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Inaugural Dissertation
on
Pericardites.

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Pericarditis is generally defined by authors to be "an inflammation of the serous membrane, lining the pericardium and covering the external surface of the heart." This definition is I think insufficient, as will appear by the sequel; for, the frequency of this affection consequent upon, or concomitant with rheumatism, will sufficiently show these diseases, to be somewhat analogous: and that, very probably, pericarditis generally, if not always, first attacks the fibrous pericardium. Although from the intimate connection existing between the two layers, of which the pericardium is composed, the inflammation quickly extends to the serous membrane.

Corvisart, whose description of the disease almost all succeeding authors seem to have followed, pertinently
enough enquires "Why the fibrous pericardium should not
like all other solids of a similar structure in the body be the
seat of inflammation?"

Analogy, and I may venture to add, facts also, lead to the
conclusion that in very many instances the inflammation
does begin in the fibrous pericardium. Many of the causes
of pericarditis, are such as produce rheumatism, and
still more frequently rheumatism itself is the only asign-
able cause. This proposition is so generally admitted
as to require no other proofs than a mere reference to
the works of Sir David Dundas, Sir Charles Liddonrece
Dr. Ochterlony, Wells, Maillie, Hope, Stotes, Panillaud &c., to
satisfy any unprejudiced observer of its correctness. Sir
D. Dundas in particular has detailed eleven cases, nine
of which proved fatal, and in which the disease was connected
with acute rheumatism.

Pericarditis often occurs as a vicarious affection
on the disappearance of rheumatism, at other times the
two diseases coexist. Mr. Panillaud is so convinced of the
dependence of inflammation of the heart, and pericardium, on rheumatism, that he considers the former as constituent elements of the latter, and not merely as accessory and concurrent events: and he states that of any given number of cases of acute rheumatism at least one half, presents symptoms of pericarditis, or of endocarditis, or of both united at some period of their progress. And the reviewer of M. Bouillon’s work (1) thus expresses himself: “If indeed we were not afraid of startling our readers, we would go much further than M. Bouillon has done; and say that in every case of acute rheumatism, there exists a greater or less degree of inflammation, or of that term be too obviuous, of irritation in either the lining membrane or the covering of the heart, or in both together.” And Dr. Graham (2) is of opinion that in patients liable to rheumatism, there is in every attack, greater dulness or percussion than natural over the regions of the heart and other symptoms indicating an affection of the pericardium. Speaking of rheumatism Dr. Hope says “An affection which, whether
severe or mild, whether, in its early or its latter stages, is beyond comparison the most frequent cause of pericarditis; again he says "An individual who has been recently affected with pericarditis, is peculiarly liable to a recurrence of it; especially if it has resulted from rheumatism: in this case should rheumatism return, it rarely fails to be accompanied by a renovation of the pericarditic symptoms."

Dr. Stokes observes, in a note to a case related by him of a woman who had an attack of pericarditis consequent upon arthritis "some time previous to, and after, the time that this girl was admitted, we had a most remarkable number of cases of acute arthritis; it was not uncommon to have four or five such cases in the same ward." How far this kind of epidemic tendency to affections of the fibrous and synovial tissues may explain the frequency of pericarditis which has been lately observed, I shall not now enquire. I feel convinced that this frequency of pericarditis alluded to by Dr. Stokes, resulted from the epidemic affection of the fibrous tissues of the joints: in this affection I am borne out
by the statements of Dr. Seidlitz (1) who in describing a variety of pericarditis which prevailed at St. Petersburg from 1831 to 1834 says: "That the disease occurred during the prevalence of morbus ruber, that it assumed an epidemic character and was associated with a transitory epidemic of a rheumatic nature, while pleurisy was commonly prevalent at the same moment."

As rheumatism appears from the foregoing remarks, to be the most frequent source of pericarditis, as it is essentially a disease of the white fibrous tissue, and as the synovial membranes of the joints become affected by it secondarily only, it is very probable, I think, that the fibrinous pericardium, being a membrane of the white fibrous structure, is the primary seat of the inflammation, and that, the serous pericardium becomes affected in the majority of instances secondarily only.

Laennec relates a case which, I think, incontrovertibly proves this to be sometimes the case, in which he found the heart enclosed in a bony case which sent processes into the substance of the heart, even to its very cavities; and he satisfied himself by dissection that it was developed between the serous

and the fibrous layers of the pericardium. Other strong proofs
of the analogy of pericarditis and rheumatism may be found, in
the pulse of incipient pericarditis being generally the loose, throb-
ing pulse of acute rheumatism, rather than the hard and tense
pulse of inflammation of the serous membranes; and, in the two
diseases requiring very nearly the same treatment.

In rheumatism general blood letting to any extent is de-
treated by many authors, as tending to induce a chronic form
of the disease, or even pericarditis itself, as is believed by
Dr. Forgyee, and Alison, whilst local abstraction of blood is fre-
quently used. The early symptoms of pericarditis must be promptly
met by local bleeding and counter irritation; but collection
to any amount is rarely admissible; indeed it was thought by
Corvisart that blood taken from the region of the heart was more
efficacious than when drawn from the general system.

