CONTRIBUTIONS TO THE STATISTICS
OF
VALVULAR DISEASE OF THE HEART ;
WITH ESPECIAL REFERENCE TO AFFECTIONS OF THE
SEVERAL ORIFICES,
AND
THE PARTICULAR EFFECTS OF CERTAIN RECOGNISED
CAUSES.

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IN presenting these remarks on the subject of valvular disease to the Medico-Chirurgical Society, I feel it due to myself to state that the inquiry was entered into with no view to publication, but merely to ascertain facts for my own instruction, which published works on this subject did not supply. But having found that other results began to develop themselves, and having formerly experienced the need of such statistical information as the present paper contains, I have been led to hope that it might be useful to others. To render the results of the investigation more readily available, I have placed in a tabular form a short resumé of the more important pathological facts observed in various organs in the several cases analysed. These facts will, I trust, carry with them the more weight as they are put forward on the authority of Messrs. Hewett and Pollock, the successive curators of the Museum at St. George's Hospital, by whom all post-mortem

examinations there have for some years been conducted and recorded.

The cases included in the Table occurred during the last two years, when a constant personal examination of cases in the medical wards necessarily threw much light upon the results afterwards ascertained in the dead-house. But as my object has been to obtain correct general statistics, I have not limited myself to those only which came under my own observation, but have endeavoured, by a careful perusal of all the cases, to ascertain in how many instances valvular lesion occurred ; to compare, one with another, the various forms it assumes ; and to detail in connection with it the morbid changes in other structures, which have reference more or less defined to disease within the heart. And here let me also acknowledge my obligation to the medical officers of St. George's for the permission kindly accorded me to publish such facts as are derived more directly from the Museum Records of that institution, in which a mass of materials of a highly interesting character have been accumulated for several years past.

The whole number of deaths in the hospital during the period above referred to was 535 ; the condition of the organs of circulation was ascertained in 419 instances, and among these there were seventy-nine cases of valvular lesion. These have been arranged in the Table, according to the ages of the patients. The first two columns exhibit the particular condition of either valve which had become the subject of disease ; the others show the number of cases in which atheromatous disease was found at the root of the aorta,—the cases in which the previous history of the patient decided whether he had ever suffered from an attack of acute rheumatism, or the contrary,—the changes in the muscular structure of the heart,—the instances in which the recent effusion of lymph or the persistence of old adhesions indicated inflammation of the serous membranes within the chest,—and those in which any change was found in the structure of the kidney. Other lesions are occasionally mentioned, and the chief cause of death is stated.

The term "*fibrinous deposit*" has been generally employed in the Table, as distinctive of that condition of the endocardial membrane which we are in the habit of considering as the result of acute inflammation: it is not intended to imply an adoption of the theory which attributes its presence to deposition from the blood, in preference to that which derives it by exudation from the lining membrane. It occurs sixteen times among the first eighteen cases, reaching to the age of 34, and is only five times mentioned among the remaining fifty-one cases. In fourteen instances previous valvular disease had existed, while in seven the fibrinous deposit on the valve is the only condition of disease. The details of these cases will be considered under other heads; but it cannot fail to be remarked, that whatever circumstances may co-operate in the development of this condition, the presence of fibrinous deposit is more influenced by the age of the patient than by any other cause whatever.

The valves affected in the seventy-nine cases detailed in the Table are,—

In 36 cases,	the aortic and mitral valves, simultaneously ; or,	45 per cent.
In 26	„ aortic valves alone ; or,	33 per cent.
In 17	„ mitral valves alone ; or,	21 per cent.

These numbers may be taken as pretty correct representatives of the relative proportions of valvular disease in general; for on a larger survey, extending to nearly 200 cases, I find the numbers are—

46 per cent.	for the aortic and mitral together.
32	„ „ aortic alone.
22	„ „ mitral alone.

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Or, taking for our standard of comparison the whole number of post-mortem examinations, in which the condition of the heart is reported, viz. 419, as before stated, we obtain—

18·8 per cent. of valvular disease ;

and—

8·6 per cent. of disease of the aortic and mitral valves simultaneously.				
6·2	„	„	„	aortic alone.
4·0	„	„	„	mitral alone.
<hr/>				
18·8				

Among the 419 deaths from all causes in the hospital, no fewer than 113 individuals (about twenty-seven per cent.) are reported to have exhibited traces, more or less marked, of *atheromatous disease* either on the valves themselves or in their immediate vicinity at the origin of the aorta. The researches of various pathologists have sufficiently proved this disease to be one chiefly of advanced life. And here it need only be stated, by way of illustration, that during the two years there occurred—

1	case at the age of	6
1	„ at the age of	12
1	„ at the age of	19
13	cases from	20 to 30
22	„ from	30 to 40
19	„ from	40 to 50
36	„ from	50 to 60
13	„ from	60 to 70
7	„ above	70 years of age.

Comparing these numbers with the proportion of deaths at corresponding ages during the same period, I find that amongst all the patients dying in hospital the proportion exhibiting traces of *atheromatous disease* in the immediate proximity of the heart was at the different ages as follows:—

from 20 to 30		12 per cent.
from 30 to 40, and from 40 to 50, each		21 per cent.
from 50 to 60, and from 60 to 70, each		43 per cent.
and above 70		54 per cent.

Valvular disease is superadded in about two-fifths of the cases of *atheroma*, but in little more than half of these is the valve found in a condition of *atheromatous degeneration*.

Among the cases recorded in the Table, we find twenty-eight examples of *atheromatous disease* affecting valves, fourteen of which exhibit *atheroma* of the root of the aorta. There are also twenty-four cases of *atheroma* of the aorta, in

which the valvular affection was of some other nature. We have, therefore, fifty-two examples of atheroma among the seventy-nine cases of valvular disease, and, as before stated, 113 altogether for the two years. And taking, again, as the standard of comparison, the 419 post-mortem examinations, we obtain the following relative proportions:—

- 27 per cent. of atheroma on the valves, or in their immediate vicinity.
- 12·24 per cent. of atheroma, conjoined with valvular disease.
- 3·34 per cent. of atheroma of the valves, with similar condition of the aorta.
- 5·73 per cent. of atheroma of the aorta, with some other form of disease in the valves.
- 3·34 per cent. of atheroma of the valves, the aorta being healthy.

