The condition in which I found the right posterior tibial artery merits attention. On slitting it open, it was found to contain a whitish firm cord, which, on transverse section, proved to be hollow; and, when slit up longitudinally, its interior was found lined by the inner coat of the artery, and atheroma was deposited in its outer surface. Careful examination proved that the cord was formed by longitudinal splitting up of the middle coat of the artery, and contraction of the inner part of the said coat, including the lining membrane, into a cylinder; and that it was not a solid body contained in the artery, as at first appeared, but in a shell formed by the outer coat, and most external layers of the middle one, which had preserved the original size and shape of the artery.*

The whitish firm cord had often been noticed by Carswell; but he did not examine its structure, and consequently misunderstood its nature. "In every case of gangrene senilis which I have examined after death (Carswell, *op. cit.*), the arteries of the limb were obliterated to such an extent as to interrupt the circulation of the blood. The obstructing cause existed in five or six cases of a *fibrous tissue formed either in the walls or cavities of the arteries*, and which had converted these vessels into nearly solid cords of ligamentous consistence." Carswell then recognised these cords as one of the most frequent causes of dry gangrene, acting as passive obstacles to the flow of arterial blood; but the discovery of this structure suggests future investigation to determine where they are not active agents. It is easy to conceive how, in the diseased condition of the middle coat (atheromatous degeneration), arterial contraction may be attended by its splitting up, and extreme contraction of its inherent part, so as to impede the access of blood.

The existence of arterial mischief in parts of the body where there was no external sign to indicate its existence (Case I), the disproportion between the extent of arterial obstruction and the outward manifestation of diseased cord where present (Case II), are weighty facts in connexion with the question of amputation in this disease. The very great majority of surgeons are agreed that, in spontaneous gangrene, amputation should not be performed until nature has made a decided effort to arrest the disease, and separate the dead part; the slow process of the completion of the line of demarcation may then be expedited by the operator's interference. Still there are surgeons who pursue an opposite line of practice; and M. Chassaignac† concludes a commentary in a case of the kind, in which he amputated while the gangrene was spreading, by laying down as a rule, "that, where amputation is performed for senile gangrene, the knife should only be applied where the arterial pulsations are unmistakably felt". This may be a guarantee that the stump will be supplied with blood, and not subject to mortification; but it will certainly not lessen the chances of gangrene occurring in other parts. Theoretically, amputation is not indicated in this disease; for the dead part is but a symptom, which may certainly be removed; but

* These facts were noted several months before I became acquainted with the existence of M. Chassaignac's "Researches on Spontaneous Gangrene", published in the second volume of the *Memoirs of the Parisian Society of Surgery*, p. 254-273. He therein describes, in all essential particulars, appearances similar to those noted above; but he appears to refer them to dissection; whereas there can be no doubt that the splitting up of the middle coat occurred during life. In point of fact, he says scarcely anything as to the probable mode of formation of these cords, and nothing as to their pathological significance. In speaking of the arteries of the leg in a case of dry gangrene, he says they were obliterated "par des concrétions crétacées dures et sèches comme de la pierre et qui forment des cylindres paraissant tapponner en quelque sorte la lumière du vaisseau. Ainsi en incisant de l'extérieur à l'intérieur, on semble ouvrir l'artère, dont on écarte les parois. En les renversant, et au centre de l'artère ainsi épanouie, on voit le cylindre ossiforme, qui est parfaitement arrondi. Toutefois ce premier aspect est trompeur; ce n'est pas dans la cavité même du vaisseau que se trouve le cylindre, et la disposition que nous venons de signaler, n'est en quelque sorte que le résultat même de la dissection. En effet, ce cylindre ossiforme, fendu suivant son longueur, présente dans son axe une cavité évidemment tapissée par la membrane interne de l'artère. Il est donc évident que par la première incision, faite sur le vaisseau on a divisé la tunique celluleuse et les couches les plus externes de la tunique moyenne, tandis que les couches les plus internes, converties en une lame ossueuse, maintiennent la forme d'un cylindre encaigné dans les membranes divisées, et qui au premier aspect paraît fondue dans la cavité même de l'artère."

† *Mém. de la Soc. de Chirurg. de Paris*, loc. cit.

the cause—arterial disease—is left in the system in full vigour, for the reproduction of the disease elsewhere. Though cases of successful amputation for dry gangrene are on record, the rule of abstinence is certainly borne out by the mass of experience, and particularly so by the two cases here recorded.