Acute rheumatism generally attacks the young and vigor-
ous, so does pericarditis; though the latter disease sometimes
attacks children under the age at which they would be liable to
suffer from the former; and patients suffering from either, are
liable to a recurrence of the disease, and particularly exposed to suffer from pericarditis if previous attacks of rheumatism should have been treated by copious depletion. The most common causes of pericarditis besides rheumatism are blows or excessive pressure on the precordial region, inflammation propagated along the lungs or pleura, checked perspiration, cold, the abuse of spirits in liquor, and the exanthemata.

Morbid Anatomy.

After the inflammation has attacked the serous pericardium, the morbid alteration it produces may be described according to the four following heads. The thickness and vascularity of the membrane, effusion, formation of false membranes, and their conversion into cellular tissue, fibro-cartilage, bone, etc.; but I must confess that I am at a loss how to describe what I consider to be the first stage of the disease: namely, that in which the fibrous pericardium alone is affected; for, as the fibrous tissue in the neighborhood of joints does not present after rheumatism, any pathological appearances, except in a few protracted and very severe cases, we cannot expect to find any morbid alterations in
The pericardium, when the disease has existed in its fibrous layer only.

Thus it happens that Laennec assures us that in many instances he could find no trace what-ever of the disease, although from the symptoms which had characterized it, he was persuaded that it had been the only cause of the patient's delirium. In all such cases, I am convinced, that the inflammation had existed only in the fibrous pericardium and had produced its fatal effect by the imperviousment which it must have offered to the free action of the heart. — The case already alluded to at page 5 as described by Laennec, seems clearly to have been one of this description.

The redness over the pericardium is seldom uniform; sometimes it assumes an arborescent appearance but most commonly shows itself in small patches or in dots, alternating with the natural colour of the membrane.

This alteration of colour is not invariably present after pericarditis, for, Laennec found in some cases, that although the symptoms during life, and the thickness of the false membranes indicated the inflammation to have been very
were, yet on the most attentive examination he could discover no redness whatever. Andral also relates a case where he found a copious effusion without even the slightest redness; and Dr. Wm. Wells in his thesis relates two similar cases which occurred in Edinburgh under his own observation.

Although some have asserted that the redness may have disappeared after death, as it does from the surface of persons who have died of erysipelas, yet I think, that the experiments of M. Scoullar** go far to prove, that inflammation of a serous membrane will invariably exhibit increased redness after death. The colour of the pericardium after chronic pericarditis, has a deeper and duller hue, and is destitute of that brilliancy which characterizes when present the acute form of the disease.

The effect of inflammation in almost all textures of the body, is the effusion or exudation of a particular mortified secretion. In pericarditis it generally consists of coagulable lymph accompanied by more or less serum; but, as we shall presently explain different other fluids may be found.
within the pericardium, and sometimes, to the total exclusion
of either lymph or serum, or both. — Then only lymph and
serum are effused: the latter sometimes exceeds the former in quan-
tity. Laennec indeed denies this fact at the beginning of the
chapter on pericardites, in his work on auscultation; but, we
can scarcely receive this as his opinion, for he afterwards states

"It would seem that the quantity of effused serum diminishes
quickly as soon as the inflammation begins to subside, for we
usually find the proportion of serum and albumen nearly
equal; whilst in pleurisy and peritonitis the serum is commonly
from twenty to fifty times greater than the extravasated lymph.

"It is plain I think that, if we grant, that the serum di-
"minishes as soon as the inflammation begins to subside," and
we find it after it has subsided equal in quantity to the albu-
men, that we must also allow it to have been greater in
the first instance. — Louis states that out of thirty
five cases in three only did the lymph exceed the effused serum,
while in the remaining thirty two, the quantity of serum was
very considerable and that of lymph but small; in one of these,
cases the serum amounted to four lbs. and in none was it less than eight ounces. Corvisart also relates a case, where he found four pints of effused serum.

In opposition to these authors Dr. Latham states that the solid products of the inflammation always predominate over the fluid; and, in the instances described by Sir D. Dundas this was the case. Dr. Stokes also mentions some cases where the quantity of lymph exceeded that of serum.

Dr. Hughes' observations regarding the nature of the effusion seem to me so just and conclusive, that I shall take the liberty of transcribing them. "The only notice," he says "that I have hitherto been able to discover of the usually solid nature of the effusion, in rheumatic pericarditis, exists among the many valuable and interesting remarks of Dr. Latham**, in the lecture already referred to, and is the following effect: In the pericarditis that accompanies rheumatism, the symptoms during life are those that have been mentioned as strongly indicating the pre-dominance of the solid over the fluid products of inflammation.

