

A pathological inquiry into the secondary effects of inflammation of the veins / by James M. Arnott.

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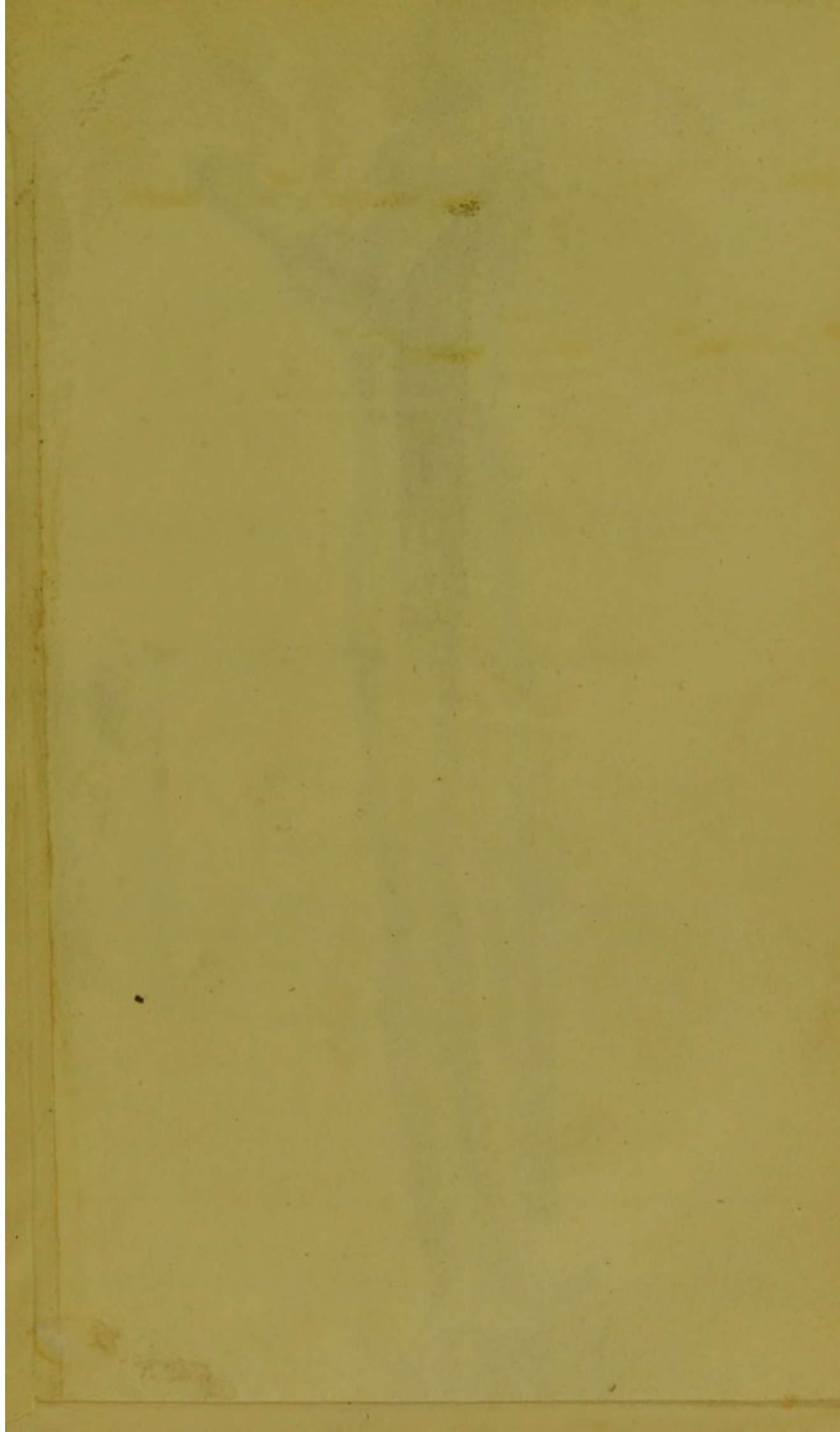


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at the University



Explained singular
rein of Horse.
p. 130

Plate I. Vol. XV

Fig. 1.

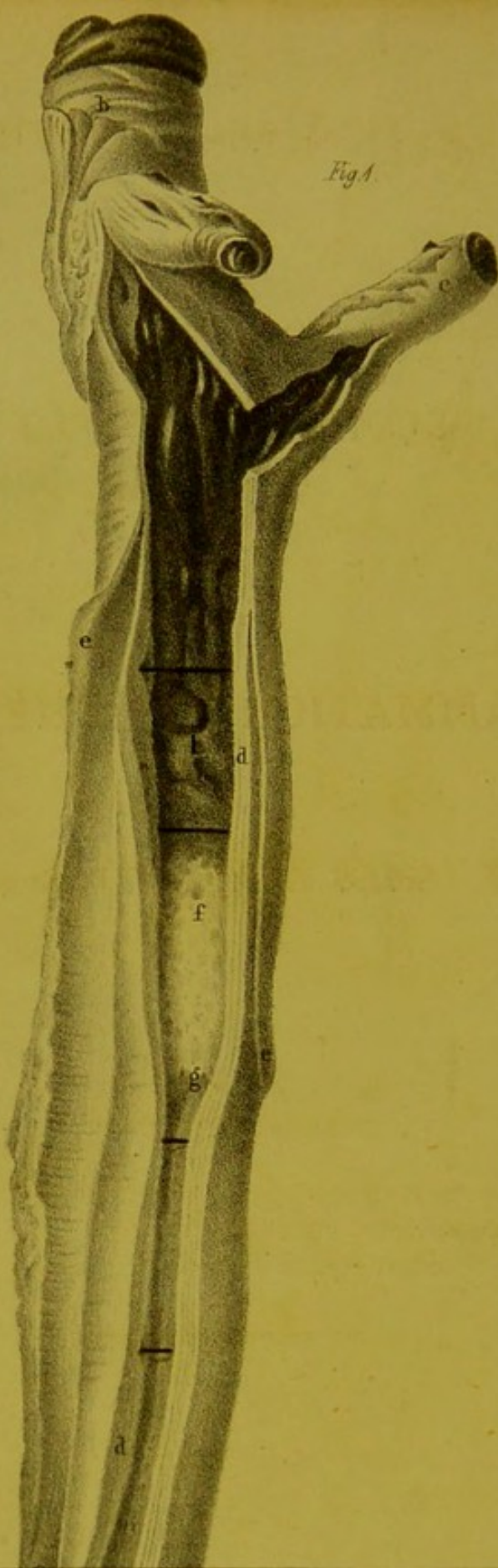
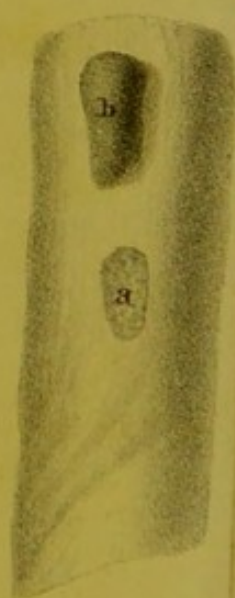