The twenty-eight cases of atheromatous valves consist of—

- 4 affecting equally the aortic and mitral valves.
- 12 affecting the aortic valves.
 - of which { 1 was associated with fibrinous deposit on the mitral valve.
 - { 6 ,, with thickening of the mitral.
 - { 5 ,, with no form of mitral disease.
- 12 affecting the mitral valve—
 - of which { 1 was associated with fibrinous deposit on the aortic valves.
 - { 2 ,, with thickening of the aortic valves.
 - { 9 ,, with no form of aortic disease.

In two of these cases, fibrinous deposit on the one valve corresponds to an atheromatous condition of the other. Nor is this association of old atheromatous disease, with recent inflammatory action, one of very rare occurrence. There are altogether eight such instances. In addition to the two just mentioned, one case exhibits atheromatous and fibrinous deposits on both sets of valves; another, atheroma of the aortic valves accompanied by fibrinous deposit on the aorta itself. Atheromatous and fibrinous deposits on the aortic valves are associated, in a third case, with thickening of the mitral; while the same combination of disease in the mitral is, in one instance, conjoined with thickening of the aortic valves, and

exists in two more, without other cardiac lesion. In several of these cases, other acknowledged causes of cardiac inflammation had been present, which might serve solely, or conjointly with the atheroma, to excite the inflammatory action of which traces are found after death. In one, recent pleurisy; in another, pericarditis; in a third, granular degeneration of the kidney; and in two others, inflammations in other organs,—prevent our assigning too great importance to the previously atheromatous and contracted state of the valve; but in others no cause can be assigned. And I may refer to Nos. 7 and 18 as being instances of this nature, and offering a fair presumption that the inflammatory condition was in great measure brought on by the previous condition of the valve, which was such as to offer great impediment to the due action of the heart.

Another set of cases, of an opposite character, might also claim our attention, in which atheroma seems to have been developed in a valve previously thickened, contracted, or even cartilaginous; but this will better fall to be considered after the cases commencing in inflammation. And I would now only advert to the fact, that the results of this analysis are opposed to the statement made by several pathologists, that the mitral valves are more liable to atheromatous disease than the aortic; the only difference in the cases I have examined being, that when the mitral valve is affected with atheroma, the aortic valves are more frequently found free from other forms of disease, than the contrary.

There are only fifteen cases in which a distinct account was obtained from the patient, of his having undergone, at any previous period, an attack of acute *rheumatism*: in many of the others, it was equally ascertained that he never had done so,—in some the fact was doubtful, and in others it had never been inquired into. We may suppose that in many cases, in which merely slight thickening or opacity of the valve was found, giving no evidence of their unsoundness during life, or where the attention was directed to some other ailment, wholly independent of the central organ of the circulation,

which ultimately proved fatal, the affection of the valve might be due to a previous attack of acute rheumatism; although, having been overlooked during life, its cause had never been inquired into: and this is particularly true of patients dying in the surgical wards. In addition to this, if we consider the difficulty of obtaining a distinct account from the patients themselves, of any previous illness, or of the origin of their present ailments, it is at least probable that all the cases due to this cause are not stated as such.

This question becomes important, when we find that the fifteen cases consist of—

13	of affections of the aortic and mitral valves together,
1	„ aortic valves alone, and
1	„ mitral valves alone;

which affords a striking contrast to the statistics of valvular disease in general, already given. But it is remarkable, that in going back over two or three years previous, a similar result is obtained; and that of thirty-five cases ascribed to the consequences of rheumatic endocarditis, there are—

28	of affections of the aortic and mitral valves together.
3	„ aortic valves alone.
4	„ mitral valves alone.

One possible source of fallacy it may be well to advert to. From the nature of the case, it must be evident, that the majority of those to whom the question had happened to be put, were patients in whom the affection was so pronounced, as to leave no doubt that the valves were unsound during life, and, therefore, many, or most of them, were cases which proved ultimately fatal, chiefly in consequence of conditions arising out of that unsoundness. But in other cases, fatal in consequence of similar conditions, likewise traceable to disease of the heart, in which acute rheumatism had not existed, the same proportion does not hold. Of the fifteen rheumatic cases, nine proved fatal, from disease directly connected with unsoundness of the heart; of which there were—

8	cases of disease of both aortic and mitral valves.
1	case „ the aortic valves alone.

The other six were complicated with diseased kidney, and albuminuria. During the same period, I find twenty-six cases recorded, in which the cardiac disease was equally pronounced during life, of which nine were connected with albuminuria; the remaining seventeen consisting of—

7	cases of disease of the aortic and mitral valves simultaneously.
4	„ aortic valves alone.
6	„ mitral valves alone.

No doubt therefore remains, in my own mind, that cases of cardiac lesion due to rheumatic endocarditis are peculiarly liable to simultaneous affections of both sets of valves.

Almost all the cases of morbus cordis found in connection with rheumatic fever, prove fatal at a comparatively early period of life. Ten of the first seventeen cases in the Table are stated to have had attacks of it, and to have died at ages from twelve to thirty-one. In only one of these cases was the rheumatic fever recent; in another case, a recent attack supervened on one of old standing, and no new inflammation was excited in the endocardium; and in a third case, purulent inflammation of the joints was present, without endocarditis, and a history was given of an attack of acute rheumatism, some years previously. The five cases occurring at later periods of life, all similarly point to attacks undergone some years prior to the period of their death, and in one only was there severe lesion of the valves of some standing (No. 24); in three others, the pericardium was adherent; and one case (No. 37) I am inclined to view as a mere coincidence, since the rheumatic fever had existed sixteen years previously; the pericardium was not adherent, one of the valves was atheromatous, but the valvular lesion was nowhere of great extent, while there was also granular degeneration of the kidney.

It must be remembered that acute rheumatism is essentially a disease of youth. During the two past years at St. George's Hospital, one patient was admitted labouring under an acute form of the disease at 55 and one at 50 years of age.

Between 50 and 35 there were 22

„ 35 and 25 „ 50

„ 25 and 15 „ 71

Under 15 there were seven, of whom the youngest was 10 years of age. This has of course only an approximative value, as we know that children are liable to its attacks at a much earlier period, and I have every reason to believe that the number under 15 ought to be greater, but that they are more seldom brought to the hospital at that age. I would here, in passing, call attention to the fact, that while during two years 152 patients laboured under this disease in the hospital, excluding the subacute, gonorrhœal and chronic forms, only fifteen cases of endocardial affections, in which a history of acute rheumatism was obtained, were found on post-mortem examination during the same period. And if to these be added all the doubtful cases in which the origin was not known, and the chief lesion was not atheromatous in kind, the number only amounts to thirty-eight altogether, of which fourteen were complicated with diseased kidney.

