certain sign of adhesion of the heart and pericardium, and of their attachment to the vertebral column.

The limits of dull percussion remain the same during inspiration and expiration, because the lungs, during inspiration, are prevented by the adhesions from dilating over the pericardium.*

The nature of the sounds of the heart gives us no aid in the diagnosis.

Dr. Law, in the *Dublin Quarterly Review*, vol. 22, p. 81, gives as a sign of adherent pericardium: "the persistence of the same extent of dulness to percussion in the præcordial region, no matter what position the individual may assume."

The only one of these signs which I have been able to verify, is the permanence of dull percussion over a given part, during inspiration as well as expiration; but this fact necessarily indicates also exo-pericardial adhesions.

[*To be continued.*]

A BRIEF REVIEW OF THE PATHOLOGY OF ANGINA PECTORIS: WITH CASES.

By WILLIAM BOYD MUSHET, M.B.Lond.

IT must be but seldom that a number of cases of angina pectoris are presented to one practitioner. Opportunities of autopsy, in fatal instances, must yet more rarely occur—the irregular paroxysmal character of the disorder conducing to its infrequent appearance in hospitals and other public medical institutions, and, when encountered in private practice, the prejudices of relatives and friends for the most part opposing a barrier to inspections after death.

I therefore venture to publish the following cases, and previously to cite various eminent authorities as to the nature of the disease, the difference of opinion and statements amongst which, to my mind, leads to the irrefragable conviction, that we either know very little about its pathology, or that it is an *accidental phenomenon, independent of and superadded to* the special organic affections with which it has been observed to be associated. Dr. Heberden's description is generally regarded to be correct, as he was the first to draw attention to the disease, and his account is most usually followed, although it may be remarked that Dr. Parry and others differ from this physician as to the nature and symptoms of the malady in question.

According to Heberden (*Commentaries*, art. *Pectoris Dolor*) "There is a disorder of the breast marked with strong and peculiar symptoms . . . . not extremely rare. The seat of it, and sense of strangling and anxiety with which it is attended, may make it not improperly be called *angina pectoris*. Persons are seized whilst they are walking, more especially if it be up hill, and soon after eating, with a painful and most disagreeable sensation in the breast, which seems as if it would extinguish life . . . . but the moment they stand still all this uneasiness vanishes. . . . . Males are most liable to the disease, especially such as have passed their fiftieth year . . . . Varieties may be met with. Some are seized standing still or sitting, or upon first waking out of sleep, and the pain sometimes reaches to the right arm, as well as to the left, and even down to the hands." Heberden saw nearly one hundred cases, one of which was in a boy of twelve. He believed it to belong to the class of spasmodic, not of inflammatory complaints. He adds, "in one case a very skilful anatomist could discover no fault in the heart, valves, or arteries, or neighbouring veins, in opening the body of one who died suddenly of the disease, except some small rudiments of ossification in the aorta."

Dr. Parry, of Bath (*Edinburgh Medical and Physical Dictionary*), differed from Heberden, and called the affection "syncope anginosa." He maintained, in the true disease, that there is neither dyspnœa nor palpitation of the heart, and that angina pectoris is a mere case of *syncope* or fainting, differing from 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 apparent health, by any general exertion of the muscles, more especially that of walking. He ascribed it to *ossification of the coronary arteries.*

Dr. John Wall, of Worcester, in a letter to Dr. Heberden in 1772, reminded the latter that he (Dr. Heberden) acknowledged he never saw any one opened who had died of this disease. Dr. Wall then proceeds to detail the appearances presented on examination of the body of a person who had died of the affection, and as his statement of the symptoms and *post mortem* inspection is remarkably exact, I deem no apology requisite for the transcription.

Dr. Wall lays great stress "on the pain under the sternum, extending on each side across the breast in the direction of the pectoral muscle, and affecting one or commonly both arms, exactly where the muscle is inserted into the os humeri." This physician met with thirteen cases, and of these ten died suddenly.

"The subject examined was sixty-six years of age, and had been six or seven years subject to the complaint. He was a short, well-made man, inclined to be fat, who, in the former part of his life, had had several very severe attacks of the rheumatism. For two or three years he only felt a very slight pain and tightness across the breast and arms, upon walking a little faster than ordinary. By slow degrees this increased, till at last he could not walk, but in a very slow pace, and with great difficulty. He could not go up stairs, nor lie down without bringing on a dyspnœa, or rather a sense of suffocation. He was free from cough till towards the latter end of his illness, and then a very troublesome one came on, attended with a hoarseness. His pulse was never irregular, but always small, and during the paroxysms it sank so much under the finger, that it could hardly be felt. He died after having struggled in the fit about two hours.

