influx of good blood through those vessels into the muscular substance of the heart. "Est itaque Syncope motus cordis ad "tempus sufflaminatio—ab impedito vel minus "sufficiente liquidi spirituosi per nervos, et san-"guinis probe temperati per vasa coronaria in "musculosam cordis substantiam, influxu depen-"dens."(*w*)

These opinions are, probably, in a considerable degree true. The rigidity of the coronary arteries may act, proportionably to the extent of the ossification, as a mechanical impediment to the free motion of the heart; and though a quantity of blood may circulate through these arteries, sufficient to nourish the heart, as appears, in some

(*u*) Pressio eadem à quacunque causa in trunco, vel ramis majoribus arteriæ per tumores, tubercula, pinguedinem, lapillos, &c. Sistet enim illa sanguinem in villos cordis derivandum, unde intermittet pulsus. BELLINI de morbis pectoris, edit. 1714. pag. 615.

(*v*) Les parois du cœur ne pouvoient s'étendre ni se reserrer qu' avec beaucoup de difficulté.——Traité du Cœur, liv. vi. chap. v. §. 9.

(*w*) HOFFMAN, tom. iii. pag. 270.

instances, from the size and firmness of that organ, yet there may probably be less than what is requisite for ready and vigorous action. Hence, though a heart so diseased may be fit for the purposes of common circulation, during a state of bodily and mental tranquillity, and of health otherwise good, yet when any unusual exertion is required, its powers may fail, under the new and extraordinary demand. Accordingly we find, that paroxysms of the Syncope Anginosa are readily excited by those passions, the tendency of which is to stimulate the heart to excessive contraction.(y) It may not, indeed, be easy always to determine, by external marks, what degree of contraction can be termed excessive. That degree must certainly be relative to the state of the heart itself. We find that a healthy heart can undergo vehement contraction, without suffering, in consequence, any morbid quiescence. On the other hand, the more common organic injuries of the heart so impair its energy, that its palpitations are often followed by Syncope. When its powers are still farther lessened, as in the instance of persons weakened by long diseases, fainting often follows the slight increased action, which is pro-

(y) Dr. FOTHERGILL's last patient, opened afterwards by Mr. HUNTER, died in a "violent transport of anger." Med. Obs. and Inq. vol. v. p. 254. And the last paroxysm in Mr. HUNTER himself was owing to the same cause.

duced

duced by the exertion of rising up in bed. In the same manner, anger, and other stimuli, acting on hearts furnished with indurated coronaries, may occasion Syncope through the medium of a degree of contraction, which is excessive with regard to the power of hearts so diseased, but is much less than that motion which is usually called palpitation.(z) In such cases, the heart suffering a speedy diminution of motion after the application of the stimulus, the blood, which is driven onwards by the other circulating powers through the veins, stagnates, and is accumulated in its cavities. The same accumulation probably follows the operation of certain other causes, as of all muscular exertion, chiefly in walking, in which many of the muscles are employed; more especially if the walking require unusual strength, as when it is quick, against the wind, or up hill. The same effect is produced by full meals; and, if I am not deceived, arose, in the case of Mr. S., from pressure on the aorta descendens, by fæces in the colon.(a) It is also probably owing to a similar

(z) If the same degree of quiescence follow different degrees of action; or, if different degrees of quiescence follow the same degree of action; the energy of the heart being in both cases, given; it is obvious, that the difference of the effect does not depend on the force of the several stimuli producing the action.

(a) In what degree the biliary concretions in this case might act as a remote cause, I cannot say; but certainly their number far exceeds any thing of which we read in the history of medicine.

accumulation

accumulation of blood about the heart, that paroxysms of the Syncope Anginosa are apt to come on during sleep, or at least about two in the morning; and though I do not pretend to assign a reason for this accumulation at that particular hour, we have, in proof that it does actually occur, the analogy of the suffocation in the hydrothorax and asthma, the latter of which is, I think, demonstrably owing to fullness of the vessels of the lungs.

These remarks serve to explain the co-operation of the exciting causes with the predisposing cause of the Syncope Anginosa. They enable us to understand, how, first, under circumstances of moderate predisposition, paroxysms of the disease, or even death itself, may take place, from the strong agency of exciting causes; or how, secondly, the injurious effects of the predisposing cause may gradually increase, so that the heart shall become unfit for the occasions even of ordinary circulation, and paroxysms shall occur, and the patient die, though previously at perfect rest.

Besides ossification of the coronary arteries, the dissections of persons, dying of the Syncope Anginosa, have shewn us various other organic, or mechanical diseases about the heart. The chief of these are,

Enlargement

Enlargement or dilatation of the heart.(*b*)

Smallness of the heart.(*c*)

Flaccidity and paleness of the heart.(*d*)

Undue fatness of the heart and pericardium.(*e*)

Thickness of the pericardium.(*f*)

Valves in different degrees of induration or ossification.(*g*)

The aorta about its arch dilated, weakened, or ossified; or these states variously combined.(*h*)

Water in the thorax.(*i*)

Water in the pericardium.(*k*)

(*b*) MORGAGNI, epist. xxvi. §. 31. WALL, Med. Trans. vol. iii. page 17. BLACK, Med. Mem. vol. iv. page 268. Mr. S. vide supra, page 23. Mr. M. vide supra, page 31.

(*c*) HOME's Life of HUNTER, page lxiii.

(*d*) HOME, page lxiii. JOHNSTONE, Med. Mem. vol. i. p. 380. BLACK, Med. Mem. vol. iv. page 269.

(*e*) WALL, Med. Trans. vol. iii. pages 16 and 17. FOTHERGILL, Med. Obs. and Inq. vol. v. page 239. BELLAMY, vide supra, page 12. Mr. S. vide supra, page 23. Mr. M. vide supra, page 31.

(*f*) HOME, page lxii.

(*g*) WALL, Med. Trans. vol. iii. page 17. HOME, page lxiii. Mr. M. vide supra, page 32.

(*h*) MORGAGNI, Epist. xxvi. §. 31. WALL, Med. Trans. vol. iii. page 18. HOME, page lxiii. BLACK, Med. Mem. vol. iv. page 269. Mr. S. vide supra, page 23. Mr. M. vide supra, page 32.

(*i*) WALL, Med. Trans. vol. iii. page 16. FOTHERGILL, Med. Obs. and Inq. vol. v. page 239. BELLAMY, vide supra, page 11.

(*k*) WALL, Med. Trans. vol. iii. page 17.

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We have seen above, (page 71 to 75) that some, or all, of these causes have been found to exist in persons dying of the ordinary Syncope Cardiaca; and they may possibly contribute to produce the Syncope Anginosa. It is certain, however, that the more immediate effect of the greater number of them is usually dyspnœa, or palpitation of the heart, neither of which occurs in the disease before us. This circumstance seems to indicate a striking pathological difference between the Syncope Palpitans and the Syncope Anginosa. While the various causes, which I have detailed from authors, occasion the former species, ossified coronaries, so far as we yet know, tend more especially to produce the latter. Nay, this organic læsion seems, in some measure, to counteract the tendency of those causes to excite palpitation; for one or more of them existed in all the more recent cases of ossified coronary arteries, and yet without palpitation of the heart.

I have often thought that none of these deviations from the healthy state are so powerful in co-operating with indurated coronaries, as dilatation of the aorta, which, under this impression, I predicted in the case of Mr. M. Let us examine the general effects of this species of mal-organization.