A previous attack of acute rheumatism, complicated with cardiac inflammation, would seem to confer a predisposition to suffer from subsequent endocarditis, even though the rheumatic disease should not again manifest itself in the joints. Eight of the first ten rheumatic cases present evidence of recent endocarditis. In one of these, as already mentioned, there had been a recent attack of acute rheumatism. In another, the patient was admitted labouring under a severe form of pneumonia, terminating in disintegration of the structure of the lungs. In a third, granular degeneration of the kidney was found. But in the other five, the chief ailment during life, and the principal cause of death, was referrible to the heart itself; three were complicated with dropsy. Of these—

2 without dropsy had recent pericarditis.

3 with dropsy had $\left\{ \begin{array}{l} 1 \text{ pericarditis and pleurisy.} \\ 1 \text{ pleurisy.} \\ 1 \text{ pneumonia.} \end{array} \right.$

A further confirmation of this predisposition would seem to

be derived from four cases of fibrinous deposit found on other portions of the endocardial membrane, which all occurred in cases of old rheumatic fever.

In nine of the fifteen rheumatic cases, endocarditis was present at the time of the patient's death. The majority of these gave evidence of previous disease. Two were accompanied by atheromatous deposit in an advanced stage. In the other six cases, the valves were in two atheromatous, and in the remainder merely indurated and contracted. In all the cases in which fibrinous deposit was present, both valves were affected by some form of disease; the two examples of rheumatic affections of solitary valves being found among those of old standing only.

The column following that devoted to the report upon acute rheumatism states in general terms the alterations found in the *muscular structure of the heart*, the details of which do not seem of sufficient interest to detain us at present. Hypertrophy, dilatation and atrophy are equally found mentioned as the consequences of severe lesion of the aortic and of the mitral valves, and of adherent pericardium; and sometimes would seem to exist in a considerable degree of development, with a condition of valves in no way proportionate to the muscular changes.

The two subsequent columns are devoted to a detail of those cases in which there were indications of recent *pericarditis* or *pleurisy*, and those in which old adhesions gave evidence of previous inflammations. There are fifteen cases of recent pericarditis among those of valvular disease; in seven of which, the patients had at some previous period suffered from rheumatic fever; in six of the remaining eight, this had certainly never been the case; in one it is uncertain, and in one unknown. Nine of the fifteen cases are associated with fibrinous deposit on the valves, and one with similar deposit on the lining membrane of the aorta, without its being found on the valves. There are also nine cases of old adhesions of the pericardium, six of rheumatic origin, two non-rheumatic, one of unknown origin. It has formed no part of my plan to discuss the subject

of pericarditis, and it is only introduced here, with a view to examine its bearing upon valvular disease. The uncertainty still hanging over those white patches so often found on the surface of the heart,—the difficulty of enumerating every instance, or of wholly excluding it as evidence of inflammation, as well as the question, how far all trace of pericarditis may be removed, seemed to justify the course I have adopted. Several of the cases which combined pericardial with endocardial inflammation bore evidence from examination during the patient's life that the affection of the pericardium was subsequent to, and consequent upon, the inflammation within the heart; while in some, a general cause seemed to operate in developing both simultaneously, and each independently of the other; and in others the inflammation being propagated from neighbouring parts, may be presumed to have travelled from without inwards, and endocarditis to have supervened upon pericarditis.

Seven of the fifteen instances of recent pericarditis, and five of the nine of old standing, are associated with similar conditions of the *pleura*. There are also seven cases in which recent *pleurisy* is associated with fibrinous deposit on the valves: in four of these, pericarditis was also present, and in three, the pericardium was unaffected. Numerous other complications were present, and in three only were the symptoms referrible to the lungs and pleura at all prominent—so that I am unable to trace any such definite association between pleurisy and endocarditis as clinical observation led me to anticipate. Several instances are recorded of old pleuritic adhesions, in which slight thickening of the valves from previous inflammation was found, without any other lesion sufficient to account for its origin; but in all it will be observed that the affection of the valve was slight, and they commonly occur among persons in advanced life. Pleuritic adhesions are mentioned in thirty-four of the cases of valvular disease; and—

In 21 are associated with disease of the kidney.

In 2 „ with rheumatic fever.

Of the remaining eleven cases,—

- 3 were instances of atheromatous disease of the valves.
 8 ,, simple thickening.

Deviations from the healthy and normal condition of the *kidney* are noticed forty-one times in the Table:—

- In 28 cases the disease is granular degeneration.
 5 ,, the kidney is "large and mottled."
 1 ,, it is "mottled, small, and the cortical structure wasted,"
 as in granular degeneration.
 3 ,, it is congested.
 2 ,, it is coarse.
 1 ,, it is fatty.

In the remaining case, one kidney had a yellow patch on its surface. During the same period, granular degeneration was observed altogether in fifty-nine cases; the kidney was large and mottled in twenty-one instances; and in eleven, it was mottled and atrophied. In nine of the last number it was also granular, and five of these were coincident with valvular disease, so that I am inclined to place the other two, in which the surface was not granular, in the same general class of atrophied kidneys, in opposition to those which are increased in size in the diseased state. The other conditions need not at present occupy our attention. Four times in the Table, kidneys affected by other forms of disease are stated to have contained cysts; but in seven instances of simple cysted kidney, occurring during this period, the valves were unaffected. It is remarkable, that while of sixty-one cases of atrophied kidney, twenty-nine are coincident with valvular disease; only five cases in twenty-one of those in which the kidney was "large and mottled" present examples of endocardial affections; very nearly fifty per cent. in the one condition, and scarcely twenty-five per cent. in the other. Among so large a number of cases, this result must be looked upon as something more than a mere accidental circumstance, and derives increased importance from the doubts entertained by some pathologists as to the identity of these two forms of disease, which have been supposed to be only different stages of the same affection.

Among the twenty-nine cases of atrophied kidney, there are five examples of recent endocarditis, of which—

1	is connected	with previous rheumatic fever.
2	„	with a previously thickened state of valve.
2	„	with no other cause.

In three of these, old adhesions of the pleura were found ; and in one, recent pleurisy—in another, recent pericarditis, were also present ; but in all, the disease of the kidney had been recognised during the life of the patient by the presence of albumen in the urine : and, from a careful examination of the cases, I think I am justified in asserting that it was the chief cause of the lesions found after death. For although we have seen reason to believe that a mutilated or inefficient condition of a valve may excite endocardial inflammation, still in the cases before us the affection was scarcely of such extent as to authorise such a belief, and was of minor importance in comparison with the condition of albuminuria ; and at least the two last are free from any such ambiguity. The remaining twenty-four include—

2	cases connected	with rheumatic fever.
10	„	with an atheromatous state of valve.
1	„	with atheromatous dilatation of aorta.
11	„	with no other direct cause of disease of heart,
except pleuritic adhesions.

