skulls. Although such extreme dolichocephaly, as is met with amongst the Eskimo is very rare among true Americans, the larger number of crania of Indians, excepting those of the inhabitants of the west coast of North America and the region west of the Andes in South America, namely, Peru and Bolivia, as well as Patagonia, are mesaticephalic or moderately dolichocephalic; but the two forms are curiously intermixed, or at all events found in different tribes inhabiting adjoining regions, much in the same way as they are in Europe. As the inhabitants of the two extreme ends of the Continent, the Eskimo and the Fuegians, are both dolichocephalic, though in the case of the latter the evidence of cranial form is not yet so complete as might be desired, and as certain skulls apparently of great antiquity, which have been discovered in Patagonia and Brazil, are of the same form, it has been conjectured that the primitive inhabitants of the Continent were a race with long and narrow heads, and that the brachycephalic race are a later influx. The characters of the bones of the face exhibit, as is often the case, greater uniformity than those of the cranium proper. The frontal region is almost universally low and retreating, and the supraciliary ridges are generally well developed in the males. This and the form of the nose distinguish them from the majority of Asiatic Mongols. Nasal bones compressed laterally and hollowed near their upper ends forming a marked projection forwards at their lower ends, and giving the characteristic high bridge to the nose of the bony face, are found in the great majority of American skulls from all parts of the Continent. The tendency to the narrow form of nasal aperture, so very marked in the Eskimo, prevails throughout the American Continent, the average index of 123 specimens being 47.2, which is almost as low as that of Europeans; while a really platyrrhine nose, such as is the rule among Negroes and Australians, is rarely if ever met with. The form of the orbit is also characteristic, being almost invariably large, round, and high, having an average index in 129 examples of 91.5. In the artificially flattened heads, this index is greatly increased, as the depression of the forehead drags the superior margin of the orbit upwards, often so much as to cause the vertical height to exceed the horizontal diameter. The malar bones are always full, and project laterally; and the nasi-malar angle, though somewhat diminished by the shape of the nose, approaches to that characteristic of the Mongolian races. The forward projection of the jaws is not very great, though more so than in the white and less than in the black races; but in many cases there is a tendency to prognathism. The lower jaw is large, and the chin fairly prominent. The teeth are of moderate size and vertically implanted. Morton found the average cranial capacity of one hundred and fifty-five ancient Peruvian skulls to be 75.0 cubic inches, which is less than that of almost any other known race. It has been thought that some error may have crept into his method of measurement; but his estimate is probably not far wrong, as the average of forty-seven male skulls in the College collection is 1,345 cubic centimètres, and of fifty females 1,194 cubic centimètres, giving a mean for both sexes of 77 cubic inches. On the other hand, the barbarous tribes of Indians of both North and South America gave, in Morton's hands, an average capacity for both sexes of 84 cubic inches; and the Chinooks from the mouth of the Columbia river have remarkably capacious skulls, the average of seven males in the College collection being 1,589 cubic centimètres, larger than those of any other race, but those may be rather exceptional specimens. It is, however, perfectly certain that the crania of the comparatively civilised Peruvians were much smaller than those of the Indians of the North-West or the Patagonians, or even Fuegians; but, as Morton remarks, the former, living under a thoroughly organised paternal government, seem neither to have thought nor acted except at the dictates of a master, while the brain of the savage was always in a state of activity to provide against the necessities and dangers of his daily life. But it is possible that it may depend upon some general law connecting the size of the brain with the prevailing temperature, as inhabitants of cold climates have usually a larger brain-capacity than those who live in tropical countries.

The general characters of the American cranium are thus rather negative than positive; but on comparing it with those of other races, it will be seen that it has no affinity whatever with that of any of the Negroid people, Australians, Melanesians, or true Negroes. From these it differs in every essential character; but with the Mongolian it presents many affinities, especially in the form of the orbit, narrowness of the nose, and the great size and forward projection of the malar bones. It is by the latter character especially that it differs from the European cranium. The prominence of the nasal bones is sometimes the only distinction between American and North Asiatic skulls. Although Mongolian in the general type of face, it never presents such an extreme exaggeration of that type as is to be seen in the Eskimo, from which it can be always readily distinguished. The best argument for the unity of the American race—using the word in a broad sense—is the great difficulty of forming any natural divisions founded upon

physical characters. Although certain special modifications prevail in different districts, and the Mongolian resemblance is greatest on the West Coast, the same forms certainly appear at widely separated parts of the Continent. Skulls from Vancouver's Island, from Peru, and from Patagonia, can be shown which are almost undistinguishable from one another; but the materials at hand are not yet sufficient for following out this interesting investigation to a satisfactory conclusion.