* Guy's Hospital Reports No. 1. ** Medical Gazette Vol. 3.
"and here dissection after death uniformly discovers solid lymph upon the pericardium, with very general or complete adhesion." As additional evidence of the correctness of the opinions advanced on this part of the subject, I may refer to the paper of Sir B. Dundas, who mentions nine cases of the disease accompanying or following rheumatism of which seven died, six were examined after death, and in five the pericardium was found adherent. But this cannot be, by any means, considered a fair general average of the nature of the effusion; as it must be recollected, that the great majority of those affected with the rheumatic form of the complaint recover; and that the worst, or fatal cases, are those in which though originally arising from rheumatism, the disease, in its progress, assumes the form of common inflammation; and in which, therefore, the inflammatory effusion is likely, if ever, to be sero-purulent in character. Again; the pericardium is frequently found adherent after death, when nothing has, during life, induced a suspicion of disease in this membrane, and the nature of the adhesion proves it
"to be of considerable standing. Now, as rheumatism is a
very common complaint; as accompanying pericarditis is
also frequent; as we know that it is often overlooked, and
have evidence that this form of the disease generally has a
favorable, or, at least, not a fatal termination; as idiopathic
inflammation of the membrane appears to be comparatively
rare; and as the cases which have been observed were usually
accompanied by severe symptoms and fluid effusion, and
often followed by a speedy fatal result, the natural conclusion
or fair presumption, is that, in the cases referred to the indivi-
duals had previously suffered from rheumatism and rheuma-
tic pericarditis; which latter, in consequence of its slighty,
obstrusive symptoms, and the attendant solid matter deposited,
had escaped detection altogether, or been but little regarded and
inefficiently treated. The conclusion at which we arrive,
by the observation of facts, is confirmed by analogy. The
products of rheumatic inflammation, in other parts of the
body, are usually, in a great degree, solid, as proved by the
resistance of the swollen parts: pus is here almost unknown, and
"Scum is found almost solely in the mixed or chronic form of the complaint."

Professor Thomson relates the case of a girl who had never menstruated and who died of pericarditis. In her the pericardium was found filled with a large quantity of a fluid having the physical characters of blood; but, rather resembling the mucus found in the uterus and vagina in cases of imperforated hymen.

Dr. Latham relates a case where he found the cavity of the pericardium filled with pure and unmixed blood and its surface covered by coagulable lymph of which that part the heart was not unlike the pills of a fish in colour and texture: he considers this effusion to have been the effect of a secondary inflammation of the false membranes; but I think it more likely that it was the result of mere oozing; and this, the effect of friction of the tender and vascular surfaces of the newly organized lymph against each other by the action of the heart; for, if we grant that the false membrane was sufficiently organized to take on an inflammatory action, we might, I think, reasonably expect some other fluid to have been ejected instead of
pure and unmixed blood.

The effused lymph forms a membranous covering more or less perfect on the surface of the pericardiums and according to Lamy this readily presents the equable surface peculiar to the membranes formed during pleurisy; but, on the contrary, it is pitted, mamillated, and rough, not unlike the appearance that would be exhibited on separating two plates between which a very thick layer of butter had been interposed. The membranes formed during an attack of pericarditis are in general denser, thicker, more elastic, and more inseparably connected to the surface that has produced them, than those formed during pleurisy: according to Dr. Latham they are grown in proportion to the duration of the disease; hence one is led to infer that they are thicker after chronic than after acute pericarditis: Dr. Latham says that he has found them in cases of a few months standing, laminated and of unequal consistence, the thickest lamina being that nearest the heart; he thinks that the membranes are studded with little pores, and that they are supplied by vessels from the coronary arteries.

Dr. Allen* has often seen in bodies of persons who have died

* Clinical Lectures.
of pericarditis, effusion of different degrees of hardness, indicating that they were of different standing.

When the quantity of the effused fluid is not great, or is altogether absorbed, the surfaces of the pericardium coalesce, the adventitious membranes come into closer contact, and an adhesion more or less perfect is the result. Dr. Watson says that a complete adhesion is the most favorable termination we can anticipate, after we have failed in producing resolution; but it is extremely difficult to obtain such complete adhesions and therefore they vary from the most complete apposition of the whole surface of the pericardium, to mere bands of loose and feeble texture stretching sometimes to a considerable length, when there is much fluid present. — Stenney thought that partial adhesions by long bands were the effect of acute pericardities and that those more perfect were the result of an attack of the disease in a chronic form, but he does not seem to be borne out by facts. — Sometimes the lymph is not effused equally all over the pericardium, but interruptedly leaving patches of this membrane quite uncovered. — The lymph becoming
organized unites with that of the opposite surface, and thus leaves as it were small cavities under the sound pericardium; these become distended with pus giving to the heart the appearance as Dr. Latham has remarked, of being covered by small abscesses.

Cases of partial pericarditides are according to Lacenne very rare, not more than one in ten, and generally end in recovery; but this is denied to be the case by many other practitioners.

In many cases the only evidence we have of the disease having existed consists of white spots covering the heart and formed of condensed cellular substance, resembling the nails of the fingers in appearance; though, sometimes they are much larger: according to Corvisart they are formed beneath the surface of the pericardium, but, Lacenne says that he has succeeded in detaching them from the surface of this membrane leaving its serous lamina quite entire; he does not consider them pathological appearances nor does he think that any derangement of function can result from their presence; in these assertions he goes directly against the greater number of our best authorities. — Sometimes instead of these patches
The pericardium is studded with small concretions similar to those found in the choroid plexus. The serum effused may be of almost every hue; it generally, however, is of a yellow colour and very rarely white or opaque. After the lymph becomes organized it sometimes continues secreting and the serum then poured out gradually degenerates into pus, though it is but seldom that this takes place for according to Dr. Hope the pressure of the effusion induces atrophy of the organ and destroys the patient before this period.