In three only of the ten instances complicated by an atheromatous state of valve does that appear to have been unaccompanied by inflammatory thickening ; in some the condition of the valve was such as to afford very clear evidence that inflammation and thickening had preceded the atheromatous deposit, while in others it could not be ascertained which was the primary lesion. In six of those cases which I am inclined to attribute to disease of the kidney as the predisposing cause of the affection, pleuritic adhesions were found : and while on the one hand it is to be considered that endocardial inflammation may probably be excited by pleurisy, it is to be remembered on the other, that it is in many instances due to

renal disease, and is liable to occur in the course of renal dropsies, without any assignable cause.

The five cases in which valvular disease was coincident with the large and mottled condition of kidney, consist of—

3 of acute endocarditis	{	1 complicated with calcareous deposit.
1 " with previous rheumatic
fever and cellular inflammation.
1 complicated with severe pleuro-pneumonia. |
|-------------------------|---|--|
- 1 of simple atheroma of the mitral valve.
 1 of thickening and ulceration connected with no other direct cause of cardiac disease.

Whatever influence may be assigned to the condition of the kidney as predisposing to cardiac disease, it is worthy of remark that in each of the cases of recent endocarditis just enumerated, the complications are such as we have seen associated with the same form of acute disease when the kidneys were healthy, which cannot be said of all the instances of granular degeneration. In the first case only (No. 13) was disease of the kidney indicated during life: there had been excessive hæmaturia of but short duration previous to admission: the calcareous deposit on the valve was of old standing, and there were old adhesions of the pleura and pericardium. In the two others (Nos. 41 and 55) severe and fatal inflammations were present, and are noticed as of primary importance in causing the patient's death: in fact, there was no symptom to call attention to the condition of the kidney. In one of them there had also been a previous attack of acute rheumatism, which, as we have seen, has a tendency to confer a predisposition to subsequent attacks of endocarditis, and the pericardium was adherent probably from this cause.

The first of the two cases without recent endocarditis (No. 22) cannot in any way be attributed to disease of the kidney. The other (No. 66) is more doubtful. This patient had happened to have been in the hospital twelve months previously with common continued fever, from which he recovered completely, but during the continuance of which a bruit was discovered accompanying the first sound of the heart over the

aortic valves, without any evidence of the hypertrophy which was so marked on his second admission ; and during the intervening period he alleged that he had suffered from gout ; the urine was albuminous. The consideration of these cases is not unimportant ; for although the most direct evidence of the connection between endocarditis and particular forms of renal disease must undoubtedly be derived from those in which the former affection is quite recent, still we should also expect that, if it be of frequent occurrence during their continuance, traces of its previous existence will be left in thickening and contraction of the valves after death. And in comparing these two forms of disease, we find that, while contraction with thickening of the valve exists in numerous cases of "granular degeneration," only one ambiguous instance is recorded as coincident with a "large and mottled" kidney, a result which agrees with the fact, that endocarditis occurs in the former without complications, and is not found in the latter, except under such conditions as would seem to develop it in healthy kidneys. At the same time it is right to observe that there are, in the Table, but three cases of endocarditis between the ages of 45 and 55 ; and that two of these are coincident with "large and mottled" kidneys, and one with granular degeneration, whatever other cause may have been in operation ; while on the other hand, there is scarcely a larger proportion of cases of valvular disease coincident with mottling degeneration than is found among deaths from all causes in the hospital.

Of the cases in which evidence of recent endocarditis was found, three remain which have their origin in none of the causes hitherto specified. The first of these (No. 1) derives importance from its being the only case recorded in the Table, in which a general condition of inflammatory disease is accompanied by inflammation of the endocardium, without the intervention of any other assignable cause, and from its thus justifying the assumption already made, that even where such complications are present, a reference to the history of the case may induce us to exclude them as causes of the endocarditis which has been found. A mark of doubt is placed after the

statement that the patient, in this case, never had suffered from rheumatic fever, solely because he was said to have complained of aching pains in his limbs a day or two before the accession of the acute symptoms, although none of his joints had ever been swollen or red.

The other two (Nos. 3 and 28) have one feature in common; they present the peculiarity of having only two aortic semilunar valves. Two similar instances occur in the Table, exhibiting other forms of valvular lesion, and I am not aware that, during the two years from which the cases are selected, any instances of this abnormal conformation occurred unconnected with endocardial disease. In none of them was the mitral valve at all affected, none gave a history of previous rheumatic fever, in none was any form of renal disease present, and in all, while two of the valves were unusually developed, the third was either quite rudimentary or entirely absent; and I am inclined to attribute to the congenital malformation the subsequent development of cardiac disease.

The four cases consist of—

- 2 instances of recent endocarditis.
- 1 ,, of inflammatory thickening with ulceration.
- 1 ,, of calcareous deposit.

The first occurred in a boy of 14 years of age, who was admitted into the surgical wards with diffuse cellular inflammation, commencing at the ankles and extending up the legs to near the knees, and terminating in the formation of pus of a fetid character, which was found burrowing among the muscles of the leg: secondary abscesses formed in the lungs; and pus was also found in one of the ankle-joints which was opened. In this case, the exciting cause of the endocarditis was manifestly that of general inflammation, but it is very remarkable that this is the only instance under the age of 25 in which one set of valves alone is affected, and that these were the subjects of congenital malformation. The whole history of the case forbids its being regarded as allied to acute rheumatism, although the inflammation began in the neighbourhood of the ankle-joints. The other case of endo-

carditis occurred in a man aged 39, who, though a carrier, had never experienced any dyspnœa or irregular action of the heart, nor any incapacity for exertion, till four months previous to his admission, when, to use his own expression, he caught a "violent cold," with sharp pain in left side, for which he was blistered, &c. Dropsical symptoms had commenced three or four weeks before his admission, and a rough "bruit" accompanied both sounds of the heart over the aortic valves. He had had no other previous illness which he could recollect. On post-mortem examination no lesion of any importance was found, except the "rudimentary state" of one of the semilunar valves, and extensive atheromatous deposit in the aorta, with destruction of its lining membrane. There was considerable congestion of the lungs, with pulmonary apoplexy, and a small tubercular mass occupied the apex of the left lung.