Fig. 2.



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A PATHOLOGICAL INQUIRY

INTO THE

SECONDARY EFFECTS

OF

INFLAMMATION OF THE VEINS;

BY JAMES M. ARNOTT, SURGEON.

FROM THE FIFTEENTH VOLUME OF THE MEDICO-CHIRURGICAL
TRANSACTIONS, PUBLISHED BY THE MEDICAL AND
CHIRURGICAL SOCIETY OF LONDON.

London :

PRINTED BY G. WOODFALL, ANGEL COURT, SKINNER STREET.

1829.

A PATHOLOGICAL INQUIRY

INTO THE

SECONDARY EFFECTS

INFLAMMATION OF THE VEINS;

BY JAMES M. ALCOCK, M.D.

FROM THE LECTURES DELIVERED AT THE ANATOMICAL
THEATRE, DURING THE YEAR 1850, AND
PUBLISHED BY THE CHURCH OF LONDON.

London:

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1851

A PATHOLOGICAL INQUIRY
INTO THE
SECONDARY EFFECTS
OF
INFLAMMATION OF THE VEINS;

BY JAMES M. ARNOTT, SURGEON.

Read October 14th, and 28th, 1828.

A DEGREE of doubt seems still to prevail as to the cause of the alarming constitutional affection frequently attendant on Inflammation of the Veins, and much obscurity unquestionably exists, with regard to the origin of those abscesses and inflammations in distant parts which sometimes occur after injuries. An attempt to remove the one, and to dispel a portion of the other, may not therefore be considered as altogether unworthy of notice.

My attention was more particularly called to this subject, by some occurrences which marked the course and termination of three fatal cases of inflammation of the veins after venesection, which I had an opportunity of observing. In one of these,

a deposition of pus, without signs of previous inflammation, took place under the skin of the opposite fore-arm; in another destructive inflammation of the knee-joint, with a deposition of pus into the cellular substance of the thigh; and in the third, collections of matter at several points in the substance of the lungs; while in all three, the inflammation of the vein did not extend to the heart. These circumstances suggested inferences as to the cause and nature of the constitutional affection in cases of Phlebitis, and views with regard to the origin of abscesses in remote situations arising from injuries, which led to an examination of the evidence on both these subjects, to be found in the writings and observations of others. The results of this investigation I submit to the Society.

PART I.

Mr. Hunter*, in his original essay on inflammation of the internal coats of veins, threw out two suggestions as to the manner in which this affection might influence the constitution. He remarks that, "in all cases where inflammation of veins runs high, or extends itself considerably, *it is to be expected* that the whole system will be affected. For the most part, the same kind of

* Trans. of a Soc. for the Improvement of Med. and Chir. Knowledge, Vol. I. London, 1793. p. 18.

affection takes place, which arises from other inflammations, with this exception, that where no adhesions of the sides of the vein are formed, or, where such adhesions are incomplete, pus, passing into the circulation, may add to the general disorder and even render it fatal." And, after observing that he had frequently seen the jugular vein of horses inflamed through its whole length, the inflammation carried along the vein quite into the chest, and that many horses die of the disease, Mr. H. proceeds, "But what is the particular circumstance which occasions their death, I have not been able to determine; it may either be, that the inflammation extends itself to the heart, or, that the matter secreted from the inside of the vein, passes along that tube in considerable quantity to the heart, and mixes with the blood."

Mr. Abernethy* had not seen a case where the vein evidently suppurated, and upon the effects of such an occurrence, he merely transcribes the opinions of Mr. Hunter, asserting, that if abscesses form, the matter of these may sometimes mix itself with the circulating fluid, and produce dangerous consequences. But, what Mr. H. considered as of *possible*, Mr. A. assumed as of *actual* occurrence when he stated, that where inflammation of the venous tube is extensive, it is probable that much sympathetic fever will ensue, not

* Essay on the occasional Ill Consequences of Venesection. Surgical Works, Vol. II. London, 1823. p. 150.

merely from the excitement which inflammation usually produces, but also, "*because* irritation will be continued along the membranous lining of the vein to the heart."

Mr. Hodgson*, likewise affirms, that the inflammation extends, "in some instances even to the membrane which lines the cavity of the heart," and he describes the symptoms which attend the disease as having a striking resemblance to those of typhus fever. Mr. H. considers that the constitutional irritation, being accompanied by symptoms of greater debility than acute inflammation in general, may probably arise from the extent of the inflamed surface, but, that it is not unlikely it may be an effect produced upon the nervous system by the pus which is secreted into the vessel, being mixed with the circulating blood†.

Mr. Travers‡ draws a distinction between the cases where the inflammation of the vein terminates in the formation of pus, and where it terminates in the deposition of adhesive matter or lymph; the latter extending to the trunks of the system, and sometimes, it is said, reaching the heart. He observes there is a marked difference

* On Diseases of Arteries and Veins. London, 1815. p. 511.

† Ibid. p. 518.