The appearances after chronic are much the same as after acute pericarditis, some of them however are less marked —

The respiration already mentioned is fuller, deeper and less brilliant, the membranes thinner in altogether wanting, the adhesions more complete, the fluid according to Laennec is puriform and the substance of the heart itself is softened: — At the effects of this form of the disease according to Bouilland may be enumerated morbid alterations of the muscular substance of the heart and of the dimensions of its cavities such as hyper trophy, dilatation and above all diseased condition of the lining
membrane, and of the valves. Cases confirming this opinion are related by Hope, Corvisart, and Tommasini.

During chronic pericarditis, other organized effusions besides lymph are deposited within the pericardium, some of which I shall now enumerate. Dr. Stokes found in one case the pericardium covered by a coat of semi-cartilaginous lymph, forming mammillary prominences, and a complete band of the same substance nearly one inch in breadth under the apex of the heart and connecting it to the external pericardium. According to Dr. Latham, the pericardium is sometimes surrounded by a ring of bone which sends processes into the heart itself even to its very cavities, but this is very rare. Lucerne met with a case of this description, where as already stated, the bony layer had been deposited between the serous and the fibrous pericardium.

Dr. Burns met with a case where the pericardium was completely ossified, and Dr. Burridge of this university has seen a similar case. Mr. Louis in his memoir mentions two such cases, and in a thesis published at Heidelberg by Dr. Holf several of a similar nature are recorded and delineated.
The pericardium whatever changes may be going on within it is very rarely thickened the false membranes having been sometimes according to Dr. Hope and M. Bravillano, confounded with thickening of the pericardium itself.

According to Laennece, the acute form of this disease passes into the chronic, in emaciated and phlegmatic patients, and in such he has found tubercles in the pericardium similar to those found in the lungs; but we cannot consider this as the result of pericarditis: for, as tubercles existed in the lungs they were, I think, found in the pericardium, merely because it happened to be diseased and therefore more favorable to their deposition, than any other texture of the body. — The muscular substance of the heart may also be affected during pericarditis, thus M. Stanley has found it much congested with dark blood, and penetrated by small collections of pus; which constitute, according to Laennece, the only unequivocal evidence of inflammation of the muscular substance. Laennece thinks that most cases recorded as of carditis are merely instances where the inflammation has extended from the pericardium to the muscular substance of the heart. — The
internal lining of the heart is reddened and thickened particularly in
the region of the valves: These are sometimes swollen and infiltrated
and present fungoid excrescences on their free edge.

M. Bouillaud remarks that in cases where the effusion has consisted
principally of serum the alteration which the muscular substance
undergoes if it should be at all affected, consists of its becoming of
a whitish yellow colour, as if it had been long macerated.

M. Deselens in several instances where he had produced inflam-
mation of the pericardium by artificial means found on dissection
of animals so treated the internal membrane of the heart, red and
the valves, and more especially those of the left side thickened and
as described above infiltrated and fungoid on their edges.

Covisart and Dr. Hope have thought that no patient could live
and enjoy general good health, whose pericardium had contracted
a complete adhesion of the heart: the former says that such
adhesions are often accompanied by an aneurism of the great
vessels, or an enlargement of the heart and with little or no ef-
fusion into the cavities of the chest: and the latter affirms that
unless the effused lymph as well as the serum be absorbed it
causes an adhesion and thus establishes destructive disease. — but Laennec positively states that he has found the most com-plete adhesions without the patients having experienced the slightest disorder of either respiration or circulation: and Dr. Watson is of the same opinion. — As Laennec's proof is po-itive and both Corvisart and Hope wrote the above from mere supposition we must I think agree with the latter that this condition of the heart although abnormal is not positively fatal.

Dr. Seaton is of opinion that pericarditis is more danger-ous in the young than the aged, because of the greater activity of the circulation required in them to maintain the growth of the body: as, the effused lymph sometimes fetters the left ventricle thereby producing bronchites, disease of the right lobe of the liver, and dropsy.
Diagnosis.

Nothing can be more perplexing or unsatisfactory to the practitioner than the diagnosis of pericarditis. The disease has been mistaken by the best practitioners for affections of other organs, which on dissection have been found perfectly healthy. And often times it is mistaken by other disorders as to be altogether overlooked; besides, some of the best marked instances of this disease leave apparently no morbid traces. Lacunae figures us that he often found on dissection all the evidence of the existence of pericarditis, when nothing had occurred during the life of the patient to excite the slightest suspicion that such a disease was present; and again, that often he could find no trace whatever of the disease when he was sure that it had been the only cause of the patient's dissolution; and he observes that pericarditis is a disorder, the existence of which during the life of the patient, the most able physicians rather guess at, than recognize. Dr. Latham mentions two cases in which the disease was mistaken for disease of the brain, and treated accordingly, but dissection proved them to have been
cases of pericarditis. — Indeed and Coivard mention two
similar cases; the latter was of opinion that the cases where
Diagnoses was most obscure were always complicated with pleurisy
pneumonia, or some other disease of the thoracic viscera.