The following are the best-marked examples of it which I can collect from authors, without concre-

tion

tion of blood in the dilated part, or any important extravasation into the thorax or pericardium. LIEUTAUD, lib. ii. obs. 405, 418,(b) 430, 435, 443, 772, 793, 798, 804, 814, 824. HARVEY, tom. i. pag. 127. MORGAGNI, epist. xvii. 17, 23. xviii. 30, 34. xxv. 10. xxvi. 21. lvii. 10. lxiv. 12. In these cases, the chief symptoms, exclusively of pulsating tumour, were dyspnœa or cough; palpitation or vehement action of the heart; or pain, weight, or constriction about the thorax. Thus, disordered respiration or cough occurred in the cases, LIEUTAUD, obs. 405, 418,(b) 430, 772, 793, 798, 804, 814, 824. MORGAGNI, epist. xvii. 17, 23. xviii. 30, 34. xxvi. 21. lvii. 10. lxiv. 12. Palpitation, or vehement action of the heart, in LIEUTAUD, obs. 405, 430, 435, 443, 772, 793, 798. MORGAGNI, epist. xviii. 30. lxiv. 12. Pain, weight, or constriction in some part of the thorax; LIEUTAUD, 443, 793, 798, 814. HARVEY, pag. 127. MORGAGNI, epist. xvii. 17, 23. lvii. 10. From this statement it appears, that in sixteen of the twenty cases, there was dyspnœa or cough; in nine, palpitation; and in seven, pain or constriction; and that one or other of these disorders existed either singly, or variously combined with the others, in all the cases, but that in MORGAGNI, epist. xxv. 10.

But

But though these were the usual disorders accompanying dilatation of the aorta, that state was sometimes attended with Syncope, as in the instances, LIEUTAUD, obs. 798, 814. MORGAGNI, epist. xvii. 17. xxv. 10. xxvi. 21. lvii. 10.(*k*) The Syncope was combined with palpitation in one case only, LIEUTAUD, 798.

In the greater number of these examples, there were, conjoined with dilatation of the aorta, other kinds of mal-organization; the principal of which were, dilatation or enlargement of the heart, and induration or ossification of the aorta. It seems, indeed, that this artery is seldom dilated without a disposition to a cartilaginous or ossified state. From this coincidence of disorders, as I have formerly observed, great difficulties arise as to the operation of the predisposing causes. There are, however, a few cases with so little of disease, except of the aorta, as to admit of our forming some tolerably accurate judgment of the consequences of that state. These cases are, LIEUTAUD, obs. 793, 798, 804, 814, 824. MORGAGNI, epist. xvii. 17. xxv. 10. lvii. 10: and as all of these patients, but three, had Syncope, of which only one other example is to be found

(*k*) The cases, LIEUTAUD, obs. 798, and MORGAGNI, epist. xvii. 17. xxvi. 21. and lvii. 10. ought to have been arranged among the instances of Syncope above, page 71, &c.

among

among the more complicated cases of dilated aorta above-quoted, I think it highly probable that this state affords some predisposition to the Syncope.

With regard to the Syncope Anginosa in particular, we have already seen that the aorta was found dilated in six of the cases to which I have referred. In that of Mr. M., indeed, there was very little vestige of any other disease, except undue fatness of the heart added to ossification of the coronary arteries.

But in whatever degree this condition of the aorta, by retarding the general circulation of the blood, may tend to produce the Syncope Anginosa, it is certainly not essential to that effect; for in Dr. FOTHERGILL's patient, dissected by Mr. HUNTER, the aorta was in the natural state. In reality, in this patient, not only dilatation of the aorta, but inordinate fatness of the heart, and every other material deviation from the healthy condition of the parts, was wanting, except ossified coronaries, and such a paleness of the heart, as one would naturally expect from the impervious state of those vessels; and yet this case was an undoubted example of the disease in question. Hence we cannot reasonably deny, that ossification of the coronary arteries is of itself capable of producing the whole predisposition which is necessary for the Syncope Anginosa.

As

As one great mark of distinction between this variety of Syncope Cardiaca, and that which I have called Palpitans, is the want of palpitation in the former, so the Syncope Anginosa is distinguishable from the Occasionalis by being preceded by the remarkable stricture, pain, or anxiety about the heart, which we have before described. Mr. Home attributes this pain to the pressure of the nerves of the heart against the rigid coronaries, during the paroxysm. This explanation may be in part just; but that, in these cases, there is a spasm of the heart, is, I think, far from probable. It is scarcely credible, that a cause, producing a deficiency of that power which is the source of contractility, should occasion excessive contraction. In fact, no disposition to contraction of the heart, beyond what is common in the healthy state, is perceiveable in this disease. It is more probable from the symptoms, and from the operation of the predisposing and exciting causes, that the phænomena arise from such an accumulation of blood in the heart and large vessels, as the muscular force of the heart is not sufficient wholly to overcome. While the blood is driven forwards to the heart by the other circulating powers with the common velocity, or perhaps, in consequence of muscular exertion, with a momentum greater than usual, the heart itself, loaded beyond its strength, contracts

tracts more and more feebly, and at length entirely ceases to beat. During this process, the blood, retarded in the cavities of the heart and lungs, causes the same sort of anxiety as that which occurs from long holding the breath; and it is, probably, this retardation, which, in addition to the pressure of the indurated coronaries, produces the intolerable constriction or pain, and the frequent disposition to sighing, which are so conspicuous in the Syncope Anginosa. This account very exactly agrees with the excellent description of Dr. BLACK's patient, who calls the sensation in his breast, an "intolerable sense of anguish at "the heart, resembling that which is felt by a "person exhausted and ready to faint from run-"ning;(*l*)" and it well enough explains how in the purest cases of Syncope Anginosa, as in that of MORGAGNI and others above-mentioned, the sufferers may mistake a disposition to frequent inspiration for difficulty of breathing. Mr. HUNTER seemed to have been sensible of some such ambiguity; for Mr. HOME speaks of his having suffered a "feel of oppression in breathing, "although the action of breathing was attended "with no real difficulty."(*m*)

The effect of pressure on the carotid arteries serves strongly to confirm the theory which I have

(*l*) Med. Mem. vol. iv. page 263.
(*m*) Life of HUNTER, page li.

here

here suggested. If one of them be strongly compressed, some degree of anxiety, similar to that which arises from holding the breath, is usually felt about the chest. This anxiety is proportioned to the degree of compression, and the momentum of the blood in the carotids. It is therefore greatest, when the pressure is made on both carotids at once; and when they are at the same time dilated, by previous strong beating of the heart from exercise, mental agitation, or any similar cause; or from those powers which produce coldness of the lower extremities; of which latter kind, exclusively of some unknown causes, are uneasy distension of the stomach or colon by food, excrement, or flatus. The patient strives to relieve the anxiety, just as after having long ceased to inspire, by quick and deep inspiration. During the usually-slow impulse of blood through the carotids, and the pressure of only one of these arteries, this expedient succeeds tolerably well; but in the other case which I have stated, of excessive impulse of blood, and strong compression of both carotids, the patient obtains only temporary relief from sighing. His heart, in general, soon begins to beat more slowly; and, at length, he feels threatenings of actual Syncope. These painful effects of local accumulation are, however, in a great measure obviated, if the general circulation

tion be permanently reduced by the pressure to its natural state. This reduction sometimes occurs; and it is apposite to my present purpose to remark, that when it does so, it is often clearly perceived by the patient to be owing to a sudden increase of motion in the alimentary canal, in consequence of which some oppressive contents are felt to change their place; immediately after which, the feet begin to tingle and glow, the flushing of the face ceases, the suffering state of the head is relieved, the pulsation of the carotids is softened, and the action of the heart permanently diminished. In specifying these facts, relative to arterial compression, I anticipate a subject, which, hereafter, I may have occasion to discuss at large; but as they throw great light on the disease which is the subject of our present enquiry, by extending our knowledge of the phænomena connected with accumulation of blood in the larger vessels, I could not avoid slightly mentioning them here.

With regard to the anxiety accompanying this accumulation or retardation of blood, it is evident that the blood, thus retained, acts, not merely by mechanical distention, but by not having undergone, from the influence of the air, that change, which renders it a fit stimulus for the muscular fibres of the heart. It is, probably, in order to promote this necessary chemical change in the blood,

blood, and thus restore the due action of the heart, that the patient so frequently makes deep inspirations. We see, however, from the facts which I have related, on the subject of compression of the carotids, that these inspirations are not sufficient to remove the anxiety about the heart, as long as the blood is, to a certain degree, accumulated in it by any mechanical cause.