Both the patients whose histories I have related were very poor women—one an inhabitant of a secluded village in the Apennines, whose life was certainly not devoted to the pleasures of the table; for milk and flour of chesnuts were her staple articles of nourishment, and meat a luxury only about thrice a year indulged in. I have seen other three cases of this disease in persons of this class; and there seems good reason to suspect, contrary to the prevalent opinion, first sustained by Mr. Pott,* that this disease is scarcely if at all more frequent among the wealthy than the poorer classes.

Palazzo Corsi, Florence, January, 1854.

COMPARATIVE FREQUENCY OF DISEASE OF THE HEART AND EMPHYSEMA OF THE LUNG IN ST. GEORGE'S HOSPITAL AND THE EDINBURGH ROYAL INFIRMARY.

By THOS. K. CHAMBERS, M.D., Physician to St. Mary's Hospital.

IN the ASSOCIATION MEDICAL JOURNAL for January 20, the attention of the profession was very properly drawn by Dr. Gairdner to the different results of certain statistics derived from the records of fatal cases at St. George's Hospital, London, published by me under the title of *Decennium Pathologicum* in the *British and Foreign Medico-Chirurgical Review*, and of those which he deduced from a similar source at the Edinburgh Infirmary, and which are the foundation of his admirable paper on emphysema published in the same periodical.

The chief differences are these:—

At St. George's, according to the records—

1. *Cardiac disease* appears to be somewhat more frequent than at the Edinburgh Infirmary.
2. *Emphysema of the lung* very much less frequent; viz., in the proportion of 12 to 31.
3. The latter lesion appears to occur *most* often when the valves of the heart are diseased; whereas at Edinburgh it does not connect itself so much with valvular injury as with dilatation of the muscular walls.

The differences of material from whence the statistics are derived may be thus stated:—

Dr. Gairdner's statistics of the Edinburgh Infirmary are taken from the records of autopsies—

1. 84 in number.
2. Made with a special view to the observation of emphysema.
3. Conducted all by one hand.
4. From cases selected and known as clinically interesting; i.e. cases of chronic organic disease.
5. Made on the principle of omitting instances of endocardial or valvular lesion, judged not capable of causing functional disturbance.

The statistics of the *Decennium Pathologicum* are taken from the records of autopsies—

1. 2,161 in number.
2. Made with no special view at all.
3. Conducted by several hands.
4. From cases mixed indiscriminately of surgical, medical, and accidental causes of death.
5. Including all instances of all lesions, however slight.

The question which naturally presents itself, is, Which series of statistics shall we allow most to influence our opinions? In spite of the promptings of paternal affection I cannot feel justified in returning a simple categorical answer. For, in fact, each seems to me to possess recom-

* *Chirurgical Works*, ed. 1763, vol. III, p. 338.

mendations which the other wants, and I do not doubt but that both are infested with fallacies naturally parasitic. As the criticism which points out merits is more agreeable than the detection of vices, I will contrast them by enumerating a few of the advantages severally possessed.

The materials of the *Decennium* are very extensive, so that the accidental prevalence of any one lesion is improbable. They are the work of several hands,* and therefore little liable to fallacies dependent on the *idola speciei*. All cases of disease, however slight, are included (if noticed in the *post mortem* record); so that there is no room for the chance of arbitrary exclusion. Being a continuous series of indiscriminate autopsies, they may be supposed to represent diseased persons as a whole, not only those diseased persons who are interesting in a pathological or diagnostic point of view.

On the other hand, the Edinburgh series of *post mortem* examinations, being shorter, is probably richer in detail. The whole were made by one hand, and are therefore most uniform. They were made with a special view to one lesion, and by a pathologist well acquainted with it, and therefore are not likely to omit any instance.

These several advantages of one or the other series of statistics should, I think, have different weight, according to the question proposed for examination. Should the subject for investigation, for example, be the prevalence of such a lesion as cardiac disease, where the statistics differed to an extent not to be accounted for by difference of circumstances, I would trust more to the larger series. For the attention of the medical world in general, and of morbid anatomists in particular, has been of late so strongly drawn to the heart, that correct detail of its state is rarely omitted, even though the examinations are not conducted with any peculiar view of elucidating its pathology. I should be disposed to say, that the difference which exists between Dr. Gairdner's and my statistics, in this particular, was really a difference founded on nature, and not on any variation in the mode of collecting the materials. I mean that cardiac diseases are really more common at St. George's than at Edinburgh; and that both sets of statistics are valuable, as respects the proving of this point, in a direct ratio to their numerical extent. Indeed, the fact itself is *a priori* exceedingly likely, when we know the great prevalence of diseases of a gouty and rheumatic character among the poor of London, at least on the west side. There were admitted into St. George's, during the four years ending December 31st, 1848, as many as 1014 cases thus characterised; that is, 253 per annum. The usual number of medical cases is a little under 1400 a year; so we may fairly say that 18 per cent. of the sick are thus affected. At St. Mary's, during the year 1852, out of 460 medical cases admitted, 91, or nearly 20 per cent., were included in the same category. The majority of these, too, are anæmic, broken-down individuals, who have seen better days, and have been subjected to the depressing influences of bad air, vicious habits, and sedentary occupations; among which class the local and organic consequences of rheumatic disease are most liable to be manifested.