In opposition to this statement may be quoted Lacunne who says
that the most complete latent affections he has met with, were
in patients whose thoracic viscera were in other respects quite sound
and who had died of disease of the abdomen.

The symptoms of acute pericarditis as given by Dr. Hope
are acute inflammatory fever, burning lancinating pain in the
region of the heart, and shooting to the scapula, shoulder, and upper
arm; and sometimes though rarely to the elbow — Dry cough —
hurried respiration — palpitation of the heart — The action of the
heart regular though violent, whilst its beat is unequal in
strength — at other times it is weak and irregular — The pulse
always regular and sometimes on the quick, hard, full, jerking
and often with a thrill — sometimes it is weaker than usual
with no change in the heart’s action, unequal, — irregular and intermittent.

When this is the case it is accompanied by dyspnea. The pa
patient breathes easily only in one position and betrays great anxiety. The features are contracted and sometimes exhibit the sardonic grin: the patient feels great alarm, and suffers from cold sweats, and the face and extremities are cold from obstructed perspiration. The pulse, according to Dr. Stokes and some other eminent authorities, is rather the loose throbbing jetting pulse of acute rheumatism, than the hard and tense pulse of inflammation of a serous membrane as for example pleurisy.

The pulse at the commencement, that is, when the fibrous membrane alone is affected will generally be found to be that of acute rheumatism, but will vary in proportion as the serous membrane becomes affected; and it is owing to this that the pulse of pericarditis is so different in different subjects, and so variable throughout the course of any particular case. We cannot therefore form our diagnosis by the pulse alone, as it may derive its particular character in some cases not so much from the affection of the pericardium, as from rheumatism in other parts of the body on the one hand, or from inflammation of some other serous membrane on the other.
According to Dr. Alison slightly hurried and laborious respiration, followed by increased impulse of the heart are the first appreciable signs of the disease, to this may be added as given by Dr Hughes and W. Wells, headache, sometimes with delirium, violent nausea with occasional vomiting of bilious matter, and other marks of gastric irritation; the face is flushed and as observed by Corvisart and Dr. Wells, the colour is more intense and permanent on the left, than on the right cheek: — In general when there is no effusion of unexudable matter, or it is quickly absorbed, observations rapidly take place, and the heart and pulse maintain throughout the disease the same strength and regularity and the patient is left annoyed by a change of posture. — When the heart is fettered in its actions and compressed by effusion being unable to perform its functions it becomes congested, it flutters, and, its actions and consequently the pulse become intermittent; — it is in such cases according to Dr. Hope that faintness, dyspnea, anxiety, coldness, lividity, sense of suffocation begin themselves, and if we overlook these important circumstances and trifle with the short period during which we can do anything to mitigate such.
alarming symptoms, the patient is in all probability irretrievably lost. All authors seem to agree that the most unequivocal sign is the presence of pain over the region of the heart, particularly if aggravated by pressure in whatever way exerted, whether by full inspirations, change of position or artificially. This latter circumstance has been known to aggravate it so intensely as to have caused a fit of syncope.

"The pain," says Dr. Hughes, "which, according to my experience, is a constant attendant upon rheumatic inflammation of the pericardium, is fairly applicable, by the inflammatory rheumatic affection of the fibrous external covering to the serous membrane; the fibrous tissue being the natural seat of rheumatism; of which pain is the most common, if not the universal symptom."

Dr. Hope attached so much importance to the artificial development of I may so call it, of the pain, that he strongly recommends, that we should place our hand over the region of the heart and carefully press on the interspaces of the 3d, 4th, 5th and 6th ribs, whilst with the other we feel the pulse, both to ascertain the state of the heart's action and the presence or absence of the pain, as it is often
latent except when artificially excited: in many instances though there is not actual pain yet the patient feels a sense of oppression over the region of the heart; at other times the patient feels not even oppression. This is especially the case in free livers, with whose intemperance has a strong tendency to obscure the ordinary symptoms.

Almost all positions are intolerable, if not positively painful to the patient; lying on the side particularly so; and he generally prefers lying flat upon his back, or still better, sitting in the reclining position with the head and shoulders elevated by means of pillows:—sometimes, though rarely, the only position which the patient can tolerate is sitting in bed inclining directly forwards. According to Dr. Latham, the degree of pain accompanying the change of posture, depends on the nature of the effusion.

Sometimes the pain and inconvenience which the patient feels in changing his position is altogether absent and the practitioner then, must be guided by symptoms which, were the pain present, he would consider of secondary importance only.