Why, in the case of Mr. M., the pain in the breast should have subsided for some time previously to its final aggravation, while scarcely any pulse was to be felt in the radial arteries; and, on the contrary, why it should have continued in Mr. S., during the whole period between the two exacerbations, the pulse at the same time being tolerably good; I do not presume to determine. Perhaps these circumstances may depend on the different degrees of local congestion of the blood, relatively to its general retardation. Thus, probably, in Mr. M., the heart might, during a short time, have contracted, so as to expell the superabundant blood, but so slowly and weakly as not to dilate the radial arteries;(*n*) while in Mr. S.,

(*n*) It is astonishing how long, in diseases of the large vessels, the pulse may be almost totally wanting in the radial arteries, and yet no fatal consequences arise. Two years ago I saw this happen for 16 days, in the case of a gentleman subject to such attacks; who then recovered his pulse, and I believe is now living. I say almost totally wanting; for it was with great difficulty that I was ever able to feel it beat during the whole of that period; though there must have been some circulation, as the hands were tolerably warm.

the distention from accumulation might continue to recur, so as to occasion great pain, and yet, for a considerable time, the heart perform its systole with sufficient vigour to carry on the circulation, in a certain degree, through the rest of the system.

This may perhaps explain why in some instances, as in that of Mr. S., the ventricles and aorta continued full of blood, while in others, as perhaps in that of Mr. HUNTER's first patient, the left ventricle was said to be as empty as if it had been washed. The same emptiness of blood has been observed in the hearts of persons dying of common Syncope, notwithstanding extreme weakness of the parietes has been demonstrated by the dissection. Thus, in the case by DENYS, LIEUTAUD, lib. ii. obs. 40, the heart was very large, soft, and corrugated, and contained not a drop of blood; and in that of MORGAGNI, epist. xlviii. 44, there was scarcely any blood in the auricles, or right ventricle, and none in the left ventricle, although the heart was flaccid beyond expression. "Cor, supra quam dici possit, flac-" cidum, nihil fere sanguinis in auriculis, dexte-" roque ventriculo, nihil autem prorsus in sinistro " continebat." The same coincidence was found in Dr. JOHNSTONE's patient, who, the day after his death, was opened by Mr. GUNTER, and "whose " heart was quite empty," notwithstanding it was

" so

" so putrid, as to admit Mr. GUNTER's fingers " pass through it with very little pressure."(o) What was the state of fullness in the heart of Mr. M., cannot be determined, for the reason already assigned. On all these occasions, the difficulty is certainly much increased by the fluidity of the blood, which we have marked as generally occurring in the Syncope Anginosa, and which renders it apt to escape through every opening, after the valves are relaxed by death; so that the quantity of blood in the cavities of the heart and aorta cannot be ascertained, unless either these parts are opened in situ, or the heart and lungs are taken out of the body, effectual ligatures having been first made on the aorta and venæ cavæ. This want of coagulation in the blood, which is not uncommon in persons dying suddenly, is probably the effect of the circumstances accompanying death, and has no influence as a cause; for the blood drawn from the arm of Mr. S., only eight hours before his death, and subsequently to an exacerbation, which had nearly proved fatal, coagulated very readily, and in no respect differed in appearance from that which is often seen, when taken from persons in moderately good health.

I have thus endeavoured to prove, that the chief circumstances of the pure Syncope Anginosa, de-

(o) Med. Mem. vol. i. page 380.

pend

pend on accumulation or retardation of blood in the cavities of the heart, and the neighbouring large vessels. This opinion is farther confirmed by what has been already stated, that the symptoms are occasionally relieved by the erect posture, and by eructations.

It is easy to understand, that the first of these means may operate by straightening the aorta, and by increasing the capacity of the thorax; in consequence of which, all undue resistance to the free evacuation of the left ventricle is, so far, removed.

Of the influence of eructations in mitigating pains of the thorax, produced by mal-organization of the large vessels, several examples are to be found in MORGAGNI; who remarks, that such diseases have been, on that account, by the vulgar, and even by physicians, falsely supposed to originate from flatulency only. See that author, de Sed. et Caus. epist. xvii. 16. xviii. 17. xxvi. 11. In these three cases there was great dilatation of the aorta, which would probably be much incommoded by the pressure of a stomach distended with wind. Whether the same inconvenience be felt in any other cases of the Syncope Anginosa, besides those which happen to be thus complicated, I know not. Mr. HUNTER, Dr. JOHNSTONE'S patient, Dr. FOTHERGILL'S first patient, Mr. BELLAMY, and Mr. S., were all

much affected with flatulency; and the pain attending the paroxysms in the three last was more or less relieved by eructation; but no dilatation of the aorta is mentioned in the second, third, or fourth of these cases. That the motion of the heart itself may be much affected by distention of the alimentary canal, I have already remarked, and can confirm by the following fact. A middle-aged man, subject to indigestion, and long labouring under great mental distress, was exposed to a sudden increase of the afflicting cause. Soon afterwards his pulse began to intermit, and continued to do so during several days, with occasional tendency to fainting, but without dyspnœa, pain, cough, or any other disorder of the thorax. He clearly perceived this symptom to arise from aggravation of the dyspepsia; and was always relieved by purgatives and carminatives. The complaint gradually receded, and he remained several years in good health, able to take the strongest exercise, without the smallest affection of the heart. At length, another serious, and long-continued cause of anxiety occurred. The intermission in his pulse now returned, but again, evidently, from torpor of the alimentary canal. It lasted more or less during two years, when it subsided, as the digestion improved; and the patient is now once more free from complaint. From this, and many other

other similar cases, it may be easily understood, how flatulency, by contributing to impair the action of a heart already weakened by disease, may impede the free evacuation of blood from its cavities, and thus aggravate, or even occasionally produce, paroxysms of the Syncope Anginosa.

This disorder has been sometimes found to occur in cases of patients subject to the gout; and I think there is good evidence to prove that its paroxysms have been prevented by fits of the latter disorder in the extremities. We cannot, however, from thence infer, either that the Syncope Anginosa is a modification of the gout, or that it can exist without organic disease of the heart. All which, in the present state of our knowledge, we have a right to conclude, is, either that the gout may produce mal-conformation of the heart, or else, that distant local inflammation may abstract one or more of the remote causes which concur with mal-conformation in producing the disease.

As the paroxysms of the Syncope Anginosa consist in a certain degree of quiescence of the heart, we can easily conceive how the irritability of that organ may, in consequence, often return, so as to admit of its action being restored. Thus many paroxysms may be excited, and tolerable health succeed, previously to the last and fatal attack.