‡ Essay on Wounds and Ligatures of Veins, in Cooper and Travers's Surgical Essays. Vol. I. 3rd edition. London, 1818. p. 286.

in the symptoms accompanying these states; the first is a protracted irritation, producing hectic, and ending in exhaustion, the second is a typhoid fever, which speedily producing delirium, terminates within a few days. The former cases, although always dangerous, are sometimes recovered; the latter he imagines, never. Mr. T. then proceeds, "there have been many conjectures respecting the cause of the fatal termination of these cases, at which I confess I feel surprised; among others, the inflammations by extension of the heart, or the membranes of the brain, and the conveyance of pus into the circulation, have been mentioned. Not to insist on the innocuous quality of pus, it should be observed, that the most rapidly destructive inflammation is that which has the true adhesive progress in which no pus is secreted. But, if we consider the importance of the veins in the economy, the extent of surface which the collective *areae* of the venous trunks afford, larger, I imagine, than any of the shut sacs of the body, and the diffused and disorganizing character of the inflammation, we can surely be at no loss to account for the disturbance of the system. It is an error to suppose that any quicker sympathy exists between the constitution and the venous, than the arterial or absorbent system. I say this, because I have observed something like that superstitious alarm which is excited by events that we do not expect, and cannot explain, has been produced by the fatal

catalogue of tied veins, and a comparison of this with the generally successful cases of tied arteries. All the mystery of veins is, as I have attempted to show, that they are indisposed to inflame, but when excited, inflame by continuity, and therefore it is that the constitution sympathizes so deeply."

Mr. Carmichael*, in one of the cases which he describes, considers it probable that the inflammation extended "to the cava, and perhaps to the heart," but of the symptoms generally, he observes, that they "were no doubt owing to the formation of matter, and the influence which it must produce on the general system when mixed with the mass of blood."†

M. Breschet‡, in alluding to the febrile symptoms accompanying Phlebitis, remarks, that in several subjects who had died of Typhus, he had found evident traces of inflammation of veins within the cranium. But, whilst he seems to regard Typhus as a series of symptoms dependent on inflammation of the veins, he does not show how the primary local affection in cases of Phlebitis produces the constitutional.

* Observations on Varix and Venous Inflammation, in the Transactions of the King's and Queen's College of Physicians in Ireland. Vol. II. Dublin, 1818. p. 355.

† Ibid. p. 368.

‡ De l' Inflammation des Veines, ou de la Phlébite, Journal Complimentaire du Dictionnaire des Sciences Médicales. Tome II. p. 325. Tome III. p. 317. Paris, 1819.

M. Bouilland * ascribes the typhoid symptoms to the presence of pus in the system, and refers to the experiments of Baglivi, of Majendie, and of Gaspard, as having produced apparently analogous effects in animals, by the injection of acrid and putrid matter into their veins.

M. Ribes †, apparently the first, threw out the opinion which has since obtained partial credit, that the veins and venous blood are primarily affected in the *fièvres adynamiques* ‡. More recently, he has described the morbid appearances presented by the veins when inflamed, and the circumstances under which they become so §; but, although the pathological conditions of the different organs of the body in cases of Phlebitis, are likewise, though briefly, narrated, M. Ribes does not trace the connexion between the local and constitutional affections.

Mr. Guthrie, who observed the veins inflamed after amputation, in connection with, or, as he believes, as a consequence of a diseased condi-

* Recherches Cliniques pour servir à l'Histoire de la Phlébite. Revue Médicale. Juin 1825. P. 424, 5.

† Exposé Sommaire de quelques Recherches Anatomiques, Physiologiques, et Pathologiques, faites par F. Ribes. Mémoires de la Société Médicale d'Emulation. Tome 8. Paris, 1817. P. 624.

‡ Id. p. 628.

§ Exposé Succinct des Recherches faites sur la Phlébite, Revue Médicale. Juillet, 1825. P. 1.

tion of the stump, assumes * that inflammation of the veins is of two kinds, viz. the adhesive or healthy, and the irritative, erysipelatous, or unhealthy. The first kind is represented as seldom observed, but when observed, is usually cured; the latter is almost as invariably fatal, but in what manner, he offers no explanation.

In the third volume of his lectures by Tyrrell, published last year, Sir Astley Cooper † asserts, that sometimes life is destroyed by inflammation extending to the large vein and to the heart. He also remarks ‡, that if the matter resulting from the suppurative inflammation does not point, but remains in the veins, it produces excessive constitutional irritation, which destroys life.

From the preceding narrative it appears, that although the violence and fatality of the constitutional affection arising from Phlebitis have been equally recognized, several explanations are given of the circumstances upon which these more immediately depend; and that of the opinions so expressed, even those which have most probability in their favour, rest on somewhat uncertain grounds. The chief cause of this uncertainty has

* A Treatise on Gun-shot Wounds, &c. 3d Edit. 1827. p. 299.

† Lectures on Surgery, by Tyrrell. Vol. III. London, 1827. P. 205.

‡ Ib. P. 206.

been, the want of accurate observations of the symptoms and morbid appearances met with in cases of this disease, a want, which, since the attention of the profession has been called to the subject, more particularly by the writings of Mr. Hodgson and Mr. Travers, no longer exists; the doubt therefore that still remains is rather attributable to the question not having received that careful consideration which is requisite, in order to arrive at a satisfactory conclusion, than to any deficiency of materials to enable us to do so. In attempting this on the present occasion, I shall first offer a succinct account of several cases of Phlebitis, where death was clearly referable to its occurrence, and the bodies were subsequently examined, so as fairly to represent the circumstances which characterized the origin, course, and termination of the constitutional affection, and having done so, I shall proceed to draw such conclusions, accompanied by remarks, as the facts seem to justify.

FATAL CASES OF INFLAMMATION OF VEINS.

The first three cases, of which I daily witnessed the progress, occurred in St. Bartholomew's Hospital, under the care of Mr. Lawrence, to whose kindness I am not only indebted for the opportunity of observing them, but also, for having enabled me to give the following account. The other instances are derived from various sources: in selecting them, I have restricted myself to cases of

Phlebitis arising from wounds, the injury being either slight, or where extensive the connexion between the inflammation of the vein as primary affection, and the constitutional as secondary, being too obvious to be mistaken. The details of treatment unimportant for the purposes of the pathological investigation are omitted.