"On inspection, the surface of the pericardium was covered with fat, nearly an inch in thickness. The lungs were greatly distended with very dark blood. They were full and hard, and in the cavity of the thorax was a very considerable quantity of an aqueous fluid. Cutting into the lungs, frothy mucus, mixed with something purulent, and of a fœtid smell, issued from every part, but chiefly from the divided bronchi. . . . Upon opening the pericardium, the heart appeared of an enormous size, and was covered with a great quantity of fat. The pericardium contained not less than a pint of fluid. Upon examining the heart, no part appeared diseased, till we opened the left ventricle, and there the semilunar valves placed at the origin of the aorta were found to be perfectly ossified. They did not, as usual, lie flat upon the divided orifice of the vessel, but stood erect, and appeared to be immoveable. They were entirely osseous through their whole substance, but the ossification was formed unevenly, and as it were in spines, some parts being near a line in thickness, and others thin, like a connecting membrane, but perfectly bony. The aorta at its curvature was considerably enlarged, and for near an inch from the heart was in part ossified, there being several bony scales or laminæ on it, but not connected with one another.

"The origin of the disorder," says Dr. Wall, "is here evidently to be traced from the induration of the semilunar valves, which existed probably in a less degree for several years, and increased gradually till it came to a bony hardness and immobility. It is possible that this induration of the semilunar valves may not always be the cause of the disease, though it seems not improbable that some malformation in the heart, or vessels immediately proceeding from it, may be so. Indeed, when we consider how frequently such indurations in the valves of the heart have been found, that the disease in question does not come on till a person is advanced in years, and consequently until a rigidity in every part naturally comes on, we shall be inclined to imagine that a preternatural induration of the parts necessary to the circulation of the blood, through the heart, may be the predisponent, if not the efficient cause of the disorder."

In a fatal case of Dr. Fothergill, "the only morbid appearance was a small white spot near the apex of the heart;" and in an instance recorded by Dr. Haygarth, "the heart, lungs, and pericardium were perfectly sound."

Referring to more modern authorities, we find that Laennec arranges angina pectoris under *neuralgia of the heart.* He says "it is a spasmodic affection, which returns in paroxysms after longer or shorter intervals . . . . Angina pectoris, in a slight or middling degree, is extremely common, and exists very frequently in persons who have no organic affection of the heart or large vessels. It is certainly true that this affection frequently coincides with organic disease, but nothing proves even then, that it depends upon such diseases, inasmuch as they are of various kinds, and as the angina exists without any of them. Of subjects examined, who had laboured under this disease, *in none did I find the coronary arteries ossified.* One died suddenly during an attack of angina, and such a result need not surprise us, when so severe a nervous affection co-

* This sign was long ago pointed out by Dr. Sibson.

exists (as in this case) with extensive hypertrophy." Dr. Hope "thought the disease to be owing to structural disease of the heart or great vessels, in which some portion of them was deprived of their elasticity by osseous cartilaginous or steatomatous degeneration, and that pain was dependent on over tension of the rigid portion."

Dr. John Forbes (*Cyclopædia of Practical Medicine*) seems to consider it doubtful whether angina pectoris would prove fatal in the absence of structural disease of the heart. He observes, "there is reason to believe in the few cases of fatal angina, in which no organic lesion was found on dissection, the heart was not exactly of just proportions, or of perfectly sound structure."

Dr. Wood, of Philadelphia, regards "neuralgia of the heart and angina pectoris as identical, as though angina has been frequently found in connexion with organic disease of the heart, yet frequently also no such affection has been detected after death, so that it must be considered as essentially nervous."

Dr. Copland (*Dictionary of Medicine*) remarks "in several instances, not the slightest morbid appearances could be detected, but more frequently the heart and large vessels in its vicinity have presented marks of disease, generally varied in its nature, and opposite as to its characters." This author is inclined to impute the affection to a species of neuralgia of the cardiac and pulmonary nerves. Dr. Walshe is of opinion that angina pectoris "is a neurosis, although he is disposed to think that a true angina cannot exist without organic disease of the heart."

Dr. Joy (*Library of Medicine*) states "we are disposed to side with those who believe that angina pectoris, at least in its less inveterate modifications, may exist, altogether independent of structural changes. It is only in the more aggravated and prolonged cases that such alterations have been very conspicuous."