It

It would be an object, valuable in a more important view than that of mere philosophical curiosity, could we discover the cause of that ossification, which seems to produce this disease and so many others of a dangerous kind. The chemical nature of the substance itself has not, so far as I know, been accurately examined. It is certain, however, that hard concretions have been formed in various solid parts of the body. Thus, in the joints they occasion enlargement, or anchylosis; and in the neighbourhood of the tendons, or capsular ligaments, they appear in form of what are called chalk-stones. These latter concretions are, originally, more or less soft; and they evidently harden from the absorption of the intermingled fluid. They seem to be secreted from the vessels of parts suffering a condition like that of inflammation. It is not easy to decide what relation they bear to the osseous crusts within the muscular coat of arteries. The case quoted above from CRELL proves, that the latter are capable of being formed from a matter deposited in a similar state of fluidity; and HALLER is of opinion, that this is the common process of osseous degeneration in general, and of that of the arteries in particular. "This," says he, "is the matter "which is deposited in the cellular substance of "every part of the human body. It appears to

"me

" me to be at first yellow and pultaceous. Being " effused into some part of the cellular substance, " it stagnates there, and afterwards, the aqueous " part having been removed, it becomes first ash- " coloured, then tough and like cartilage, and " lastly, similar to bone." " Hæc materies est " quæ per universum corpus humanum in spatia " cellulosa deponitur. Prima mihi facies ejus succi " videtur flava esse, pultacea. Is succus in cellu- " losam telam aliquam effusus stagnat, et porro " abacta parte aquea, sensim cinereus, inde scissilis " et similis cartilaginis, denique osseæ naturæ non " dissimilis."(*k*) And again, " There is depo- " sited in the internal cellular substance of the " artery a pultaceous and callous matter, which, " by degrees, changes into scales, at first cartila- " ginous, and ultimately osseous and brittle." " Deponitur in cellulosam telam arteriæ intimam " materies pultacea, callosa; et sensim abit in squa- " mas cartilagineas, demum osseas et fragiles."(*l*)

A remarkable fact on this subject, is mentioned by BOERHAAVE. He says, that ossification of the aorta, (probably of the semilunar valves) in animals of the deer kind, is always found in those which have been accustomed to running, and have been killed after a long chace; but never in those

(*k*) Element. Physiol. tom. viii. pars II. lib. xxx. sec. II. §. vii.
(l) Ibid. §. viii.

which

which have led a quiet life in menageries. "In-
"signe hujus rei documentum est in osse de corde
"cervi, sive principio osseo magnæ arteriæ, quod
"in hoc animalium genere, et longævissimo, et
"agilissimo, et mobilissimo, post diuturnam fu-
"gam occiso, perpetuo reperitur. Fuerunt me-
"dici, qui in cervis hoc os quæsiverunt captivis,
"quos principes in vivariis suis aluerant; sed
"frustra fuerunt. Unice enim in iis animalibus
"reperitur, quæ frequente cursu corpus exer-
"cent."(*m*) This is a very curious fact, if it be true. MORGAGNI certainly receives it as such;(*n*) and HALLER seems to acquiesce in the same opinion, when he says, that in the aorta it is only the interior part which ossifies, while the exterior, which is more remote from the impulse of the blood, remains soft. "Sola autem ea interior arte-
"riæ crusta ossescit, dum exterior, et a pulsatione
"remotior, aortæ pars mollis est."† At the same time, this great physiologist dissents from the theory of BOERHAAVE, that the induration is produced by the friction of the blood, which destroys the gluten and proper fibres of the arterial coats, and leaves the earthy matter uncombined. "Ossa
"ex mero tritu nata, minus et minus admitto, &c."*

(*m*) BOERHAAVE Prælect. in Instit. rei med. cccc lxxviii.
(*n*) De Sed. et Caus. epist. xvii. 24.
(†) Element. Physiol. in loco citato, §. viii.
(*) Ibid.

As

As induration or ossification of the aorta and valves generally attends dilatation of that vessel, and of the heart, it should seem that these two states have some important and necessary relation. Now it is certain that such maladies are most usual in the male sex, and, of them, in those who used violent exercise. MORGAGNI speaks of their frequent occurrence in players on wind instruments;* and in carmen or coachmen, and others who are accustomed to much jolting on horseback;(*o*) and I have clearly observed that hard riders, either in the medical profession, or in hunting, are peculiarly subject to such disorders. Mr. BELL gives two curious cases of morbid dilatation, arising, probably, from excessive bodily exertion. In one of these, the efforts were continued only six hours, and yet the consequence was a fatal aneurysm of the aorta.(*p*) These facts render it probable, that excessive momentum of the blood is capable of producing, in the arteries, dilatation and various degrees of induration.

But though an artery may be made to dilate by the mere mechanical impulse of blood within its cavity, the change which takes place in the structure of its parietes, must arise from some affection of the vessels with which its coats are fur-

(*) De Sed. et Caus. epist. xviii. 24.
(*o*) Idem. epist. xvii. 18.
(*p*) Anatomy, vol. ii. pages 237 and 238.

nished.

nished. From the quotations which I have made above, it appears, that this was the opinion of HALLER. Dr. JENNER also thought so, when, in the case of Mr. BELLAMY, he saw a hard tubular crust, not unlike coagulated lymph, and which Mr. PAYTHERUS compares to the secretion attached to the trachea in the croup, lining the cavity of coronary arteries degenerated into a sort of cartilage. From considering this case, one can have little doubt, that the same operation which changed the state of the arterial coats, produced the extravasation incrusting their sides.

The nature of the operation in question may be farther discovered, by our recollecting, that the first attack of disease about the heart, in the patient alluded to, was occasioned by an excess in drinking; and observation will convince us, that the violent stimulus of ardent spirits is frequently a concurring, if not a sole, cause of such disorders. In this very patient, also, there was an appearance about the pericardium and aorta, which was thought to prove the existence of former inflammation. A similar conclusion was formed from an exsudation of coagulated lymph in the heart of Mr. HUNTER, who, at different periods, had great soreness in the course of the arteries. His dissection exhibited several of those vessels in a state of ossification. My patient Mr.

M.,

M. had for many years, in various parts of the body, an extraordinary succession of pains, aggravated by warmth, and accompanied with some increase of external heat, and with a sense of great heat in the parts affected. These pains were relieved by sweating and by bleeding. Another patient, whom I judged to labour under the Syncope Anginosa, was also affected with wandering pains, which were extremely troublesome. The outer surface of the arch of the aorta, in Mr. S., had an appearance of superabundant blood in its vessels. In many instances I have been able to trace back chronic disorders, which, by the symptoms, have appeared to be in the heart and large vessels, to inflammatory diathesis, shewing itself in the form either of common acute rheumatism, arising from sudden change of temperature, or of that species of acute rheumatism caused by full living, which constitutes nine out of ten of those cases, which are unhappily mistaken for gout.(q) Such chronic disorders are often characterised by inequality of the pulse, with palpitation of the heart and dyspnœa, much aggravated by exercise—symptoms, which, when unacompanied with others, generally arise from indurated semilunar valves of the aorta. I had scarcely written this

(q) This is, probably, one reason why Angina Pectoris is so often supposed to be a modification of gout. See above, p. 131.

last

last sentence, when I received the appendix to Dr. BAILLIE's Morbid Anatomy, in which he mentions, on the authority of Dr. PITCAIRN, undue enlargement of the heart as arising from rheumatism.(r)

I have thrown together these hints on the origin of morbid ossification, more with a view to excite attention to an important but neglected subject of pathology, than with the hope of being able to establish, from my own observation, any decisive principles. In the mean time, it seems probable that undue congestion, or impulse of blood in the vasa vasorum, may, according to its different modifications, produce in the coats of the arteries various states of inflammation, suppuration, ab-

(r) Dr. BAILLIE attributes some power of producing Angina Pectoris to indurated valves of the heart and large arteries. It seems to me, however, that the peculiar effects of this læsion are of a very different kind, and such as I have described in the text. Of the twelve dissections to which I have referred, six only had induration of the valves, and two of them in a very slight degree. The remaining six patients, which were the first of Dr. FOTHERGILL, and those of Drs. HEBERDEN, PERCIVAL, JAMES JOHNSTONE, BLACK, and Mr. PAYTHERUS, were perfectly free from all disease whatever of the valves.

I cannot say that such a defect may not occasionally co-operate; but it follows, from this statement, that it cannot be essential to the Syncope Anginosa.

Had I, previously to the printing of the preceding sheets of this inquiry, seen Dr. BAILLIE's valuable appendix, or the Medical and Chirurgical Transactions, to which it refers, I should not, on the authority of HALLER, have denied, that the pericardium is sometimes originally wanting.

sorption,

sorption, ossification, or conversion into what is called cartilage, or, perhaps, more properly schirrus; together with a corresponding state either of rigidity and contraction on one hand, or of weakness and disposition to dilatation on the other.

CHAP. V.

RECAPITULATION.