In No. 38, the two semilunar valves were much thickened from previous inflammation, and one was ulcerated quite through, so as to permit free regurgitation of the blood; the lungs were, as in the former case, congested, with some pulmonary apoplexy. The history of the case was very similar to the preceding, palpitation commencing three or four months previous to admission, without his having had any preceding illness, and dropsy supervening, on account of which he was led to apply for admission into the hospital. The other case (No. 20) died in consequence of the effects of delirium tremens, and I have therefore no history of the cardiac affection.

Before leaving the subject of endocarditis, perhaps I may be permitted to allude to another case (No. 6), which derives interest from the complication with jaundice occurring a few days before death.—A girl aged 18, pale and cachectic, said to have been subject to palpitation of the heart from a child, had an attack of acute rheumatism, with pain in the chest, four months ago, since which time the cardiac symptoms have much increased. I need not detail all the symptoms: there was evident enlargement of the heart, with a mitral murmur.

Three or four days after admission, constant vomiting commenced, and continued with no intermission till within one or two days of her death. Jaundice supervened two or three days after the vomiting, and the affection of the heart became evidently and painfully increased. Her condition was such as to preclude any minute examination of that organ, but a week after admission pericardial friction was very distinct, and obscured the other sounds of the heart.

Twelve days after admission I made the following note :—
“She is lying almost unconscious, with a brightly yellow skin, only disturbed by frequent efforts to vomit : the præcordial region has become more prominent and full since admission ; the heart’s action is very violent and irregular, shaking the whole upper part of her body, having evidently become much more laboured, as the jaundice has supervened.” Erysipelas of the face came on a few days before death, with an inflamed and ulcerated condition of the fauces and pharynx.

Post-mortem examination showed the jaundice to have been dependent on disease of the liver, with obliteration of the secreting apparatus. One kidney had a patch of yellow discoloration, covering about a fifth of its surface, which penetrated to some depth into the cortical structure. The mitral valve showed traces of disease of long standing, and also of recent endocarditis ; and the aortic valves had slight fibrinous fringes. The pericardium contained several ounces of serum, with flakes of lymph suspended in it.

I cannot state positively whether albuminuria existed during life, but I believe not ; however, the point of interest in this case is, that the predisposition to inflammation of the endocardium being given by previous disease of the mitral valve, there seemed to be a connection between the sickness and the development of endocarditis and pericarditis, and a mutual dependence of both these on the structural disease of the liver, and the presence of bile in the blood. Jaundice would seem, on the other hand, to be sometimes produced in the course of an illness, of which the most marked feature is disease of the heart, in consequence of secondary congestion

of the liver, from impediment to the circulation, particularly when this extends to the right side of the heart. Were I to allow myself to speculate on blood-poison as a cause of endocarditis, of which acute rheumatism and granular degeneration are supposed to furnish us with examples, I might inquire why it is that in the one the inflammatory action is so liable to extend to both sets of valves, while the other does not exhibit any marked deviation from the ordinary statistics which I have obtained for all forms of cardiac lesion together? whence the liability to a recurrence of endocarditis is derived, when no subsequent affection of the joints has been observed? or why, in the last stages of granular degeneration, when epilepsy or coma marks the transmission of the poison to the brain, recent inflammation is so rarely found, and evidence of previous disease is of such constant occurrence? But for the present it must suffice to point out these as inferences which may be fairly drawn from the statistics now presented.

It must be evident, that the only proof of inflammation affecting the valves, fairly admissible in such an inquiry as the present, is that which is derived from recent fibrinous deposit found after death; but it is quite possible that, in an inferior degree, that thickening which is invariably found when inflammatory action is present, may of itself be the only effect produced. This conclusion would seem to be almost necessary, from the rarity of instances of fibrinous deposit after 35 years of age. All the conditions being found which we recognise as causes of endocardial inflammation, simple thickening or opacity of the valve may be the only form of lesion, and one is led to inquire, whether this may not be the result of recent inflammation in a minor degree. Again, the rarity with which fibrinous deposit has been traced to granular degeneration of the kidneys, out of the large number of cases in which these organs and the heart are simultaneously affected, would seem to point to the same possibility. And I am inclined to associate with these facts, an observation which I have occasionally made, of a state of excessive vascularity, or congestion, of the valvular

apparatus, which still was not such as to justify its being regarded as a condition of disease.

Having now examined all the cases of recent endocarditis, in the order in which they have been arranged, empirically, so to speak, in the Table, I may venture to arrange them according to the supposed cause of the development of the disease, along with any important complications.

6 are due to inflammatory disease—

- 1 to recent rheumatic fever,
- 1 to severe pneumonia, with } complicated with pericarditis,
previous rheumatic fever, } pleurisy, and pneumonia.
- 1 to diffuse cellular inflammation of mediastinum, with previous rheumatic fever, and "large and mottled" kidney.
- 1 to pleuro-pneumonia, with pericarditis, and large and mottled kidney.
- 1 to inflammation of brain and lungs.
- 1 to diffuse cellular inflammation, with purulent pericarditis, and deficiency of one semilunar valve.

5 are due to previous valvular lesion, without dropsy—

- 1 to deficiency of one semilunar valve, with purulent pericarditis.
- 2 to thickening, and atheromatous disease, one complicated with pleurisy.
- 1 to previous rheumatic thickening, with pericarditis.
- 1 to rheumatic thickening, and calcareous deposit, with pericarditis (apparently due, in some measure, to jaundice).

3 are due to valvular lesion, with dropsy—

- 2 to rheumatic thickening, both complicated with pleurisy, and one also with pericarditis.
- 1 to rheumatic thickening, and atheromatous disease.

In 2 there was valvular lesion, with albuminuria and dropsy—

- 1 due to rheumatic thickening, and granular kidney.
- 1 to granular kidney, and atheromatous disease.

In 1 there were valvular lesion and hæmaturia—

Due to calcareous deposit, and large and mottled kidney.

In 2 there was albuminuria without dropsy—

Both due to atrophied kidney, one complicated with pericarditis.

In 1 there was albuminuria, with dropsy—

Due to atrophied kidney, complicated with previous thickening, and pleurisy.