The feeble, fluttering and intermittent pulse, without any apparent cause accompanied by deranged circulation affords, according to
Dr. Hope, strong evidence of the presence of the disease.
In some rare instances no symptom whatever can be detected and
then it is, that the most experienced practitioners will mistake the
disease, for some other affection. Although the pulse in some
rare cases may not be affected under ordinary circumstances,
yet, it is generally so when the patient moves in the slightest
degree. Dr. Gardner relates a case in the Edinburgh Med:
chir. Transactions of a young man labouring under pericarditis
whose pulse varied between the extremes of 90 and 130 on the slight-
est exertion; — change of position is hurtful not only by altering
the pulse, and exciting pain, but the anxiety produced by it is so
distressing, that the patient often faints in consequence.

It is always difficult to form a correct diagnosis of this
disease, but sometimes it is particularly so — Inflammation
of some other thoracic viscera may be readily mistaken for it and
by pressure, should it be applied, we will excite pain whether the
heart or some other organ within the cavity of the chest be affected
— Should this be the case we must, mainly trust to the symp-
toms elicited by auscultation and percussion, which in the gene-
rality of cases, will be sufficient to guide us, but in some obscure cases of pericarditis, we have only negative symptoms to judge by; and then we must decide of the nature of the case by the absence of such symptoms as characterize disease of other thoracic viscera, as, for example, pneumonia, pleurisy, etc.

Dr. Hope observes should pericarditis be mistaken for disease of some other thoracic viscera, the mistake cannot be very injurious to the patient, since the treatment of all these diseases at their commencement is very similar; although it is true that the treatment of these affections is similar at the beginning, yet, the after treatment must materially differ according to circumstances; and the patient must be kept much longer quiet after pericarditis, than after the diseases alluded to by Dr. Hope, to avoid the risk of hypertrophy. Should the feeble fluttering and unsteady pulse, the feeling of suffocation, and the confinement to one posture cease, we may be almost certain that the fluid on which these symptoms depended, is diminishing by absorption, but should they continue or return after having been absent for sometime, then we have good cause to fear that the disease is
aggravated by the accumulation of the secretion, of whatever description this may be. The inflammation may be said to be on the decline. Then the fixed pain, if there should have been any, degenerates into diffuse aching and the peculiar veheence of the heart's action gradually becomes the beat of merely accelerated circulation; but not until all the symptoms have altogether disappeared can we say that the inflammation has terminated.

Even when they have entirely ceased, the patient is not for a long time safe against their recurrence; as they very often re-appear when the patient resumes his original avocations—When the motion and sounds of the heart do not entirely regain their healthy standard, we may reasonably suspect that adhesions and lymph still remain.

Physical signs.

The impulse of the heart is greatly increased sometimes to such a degree as to be perceptible to the bystanders; it is generally abrupt and irregular. Whenever there is a contraction of the heart stronger than common, the jetting is immediately felt along the arteries; it is this that distin-
guishes the pericarditic pulse from that produced by merely accelerated circulation. This jarring sometimes remains for months after the inflammation has ceased. In cases where there had been adhesions Dr. Hope has known it to exist for six months after the patient had been considered well. The irritability of the heart in such instances is perhaps kept up by frequent recurrence of inflammation, though not to an alarming extent, by adhesions, or by softening of the substance of the heart by subsequent carditis. The sound of the ventricular systole, as first noticed by Dr. Latham, is unusually sonorous and accompanied by the bruit de soufflet; this bruit de soufflet has been mistaken by many for the bruit de cuir neuf, first described by Lanneau, who compared it to the creaking of a new saddle, though properly speaking it was Collin who first observed it in pericarditis, and attributed it to the serous membranes having lost their smoothness and lubrication rubbing against each other. He called it frotement instead of bruit—this bruit is at times very obscure and resembles both the bruit de rage and the bruit de soufflet.

Dr. Latham limits the existence of this sound to rheumatic
pericarditis, but Dr. Hope affirms that it is present in every form of the disease except when the action of the heart is feeble. This sound often accompanies the diastole of the heart also. Thus, Dr. Hope relates three cases where such was the case, and to use Dr. Hope's own words, this sound seemed to annihilate the natural sounds of the heart more than in any other affection. Dr. Hope gives two explanations of this phenomenon accompanying the ventricular systole first: that it is owing to the increased velocity with which the blood is propelled in consequence of the morbidly abrupt contraction of this organ. "An explanation" he observes which "appears to us to be rendered probable by the following considerations" — first, by repeated abstraction of blood in animals at intervals of a day or two, we have produced at pleasure the rapid, jerking, throbbing and thrilling action of the heart, and in strict concurrence with it the bellows murmur; — secondly, this murmur takes place in nervous palpitations when the action of the heart is of the nature described: — thirdly, the loudness of the murmur observes a very accurate ratio, to the violence of the throbbing and thrilling; — the second cause to which Dr. Hope at-
tributes the coexistence of this murmur with systole of the ventricle, is to endocarditis, which I think is the most plausible explanation.

When this bruit accompanies the diastole Dr. Hope thinks it is entirely owing to endocarditis affecting the auricular-ventricular orifices;—"this," he says, "we infer because we have not found it produced by the abrupt jerking action of the heart in reaction from loss of blood; nor in nervous palpitations; and because, when we have noticed it in pericarditis, we have invariably found it connected with a more or less thickened state of the valves."