ANEURISM OF THE LEFT VENTRICLE.*

By JOHN RICHARD WARDELL, M.D., F.R.C.P.,

Senior Physician to the Tunbridge Wells Infirmary.

THIS term is now understood to imply a pouching, irregular bulging, or partial dilatation of the wall of a chamber of the heart, and communicating with the interior of the viscus. It may or may not protrude and alter the external configuration of the ventricle; and it may be said, as the rule, to signify degeneration of the muscular structures. Pathologists now very nearly restrict the occurrence of this affection to the left side of the heart. It is true cardiac aneurism, and it does not mean that general eccentric dilatation to which this name was applied by the older authors. It is more common in men than in women. Of forty cases given by Thurnam, thirty were in males and only ten in females; and it may supervene at any period of life.

Some time ago, an example of this affection came to my notice. A gentleman, of more than middle age, suddenly fell down in his drawing-room. He was, when first seen, lying partly on a sofa and two chairs, supported by his friends and servants. His face was livid, the eyelids were closed, nostrils dilated, mouth open, and the tongue was slightly protruding, which, with the under lip, was swollen, and of a darker hue than the face generally. The pupils were firmly contracted; not the slightest pulsation could be detected in any of the larger arteries, nor could the hand or ear discover the feeblest action when placed over the præcordial region. There were two or three slight, apparently spasmodic, attempts at inspiration; and, on his being moved higher up the sofa, the pressure on the chest and abdomen occasioned a noise in the throat familiar to those accustomed to *post mortem* examinations, but which was regarded by certain of his friends who stood by as groaning. Life was extinct.

On inspection, the body was that of a corpulent well-formed man. On dividing the integuments over the chest and down the abdomen, there was a subcutaneous stratum of fat, varying from an inch and a quarter to two inches in depth. On the removal of the sternum, the pericardium was seen considerably distended. On opening it, which was accidentally done, a considerable quantity of yellowish serum escaped, which, however, was not measured. On slitting up the pericardium to a greater extent, a loose dark clot of blood was discovered to completely encircle the heart, and, consequently, the viscus was quite concealed. On carefully removing this mass of coagula, it weighed ten ounces. The heart was lying in its normal situation, and of its natural size. On being examined *in situ* to detect, if possible, the source of the hæmorrhage, a rent was discovered, about an inch and a half in length, with unequal edges. It was situated in the centre of the left side of the left ventricle. Around the heart, externally, the investing serous membrane was separated from the muscular substance to at least an inch and a half in diameter; and, on carrying the investigation deeper, the external rent was found to enter a cavity formed in the substance of the wall. It communicated with the interior of the left ventricle by a sinuous connection. The muscular tissue of the heart was considerably altered in colour and consistency, presenting the appearance of red softening; it was of a deep claret hue, and, under very moderate pressure of the fingers, the substance was readily torn. No appearance of pus was discovered. The walls were of normal thickness, and all the valves sound. No other morbid appearances were revealed in the thoracic organs. The abdominal viscera were healthy, with the exception of the kidneys, which were extensively diseased. They were embedded in an enormous quantity of fat, much enlarged, and of a claret colour or reddish-black; and both were lobulated, as in the fetus. The capsules of each presented ulcerative patches, two of which in the left kidney were very deep, of conical shape, their bases being towards the surface, and they extended from half to three-quarters of an inch into the substance of the organ. The capsules were thickened, and readily torn off. On longitudinal section being made of these organs, there was considerable congestion; the tubular portions of both

* Read before the West Kent and East Sussex District of the South-Eastern Branch

were completely obliterated, with the exception of a small part of the cones in the right kidney.