Should, however, the question be the *absolute* prevalence of such a pathological state as emphysema of the lung, I should attach most importance to statistics collected as Dr. Gairdner's have been. The attention being particularly directed to that lesion, probably no case of it could escape observation; whereas, in ordinary autopsies, it is doubtless often passed over. Such ought to be the case no longer, now that Dr. Gairdner's valuable papers have shown the importance of the lesion; but during the ten years over which my materials extend, the facts may be fairly conjectured. But, even in such an investigation as this, a certain advantage is to be attached to an indiscriminate series of examinations, as representing more truly the population,

than selected cases, on whatever principle the selection was made.

If, on the other hand, our intention is to inquire into the connexion of any lesion with various diseases, the advantages of the direction of special attention to the individual morbid state, and of the more careful performance of the autopsies, weigh but little. The lesion is just as likely to be noted or to be passed over in one case as another. There is no reason why emphysema, for example, should escape the eye in a case of pure dilatation of the heart, and yet be recorded in one of valvular disease—described with pneumonia, and omitted in pulmonary tubercle. Admitting that a certain percentage of examples are undetected by the less observant eye, they have an equal chance of belonging to one class as another; and, in a large number of cases, the result is nowise affected. Here again, then, I should trust most to the larger series of statistics.

I have taken advantage of the circumstance of Dr. Gairdner's criticism to weigh as a judge the several merits of two classes of statistics; viz., those where the facts, though few, are recorded with minuteness of detail, and those where the facts, though many, are observed with only ordinary care. I hope and believe I have not merged the judge in the advocate. In conclusion, I cannot forbear directing attention to the great importance, in all cases where statistics are employed, of detailing fully and freely the circumstances of their collection. If this is done, I feel sure they can *never* be without value; if it is not done, they are nearly always worse than worthless.

1, Hill Street, Berkeley Square, Jan. 28, 1854.

CASE IN WHICH THE INHALATION OF CHLOROFORM WAS FOLLOWED BY A FATAL RESULT.

By JOHN HARRISON, Esq., Senior Surgeon to the Bristol Royal Infirmary.

THE following case, in which the inhalation of chloroform was followed by death, is the first fatal case of the kind which has occurred in the Bristol Royal Infirmary, where chloroform has been used very constantly during the last six years. As death from the inhalation of chloroform is a very rare accident, I think it is the duty of every professional man to publish his experience of fatal cases, together with the *post mortem* appearances; since, by analysis of the facts thus recorded, useful information may be elicited for future guidance.

CASE. Jane Morgan, aged 59, a married woman with a family, moderately stout, pale, but not otherwise of unhealthy appearance, was admitted an in-patient of the infirmary, January 19, 1854. It appeared that eight weeks previously to her admission, the patient had received an injury in the left shoulder from a severe fall. Upon examination, the humerus was found to be dislocated forwards, the head of the bone resting on the inner side of the coracoid process of the scapula. The glenoid cavity, acromion, and coracoid processes, appeared to have been uninjured. There was a slight irregularity to be felt on the outer side of the head of the humerus, just in front, and to the inner side of the coracoid process; which led to the supposition that there had been a partial fracture at this point. The head of the humerus could be moved tolerably freely in its situation. The patient complained of very great and constant uneasiness, extending down the arm; and the examination gave her considerable pain. There was no particular heat about the shoulder; and the absence of swelling rendered the nature of the accident very obvious.

A consultation was held upon the case, which was considered to be a dislocation forwards; and it was agreed that reduction should be attempted while the patient was under the influence of chloroform. The woman, having been made acquainted with the result of the consultation, agreed to submit to the necessary measures. The stethoscopic in-

* Namely, Mr. Hewett, now Surgeon to St. George's Hospital; Mr. Lee, now Assistant-Surgeon to King's College Hospital; Dr. Handfield Jones, now Assistant-Physician to St. Mary's Hospital; Mr. Pollock, now Assistant-Surgeon to St. George's Hospital; and Mr. Holl.