The cases of *disease of longer standing* do not offer any points of interest when viewed in connection, except it be the way in which one form of disease may be superadded upon another in the same valve. This was before alluded to, in regard to those cases in which calcareous and fibrinous deposit were found together, when it was shown that the atheroma might be the cause of the endocarditis. But another condition would seem to be indicated, one in which a valve, having previously undergone an attack of acute inflammation, becomes afterwards the seat of atheromatous disease. Perhaps the safest evidence of this condition is derived from cases due to an old attack of rheumatic fever, the effect of which we know to be, in the first instance, to produce inflammatory thickening alone. Here the subsequent deposition of calcareous matter would seem to be a mere coincidence, from the fact, that the proportion of cases of a rheumatic origin, which exhibit traces of atheroma, is only very slightly greater than that derived from all diseased hearts together; and this excess probably arises from the circumstance, attendant on inflammatory action in all parts of the body, that it frequently serves as a predisposing cause for the development of special maladies, of which tubercles and cancer may be cited as examples. The difference may be represented thus:—

All the cases of diseased heart give a proportion of	{	45 per cent.	of atheroma in general.
		25 „	of atheroma of the valves.
Diseased hearts connected with rheumatic fever give a pro- portion of	{	53 „	of atheromatous disease in general.
		27 „	of atheroma of the valves.

These facts, in regard to cases of a rheumatic origin, prepare us for admitting, that the instances in which a greatly indurated condition of valve is associated with a slight deposit of atheromatous or calcareous matter, have been originally examples of inflammation of the endocardium, followed, after partial recovery, by the development of the specific malady.

Such cases occur pretty frequently among the instances of atrophied kidney.

In seventeen cases, *disease of the liver* is recorded as having been present, for the most part, in the contracted and granular form. This I was led to note, from the apparent connection in the case already detailed, between the supervention of jaundice and the excitement of renewed endocarditis, but I have not been able to draw any inference of value from these cases. Thickening of the tricuspid is mentioned eight times, but without its throwing any light on the subject of affections of the right side of the heart. Their comparative rarity is well known, as well as their constant connection with obstructions of the orifices on the other side.

In conclusion, I would merely remark, that while I conceive the chief value of these facts to consist in their being "contributions to the statistics" of valvular disease, I cannot but think some of the deductions worthy of attention, and demanding, at least, further investigation. The liability to double valvular disease, in consequence of rheumatic endocarditis; and the early incursion, as well as the commonly early termination, of that disease; the limit put by age, in so marked a manner, to fibrinous deposit on the valves of the heart; the very large proportion, amounting to almost one-half, of the fatal cases of granular kidney, found coincident with valvular disease, and its comparative rarity in those cases in which the kidney is large and mottled,—are all facts clearly proved by reference to the Table, in regard to the cases which have formed the ground of this analysis. To others I must leave to determine, whether the double valvular affection be the immediate, or the remote, consequence of rheumatic endocarditis, and whence the predisposition to renewed attacks of this disease is derived; whether endocarditis be ever due to a large and mottled condition of kidney, as its sole cause, and why, among so large a number of cases connected with Bright's disease, the inflammatory action was not more often found recent. One commonly-received opinion these statistics contradict, viz. that atheromatous disease affects,

by preference, the mitral valve; and another they render at least doubtful, viz. that it is in the advanced stage of Bright's disease endocarditis is liable to occur, unless, indeed, we are to admit the existence of endocardial inflammation without fibrinous deposit, or exudation.

Table of Seventy-nine Cases

No.	Condition of valves.		Age.	Sex.	Atheroma of aorta, when present.	Previous existence of acute rheumatism.	Abnormal state of heart.
	Aortic.	Mitral.					
1	Fibrinous deposit	fibrinous deposit	12	M	atheroma	none(?)	dilated
2	Thickened—fibrinous deposit	thickened	12	M	—	old rheumatic fever	dilated—hypertrophied
3	Fibrinous fringes—only two valves	—	14	M	—	none?	—
4	Thickened	thickened	16	M	—	old and recent rheumatic fever	greatly dilated
5	Slight fibrinous deposit	opaque — extensive fibrinous deposit	17	M	—	recent rheumatic fever	—
6	Small fibrinous fringes	thickened—contracted—calcareous fibrinous deposit	18	F	—	old rheumatic fever	large—dilated
7	Much thickened—atheromatous—ulcerated	fibrinous deposit	19	M	—	none	much dilated—slight hypertrophy
8	Thickened—rigid	calcareous deposit—fibrinous granulations	22	M	—	old rheumatic fever	dilated—hypertrophied
9	Opaque—fibrinous fringes	thickened — opaque — rough—fibrinous deposit	23	M	—	old rheumatic fever	greatly dilated hypertrophied
10	Opaque—thickened	much thickened—fibrinous deposit	23	F	—	none	hypertrophied
11	Slight fibrinous deposit—granulated	fibrinous deposit	24	M	—	old rheumatic fever	atrophied
12	—	fibrinous deposit—thickened	28	F	atheroma	none	hypertrophied
13	—	calcareous and fibrinous deposit—ulcerated	28	F	—	none	—
14	—	thickened	29	F	—	old and recent (?) rheumatic fever	—
15	Slight thickening	thickened fibrinous deposit	30	F	—	old rheumatic fever	dilated — atrophied
16	Opaque—atheromatous—fibrinous edges	opaque thickened—calcareous deposit—fibrinous edges—ulcerated	30	M	atheroma	none	large—hypertrophied — great dilatation
17	Slight thickening	great thickening—fibrinous deposit	31	M	atheroma	old rheumatic fever	dilated—hypertrophied
18	—	much thickened—calcareous and fibrinous deposit	34	M	atheroma	none (?)	much dilated—atrophied
19	Slight thickening	—	35	M	—	—	dilated—fatty
20	Calcareous deposit—only two valves	—	36	M	—	—	dilated — atrophied
21	Thickened	much thickened	36	F	—	none	dilated
22	—	atheromatous	36	M	atheroma	—	hypertrophied
23	Slight thickening	—	37	F	—	—	—
24	Thickened—atheromatous—ulcerated	thickened—contracted	37	F	atheroma	old rheumatic fever	large and hypertrophied
25	Thickened	—	37	M	atheroma	—	—
26	Opaque	slight thickening	37	M	atheroma	old rheumatic fever	hypertrophied

of Valvular Disease of the Heart.