Case 1, after Venesection.—Sophia Brancher, twenty-five years of age, was bled on the 27th of November 1826, from the left median-basilic vein, on account of an unimportant accident met with the preceding day.—On the 28th she resumed her occupation of weaving; towards evening, the arm felt stiff and painful.—On the 29th she continued at her work, and all the symptoms became aggravated. The two following days she was incapable of using the arm, which she poulticed, and feeling very unwell, she came into the hospital on the 2d of December.

The inside of the arm, for some distance above and below the elbow joint, is swollen, red, and very painful on pressure. A small crust covers the wound made in venesection; the face is pale and anxious, skin hot and dry; pulse full and 120; tongue white and moist, great thirst, no appetite; bowels open from an aperient taken yesterday. Sixteen ounces of blood taken from the opposite arm induced fainting; it was highly cupped and buffed.

3d. Passed a restless night, frequent moaning, respiration hurried; skin hot, pulse small and 120. Bowels open, complains of pain in the abdomen, increased on pressure, or by a deep inspiration. 5th. The pain in the epigastrium has been removed by the application of leeches, in other respects continues much the same.—Arm rather easier, the inflammation extends towards the axilla; tongue white on the sides, light brown and dry in the middle.

7th. Arm less inflamed, the wound in the vein discharges rather copiously; the pus, which is of the ordinary consistence, is sometimes of the usual colour, and sometimes red from the admixture of blood; a considerable quantity of this red matter issued from the vein to-day, on pressure in the neighbourhood of the wound. Continues very restless during the night, and without sleep. The face is very pale and anxious; pulse small and 104; tongue furred and dry in the middle; bowels open. Yesterday and to-day she has complained of pains over the whole body, which are particularly severe in the extremities. She suffers more from them than from the arm.

8th. Continued restlessness and want of sleep, countenance flushed and anxious; respiration hurried; severe pains in the limbs, particularly in the calves of the legs; the redness, heat, and tension of the left fore-arm rather increased; the purulent

discharge from the vein continues; tongue less dry.—9th. A very restless night, countenance more anxious and sallow. Arm better; tongue rather dry; considerable thirst; pulse full, soft, and 100; bowels open. In the evening, the skin warm but moist; the pain in the limbs diminished. 10th. Had some refreshing sleep in the night, and is in all respects better to-day; the swelling and pain in the arm are nearly gone; pus still flows from the orifice in the vein. 11th. Slept a little in the evening of yesterday, but was restless during the night, and she complains much of the pains in her limbs. Her appearance is improved; respiration nearly natural, pulse weak, and 108. Tongue dry, and a little brown in the middle; thirst diminished, and bowels purged. Left arm nearly of its natural size. In the evening, more pale and anxious than in the morning, but the pains in the limbs are much diminished. The skin is cold, respiration laborious, (being performed with considerable effort,) and thirty in a minute. Pulse small, weak, and 104. Bowels continue purged, and the abdomen is painful on pressure.

12th. Has passed a better night, having slept for five hours; the countenance is much altered and pale. Matter has formed under the skin of the right fore-arm without redness, five ounces of good pus evacuated by puncture. Painful swellings of the left knee from effusion into the articular cavity.

13th. Has passed a very bad night, and is much worse to-day, the pallid and sunk countenance, feeble pulse, and other symptoms indicating clearly the near approach of dissolution. 14th. Died early in the morning.

The husband chose to be present at the examination after death, to restrict it in point of time and extent: it was therefore hurried and imperfect. The following points were, however, ascertained. Inflammatory condensation of the cellular tissue of the fore-arm, and arm in the inflamed part. A chain of small suppurations in the course of the blood-vessels, with white healthy pus from the elbow to the axilla. The axillary and subclavian veins, the superior cava, and the lining of the heart were quite natural. No diseased appearances in the chest; the liver light coloured, and beginning to assume the yellow appearance produced by indulgence in spirits. The other abdominal viscera were sound.

The knee was not allowed to be examined.

Case 2, after Venesection.—John Carr, forty-seven years of age. Having strained his back, was bled on the first of January 1827, and returned to the hospital on the following day, in consequence of pain in the wound, and inflammation of the surrounding cellular tissue. Face pale and

anxious, pain in the chest on taking a full inspiration; pulse frequent, full, and hard.

3d. Passed a restless night, with very little sleep. Arm easier; pulse full, hard, and 116: tongue white, bowels open. Twenty ounces of blood being taken from the arm, he fainted during the bleeding; the blood drawn much buffed, and the crassamentum very tough. 4th. Seems rather better, but the pulse being full, hard, and upwards of 100, he was bled ad deliquium, faintness being produced when twenty ounces had flowed; the blood was highly cupped and buffed, and the serum had a milky appearance: in the evening he breathed easier. 5th. Has passed a good night, and says he is much better: the symptoms connected with the thoracic affection are nearly gone. Great thirst. Bowels repeatedly open during the night.

6th. Much the same as yesterday. The arm is more swollen, and some pus is discharged from the orifice of the vein, on pressure in the course of the vessel. The purging continues. In the evening he had several shivering fits.

7th. Some sleep during the night, countenance pale and anxious. He expresses a feeling of great weakness, and is extremely irritable, but in good spirits. Pulse small, soft, and 140; tongue slightly

brown and dry, great thirst; no appetite. 10th. Has continued nearly in the same state, with strongly marked restlessness and irritability. Pale and sallow countenance. The inflammation of the arm, in the course of the vein, is diminished, but the discharge from the orifice of the vessel is increased, and is now mixed with bubbles of air, which seems to gain admission when the elbow is extended. Respiration is laborious, and 32; but a deep inspiration gives no pain. Pulse small and 108; great thirst.