IT may be advantageous to place under one view the general conclusions which have been drawn from the preceding enquiries into the nature and causes of the Angina Pectoris. From these it appears,

I. That it is a case of Syncope, preceded by a notable anxiety or pain in the region of the heart.

II. That so far as the most accurate observation has hitherto gone, the tendency to this disorder arises from mal-organization in the heart itself; which mal-organization seems to be chiefly induration of the coronary arteries.

III. That this mal-organization acts by diminishing the energy of the heart.*

IV. That the chief symptoms of the disease are the effect of blood retarded and accumulated in the cavities of the heart and neighbouring large vessels.

* By the energy of the heart I mean not merely the readiness, but also the degree of irritability or excitability.

V. That

V. That the causes exciting the paroxysms are those which produce this accumulation;

1. By mechanical pressure; or

2. By stimulating in an excessive degree the circulating system; in consequence of which, the heart, weakened by the mal-organization, readily sinks into a state of quiescence, while the blood continues to advance in the veins. Whence it follows, that, the power of the heart being given, the disposition to paroxysms will be directly as the momentum of the blood in the veins; and that, on the contrary, the momentum of the blood in the veins being given, the disposition to paroxysms will be inversely as the power of the heart.

VI. That, after a certain approach towards quiescence, the heart may recover its irritability, so as again to carry on the circulation in a more or less perfect degree, from the operation of the usual stimuli; but

VII. That death may at length ensue from a remediless degree of inirritability in the heart.

CHAP. VI.

On some Accidental Symptoms attending the Syncope Anginosa.

AS induration of the coronary arteries probably depends on causes which may alike operate on every other part of the heart and large vessels, there is no reason why it may not be accompanied with any of those organic injuries which have been before described. And if we can suppose that the coronaries may be so obstructed as to intercept the blood, which should be the proper support of the muscular fibres of the heart, that organ must become thin and flaccid, and unequal to the task of circulation. Hence the blood will stagnate in its cavities, and in the vessels of the lungs. In all these cases, there may follow serous effusion into the pericardium or thorax. In this way, the Syncope Anginosa may come to be complicated with symptoms unessential to it; as dyspnœa, cough, expectoration of various kinds, uneasiness in lying on one side, or at all in the horizontal posture, and constant irregularities of the pulse; several of which have been found to exist, in the cases to which I have referred in this treatise.

Nor

Nor do I deny, that, from the coincidence of one or more of the circumstances of mal-organization above-specified, even palpitation of the heart may be found to occur in cases in which the coronaries are ossified. It may, however, be questioned, a priori, whether the vehement action of the heart, which characterizes palpitation, would admit of the accumulation of blood in the cavities of the heart, which, I have endeavoured to prove, constitutes the remarkable anxiety of the breast in the Syncope Anginosa. If this doubt be well founded, and we are to take the distinctions of disease from the symptoms, and not the remote causes, such a case of Syncope as I have described, preceded by palpitation, and unaccompanied with any notable pain across the thorax, would be the Syncope Palpitans, and not Anginosa, notwithstanding the ossification of the coronary arteries. This would be an additional example of the existence of such an organic læsion, without the symptoms of Syncope Anginosa.

It is scarcely necessary to add, that the disease before us cannot be expected to exempt a patient from other complaints, totally unconnected with it. Thus Mr. HUNTER had many symptoms, which, probably, arose from an affection of the brain.

There is a symptom which has occurred so frequently in the Syncope Anginosa, as to have much

much occupied the attention of physicians, some of whom have considered it as a diagnostic of that disease; I mean the pain extending from the affected part of the breast into the left arm. The precise seat of this sensation does not seem capable of being well ascertained even by patients themselves, who however agree in referring it to some part above the elbow. It neither constantly occurs in the Syncope Anginosa, nor is peculiar to that disorder; being often found to accompany violent palpitation of the heart, hydrothorax, and dilatation of the aorta. There is, in MORGAGNI, epist. xxiv. 34. a curious case of violent pain in the right arm, from palpitation, without much organic disease; and I have known pains of one or both arms, in a great number of instances of disordered action of the heart or large vessels, where there was nothing like Angina Pectoris. In other examples of similar diseases, patients complain rather of a numbness than a pain of the arms. In MORGAGNI's case of Syncope Anginosa quoted above, the patient is said to have been affected with a numbness of the left arm, accompanying the other symptoms which were produced by bodily exertions; and MORGAGNI explains this numbness by supposing it owing to the pressure of the blood in the arch of the aorta on the nerves accompanying the origin of the

left

left subclavian artery. In reality, pain and numbness seem to be only different degrees of the same affection; and as both chiefly occur from those causes which quicken the circulation, they probably arise from increased impetus of the blood. But whether the pain or numbness always exists only in that part against which the undue impetus is made, or is propagated along the nerve or muscular fibres to some distant part, I am unable to decide. In Mr. S. the uneasiness was felt in both arms, and even to the wrists; which corresponds with what occurred in the case of Mr. BELLAMY.

CHAP. VII.

On the Termination of the Syncope Anginosa.

IF the opinion be well founded, which I have endeavoured to support in the preceding pages, that the Syncope Anginosa is primarily owing to induration of the coronary arteries, we have no reason to expect that it will ever suffer a radical cure. But as we have also rendered it probable, that this mal-organization may subsist, without producing violent symptoms, till it meets with the coincidence of other causes, we may, perhaps, in some cases, afford relief by removing or suspending the operation of those causes. And, should that relief continue so long as to allow of the patient's dying of some other disease, the Syncope Anginosa may, in such a case, according to common language, be justly enough said to have been cured. Some examples of this sort have been observed, more especially in earlier life; and I have known one instance of a patient, upwards of sixty years old, violently affected with the disorder in question, in whom, for several years past,

it

it has ceased to occur. Upon the whole, the prognostic must be peculiarly unfavourable with regard to old persons, and all in whom we cannot discover the concurrence of any of the causes of predisposition explained above; or in whom the paroxysms come on without exercise, passions of the mind, or any other obvious exciting cause.

CHAP. VIII.

On the Prevention, Cure, or Relief, of the Syncope Anginosa.

IN a former part of this Essay I have stated some reasons, which seem to shew that ossification of the arteries depends on increased impetus of the blood, more especially when amounting to inflammation. In this view it may be supposed that temperance in eating and drinking, abstinence from violent bodily exertions, and an attention to all the well-known means of obviating inflammatory diathesis, may have considerable effect in preventing that organic læsion of the coronary arteries, which constitutes the Syncope Anginosa.

It is sufficient for me to have mentioned these means of prevention, little expecting that a knowledge of them will induce mankind to guard against a rare and remote effect, while they are not deterred from habits of intemperance by those fevers, dropsies, and other diseases, which they every day see to be their equally-fatal and more immediate consequences.

But though organic diseases of the heart may be produced by violent exertions, it has been thought

thought that they are counteracted by moderate bodily exercise. Thus SENAC observes, that they are rarely to be met with in foot-soldiers. It is probable, however, that these men combine with their uniform exercise more strict temperance as to food and drink, than most other persons who live by bodily labour; to which it must be added, that the Syncope Anginosa is commonly the fate of men advanced in years, while soldiers rarely continue their occupation much beyond the middle period of life. Notwithstanding the objections which may be adduced against this argument of SENAC, it appears to me that the principle is well founded; and that nothing guards more certainly against irregular action of the heart than uniform and gentle bodily exertion.

Let us now suppose a person to be actually subject to attacks of this malady.

On this head I must repeat with regret, how little benefit patients have usually derived from the measures which have been employed for their relief. That relief, however, must be attempted, and has sometimes been obtained. Let us see what useful conclusions can be drawn on this subject from reasoning or experience.

I have already expatiated on those causes, the coincidence of which is generally necessary for the production of paroxysms. Amongst these

the

the principal are the following; and in their abstraction will consist the chief means of preventing the disease.

A. General fullness of habit may be removed

1st. By regimen; and,

2dly. By certain medical measures.