Dr. Latham says "angina pectoris has existed where no form of disease or disorganisation whatever has been found, either in the heart or in the blood-vessels nearest it." He thinks it io be "immediately *a spasm of the heart.*"

I shall now narrate the following two cases, one of which proved suddenly fatal, a careful *post mortem* examination being instituted; the other in an old lady yet surviving, but which I regard as an undoubted example of the disease.

Case I. E. H., aged seventy-eight, a remarkably hale, stout old man, retaining all his functions, and employed as a messenger, had suffered for some months from pain over the region of the heart, coming on paroxysmally, and occasionally passing down the left arm, though this latter symptom was by no means of constant occurrence. During the attacks, he experienced a feeling of sinking and constriction of the chest, and a difficulty of breathing, together with considerable anxiety. The dyspnœa was not habitual in the intervals, and he had but very little cough. The pain was not periodic, but came on at irregular times. Auscultation was not practised, but he was ordered sulphuric ether and ammonia, which afforded great relief. He fell dead on the stairs one evening about 8.30 P.M.

Examination of the body, eighty-four hours after death. Weather cool. The pupils were moderately dilated. The arcus was strongly marked. Rigor mortis was tolerably manifest in the lower limbs, less in the upper. There was slight œdema of the feet.

Head. The vessels of the scalp were very turgid. The calvarium was remarkably dense. The dura mater was adherent to the skull anteriorly. The arachnoid was opaque at spots: and there was some fluid between it and the pia mater. The brain-substance was a little extra-vascular. A small amount of serum was found in the ventricles. About two ounces of sanguinolent fluid were found in the base of the skull. The sinuses at the base were filled with semifluid dark blood. The arteries at the base were atheromatous, not calcified.

Chest. The heart was entirely adherent to the pericardium; the adhesion was firm, but could be broken down with the finger. On attempting to separate the membrane from the heart anteriorly, some of the substance of the organ was also removed. The heart felt flabby. It was elongated transversely, and there was a white patch near its base over the right part of the left ventricle, of about the size of a shilling, which had a slightly roughened feel. There was a corresponding patch on the opposed pericardium. About the apex were two or three gelatinous-looking cysts, which appeared to be beneath the serous membrane. A large quantity of clots, and a little, partly decolorised, escaped on section of the inferior cava (several ounces.) There were also dark clots in the pulmonary artery and aorta, but the quantity of blood was small on the left side. The heart freed from blood weighed seventeen ounces and a half. Its structure appeared to be tolerably healthy to the eye, but fat encroached on its walls, especially at the apex, and at base of the right ventricle. Portions, from these situations, exhibited fatty degeneration under the microscope. The cavity of the right ventricle was dilated, its walls a little hypertrophied. Both auricles were dilated. The left ventricle was hypertrophied. The pulmonary valves were normal, but one segment was reticulated: they supported a column of water. The flap of the tricuspid valve next the septum was natural, but the other two were thickened and beaded with fibro-cretaceous deposit. The aortic valves appeared sound, but did not perfectly support a column of water. The mitral valve was healthy; the tricuspid orifice readily admitted four fingers; the mitral admitted all the fingers and thumb; the aorta and pulmonary artery appeared to be neither constricted nor dilated; but the former vessel displayed considerable atheromatous degeneration. The coronary arteries were pervious, and loaded with atheroma, but presented no appearance of calcification. The lungs were emphysematous and congested. There were old pleural adhesions on the right side, and slightly on left, and a few ounces of serum in the left side of the chest. No tubercle was present. The bronchial tubes were intensely injected, containing but very little secretion. There was no softening of the mucous membrane. The liver was contracted, with stellate deposits on the surface. The right kidney weighed five ounces; it was congested; the capsule separated well. The left kidney was also congested; it weighed five and a half ounces; the capsule separated, with a portion of the subjacent tissue attached. The bladder was distended. The spleen was normal. The stomach was empty, congested in patches. The intestines were also congested. The pancreas was hard and granular to the feel.