True aneurism of the heart is a disease of rare occurrence, and comparatively but few cases have been recorded. It is, however, a subject of great pathological interest, notwithstanding that we can know little or nothing of its presence during life; and it must be admitted, wherever it exists, it is a condition which must inevitably pass on to a fatal termination. Latham speaks with emphasis on this fact of the non-recognition of the disease. He says our clinical acquaintance with those diseases during life has not kept pace with our knowledge after death*; that they have sometimes had their beginning and progress without there being suspicion of anything wrong with the heart. And again, he remarks that sometimes they have been attended with suffering enough to alarm the patient, and by symptoms enough to enable the physician to infer damage of the heart, and even to anticipate its fatal event, but not to be sure of its nature: such as faltering and failure of the circulation, and dyspnoea and anguish, either constant with occasional aggravations, or altogether occasional and in paroxysms; but whether constant or occasional, never attended with any previous auscultatory signs. The last named writer cites a case in which, from first to last, the disease was undistinguished by any living phenomena. It has already been said that it is a pathologic change almost always observed on the left side of the heart. There have been some exceptional cases recorded in which the affection was located in the right ventricle. The immunity of the right side has been variously accounted for. Some have attributed its freedom to a want of power in these walls; others to the peculiarity of the valves at the right auriculo-ventricular orifice, which only incompletely close, and thus relieve the pressure by more or less of reflux within the right auricle; and it is clear there is generally far less tensity power in the right chambers. In looking to the etiological reasons why it is almost always in the left heart, it may be instanced that the arterial tissues are endowed with a higher degree of organisation and vitality than the venous; they are far more prone to acute inflammatory action; the arterial blood is more stimulating to the vascular coats, and the greater mechanical power of the left cavities is apt to lacerate the lining membrane and damage the muscular substance.

Corvisart was the first author of importance who described this lesion with accuracy, and, although Morand and Laennec speak of it, the former confines his observations to valvular aneurisms; and the latter, from his remarks, would lead us to infer that he had not met with true circumscribed ventricular aneurism. This author, in referring to Corvisart's case, terms it partial dilatation; and subsequently says he had never met with anything of the kind. Some sparsely scattered cases are to be found in medical literature long antecedent to the time of the last named authority. Brachet, Cruveilhier, Hope, Latham, Andral, Chassinat, Elliotson, Craigie, and Douglas have given accurate accounts of the disease; but the best and most comprehensive articles on this subject are by Thurnam, Quain, and Peacock. Of seventy-four cases collected by Thurnam, in fifty-eight it occurred in the left ventricle. Of this number, it was discovered in the apex of that chamber in twenty-seven of the inspections, and at the base of the ventricle in twenty-one cases, and at an intermediate portion of the ventricle in fifteen examined. Of three hundred and three examples collected by Quain, it was at the apex in one hundred and thirty-eight, at the base in one hundred and one, and intermediately in only sixty-seven. Of more recent cases which have been given, in fourteen it was at the apex, in eleven at the base, in eight intermediate, and in six at the septum. The order of its occurrence, then, is the apex, base, external wall, and septum. In the instance above recorded, the aneurism was in the centre of the ventricle. It may occur in any part of the wall of the chamber. These aneurisms greatly vary in size; they may be of all magnitudes, from that of a horse-bean to that of an orange, or even, in exceptional instances, to dimensions equal to that of the heart itself. Dr. Wales of the United States Navy, some time ago, published a case in which the aneurismal sac was so large that, regarded *in situ*, the bystanders thought the man had two hearts. At the base and septum, they are small. At the apex, they attain the largest extent. They may be circumscribed or diffused—that is, the lines of their boundary may be clearly defined, as when, by a narrow and cannulous passage, the enlargement communicates with the ventricular cavity; or there may be no line of demarcation, and the opening may be hemispherical—of the full diameter of the aneurismal pouch. The diffused variety is far more commonly met with at the apex. And it may here be remarked that the reason why the apex is more frequently the seat of cardiac aneurism is, doubtless, because there the wall of the chamber is thinner, and consequently the tissues are at that place more distensible. In thirty cases referred to by Peacock, in four they were named merely small; in five, they were compared to hazel-nuts or filberts; in one, to a pigeon's egg; and in six, to fowl's eggs. The margins are generally indurated by fibro-cartilaginous or