State of pleura and pericardium.		Diseased condition of kidneys.	Other lesions.	Chief cause of death.	No.
Recent inflammations.	Old adhesions.				
—	—	—	pneumonia (tubercles) — brain congested—softened	inflammation of brain and lungs	1
pleurisy	pericardial	—	fibrinous deposit on endocardial membrane—pulmonary apoplexy	morb. cordis—dropsy	2
purulent pericarditis	—	—	pneumonia—secondary abscesses in lungs—admitted under surgeon with cellular inflammation	morb. cordis—diffuse suppuration	3
pericarditis	—	—	—	morb. cordis (sudden death)	4
pericarditis—slight pleurisy	—	—	lungs congested	pericarditis	5
pericarditis	—	yellow patch on one kidney	liver diseased (obliteration of secreting apparatus) — kidney slight similar affection—patch of discoloration of some depth congestive pneumonia	morb. cordis—jaundice — erysipelas	6
—	—	—	—	morb. cordis	7
—	—	—	fibrinous deposit on endocardial membrane—pneumonia	morb. cordis—dropsy	8
pericarditis	pericardial	—	pulmonary apoplexy	morb. cordis—congestion of lungs	9
pleurisy	pleuritic	granular	excessive congestion of lungs—tricuspid thick	albuminuria—dropsy	10
pericarditis — puriform pleurisy — (pneumonia)	—	—	disintegrating pneumonia—vomica of lower lobes	inflammation of lungs	11
pericarditis	—	mottled—small —cortical substance wasted	tubercles in lungs — tricuspid thickened	morb. cordis—albuminuria	12
—	pericardial and pleuritic	mottled—large	pneumonia—diseased brain	bloody urine—softening of brain	13
pericarditis — pleurisy	—	—	pus in synovial capsules	sloughing — diseased joints	14
pericarditis — pleurisy	—	—	fibrinous deposit on endocardial membrane—pulmonary apoplexy	morb. cordis—dropsy	15
—	pleuritic	—	lungs congested	dropsy—morb. cordis—pleurisy	16
—	pericardial and pleuritic	granular—mottled—small	fibrinous deposit on endocardial membrane—excessive congestion of lungs	morb. cordis—albuminuria—dropsy	17
—	pleuritic	—	—	morb. cordis — dilatation	18
—	pleuritic	—	brain congested—softened—tubercles of lungs	affection of brain	19
—	—	—	brain congested — congestive pneumonia	delirium tremens	20
—	—	slightly granular—cysted	lungs congested—liver contracted	morb. cordis—congestion of lungs	21
puriform pleurisy—(peritonitis)	—	mottled—large	diffuse cellular suppuration from wound	suppuration—secondary inflammation	22
—	pleuritic	granular	—	gangrene	23
—	—	—	pneumonia—tricuspid thickened	morb. cordis—albuminuria—dropsy	24
—	—	—	previous cellular inflammation with condensation in thigh—diseased elbow-joint—no history	suppuration (sinking)	25
—	pericardial and pleuritic	very granular—mottled—small—cysted	peritonitis	morb. cordis—albuminuria—dropsy	26

Table

No.	Condition of valves.		Age.	Sex.	Atheroma of aorta, when present.	Previous existence of acute rheumatism.	Abnormal state of heart.
	Aortic.	Mitral.					
27	Thickened	—	39	M	atheroma	old rheumatic fever	flabby
28	Thickened—fibrinous deposits—only two valves	—	39	M	atheroma	none	dilated—slight hypertrophy
29	Slight fibrinous deposits	—	40	F	atheroma	—	—
30	Slightly opaque	—	40	M	—	none (?)	large—soft
31	—	thickened	41	F	—	none	fatty—hypertrophied
32	Greatly thickened—contracted	—	42	M	—	—	slight hypertrophy
33	—	greatly thickened—cartilaginous	43	F	—	none	great hypertrophy
34	Thickened—atheromatous	—	43	M	atheroma	none	large—greatly dilated—slight hypertrophy
35	Much thickened—contracted	—	44	M	—	—	large—greatly dilated—flabby
36	—	atheromatous deposit	45	F	—	none	fatty—large
37	Slightly thickened	atheromatous	45	F	—	old rheumatic fever	large—hypertrophied—slight dilatation
38	Thickened—ulcerated—only two valves	—	—	M	atheroma	none	greatly dilated—hypertrophied
39	—	cartilaginous—ulcerated—calcareous deposit	—	F	—	none	slight hypertrophy
40	Opaque	thickened	45	F	—	none	dilated—slight hypertrophy
41	Abundant fibrinous granulations	slight fibrinous deposit	45	F	—	—	slight hypertrophy
42	Slight thickening	—	46	M	—	—	—
43	Slightly thickened	slight thickening	46	M	—	none (?)	dilated—hypertrophied
44	—	slight thickening	46	F	—	none	small—right hypertrophy
45	—	thickened	46	F	—	—	small
46	Slight thickening	slightly thickened	47	M	atheroma	none (?)	hypertrophied
47	Slightly atheromatous	—	48	M	—	none (?)	dilated
48	Opaque	slightly thickened	48	F	—	none	small—thin
49	Thickened	—	50	M	—	—	—
50	Thickened—atheromatous and fibrinous deposits	slight thickening	50	F	—	none	dilated—great hypertrophy
51	Slightly atheromatous	slightly atheromatous	51	M	atheroma	—	dilated—flaccid
52	Opaque—contracted	—	51	F	atheroma	none	flabby
53	Slight thickening	—	53	M	atheroma	—	hypertrophied
54	Slightly atheromatous	slightly atheromatous	54	F	atheroma	none (?)	dilated—hypertrophied
55	Abundant fibrinous deposit	fibrinous deposits	55	M	atheroma	old rheumatic fever	slight dilatation and hypertrophy
56	Atheromatous—ossified	atheromatous—ossified	55	M	atheroma	none	dilated
57	Opaque—atheromatous	thickened	55	M	—	—	large—fatty
58	—	slight thickening	—	M	atheroma	—	great hypertrophy
59	—	thickened	55	M	—	none	hypertrophied

continued.