13th. The inflammation increasing towards the axilla, whilst it is much diminished at the bend of the arm. He remains low and very irritable. 18th. A soft tumour appears at the inner side of the insertion of the deltoid muscle, and a fluctuation was felt; it was opened, and about two ounces of thick, tenacious, yellow, and very fetid purulent matter were discharged. He continues low and irritable. 20th. A good night, but this morning is very restless and irritable. He complains of pain in the chest. Respiration is heard all over the chest with the stethoscope, and the heart is heard over a larger space than usual. Pulse small, soft, and 104: bowels open, no appetite, the tongue has been occasionally rather dry, but never much furred, and frequently clean and moist: the wound in the vein does not discharge pus, and the abscess in the axilla is healing up.

25th. Last night, after taking some cold drink, he was attacked with a severe shivering fit, and during the night and this morning, he has had several more. He is very low, and complains much of weakness. The pulse is low and less frequent: bowels open. Cough diminished, but accompanied with copious purulent expectoration. The arm is of its natural size, and there is no discharge from the wound in the vein. He will not take any medicine.

30th. Last night was delirious, so that it was necessary to confine him. This morning there is great difficulty of breathing, and the face is pale and cadaverous. The irritability is extreme. The sonorous breathing was increased at times so as to threaten suffocation, which was accompanied with a peculiar cry. He soon became exhausted, and remained still for some time, when it was again repeated. These attacks became more frequent until he expired, at six this morning.

The body was examined six hours after death.—An incision was made from the clavicle to the middle of the fore-arm, so as to divide the skin, which was dissected back. A small abscess, with a smooth secreting surface, was found between the basilick and median basilick veins, and opposite the external wound. Both these veins were impervious to blood, and were reduced to a cord-

like substance. On tracing the basilick-vein upwards, it was found to terminate in an oblong shaped abscess about two inches above the original wound in the vein : it had a thick and irregular smooth surface, and the surrounding cellular tissue was very dense ; the basilick proceeding from the abscess was lined with an irregular false membrane for about two inches, when it terminated in a quantity of fibrin, which filled up the cavity of the vein. Immediately above this, the cephalick and several smaller veins terminated. The internal surface of the heart and of the large veins appeared healthy, and were filled with recently coagulated blood.

The pericardium contained a few ounces of a yellowish serum mixed with portions of lymph. On the surface of the heart several large white spots appeared. There were extensive adhesions between the pleura costalis and pulmonalis. The lungs were healthy, excepting several points where vomicæ had formed ; a very large one was situated in the posterior part of the right lobe.—The bronchiæ were filled with mucus mixed with air.

The abdominal viscera were healthy.

The arachnoid membrane, covering the hemispheres of the brain, was thickened, opaque, and of a milky appearance. Serous fluid was effused into the texture of the pia mater. Several ounces

of yellowish serum were found in the lateral ventricles. The substance of the brain was healthy.

Case 3, after Venesection.—Henry Arnold, 51 years of age, admitted the 19th of January, 1827, having an old ulcer of the leg with much surrounding inflammation. He was twice bled from the arm, took medicine, &c. and the leg rapidly improved. Three days after the second bleeding, the wound of the vein became painful, and was found to be slightly inflamed. A poultice was applied and the arm felt easier, when on the evening of the

29th, (six days from the bleeding,) he was attacked with shivering fits, followed by heat and thirst.—31st. The inflammation had extended to the axilla, the arm being red, swollen, and painful on pressure from the elbow to that part, and he had a severe shivering fit in the afternoon. Similar shivering fits continued to recur.

On the 4th of February, he complained of severe pain in the left knee-joint, which was somewhat swollen. The arm was easy, and a small quantity of thin pus flowed from the wound in the vein on pressure. The countenance had a yellowish look, the pulse hard, full, and 100, tongue white and dry, with great thirst.—5th. The left knee and thigh were greatly swollen and very painful; the joint distended to the utmost with effused fluid,

causing a prominent tumefaction above and at the sides of the patella. All the superficial veins of the knee and thigh were excessively swollen, forming a very conspicuous net-work. The limb slightly red and preternaturally hot. Pulse soft and 140; tongue white, bowels open.

7th. Complained since yesterday of pain in the right shoulder, which continues, without swelling or redness. The knee relieved by cupping, and nearly free from pain, though the swelling is not much diminished. The pulse small, hard, and 120; tongue brown and dry; great thirst.—Died on the 8th.

The body was examined ten hours after death.—The cephalick-vein, which had been punctured, was thickened, and contained pus for about two inches below, and four inches above the wound, where a coagulum of blood was found filling the cavity; above and below these points the vessel was healthy.

The arachnoid membrane was thickened, opaque, and whitish. The cellular texture of the pia mater was loaded with serum, and an increased quantity of fluid was found in the ventricles.

The cavity of the knee-joint was filled with tolerably thick pus of an uniformly reddish colour, as if from an intimate admixture of blood. The

synovial membrane was thickened, with an irregular and almost villous surface ; it was extremely vascular in its whole extent. The cartilaginous coverings of the femur and tibia had undergone considerable absorption, so that the convexities of the femoral condyles, and the corresponding excavations of the tibia, were completely bare. The cellular substance covering the capsule of the knee, under the extensor muscles, was inflamed, thickened, and loaded with pus. This texture was in the same state on the surface, and throughout the whole substance of the vasti and cruralis muscles. Sections of these muscles presented a most singular appearance, their large fasciculi being separated, apparently, by layers of thick yellow pus. The matter, although precisely similar in colour and consistence to that produced by phlegmonous inflammation, was nowhere collected into an abscess ; but was diffused through the cellular structure, as serum is in the case of anasarca. In the rest of the limb there was an effusion of a bright light yellow serum.

The cellular structure, exterior to the orbicular ligament of the right shoulder, was filled with thick yellow pus ; but the cavity of the joint and the deltoid muscle were natural.