osseous thickening. This line of boundary may assume the condition of a dense ring. In the case above described, the edges were merely irregular or ragged. The lining of the cavity presented a thin, easily lacerable membrane, which seemed a continuation of the endocardium. When an aneurism of this kind has originated from internal pressure, the endocardium may be so stretched as to cover in unbroken form the interior of the abnormal cavity. When the lining membrane has been inflamed, its corrugated and more opaque condition render its lines of demarcation more easily determinable. From the attenuated, or rather the abolition of, muscular structure at the point of rupture, it is to be inferred that, in this instance, life had for some short time, at least, been carried on; whilst the thickened visceral pericardium had alone maintained the integrity of the aneurism. The edges of laceration were precisely such as would result from a sudden tear. No organised lamellæ intervened like those which are found, and which for so long a period sometimes oppose the fatal catastrophe in aneurisms of the larger arteries. Sometimes, however, organised lamellæ, in greater or less amount, are formed in the pouch. In the more chronic cases, this kind of thickening is more common.

The etiology of these aneurisms can only be considered in conjunction with their pathology. Softening of the parietes has repeatedly been noticed. The wall may be of dark red, or reddish brown, or of the fatty shade of colour; and in certain examples the tissue has become easily broken down beneath the fingers. It has been thought that those primary lesions of the blood which occur in certain acute diseases, such as in continued, malignant, and the eruptive fevers, or in purpura and renal disease, and also in syphilis, may be regarded as the first causes of the pathologic change. It has been conjectured that coagula contained in the chamber might give rise to a localised expansion of the walls; but, unless in connection with some other circumstances, such could hardly be assigned as a reason. A prominent and ever accompanying state is a feebleness and a loss of resistive power in the wall. A fibro-transformation is the very usual appearance revealed on inspection, and such can in most instances be referred to a chronic myocarditis. It is true, there may have been, for a starting-point, ulceration of the endocardium and some giving way of the lining under great muscular efforts and the consequent ventricular tension. The membrane may have become thickened, with loss of elasticity, and slight solution of continuity ensue; the fissure would then become wider. Bloody detritus may be deposited until such an amount becomes accumulated as to exert pressure on the subjacent muscular structure. The lining membrane sometimes exhibits villous vegetations. In chronic myocarditis, a gradual softening and degenerative change in the heart-fibre eventuates; and, as the inflammation of the pericardium and endocardium is nearly always the result of acute rheumatism, the last named affection is thus the more remote cause of ventricular degeneration; and, as a still more fundamental cause, blood-change is the primary morbid condition. Thickening and opacity of the endocardium are, however, generally the first cognisable alterations, and these are detected with more or less dilatation of the wall. With the progress of the affection, a dense yellowish or yellowish-white substance is discovered; and this may be mixed with more or less of muscular fibres, or the muscular substance may have been absolutely abolished. In certain cases, a large portion of the ventricular wall had been transmuted into such a pale dense product. This kind of new formation has by no means the resistive capabilities of the normal muscular tissue, and it would seem it is evidently liable to considerable distension. In certain instances, in which syphilis was regarded as the primary cause, gummata were discovered in the sac. Under the microscope, after the disappearance of the transverse and longitudinal striæ, the fibrillæ become broken down and reduced into fine granular detritus intermixed with oil-globules. Afterwards, according to Niemeyer, the more advanced structural changes, irregular ramifying products, are noticed, of scar-like reddish-white substance, mixed with and substituting in greater or less degree the heart-wall. Some pathologists have named this degenerative condition as steatomatous. In some cases, the transformation is really cartilaginous, and in very exceptional examples the change passes on to be osseous. Dr. Wilks showed at the Pathological Society a very remarkable instance of this conversion. A man died of phthisis, and, on examination, the apex of the heart was adherent to the diaphragm. On the organ being removed, a hard bony tumour of the size of a pigeon's egg was projecting from the apex, which, on further inspection, proved to be a thin osseous case filled with fibrin, and connected with the left chamber by an oval opening. And this tumour was lined with a smooth dense membrane, which was continuous with the endocardium; and, what was still more singular, this bony transformation had resisted rupture, and the man died, as stated, of another disease. It has been observed that embolism of some arterial branch may be succeeded by the molecular death of some par-