Dr. Stokes thought that the bruit de craquement de cuir passed sometimes into the bruit de soufflet, and Dr. Hughes thinks that it mainly depends on the nature of the effusion; and that it is always present when it is solid, whether the case be one of idiopathic or rheumatic pericarditis; but, that it is not present or at least not observable when the effusion is of a fluid nature.

Here I differ in opinion from all these gentlemen. I form Dr. Hope's first explanation, because this bruit is present in cases where the circulation is extremely languid. I do not think
that it is so often attributable to endocarditis as Dr. Hope and
Mrs. Maclelland seem to think; because we observe it in healthy
animals after the abstraction of a large quantity of blood.

From Dr. Stokes, and Dr. Hughes, I differ, because we know the
bruit de craquement and the bruit de soufflet to be essentially
different, the former being produced without, the latter within
the heart.

The condition which I think necessary for the production
of the bruit de soufflet, whether in the healthy, or diseased heart, is
that the valves shall bear a larger proportion than natural, to
the orifices which they close; or in other words that some un-
natural impediment be offered to the flowing current of blood
—thus in endocarditis affecting the valves ever so slightly, the
bruit is produced whether the valves be simply infiltrated, or
studded with vegetation. The same explanation may be
offered to account for the production of the bruit de soufflet,
after the loss of a large quantity of blood, viz: that the force of
the circulation and the quantity of circulating fluid being dimi-
nished, the capacity of the arterial tube, and indeed of the circu-
lating system at large becomes diminished, to adapt itself to the
extending force and the orifices contracting also, cause the substance
of the valves to fill up a larger portion of the area than natural
and to produce the bruit, just in the same way as if they were
diseased. We can easily satisfy ourselves of the truth of
this assertion by projecting a column of fluid through a piece
of intestine or a dead artery and applying the stethoscope
over any point of it; — when we hold the instrument lightly
no bruit is heard, but the moment that we indent the vessel,
it is produced, distinct in proportion to the pressure employed.
The absence of the respiratory murmur over the region
of the heart, is enumerated by Louis among the physical signs
of pericarditis, this is caused by the enlarged pericardium
displacing the lungs — if the disease be complicated with
an affection of the lungs, this sign may be fallacious, as it
may be the effect of partial obstruction in that part of the lungs.
When the pericardium contains fluid the sounds of the
heart are duller and more diffused than natural, and the im-
pulse of the heart against the chest does not keep time with
them. Because the heart has to displace the fluid, before impinging against the parietes of the thorax. — Although the natural sounds of the heart are distinctly audible at some distance from this organ, yet the abnormal sounds are only heard immediately over the region of the heart, and seldom beyond its limits — thus Dr. Stokes, during his very extensive experience of this disease, has only met with one instance, in the case of a boy five years of age, where the phenomenon was heard under the clavicles and along the spine, in this situation it greatly resembled the bruit de sufllet.

The bruit analogous to the craquement de cuir, now according to Collin, seems to depend on the dryness of the membranes, for he has observed that it disappears when, judging by other local symptoms, there has been an effusion of fluid within the pericardium; — this latter statement is confirmed by M. Devillers, who found in dissection of a man who had presented this symptom during the whole course of the disease, that the pericardium and heart were covered by very thick false membranes, and numerous vegetations, but that the cavity of the pericardium did not contain one single drop of fluid, although Collin supposed that the stethoscopic pheno-
...me of friction depended on the dry state of the membranes before the secreting stage of inflammation yet, I think it is evident from the last related case and those mentioned by Dr. Stokes that effused coagulated lymph will, provided fluid be absent, produce exactly the same sounds. Collin was misled into the supposition that it depended merely on the dry and inflamed state of the serous membrane by having observed it in cases of rheumatic inflammation of the knee joint, before effusion had taken place; for he says that he could produce it in such cases by rubbing the patella over the condyles. Dr. Stokes supposed that the craquement de cuir neuf depended greatly on respiration for, he says, that he has observed it in some cases to become more distinct during inspiration and less so during expiration; then it closely resembled the bruit de soufflet. If the patient held his breath the sound then was neither of the two described but somewhat between both.

M. Broussais described this craquement de cuir neuf long before Collin, under the name of bruit de parchemin, or the noise produced by rubbing two pieces of parchment together. When it is produced by the rough surfaces of the effused lymph it communicates a pecu-
clear sensation of vibration or tremor to the hand when applied over
the region of the heart which Dr. Stokes has described under the
name of tremors—This sign to judge from the correctness
of Dr. Stokes' diagnosis is most unequivocal, he says, that he has
known a distinct bruit de râpe to accompany it, and to change by
the application of a few leeches to a soft murmur resembling the
bruit de conflut.

Dr. Alison does not attach much im-
portance to the craquelement de cuir, for he says that in many
instances the disease runs its whole course without this sign being
present and in a few cases, some of them well marked in every
other respect, which have come under my notice, I have not been
able to detect it though I have attentively watched for it.