Case II. Mrs. D., aged fifty-nine, unmarried, has usually had good health, and worked hard in service as cook and housekeeper. She first suffered from rheumatism at thirty-five. This was an acute attack, and disabled her for some months. She has since suffered at intervals from the disease, for which she was a short time ago under treatment. At irregular periods, for some years, generally when she has pains in her limbs, or is *flurried* or *excited*, though occasionally at other times, especially when out of health, she has experienced a sensation of spasm over the front of the chest, deep seated, and inclining to the left side, and sometimes passing down the arm. "The feeling is very singular and crampy, and as if she were drawn together, and she feels a sort of stagnation, as if the heart stopped." During the attack, which is sometimes only momentary, and sometimes lasts for several minutes, she is quite conscious, and her sight does not fail. She has but very slight cough. Dyspnœa, palpitation, or globus never appears to be present, and there is no history or evidence of hysteria, though she is troubled with flatulence. Two or three attacks may occur in a month, or a year may elapse without their recurrence. They come on indifferently in the day and at night, and mostly when she is at rest. The climacteric epoch was not attended by much disturbance, but she had two or three seizures of epistaxis. Arcus is evident in both corneæ. Her pulse is regular, not intermitting or rigid. The heart-sounds are tolerably good, but feeble. Respiration is a little harsh. Pains of rheumatic character, chiefly affecting the muscles of the arms and calves, lately induced her to seek medical aid, and during her illness, the attacks described were of frequent occurrence, sometimes daily.

Ammonia, Dover's powder, iodide of potassium, quinine, etc. were prescribed, and in a week or two she became convalescent, the anginal symptoms disappearing with regained health.

How can we harmonize the discrepancies which have obtained amongst the profession, as to the symptoms and pathology of angina pectoris, ever since the first description of the disease?

Most authors admit the necessary association of *some* cardiac affection, and that the cardiac lesion is variable to which the angina is a supplemental symptom. Others regard it to be dependent on a particular morbid agency, as calcification of the nutrient vessels, induration of the valves, spasm of the heart,* etc., but the difference of opinion amongst these latter,

* That this is not essentially true, is proved, as in many cases, the pulse remains undisturbed during the paroxysm. And we cannot imagine an attack of angina, if dependent on spasm of the heart, to continue for half an hour and not prove fatal.

and *post mortem* appearances, sufficiently indicate that such doctrines are untenable and erroneous.

It is moreover evident, that every conceivable morbid process in the heart and great vessels may exist, in absence of observed symptoms of angina, as atheromatous and fatty degeneration, calcification and occlusion of coronary arteries, valvular disease, adherent pericardium, hypertrophy, dilatation, atrophy, coarctation or dilatation of the aorta, etc. Conversely, can angina be present in absence of all the diseased states enumerated? In some cases, not any morbid appearances in the heart or great vessels are reported to have been noticed after death; but these statements must be accepted with reservation, when we take into account the imperfect state of pathological knowledge which until lately prevailed, and we have no authentic proof that in these cases the individuals died suddenly in the anginal paroxysm, an event necessary to confirm the accuracy of the diagnosis. Again, fatty heart, a fruitful source of sudden death, was a change unrecognized by our earlier pathologists.

It is incontestable that angina pectoris either *can* or *cannot* be developed without appreciable structural alteration in the heart or great vessels. If the former proposition be true, the disease must be considered as a true neuralgia; and I affirm that such an affection is incapable of proving fatal *per se*.* If the latter be true, when death results during a paroxysm, it is more reasonable to presume that it is a consequence of the organic disease than of the superadded anginal (neuralgic?) symptom, which is clearly not necessary to explain the fatal issue, as sudden death is of frequent occurrence in cases of heart disease, in which angina has never been observed. Were it present, death might be attributed to what is, I believe, merely an accidentally associated neurosis.

It may be advanced, that the aggravated symptoms and anxiety experienced by patients, are incompatible with the view of the angina being an unimportant element in the affection, but it is well known how timorous and depressed individuals become when suffering from functional palpitation or pain referred to the cardiac region; consequently, when similar symptoms arise in persons labouring under organic disease of the heart or great vessels, we can readily estimate the influence exerted on an obstructed circulation through the emotional system.

It is agreed that angina pectoris seldom announces itself before forty or fifty years of age, about which period disease of the heart commences to be fatal to any extent. When occurring in children and early manhood, I conceive the affection to be simply neuralgia (equivalent to angina pectoris *minus* heart affection), and such a notion is corroborated by a cure being, for the most part, effected in this class of cases.

On the whole, therefore, I regard angina pectoris as a neuralgic affection,+ always connected with some heart disease (in which respect it differs from simple neuralgia), being an accidental complication of the latter, and only occasionally present, as when the sufferer is dyspeptic, out of health, or subjected to any influences which are prone to induce neuralgia in other parts of the system. Some, as Dr. Chapman, are of opinion that angina pectoris is a gouty or rheumatic affection; and it must be admitted that recorded cases tend to reveal its connexion with these diatheses; and it is almost unnecessary to advert to the relationship of gout and rheumatism to neuralgia and diseased heart.

I think this group of complaints may be well illustrated by the subjoined simple diagram.