ticular part; and thus the sequel of a more extended inflammatory process becomes emphasised at some apparent spot and limited to a circumscribed area; and at such places there may not only be external pouching, but at such parts the rupture occurs. When the bulging is very large, the visceral pericardium may not cover it; the endocardium is often atheromatous; and the reflected pericardium also may assume a milky opacity. When these changes have taken place, the serous membrane, under its transmutation, cannot be freed from the muscular structure, or that product which has substituted true muscular tissue.

When the rupture takes place, it is generally at the apex of the aneurismal tumour and in the direction of the muscular fibres; and this catastrophe is not in the earlier stage of the sacculation, but it comes to pass in the more chronic condition, when the pouch-coverings have become thinned by absorption, until at length they are unequal to systolic pressure, or by some increased exertion of sudden straining, or by lifting some weight, or when at the stool. The body of a girl of fourteen was taken into University College Hospital, who had died very suddenly; and there was found, on examination, a thimble-like pouch at the base of the left ventricle, which was of cellulose-fibrous formation, covered by the peri- and lined with the endocardium. The sac gave way at the extreme point of projection, where the covering was the most thinned. Mr. Spencer Watson recorded an example of left ventricular aneurism which was of somewhat hemispherical configuration, and which gave way at the apex. In this last cited instance, the microscope showed pale yellowish fatty patches beneath the endocardium. In both of these cases, hypertrophy was the accompaniment. Of seventeen inspections of rupture given by Hayden, in fourteen the occurrence took place in the outer wall of the left ventricle; and of twenty-two cases of rupture adduced by Quain, it was seen in the external wall of this ventricle in no fewer than fourteen examples. It is a fact to be held in remembrance, that cardiac aneurism, unlike arterial aneurism, is quite as liable to occur from fourteen to thirty years of age as from sixty to seventy; and writers on this subject agree that this early tendency is mainly or almost always attributable to the precedence of acute rheumatism, which has already been instanced as the chief cause of the affection.

It has above been remarked, that ventricular aneurism cannot be indicated by any of the ordinary rules by which we are guided in diagnosis. In the example which I have now recorded, the gentleman had, prior to his death, a slight paralytic affection, as shown by numbness of the left arm. For several months before his decease, he had complained of pain and discomfort at the posterior part of the thorax, immediately below the point of the scapula. But these symptoms are precisely such as occur in other forms of organic heart-disease, and they could throw no light on the exceptional nature of this affection. Peacock is inclined to believe that, if any specific symptoms can be relied upon, such are a sense of pain and weight at the region of the heart; but all who are conversant with cardiac pathology are aware that, in other organic forms of change in this viscus, the patient will thus complain of his ailment. Again, in some of the examples given by various authorities of the complaint, the patient was hardly inconvenienced; in others, the symptoms were characterised by no marked or peculiar indications; and in certain others there was hardly any evidence of a malady so grave and fatal. In the various forms of hypertrophy, and in valvular disorganisation, præcordial pains and heaviness are by the patient not unfrequently named. In right-side hypertrophy more especially, there is commonly a feeling of heavy dragging downwards; and not unfrequently uneasiness and a more or less pronounced degree of pain are the accompaniments. In those instances in which cardiac aneurism is small, and consequently where the action of the chamber is not mechanically much interfered with, the ordinary physical signs may give no information, nor may the patient be much discommoded. In such examples as have been narrated, and in which the tumour had attained large dimensions, there were recognised the more common states of cardiac enlargement. With scarcely an exception, when cardiac aneurism has been discovered on inspection, this pathologic change has been a surprise and in nowise expected. More than one aneurism may be present in this ventricle.

MOUNTAIN ASH.—But little information is to be gleaned from this report, beyond the fact that the death returns show the district to be improving. The death-rate has been steadily decreasing, and is now at the comparatively satisfactory figure of 18.6 per 1,000; whilst the deaths from typhoid fever (two) are many fewer than was usual a few years ago. None of the other zymotic diseases were fatal in the district, except whooping-cough, which caused three deaths, and seems to have been very prevalent.