Case 4, after Venesection.—Gaspar Goldinger*,

* M. le Herissé in *Journal de Médecine*, par MM. Corvisart, Leroux, et Boyer. Tome 12, p. 417, Paris, 1806.

subject for the last six weeks to epilepsy, was bled twice from the arm on the 1st of November, 1806; on the 8th from the foot; and on the 10th and 13th from the jugular vein. On the 16th he was again bled from the arm, (the right,) which on the following day felt painful; some redness and tension were observed round the aperture.—18th. Arm very painful and swollen from the shoulder to below the elbow; edges of the puncture red; face and skin of the body of a yellowish colour. Pulse feeble and frequent.—19th and 20th. Fever more intense; tongue dry and coated; great pain in the arm.—21st and 22d. Lies supine; prostration of strength; heat of skin; tongue dry; pain in right side of chest; respiration short.—23d. Tension of the arm diminished. Some pus flowed from the wound made in bleeding. Respiration short. Died at night, seven days after the receipt of the wound in the vein.

Dissection.—The wound in the cephalick open; the vein filled with pus through its whole length, *i. e.* from where it terminates in the axillary to the bend of the elbow, where it divides into the median cephalick and superficial radial, the latter of which contained pus for two inches below its origin. The coats of the vein were much thickened, indurated, and red.

In the interfibrillar cellular tissue of the pectoral muscle of the right side was a quantity of

thick greenish pus. Eight or ten ounces of a yellowish opaque serosity were contained in the right sack of the pleura. The lung of this side was unadherent, that of the left was adherent over its whole surface by a delicate false membrane. Both lungs presented a number of hepatized portions, varying in size from that of a nut to that of a large walnut, gorged with fluid, which in some of them was puriform.

The arachnoid membrane was opaque, thickened, and indurated; effusion of fluid between it and the pia mater, and into the texture of the latter. Some yellowish serum in the ventricles.

*Case 5, after Venesection**.—A robust soldier was bled for ophthalmia; next day great pain and swelling commenced in the arm, which gradually extended upwards; fever succeeded; and on the seventeenth day after the venesection, although the wound in the vein had healed, his pulse was 120, and feeble; skin hot; tongue covered with brown fur; respiration difficult; and great prostration of strength. The symptoms continued until the twenty-third day, when a painful swelling was observed above the clavicle, and in a few days a soft diffused swelling underneath the angle of the lower jaw. The symptoms increased slowly; respiration became more painful and difficult; pulse seldom less than 120; delirium oc-

* Hodgson on Diseases of Arteries and Veins, p. 512.

curred, and he died in the course of the seventh week after the bleeding.

Dissection.—The coats of the cephalick vein, which had been punctured, were thickened, and its cavity was obliterated, from an inch above the puncture to the shoulder. The brachial, the axillary, subclavian and internal jugular veins were enlarged, thickened, and indurated. The external jugular, (less than that of the opposite side,) and the subclavian veins were filled with pus. When slit open, they were found much thickened, and lined with lymph. The vena cava superior was healthy. The diseased appearances were not gradually lost, but terminated abruptly.

The heart was healthy, a serous fluid, with flakes of lymph floating in it, was contained in the cavity of the thorax. The lungs contained some small abscesses.

The structure of the brain was natural, but there was more serum than usual in the ventricles; the veins of the pia mater were turgid with blood.

Case 6, after Venesection.*—Hugh Johnson, æt. thirty-three, was bled on the 15th of May, 1810, in the right median-basilick vein, for ophthalmia. From the 16th, he had felt pain

* Cooper and Travers's Surgical Essays, Vol. I. p. 229.

in the arm, the wound in which was found, on the 24th, with everted edges, and discharging a small quantity of pus. The pain extended upwards in the course of the arm, and he had a quick pulse. 25th, the local symptoms increased, and a good deal of fever present. 26th, less pain in the arm, tension and swelling greatly reduced; wound nearly closed. 27th, wound quite closed. 28th, arm free from pain, but the fever continues, and is now distinctly typhoid. The constitutional symptoms rapidly increased, and he died on the 6th of June, seventeen days after the vein was punctured.

Dissection.—Wound in the vein closed, pus occupying the mediana longa for about two inches below the origin of the median-cephalick and basilick veins, and a similar appearance was traced along the whole course of the humeral vein to the axilla; there was besides an irregular deposit of lymph, which adhered to its lining membrane. Before passing under the clavicle about an inch, the vein abruptly presented its natural appearance, and there was no sign of disease, between that point and the heart. This organ was healthy, except a small patch of lymph upon its anterior surface, and a similar deposition upon the opposite surface of the pericardium; a small quantity of fluid was found in the latter, and in both sides of the chest.

*Case 7, after Venesection.**—Michael Dogherty, æt. thirty-one, was bled from the right median-cephalick vein, on the 15th of April, 1821, having on the preceding day had a severe attack of rigors, followed by flushing, pains in the head, and the usual symptoms of continued fever. Inflammation of the vein took place.

On the fifth day the local symptoms had much increased, and pus mixed with blood could be pressed from the wound, while the pulse was 104, and feeble, the skin hot and dry, and the countenance anxious and oppressed. Eleventh day, the local and general affections have become aggravated; last night he had a severe rigor, with delirium, and he complains of great uneasiness extending across the chest. Seventeenth day, pulse 124 and feeble, considerable subsultus, countenance more anxious, and breathing hurried; delirium continues.

Twenty-seventh day, the wrist of the opposite arm is much swollen, and a distinct fluctuation is felt in it; exquisite pain in the left knee, which added not a little to his irritability. Twenty-ninth day, appears much reduced, and insensible, breathing laborious and hurried, pulse 136 and moderate; tongue and teeth covered with sordes. Died on the thirtieth day after the bleeding.

* Transactions of the Med. and Chir. Society of Edinburgh, Vol. I. p. 485-6.

Dissection.—The coats of the mediana-longa greatly thickened, and its inner surface lined with a thick layer of coagulable lymph. About the middle of the fore-arm, a small abscess had formed in the vein, but was prevented from extending by the lymph. Two inches above the bend of the arm, the cephalick and basilick veins were filled with pus, and their coats were uncommonly thin, and easily ruptured. This appearance extended to the axillary vein, and terminated abruptly before the vein crossed the first rib. The vein remained quite pervious, though its cavity was much diminished; neither did it contain a particle of blood, nor could its valves be observed.