Rheumatism (Gout)
Neuralgia . . . . . Disease of Heart
Angina Pectoris.

Assuming the neuralgic origin of the disorder, it is interesting to consider the nerves implicated. That the heart is not the seat of suffering appears to be almost proved, as this organ is normally insensible, and even when seriously impaired by grave structural changes, and the varying situation of the pain (behind the sternum, on the left side, down the left arm, on the right of the thorax, at the insertion of the deltoid, at the bend of the elbow, etc.), appears inconsistent with such a presumption. A few, as Desportes, locate it in the pneumogastric nerve, but in opposition to this, the last mentioned objections hold good. I am disposed to conclude, that the intercostal are the nerves involved, the differences presented by the symptoms in different cases being explicable by consideration of the particular nerve affected, in conjunction with the special coexistent organic affection, and reference to its anatomical connections and distribution.

Upper Baker Street, October 1859.

* Is there any physician of the present day bold enough to assert from theory, or who can attest from experience, that angina pectoris has ever proved fatal in persons with a healthy heart?

+ The acknowledged efficacy of antiperiodic remedies strongly supports this conclusion.

Transactions of Branches.

READING BRANCH.

TRANSACTIONS OF THE READING PATHOLOGICAL SOCIETY.

By FREDERICK G. HARCOURT, Esq.

[*Concluded from page* 813.]

VIII.—SURGICAL CASES.

Injury to the Abdomen. On September 22nd, Mr. YOUNG read the history of a case of injury to the abdomen from a butcher's hook, occurring in a boy aged 15, who, while making his escape from another boy with whom he had quarrelled, ran against a hook which was suspended from the outside of the door. The point entered the abdomen between the anterior superior and inferior spinous processes of the ilium, and came out midway between the crista ilii and the lower rib on the right side, traversing the wall of the abdomen about four inches, and puncturing the ascending colon. The right side of the abdomen was very tender and swollen from Poupart's ligament half-way up, giving a distinct emphysematous feel when pressed on. Considerable collapse ensued. As soon as reaction set in, six leeches were applied, followed by spirit lotion, and calomel and opium every four hours. His progress was satisfactory, and he recovered in six days.

Mr. YOUNG considered this a well marked instance of the value of calomel and opium, rest, and the avoidance of stimulants. The emphysema must be considered a proof of the opening of the intestines.

Case of Opisthotonos: Recovery. On October 23rd, 1858, Mr. MAY related the case of a gentleman who, from injury to the knee, had been affected with prismus opisthotonos, and almost tetanus. The bowels had not acted for three or four days, when, at the desire of the family, an aperient (castor oil) was given, which produced violent spasms, amounting almost to tetanus. The treatment consisted in giving small doses of morphia during the day, which were increased at night. Perfect rest was enjoined. The bowels were not relieved for three weeks, when, a little irritation coming on, an enema of warm water and a little aid by scooping was had recourse to, to remove the accumulation. Small quantities of beef-tea and wine were the only food given; and he recovered. The chief point in the case was, the bowels being kept quiet for such a time, contrary to the doctrine of the schools.

Ulcerated Cartilages of the Knee-Joint. On December 15th, Mr. G. MAY presented a specimen of ulceration of the cartilages of the knee-joint, which corresponded with one he presented two meetings before, and which had been preserved in the French patent antiseptic powder, but at length became too much decomposed to be brought into the room.

Strangulated Obturator Hernia. On Monday, December 13th, Mr. DRYLAND was called to see T. F., who was suffering from nausea, vomiting, and great depression. He stated that, on the previous Wednesday, "he had been to Newbury selling eggs, and had then felt a sort of strain in his inside"; that he felt very sick and faint, and vomited. He came home, and felt worse; and found that, whenever he swallowed anything, he was immediately sick. He felt very ill all night, and in the morning sent to a chemist's, stating that he was sick, and could get nothing to go through him. The chemist sent him some mixture, which appeared to contain salts, to be taken every two hours until it operated. The mixture only operated as an instant emetic; but he continued to take it, as well as sundry doses of castor oil, which he also brought up, and sent for some more, with a statement to the chemist of the state in which he then was. Another mixture was sent, with directions that, unless it operated soon, a medical man had better be called in. During the whole of this time, he said, he kept nothing on his stomach, except very small quantities of simple liquids, such as water or milk. On the Monday morning, Mr. Dryland found him in bed, in a very weak state; the vomiting had now ceased, but he suffered from continued hiccough, and complained of pain in the abdomen, but could not refer the pain to any par-