ON THE ALLEGED DANGERS OF INTRA-UTERINE INJECTIONS OF PERCHLORIDE OF IRON IN CASES OF *POST PARTUM* HÆMORRHAGE.*

By FREDERICK POLLARD, M.D.Lond.,

Senior Assistant-Physician to the Liverpool Infirmary for Children; formerly Medical Registrar to St. Thomas's Hospital.

ALTHOUGH it is generally acknowledged in this country that the injection of solutions of the perchloride of iron into the uterus is a very reliable and effectual method of arresting *post partum* hæmorrhage, there is, nevertheless, a very prevalent feeling that the practice is not without dangers of its own. This feeling varies greatly in intensity in different individuals. Some regard the danger as scarcely greater than that which attends all intra-uterine applications. Others consider it to be so great as to make the operation unjustifiable under any circumstances; while many who resort to this method of treatment in urgent cases, do so with anxious forebodings as to what the result of it may be. The object of the present paper is to determine what the dangers of the operation in question really are; whether they are such as to make it unjustifiable or even undesirable to resort to it at all; and, if not, how the dangers may be best avoided. The value of injections of perchloride of iron in cases of flooding after labour, was probably first taught by Professor d'Outrelepont of Würzburg, who used them in the same way as is now done, and wrote on the subject thirty or forty years ago (*Obstetrical Journal*, vol. ii, p. 91). In this country, although a practitioner here and there had used the injections, the first apparently who called attention to the practice was Dr. Robert Barnes, who recommended it in his Lettsomian Lectures in 1857. In a lecture published in the *Lancet* in 1862, Dr. Barnes again called attention to the subject, and again in 1865, at a discussion at the Obstetrical Society of London on Puerperal Fever, in the course of which he spoke strongly on the importance of preventing great loss of blood, which loss itself was an undoubted predisposing cause of puerperal fever (*Obstetrical Society's Transactions*, vol. vii, p. 36). Finally, in November 1869, Dr. Barnes read an exhaustive paper before the same Society, on the Treatment of Hæmorrhage after Labour, showing the necessity in certain cases for some means more reliable than the "ordinary measures", the value of injections of the perchloride of iron as meeting this want, their possible dangers, and the best means of guarding against them. A long discussion followed, in which all the speakers agreed as to the value of the perchloride as an uterine styptic; two only, Drs. Wynn Williams and J. H. Aveling, suggesting that the method of swabbing might be safer than that of injecting (*Obstetrical Society's Transactions*, vol. xi, p. 219). At the beginning of 1870, Dr. Barnes published the first edition of his *Lectures on Obstetric Operations*, in which his method of using the injection is explained, and the cases in which he recommends it are defined. The great popularity of this book has caused the operation to be very widely known and practised. Long and animated discussions as to its merits have taken place in the medical journals and at the various obstetrical societies. Many are the lives which its advocates believe they have saved by its means. On the other hand, a considerable number of patients have died after the use of the injection; whether in consequence of it, or in spite of it, I shall have to consider presently.

I shall now refer briefly to every published case which I can meet with, in which death has followed upon the intra-uterine injection of a solution of the perchloride of iron for the arrest of primary *post partum* hæmorrhage. I exclude from consideration cases of secondary hæmorrhage, and of hæmorrhage from abortion; for Dr. Barnes himself does not advocate the injection of the perchloride in such cases, but recommends dilatation of the cervix, careful removal of remnants of placenta, etc., swabbing the interior of the uterus (if necessary) with solution of the perchloride, and so on. One of the earliest practitioners in this country to employ the iron injection was Dr. Hugh Norris of South Petherton, who used it as early as 1859, but did not publish his observations until 1869. He then gave details of seven labours, after which he had injected the perchloride, besides referring to several cases of abortion in which he had used the solution on plugs. In two of the cases of labour, death followed. The first was a case of placenta prævia; the patient was nearly dead when Dr. Norris arrived. He delivered, and injected solution of perchloride immediately. No further hæmorrhage took place, but the patient never rallied, and died of

* Read before the Liverpool Medical Institution, March 1880.