State of pleura and pericardium.		Diseased condi- tion of kidneys.	Other lesions.	Chief cause of death.	No.
Recent inflammations.	Old adhesions.				
pleurisy	pericardial and pleuritic	—	aorta wide	morb. cordis—dropsy	27
puriform peri- carditis	—	congested	lungs congested — pulmonary apoplexy	morb. cordis — conges- tion of lungs	28
—	pleuritic	granular	brain anæmic — sub-arachnoid fluid in small quantity	albuminuria—paralysis —vomiting	29
pericarditis — pleurisy — (pneumonia)	—	large—coarse	liver enlarged	pleuro-pneumonia	30
—	pleuritic	granular—mot- tled—small	—	erysipelas	31
—	—	—	tubercles of lungs	phthisis	32
—	—	very granular— cysted	tricuspid—thickened	morb. cordis—albumi- nuria—dropsy	33
puriform peri- carditis	—	—	fibrinous deposit on aorta—cir- rhosis of liver	morb. cordis—dropsy	34
—	—	—	ulcer of leg of thirty years stand- ing from injury — diseased bone—amputation	sloughing stump	35
slight pericar- ditis	pericardial	granular	liver contracted—granular	dropsy	36
pleurisy	—	granular	rheumatic fever sixteen years ago	morb. cordis—albumi- nuria—dropsy	37
—	—	—	pulmonary apoplexy	morb. cordis—dropsy	38
pleurisy (pneu- monia)	pleuritic	small — very granular	—	dropsy	39
—	—	—	liver large—irregular	morb. cordis—dropsy— ascites	40
pericarditis — pleurisy — (pneumonia)	pericardial	mottled—large	grey hepatization of lung	pleuro-pneumonia	41
pleurisy	—	—	congestive pneumonia — en- cephaloid disease of abdomen	disease of abdomen	42
—	pleuritic	—	liver granular—tricuspid thick	morb. cordis — slight dropsy	43
—	pleuritic	granular—small	tricuspid fatty	morb. cordis—albumi- nuria	44
—	pleuritic	—	liver contracted	dropsy—jaundice	45
—	pleuritic	granular	thickening of peritoneal mem- brane	dropsy	46
—	pleuritic	coarse	fibrinous deposit on aorta—dis- eased joints — congestion of lungs — supposed rheumatic gout	diffuse cellular inflam- mation	47
—	pleuritic	granular—small	tricuspid thick	morb. cordis—dropsy	48
—	pleuritic	granular	—	sinuses—debility	49
—	—	—	—	albuminuria—dropsy	50
—	—	—	brain wet—lungs congested— liver fatty	delirium tremens	51
—	pleuritic	fatty — large— cysted—coarse granular	cirrhosis of liver—peritonitis	ascites—albuminuria	52
puriform pleu- risy	—	—	brain congested and wet—lungs much congested	scalp-wound	53
—	pleuritic	—	brain congested—softened—in- flammation of liver	affection of brain	54
—	pericardial and pleuritic	mottled—large	pneumonia—cellular inflam- mation of neck and mediastinum —congestion of liver	morb. cordis—pneumo- nia — diffuse cellular inflammation	55
—	—	congested	lungs congested — pulmonary apoplexy—cirrhosis of liver	morb. cordis. — dropsy	56
pleurisy	—	very granular— mottled—small	ulceration of aorta	empyema—fits	57
—	—	small — very granular	apoplectic clot in brain	apoplexy	58
pleurisy—(pneu- monia)	—	—	diseased liver	dropsy—pneumonia	59

Table

No.	Condition of valves.		Age.	Sex.	Atheroma of aorta, when present.	Previous existence of acute rheumatism	Abnormal state of heart.
	Aortic.	Mitral.					
60	Opaque	—	55	F	atheroma	—	slight dilatation
61	Slightly thickened	—	56	M	atheroma	none (?)	dilated—hypertrophied
62	—	thickened	56	F	—	none	large — flabby — greatly dilated
63	Slightly thickened	—	57	M	atheroma	—	flaccid — soft — thin
64	Slight thickening	—	58	M	atheroma	—	hypertrophied — soft
65	Atheromatous	opaque	59	M	atheroma	none (?)	very large — dilated — hypertrophied
66	Rough — thickened — ulcerated	slightly thickened	60	M	atheroma	none (?)	great hypertrophy
67	—	thickened — cartilaginous — atheromatous — ulcerated	60	F	—	none (?)	greatly dilated
68	—	thickened — slightly atheromatous	60	F	atheroma	none	large — hypertrophied
69	Thickened atheromatous deposit	thickened	63	F	—	none	large — fatty
70	Thickened calcareous deposit	thickened	65	F	atheroma	none (?)	contracted — hypertrophied
71	Atheromatous — ossified	thickened	66	M	atheroma	—	—
72	Opaque	slightly thickened	67	F	atheroma	—	slight hypertrophy
73	Thickened	—	70	M	atheroma	none	hypertrophied
74	Atheromatous	—	70	F	atheroma	—	—
75	—	atheromatous	70	M	atheroma	—	slight dilatation and hypertrophy
76	—	calcareous deposit	74	F	—	—	large — fatty
77	Slightly thickened	slight thickening	75	M	atheroma	—	dilated — hypertrophied
78	Thickened — opaque	—	79	M	atheroma	—	hypertrophied
79	Atheromatous	—	—	F	atheroma	—	slight hypertrophy

continued.

State of pleura and pericardium.		Diseased condi- tion of kidneys.	Other lesions.	Chief cause of death.	No.
Recent inflammations.	Old adhesions.				
—	pleuritic	—	slight pneumonia — purulent bronchitis — liver congested (gorged)	purulent bronchitis	60
pleurisy — (pneu- monia)	—	small—granular	aorta dilated—ulceration of duo- denum—peritonitis	morb. cordis—albuminu- ria—dropsy—peritonitis	61
pericarditis — pleurisy — (pneumonia)	—	granular	liver contracted—granular	morb. cordis — pleuro- pneumonia	62
—	—	—	pneumonia (tubercles)—old pe- ritoneal adhesions—old ulcer of leg	pneumonia (sinking)	63
—	pleuritic	—	congestive pneumonia	mortification of foot	64
—	pleuritic	small—granular	aorta greatly dilated—ulcerated	morb. cordis — albumi- nuria—dropsy	65
—	—	mottled—large	continued fever with cardiac murmur twelve months pre- viously — tricuspid thickened— gout (?)	morb. cordis — albumi- nuria	66
—	—	granular—small	liver granular	morb. cordis—albumi- nuria—dropsy	67
—	—	congested	—	morb. cordis—dropsy	68
—	pleuritic	very granular— cysted	liver contracted	morb. cordis—albumi- nuria—dropsy	69
—	pleuritic	granular	brain congested—diseased arte- ries	congestion of brain	70
—	pleuritic	small—granular	thickening of sub-peritoneal tis- sue — peritonitis — tricuspid thick	dropsy—ascites	71
—	pleuritic	granular—wast- ed	—	incessant vomiting — albuminuria	72
—	pleuritic	—	—	general debility	73
—	—	—	ossification of arteries	gangrene senilis	74
—	—	—	coronary arteries calcareous	fit—(collapse)	75
—	pleuritic	granular—mot- tled—small	—	strangulated hernia	76
—	pleuritic	—	cretaceous matter in lungs	fracture of femur	77
—	pleuritic	—	aorta dilated—ulcerated	fractured ribs	78
pleuro-pneu- monia	—	—	diseased coronary arteries	gangrene senilis	79