Under the head of regimen, we may advert, in the first place,

a. To diet, which should be as little nutritious and stimulating as the digestion will admit. Whatever degree of fatness a granivorous or graminivorous animal may acquire from the use of vegetable aliment, it is evident that this food has less effect in fattening carnivorous animals, than a diet partly or chiefly consisting of flesh. This is well known to those who feed pigs; and even birds of all kinds are most speedily fattened by having flesh or animal fat mixed with their farinaceous food. We should, therefore, attempt to reduce fullness of habit, by diminishing, or wholly abstracting, flesh meats; and this restriction, by lessening the variety of the patient's food, will also, at the same time, probably diminish his disposition to err in point of quantity. This rule of diet will naturally require some limitation in cases attended with great weakness of digestion, in which much general disorder, and more especially that flatulency, which considerably aggravates the disease, may arise

arise from the total prohibition of animal food. In such cases, it will be prudent for the patient to trust to his own experience of the effect of different kinds of aliment on his stomach and bowels; and to eat animal food no farther than his immediate ease requires, while the vegetables, which he chooses, are chiefly, or wholly, those of the farinaceous kind. Sugar in every form, and animal and vegetable fats, being with difficulty digested, and at the same time peculiarly nutritious, ought to be eaten very sparingly. In all cases, the food should be taken slowly; not only for the sake of avoiding repletion, but because nothing seems to dispose more to paroxysms than a full stomach. With this view, it is proper that broths, chocolate, milk, and other slops, should be drank with great reserve, and that large draughts of liquor should be carefully shunned. The thicker malt liquors should in all instances be avoided; and in order to guard against uneasy distention of the stomach, it may be prudent for the patient to abstain from liquors abounding with carbonic acid, such as bottled beer, cyder, perry, and others of a similar kind.* The best liquor for common drink is water, either alone, or slightly impregnated with some aromatic or essential oil, as of lemon-peel or

* The consideration of diet, as it respects digestion, does not strictly belong to this place; but it is partly admitted here in order to avoid useless repetition.

ginger;

ginger; or mixed with wine in such a proportion, as to obtain the strength of small beer; or lastly, small beer itself, where it produces no wind in the stomach or bowels. The use of wine, and other cordials, will be considered hereafter.

b. Next to abstinence in diet, exercise appears to be the most simple and natural method of reducing a plethoric habit; to which we may add, that it is one of the most powerful means of invigorating the general constitution. It does not appear that these effects arise in any conspicuous degree from gestation, even on horseback; or from any motion, except that in which the body is exercised by means of its own muscles. But here an unfortunate objection arises. We find, that scarcely any thing excites the paroxysms of the disease so readily as bodily exercise. What then is to be done? It should seem, that as the patient for a considerable time generally knows tolerably well by experience what exercise he can use without bringing on attacks, he ought uniformly to employ it within those limits; avoiding, at the same time, walking up hill, against the wind, and as much as possible up stairs; and always choosing a gentle pace. With this exercise he may combine slow riding on horseback.

2dly. The medical means of removing general fullness, are bleeding, purging, and issues.

a. There

a. There can not be any method of diminishing fullness so certain and immediate as blood-letting. One would indeed think it so obvious, as not to admit of being contraverted. It has been asserted, however, that, on the contrary, it increases plethora; and the proof is, that animals are most quickly fattened for the butcher by repeated bleedings. I will allow, that the degree of fatness affords a presumption of the comparative quantity of blood in the vessels; but this being granted, nothing is more easy than to shew that the former part of the argument is fallacious. The fact is, that cattle, by full feeding, especially under cover, become hot and feverish, fall off from their appetites, and consequently cease to gain flesh. Bleeding diminishes this fever, and restores their appetites; and they then begin to fatten anew. It appears, then, that this operation acts by furnishing the means of nutrition to animals which want them; but it does not follow, that it can have any influence on those in which the appetite and digestion are not defective. Or if in any instance plethora should produce in a man the same loss of appetite and consequent defect of nutrition as in the inferior animals, shall we compare the case of a rational being with that of a sheep or an ox, which, thoughtless of remote consequences, spend their lives in eating and sleep?

It

It is surely in the power of every man, and in so dreadful a disease it will probably be his inclination, to resist his appetite, and so to regulate his diet, that no evil shall result either from its quantity or quality. Besides, it will not be denied, that by the lancet blood may be abstracted much faster than it can be supplied by nutrition; so that, under proper regulations, blood-letting must prove an effectual means of removing plethora. It must, however, be employed with great caution; care being taken, that while we attempt to remove the excessive load, or the undue stimulus, we leave a degree of stimulus sufficient for the purposes of healthy circulation. Blood should therefore be taken in small quantities, not greater, for example, than three or four ounces at once; and the evacuation should not be repeated till after an interval of some days. During the operation the patient ought always to be placed in the horizontal posture; and if, notwithstanding this precaution, the circulation should be considerably disordered, it may be proper to prefer, on any subsequent occasion, the application of leeches, or of cupping with scarification.

With regard to the actual effect of blood-letting in this disease, physicians much differ; and we are not at present in possession of facts sufficient to enable us to reconcile this difference. Dr.

HEBERDEN,

HEBERDEN, on one hand, asserts, that bleeding appeared to him to do no good; while, on the other hand, Dr. WALL as positively affirms, that his patient "was always better for a day or two "after bleeding."* Until our facts are more numerous, nothing remains for us but to decide from collateral circumstances as to the expediency of this measure in any individual case.

b. Purging appears to me to disorder the circulation in so great a degree, that I do not think it can be safely employed, for the purpose of removing plethora, in the case of Syncope Anginosa. Its use in other views will hereafter be considered.

c. Issues have long been esteemed very powerful means of obviating fullness; and, from the cases of Drs. SMITH and MACBRIDE, of Dublin, practitioners have expected some specific advantages from their use in the Syncope Anginosa. I have already shewn that those cases are not genuine examples of this disease; and issues were employed without success in the patients of Mr. PAYTHERUS and Dr. BLACK. Nevertheless, in cases where there may be reason to suspect plethora, it would perhaps be wrong to omit this remedy, more especially if we are apprehensive of ill effects from the more speedy evacuation of blood-letting.

* Med. Trans. vol. iii. p. 15.

There

There is little doubt that these various means, properly administered, will succeed in removing general plethora; and if the Syncope Anginosa be aggravated by preternatural fatness of the heart, that disease may probably be at the same time diminished by these measures.

B. Next to general fullness, it is necessary to shun those causes which more immediately produce a topical accumulation of blood in the large vessels and cavities of the heart; such as

1st. Muscular exertion. Of this, much has already been said; and as it appears under various modifications to be a very powerful cause of exciting paroxysms, it ought certainly to be employed with great caution. On all occasions, walking up hill, up stairs, or against the wind, quick or long-continued walking, even on plain ground, loud talking, violent laughter, and every strong effort, should as much as possible be avoided.

2dly. Want of circulation in the extremities and skin, evinced by coldness of those parts. It is easy to shew, that during this state the blood is preternaturally accumulated in the deeper-seated vessels. It ought therefore to be guarded against by proper clothing; among which may be enumerated flannel or calico, worn next the skin, and shoes of due thickness, so as to keep the whole body dry and warm.

3dly. Pressure

3dly. Pressure on the large arteries, from distention of the stomach or bowels by food or wind, or from tight ligatures about the trunk of the body. This observation shews the necessity of eating small meals, composed of such food as the stomach will easily digest. On this subject some hints have already been given above;* and we may here add, that nuts of all kinds, cold vegetables, including sallads and much fruit, and all meats hardened by salt, will probably be injurious. It is peculiarly necessary to observe these precautions before exercise and sleep. Perhaps it might be most safe for the patient to abstain altogether from supper. From the same principle it follows, that costiveness should on no account be permitted. Where there is no specific objection to the use of aloes, that medicine is the best calculated for the purpose in question; and, in many cases, will succeed perfectly well in the small dose of from one to two or three grains taken every night at bed-time. From such doses the patient rarely suffers any griping pains, but has a kind of natural, healthy evacuation. Where considerable inconveniences arise from the use of aloes thus regulated, the neutral salts pretty largely diluted, castor oil, or precipitated sulphur, taken in small doses, will probably answer the same purpose.