Between the first and second ribs, near to their sternal extremities, an opening was discovered leading to a sack, formed by an adventitious membrane of coagulable lymph, filled with purulent matter, and pushing towards the pleura costalis. The sack contained four or five ounces of pure pus. At the left wrist there was a similar collection of matter, containing about six ounces of pus. The lungs were perfectly healthy in their structure, but several old adhesions existed between the pleuras in both sides. The heart was natural and healthy, but on the left side there was a deposition of coagulable lymph on its external surface, and the inner coat of the aorta to its arch had a deep red appearance. The other cavities were examined, but nothing of any importance was found.

*Case 8, after Venesection.**—Clementine, æt. twenty, in the sixth month of pregnancy, was bled on account of head-ache, and vague pains in the chest, on the 12th of January, 1827. Inflammation of the vein took place, followed by fever, great restlessness, &c. ; on the 18th the wound made by the lancet was enlarged, and a small quantity of pus only evacuated. The local symptoms abated, but the general increased; the prostration of strength was extreme; the teeth and lips covered with sordes, the tongue black and dry. In this state, labour came on, and she died two hours after delivery, fourteen days after the vein was wounded.

Dissection.—The median-basilick vein almost entirely obliterated, its parietes at least a line in thickness; all the other veins opening into the trunk of the basilick filled with white healthy looking pus; until near the clavicle, the coats of the brachial vein were greatly thickened, and lined with a distinct concrete purulent membrane, its cavity being moreover filled with a thin reddish pus. The inflammatory changes in the coats of the vein diminished very rapidly from the axillary vein onwards, so that, opposite to the scaleni muscles, the subclavian offered no trace of them.

The superior cava and heart were quite healthy. There were very well marked traces of recent

* Archives Générales de Médecine. Aout, 1827. p. 503.

pleurisy, pulmonary *engorgement*, but not real pneumonia. The other parts of the body presented nothing unusual.

*Case 9, after Venesection**.—Captain L. æt. thirty-four, was bled from the arm on the third day after undergoing the operation of lithotomy; inflammation attacked the vein, and he died at the end of the third week; symptoms of inflammation having come on, on the same side of the chest as that on which he had been bled, in the last forty-eight hours.

The basilick vein was thickened by inflammation up to its termination, and the veins corresponding to it were in the same state down to the back of the hand. The coats of the vessels were red, and the surrounding tissue was indurated by inflammation. The interior of the inflamed veins was partially roughened, as if by the deposition of lymph; they contained pus throughout. The whole subcutaneous tissue of the arm was inflamed, and partially infiltrated with serum. The axillary vein and the continuation of the trunk to the heart were free from inflammation.

The pleura was violently inflamed; the cavity contained about a pint of whey-like fluid, mixed with pus and flakes of lymph.

* Med. and Chir. Trans. Vol. XIV. p. 284.

*Case 10, after Venesection**.—Thomas Fuller, æt. twenty-one, an athletic man labouring under general anasarca and dry cough, was bled from the right median-basilick vein, on the 18th of June, 1827, and again in the evening from the same aperture; the blood last taken was somewhat buffed. On the 21st he complained of pain in the arm, which was tender and swollen, with some redness round the puncture; pulse 112, rather full and easily compressed; tongue white; bowels costive. 22nd, obtained some rest during the night, and the rigors have not returned. [It is not stated in the preceding reports when they had occurred.] Bowels freely opened, but he has been attacked with vomiting of green and bilious looking fluid. *Vesp.*:—Vomiting continues. 23rd, condition of the arm more alarming; a sero-purulent discharge continually oozing from the wound. Mr. Rose, by a free incision into the cavity of the vein, enlarged the original wound, giving issue to a mixture of serum, pus, and blood. The coats of the vessel were found to be extremely thickened. Pulse about 90; no pain in the chest; cough on a full inspiration. *Vesp.*:—There has been a free discharge of blood, and on making pressure on the cephalick vein, from the shoulder downwards, puriform matter oozes from the wound. 24th, a second hemorrhage more copious than the first occurred during the night, and was stopped by

* London Medical Gazette, Vol. II. p. 155.

pressure; arm greatly swollen, but not preternaturally red. The whole body puffed and bloated, and its surface of a yellow bilious hue; the pulse innumera- bly rapid, weak, and small; the senses wandering; the countenance cadaverous, and expressing intense anxiety. He answers hurriedly to questions, that he has no pain at all in any part; no dyspnœa; little cough. Died in the evening, six days after the vein being wounded.

Dissection.—In the right side of the thorax, there was about a pint of discoloured serum, and extensive, though not very recent, adhesions of the pleuræ. In the left cavity, the same appearances were noticed in a less degree. The lower lobes of both the lungs were fleshy and consolidated; but the right was decidedly more so than the left. The mucous membrane of the bronchi and trachea was injected, and the pericardium contained more water than it should do. There was a general disposition to fluidity in the blood, and the lining of the left ventricle, as well as the internal coat of the thoracic and abdominal aorta, were stained of a cherry tint, which was evidently owing to transudation.

The liver was enlarged, the gall-bladder filled with bile. Both the kidneys were in a slight degree enlarged, and so highly congested, both in the corticle and medullary portions, as to resemble the spleen, in colour.

The median-cephalick vein, in which the puncture had been made, was greatly thickened, as was the cephalick as high as the insertion of the deltoid. On laying open its interior, the cephalick presented, on its inner coat, the marks of inflammation, to within two inches and a half of its junction with the axillary, above which point no appearance of disease could be discovered. Very little pus existed in the veins, having probably been washed away by the hemorrhage which occurred in the night before the patient's death. The cephalick trunk, below the spot where the median-cephalick joined it, was inflamed on its inner surface, and its cavity, in one part, plugged up by coagulable lymph. This part of the vein was comparatively little thickened. No adhesion had been formed between the coats above the puncture, so that there was left a free and unobstructed channel for the escape of the blood from the axillary trunk. The median-basilick was thickened and inflamed, and the basilick itself, for a little distance up the arm, showed traces (fewer and feebler indeed) of the inflammatory action.