The signs are the same in chronic as in acute pericarditis
but generally less marked according to Dr. Hope. There is but one
appreciable difference which is that the patient complains often-
er in chronic than in acute pericarditis, of a sense of fulness
and weight, of something which he cannot get down, in the
ventriculus cordis.

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The list of remedies which can be employed for the cure of pericarditis with decided advantage is rather limited. The abstraction of blood is generally ranked foremost by almost all authors and of the different modes of accomplishing it, aspiration seems to be preferred, yet I think, that this mode of abstracting blood is far from being absolutely necessary, and that in the majority of cases topical bleeding is preferable, first because it answers the same purpose as general blood letting; and secondly because it does not produce that distressing debility which seldom fails to follow aspiration to any amount; and because it does not excite that reaction so prejudicial when the lining membrane of the cavities of the heart, and particularly the valves are affected; our primary object must be to allay undue excitement of the heart; and general blood letting has a greater tendency than topical bleeding to excite nervous irritability which in itself is a cause of hypertrophy of that organ. That general bleeding is not absolutely necessary, and that, provided blood be abstracted the effects are the same in whatever way accomplished is
beautifully proved by a case related by Corvisart.

The patient, a woman of middle age, was attacked by very severe symptoms of pericarditis, which were completely arrested on the third day, by the appearance of the menstrual discharge and although it was unusually scanty and lasted only three days, instead of nine (the usual period with this woman), yet it was sufficient to stop the progress of the disease and to keep it stationary. That topical bleeding by itself is often sufficient is clearly shown by Dr. Hope, who assures us that he has seen a single prompt and abundant application of leeches, or a cupping at once subdue every formidable symptom. Dr. Astley says that in rheumatic pericarditis, general blood-letting is not admirable, but that the repeated use of local blood-letting is most beneficial. My results of this practice, he says, have been much more successful than those of any other.

I do not mean to say that I would in no case employ general blood-letting; but merely, that I would not do so on every occasion; as unless the symptoms are very urgent I consider topical bleeding preferable; — in cases where they are pressing.

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would bleed though not to a large extent, at first, and then truth entirely, in patients of strong and plethoric temperament to cupping, and in those of weak and debilitated constitution to leeches. Cupping where practicable I consider preferable to leeches because we can abstract a greater quantity of blood in a less space of time—of the pain and the heart's immoderate action are not subdued by the first topical bleeding, it should be repeated, but sometimes as already stated such repetition is unnecessary.

When there is pain of the epigastrium and other signs of gastric irritation, I would recommend the application of leeches to the part taking care to encourage the bleeding by warm fomentations or light poultices.

Next to bleeding I would rank severe counter irritation. Dr. Alston seems to think that it is not of much use, but with all due deference for so high an authority, I must state that I have seen one case that of a young man twenty years of age of a robust constitution, who had had two attacks of rheumatism previously and in whom the symptoms were very urgent, where a large blister kept open by the length and tart proved most
beneficial. Colchicum and digitalis combined I have used with great advantage in two cases. In the case above alluded to which was preceded by an attack of rheumatism I used antimonials but the disease which had disappeared from the joints recurred; I suspended the use of the antimonials and after subduing the disease of the joints by local means, tried the antimonials again, as they seemed to me, to have greatly subdued, during their use, the force of the circulation, but the rheumatic affection of the joints recurred soon after, thus confirming Dr. Atten's observations, but with this difference, that the disease of the joints was subdued without discontinuing the antimonials a second time, and after it was subdued they were found very beneficial.

Some practitioners have instilled the use of mercury after the effusion of lymph has taken place, in the hope that it will here as in uritis promote its absorption, but perhaps practitioners in this instance have acted upon a wrong analogy. For we must consider the difference in the quantity of effused lymph in cases of uritis, and of pericarditis, and further, that as in
The experiments of Magendie show that for a long time on one substance alone sickness and suffering from ulceration and perforation of the cornea, so perhaps it is not impossible that under certain circumstances the depraved and unhealthy state of the constitution induced by mercury may have a similar effect and if so that the absorption of the newly organized lymph in cases of iritis is perhaps but the first step towards that ulceration.

Dr. Alison is of opinion that the use of mercury though it may in some cases prevent the effusion of lymph within the pericardium, has not the power of absorbing it after it has been effected.

I would particularly recommend attention to be paid to the state of the bowels, as I think I have seen all the symptoms aggravated by the slightest constiveness or flatulency.

In the treatment of this as well as most other affections, much is left to the discretion of the practitioner and in few instances will his medical skill be more severely tested than in the advanced stages of pericarditis.

When the disease recovers it generally has not the
same intensity, and is I think more under the power of medi-
cine; we should now abstain from employing the same active,
treatment as during the first attack, and should content our-
relieves with combating the inflammation by the moderate use of
of topical bleeding and counter irritation.

The diet should be of the poorest possible description such as barley
water, weak tea, slops, weak gruel and arrow-root, diluent
drinks may be allowed but not to such an extent as to increase
the pain on the precordial region by distending the abdomen.