* Page 150.

Under

Under this head it may be proper to mention much stooping, and long sitting, which, by incurvating the aorta, and pressing on the femoral arteries, prevent the flow of blood to the extremities, and accumulate it in the heart and larger vessels.

4. The last general occasion of partial accumulation of blood, are those causes, which, stimulating the heart and arteries in a degree relatively excessive, leave the former in a morbid state of quiescence.

a. The fatal effects of anger, and other similar passions of the mind, in the Syncope Anginosa, have been already shewn. In this respect, it is obvious, the patient must minister to himself; and in this country, in which we have reason to thank Providence that there is still some genuine religion, it may be hoped that the sufferer will not be at a loss for sources from which to derive forbearance and consolation.

In the same view it may be prudent to guard against

b. Undue heat; whether of the sun or fire; and

c. The excessive use of all cordials, whether in form of medicine or diet. If, while the heart is properly performing its office, it is by any of these means considerably stimulated as to frequency or force, that excitement will probably leave in it a proportionable degree of inaction.

It

It appears, however, from experience, that some gentle and long-continued stimuli have afforded considerable temporary relief in the Syncope Anginosa. This happened with regard to one of Dr. FOTHERGILL's patients from the Bath waters; and I observed the same effect in the case of Mr. HUNTER; and of another patient, who, though considerably advanced in years, is now wholly, or nearly, free from the disease. In other instances, the good effects of this remedy have not been equally apparent. On the whole, it seems probable that the cases, in which stimulating or tonic medicines are indicated, are those in which the patient is affected with flatulency, and other symptoms of dyspepsia. Accordingly we observe that much temporary benefit is often derived from the evacuation of wind, whether spontaneously, or from the occasional exhibition of stimulants. Whether the cold chalybeate waters, and artificial preparations of iron, as well as other tonics, will prove equally beneficial with the Bath waters in this disease, I know not; but I am disposed to think, that in the intervals of paroxysms, we ought, if possible, to confine the stimulating effects of these medicines to the alimentary canal, without running any risk of exhausting the irritability of the heart. The utmost care should therefore,

therefore be taken by the physician, during such a course of stimulants, to obviate costiveness by suitable remedies, and to preclude that quantity of food, which may be demanded by the increased appetite of the patient.

As it appears that the chief occasional causes of the disease are those which act by excitement, it is probable that wine should be taken sparingly as an article of diet, though it may not be safe entirely to omit it, where it has been habitually drank.

The suspension of symptoms, which some patients have experienced from the gout, may seem to furnish an argument in favour of the more powerful stimuli. Such instances have indeed sometimes, though rarely, occurred; but the fact, though granted, is far from authorising the employment of the means which it is adduced to recommend; while the conclusion from analogy against this practice is so strong, as not to warrant its general application. With this caution respecting the ambiguity of the experiment, we may, in violent cases, employ wine, or perhaps more safely, æther, volatile alkali, or camphor, peppermint-water, and other essential oils, for the purpose of relieving flatulency, and of preventing paroxysms. According to the united testimony of Drs. HEBERDEN, FOTHERGILL, and BLACK, this practice appears to have sometimes for a short time

succeeded

succeeded in diminishing the force of fits, especially those during the night.

The same authors agree that opium, whatever be the theory of its operation, is still more powerful in this respect. For this purpose it may be given once or twice in the twenty-four hours in a suitable dose; and the costiveness, which it is apt to induce, may be prevented or removed by the aperients above-mentioned, or any others adapted to the exigency of the case.

Perhaps the disposition to accumulation of blood about the heart may be in some measure counteracted by those means, which gently stimulate distant parts. The more obvious of these are frictions and rubefacient applications to the lower extremities; to which we may add issues, which perhaps may have some efficacy in this respect, in addition to their powers of depletion before-mentioned. In the view in which I recommend these stimuli, they should be administered so as not to act on the large vessels.

Having endeavoured to state those measures which seem best adapted for the general relief of the patient, let us consider what may be done for the removal or mitigation of the actual paroxysms.

Dr. PERCIVAL tells us, that "nothing afforded "such instantaneous ease during the paroxysms "of this disorder as venæsection and vomiting."*

* Med. Comment. vol. iii. p. 181.

The

The relief obtained by bleeding, in the case of my patient Mr. S., was so strongly marked as not to admit of doubt; and though, on the other hand, Dr. HEBERDEN's last patient died of the Syncope Anginosa, notwithstanding he had been blooded, I think we ought always to try this operation in cases of imminent danger. The extreme weakness of the pulse, and coldness of the skin, certainly do not contra-indicate bleeding. In cases of general or partial plethora, nothing is more common than to see the pulse become fuller from blood-letting. HOFFMAN gives us an instance of "a "lady, of a tall but thin make, who, during her "first pregnancy, complained of oppression of the "breast and difficult respiration, accompanied "with costiveness. In the fifth month, she fell "into frequent faintings, which the surrounding "croud of females attempted to remove by giving "her a variety of spirituous and cordial medi-"cines,† notwithstanding which the disease con-"tinually recurred." HOFFMAN attributed the symptoms to costiveness, flatulency, and fullness of blood (nimiam sanguinis abundantiam;) and he accordingly cured his patient with a glyster, blood-letting, and rhubarb. On this case he remarks, that "the strength and motion of the heart are

† Lypothymias, quibus abigendis circumstans muliercularum cohors multa spirituosa, et vires depressas refocillantia propinabat, &c. Tom. iii. p. 275.

"very

"very frequently suspended, not only from a "scarcity of blood, but also from a redundancy "of that fluid." "Non tantum à defectu san- "guinis et inopiâ, verum etiam à nimiâ ejus re- "dundantiâ, vires cum motu cordis sufflaminantur "sæpissimé."* Some years ago I witnessed a decisive example of this fact, in the case of the late Sir E. W——n, who, for many years, had always suffered violent palpitation of the heart from a certain degree of bodily exertion, especially in walking. These fits of palpitation frequently lasted from five to fourteen days, when they suddenly left him in the evening, and he went to bed in tolerable ease, and readily fell asleep. But thrice in one winter, after as many successive attacks of palpitation, he was suddenly awakened at two o'clock in the morning with such a difficulty of breathing, as threatened immediate suffocation. During this dyspnœa, his pulse was extremely weak, his face and extremities were livid, and bathed in a cold sweat; and he expectorated, with great labour, a thin, serous fluid, slightly tinged with blood. In two such attacks he was bled, with immediate relief. In a third paroxysm of the same kind, a happy opportunity occurred of comparing the effect of this remedy with that of a stimulant taken into the stomach. The apo-

* Ibid.

thecary,

thecary, who had reached the patient before me, while I was occupied in feeling the pulse, took up a cordial mixture which stood on the table, and gave some spoonfuls of it to the patient. In a few seconds the pulse rapidly sunk, so as scarcely to be felt; and the coldness and dyspnœa increased in so remarkable a degree, that we could scarcely flatter ourselves that the patient would live many minutes. The suddenness of this aggravation of symptoms, which for half an hour before had gone on in an even tenor, left no doubt with us that it was owing to the exhibition o the medicine. A vein was now opened, and, as on former occasions, before three ounces of blood had flowed, the just fullness of pulse returned, and the breathing became perfectly natural. It may be proper to add, that in all these attacks the blood was covered with a thick crust of coagulated lymph; and that Sir E. W. survived the last fit two years, and, in the end, died paralytic.

If blood-letting shall on any occasion be judged necessary, the patient should be placed in the horizontal posture, and blood should be taken away from a very small orifice; while, at the same time, the finger of the physician is applied to the pulse, in order to decide on the propriety of continuing, or discontinuing, the flow of blood. If no person of adequate judgment is at hand, it may be right

to restrict the quantity of blood taken away to about three ounces, at any one operation.

In the exhibition of emetics, Dr. PERCIVAL seems to me to stand alone. It is true, that spontaneous vomiting has occurred in some examples of this disease, as in that of Dr. HEBERDEN's last patient, and of my patient Mr. M.; and it frequently attends other cases of Syncope. Where the Syncope arises from dyspepsia, we might reasonably expect some benefit from vomiting; but if the vomiting should be judged to be a mere symptom, one would not readily decide, from reasoning, in favour of this remedy; from which, on the contrary, much evil might, à priori, be apprehended. It remains for future experience to ascertain its value in this disease.

The use of purgatives appears to me less ambiguous, especially where we have reason to suspect any accumulation in the bowels. Of purgatives, the best in this case are, probably, the quickest, as senna, scammony, jalap, or some of the neutral salts; and without waiting for their operation, we should immediately order an active glyster. I have some reason for deciding with confidence, that the most active and convenient form of this remedy is an ounce or more of common salt, dissolved in a large quantity, for example a quart, of water; and thrown into the bowels

bowels by means of the condensing syringe,* now commonly in use among the medical practitioners in this city. This is more effectual, in the generality of cases, than any other glyster which I have ever seen administered.

In cases of such debility and death-like coldness, it is natural to have recourse to cordials of various kinds. I have, however, related the evident mischief arising from their use in the case of Sir E. W.; and in that of my patient Mr. M., the reader has seen that no benefit was derived from the exhibition of four or five ounces of pure brandy. I may add, that I have lately observed death almost immediately follow the little excitement which was produced by wine and brandy, in the last stage of a typhus. On the whole, it seems to me, that, during the paroxysms, stimulants can be safely taken only as far as they may be required to remove flatulency from the stomach; or, at least, that their use should be deferred to that period, when, after the failure of the other means already suggested, the pulse is not at all, or scarcely, to be felt. Perhaps rubefacients, frictions, and external heat to the lower extremities, may be less objectionable, provided their stimulus be supposed

* Made and sold by LAUNDY, Thomas-street, Southwark. It is astonishing that the manufacture of this excellent instrument, so exorbitantly dear, and often so ill executed, should remain in the hands of only one man.

to affect those parts only, to which they are immediately applied.

Of the exhibition of opium, during the paroxysms of this disease, I can find no example in authors.

I have thus endeavoured to ascertain the symptoms, and establish the pathology, of the Syncope Anginosa. It is painful to me, that the most important part, that which respects the cure or relief, should have been so defective; and that the nature of the disorder itself should promise so little success to any future enquirers. It may be hoped, however, that the investigation has not been without its value in a philosophical view; and that he, who, by throwing any light on an obscure subject, has prevented disappointment, and consequent censure or self-accusation, has contributed in some degree to the welfare of mankind.

FINIS.

Cruttwell, Printer, Bath.

ERRATA AND ADDENDA.

PAGE 2, line 5 of the note, for 'Dr. JENNER, of 'Cheltenham,' read, 'Dr. JENNER, of Berkeley in Glocestershire; well known to the public by his ingenious paper on the Cuckoo, and by his original communications on the important subject of the Cow-Pox.'

Page 24, line 21. Insert a comma after the word 'rounded.'

32, line 18. For 'care,' read 'ease.'

38, line 12. For 'mother,' read 'mistress.'

41, line 13. After 'PERCIVAL,' add 'JOHNSTONE.'

62, line 8. On the word 'pleasure,' add, by way of note: 'On my shewing this account to Dr. FALCONER, he favoured me with the following observation:—"This was "true of both the cases, but particularly remarkable in "Mr. HALHED, (father of N. B. HALHED, esq;) who, in "the midst of the most painful paroxysm I ever saw, did, "at my request, make repeatedly several long inspirations "without difficulty, and retained his breath as long, I "think, as I could myself."

Page 67, last line. The word 'ANGINOSA' not being strictly Latin, the name 'SYNCOPE ANGENS,' would, perhaps, be preferable.

Page 80, line 13. For 'LIETAUD,' read 'LIEUTAUD.'

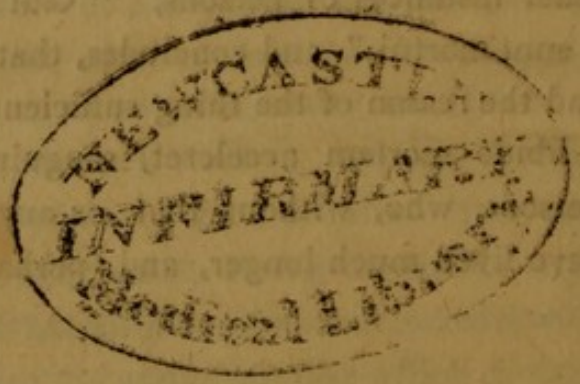
Page

Page 96. At the end of the note add, 'In the asthma, and certain other diseases, there may, perhaps, be some original weakness, or acquired decay, either of the muscular or mechanical structure of the arteries of the part; or some mechanical obstruction to the free return of the blood; as, in the asthma, to its free passage through the heart, and, therefore, through the lungs. In all such instances, the arteries, readily yielding to their contained blood, become unduely distended from a vis à tergo, which, in better constitutions, could not be considered as morbid; and still more distended from that greater impulse, which would be excessive even in the most healthy constitution. These are instances of a primary want of expulsory or contractile power; and cannot be comprehended under Dr. Brown's title of direct debility, which implies a defect of actual contraction from want of stimulus. They are, on the contrary, examples of eventual indirect debility, in which the contractile power fails under an impulse relatively excessive. In many other diseases, as gout, nervous complaints, and most, if not at all, hæmorrhages, the arterial distention is owing either to the same causes, or to what is more precisely the indirect debility of Dr. Brown, derived from previously-inordinate excitement of the affected arteries. It is easy to shew, that the distention exists during the undue impulse or excitement; and that all general stimuli increase the distention by increasing the undue impulse which caused it.'

Page 136, line 6. After the word 'who,' add 'have.'

Page 158, line 19. After the word 'consolation,' add, 'Under this head it may be proper to urge the necessity of the patient's abstinence from a certain indulgence, the effects of which, in diseases of the heart and large vessels, may

may be illustrated by a curious case in MORGAGNI, De Sed. et Caus. epist. xxvi. 13. " Meretricula,—ad hanc " cum quidam ingressus esset scortator, et post modicum " tempus egressus confuso vultu et turbato, ipsa vero, " duabus aut tribus interjectis horis, non appareret; vi- " cini, qui hæc animaderterant, introgressi, non mortuam " modo, sed et frigidam invenerunt, jacentem in lecto eâ " corporis figurâ, ut dubitari non posset, quo in opere in- " teriisset. Pericardium distentum adeo ut per inflictum " vulnusculum serum exsiluerit. Multum autem inerat; " sub eoque niger, et firmissimé concretus sanguis, cordis " faciem operiebat.—Ubi ventum erat prope valvulas se- " milunares, quæ strigosæ videbantur, semidigiti intervallo " supra eam quæ tenet posteriora, erat orificium, quod " apicem digiti pollicis admisisset, per quod aorta cum " subrotundo aneurysmate communicabat, sacculi formâ " ad ipsam appensi.—Ruptus autem in summo fuerat à " sanguine illinc in pericardium exundante." MORGAGNI refers to PLINY, DONATUS, and SCHURIGIUS, for other instances of persons, " Qui in venere improviso " sunt mortui;" and concludes, that both the dissections, and the reason of the thing sufficiently prove, " quantum " libido mortem acceleret, sanguinem concitando," in persons, who, without that, or any similar cause, might have lived much longer, and, perhaps, even to old age.'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