Case 11, after the operation for Aneurism.—John White *, æt. 28, was operated upon for popliteal aneurism, on the 29th of November, 1816, during which the femoral vein being slightly wounded,

* Cooper and Travers's Surgical Essays, Vol. I. p. 243.

a ligature was applied round the aperture by nipping up the coats of the vessel. As regarded the artery, every thing did well throughout ; but, on the 9th of December, the ligature from the vein having come away, a slight hemorrhage was found on the 10th to have occurred from the wound, and he complained of tenderness in the course of the vessels towards the groin. On the 14th, he complained of head-ache ; pulse quick and full ; bowels open ; not much thirst. On the 20th, had a severe rigor, followed by heat and profuse sweating ; and on the 21st, a slight rigor. On the 25th, hemorrhage, to the extent of about twelve ounces, took place from the wound, which had previously been discharging pus copiously. The bleeding recurred next day.

From the 27th, frequent and severe rigors took place, the febrile symptoms increased, and his pulse became remarkably quick. A material change was observed in his countenance on the 30th ; and on the 31st he died, thirty-two days subsequent to the operation. On dissection, an opening was found in the vein communicating with the external wound. The coats of the vein were thickened, and its internal tunic covered with adhesive matter. The adhesive inflammation extended to the iliac vein, as high as the bifurcation of the cava. The cava was also inflamed ; but here the inflammation had not produced lymph or pus.

There was considerable serous effusion into the chest; one of the lobes of the left lung was covered with a recent deposit of lymph, and the parenchymatous substance of the lungs appeared to have been inflamed. There was also a slight inflammatory blush on the surface of the intestines; the other viscera of the abdomen appeared in a healthy state.

Case 12, after the Operation for Aneurism.—James Boyle, æt. 40, was operated upon for popliteal aneurism, by Mr. Carmichael*, on the 20th of May, 1818. Some little force was required to pass the aneurism needle under the artery, and as soon as it was accomplished, a gush of venous blood followed, which in a second or two spontaneously ceased. On the fifth day, a small quantity of pus flowed from the wound, and he now began to feel some general uneasiness. On the sixth day, his pulse rose to ninety, which since the operation had not exceeded seventy-five, his sleep was disturbed, and his countenance flushed, but he could not point out the particular cause of his uneasiness.

June the 7th, the thirteenth day, had several distinct rigors, followed by heat; discharge from wound increased in quantity. He sighed, or rather moaned, frequently, and he had the listlessness of

* Transactions of the King's and Queen's College of Physicians in Ireland, Vol. II. p. 350.

manner and countenance usually observed in the second or third week of typhus fever. On the 8th, had a strong rigor ; and on the 9th, three ; his manner now evinced great torpor and debility, and at times he muttered incoherently,—pulse ninety—tongue brown. Six ounces of blood taken from the arm had a buffy coat, and ten ounces on the 10th, had a similar appearance. On the 11th, he was evidently worse ; in the evening had another rigor, after which, his face, which had been hitherto of a deep red, became pale and ghastly. He died on the 13th, twenty-four days after the operation in which the vein had been wounded.

Dissection showed that the crural vein had been wounded by the aneurism needle ; but no portion of the vein was included in the ligature. On slitting it open, its interior surface was lined with pus and organized lymph, exhibiting the appearance which membranes present in a suppurating state. This appearance extended downwards almost to the ham, where it suddenly ceased, but the vein was rendered impervious at the part by a deposition of coagulable lymph. The disease also extended a considerable way down the saphena, upwards it was traced as far as the common iliac ; but the examination was not allowed to be carried further.

Case 13, after Amputation.—John Crute *, æt.

* Cooper and Travers's Surgical Essays, Vol. I. p. 247.

30, suffered amputation of the thigh for a scrofulous disease of the knee-joint. During the first two days, he appeared unusually low, sighed deeply, and spoke but little. On the evening of the eleventh day, it became evident that he laboured under more constitutional irritation than is common after amputation, and he was attacked at night with severe bilious vomiting, his bowels being freely open. On the 4th day, the vomiting continued at intervals. The stump was dressed, and a copious discharge of grumous blood, accompanied with purulent sanies flowed from it. In the evening, slight rigors were followed by fever and delirium. On the morning of the fifth day, his pulse was thready, and very rapid, his countenance sunken, and he had incessant low muttering. He died next day, six days after amputation.

Dissection showed a ligature on the mouth of the femoral vein, from which all along this vessel, the external iliac and cava as far as the point at which the emulgents enter, the interior tunic was coated by large flakes of coagulable lymph. There were marks of diffused inflammation extending to the right auricle of the heart ; but the signs of adhesive inflammation terminated as described.

Case 14, after Amputation.—Elizabeth Mitchell*

* Transactions of the King's and Queen's College of Physicians in Ireland, Vol. II. p. 365.

met with a compound dislocation of the ankle joint on the 27th of January 1818, amputation of the thigh was performed on the 13th of February; matters went on well until the 18th, when after a very bad night the pulse was found 114; small and easily compressible, the skin dry, heat less than natural; the yellow suffusion, which existed during the period of the sympathetic fever succeeding the accident to a greater degree than ordinary and had in some measure subsided, now assumed a deeper tinge; the tongue was covered with brown fur; the patient, who did not complain of thirst, had vomited in the night, complained of great depression and sense of sinking about the precordia, and sighed frequently; there was a thin and fetid discharge from the stump, but small in quantity; she did not complain of any pain in the stump, except what arose from changing the dressings.

On the 20th had a long and violent rigor; frequent and severe rigors continued to recur, and she died on the 14th day after the operation.

Dissection.—The surface of the stump gangrenous, the femoral vein on being slit up was found full of pus as high as Poupart's ligament; above this it was covered with irregular patches of coagulable lymph like a soft membrane. On scraping this off, the vein appeared very vascular, which appearance was continued as far as its junction with the corresponding iliac to form the cava; this last

was not inflamed. The liver was sound, and the gall-bladder loaded with a dark viscid bile. The examination could not be carried further.

Case 15, after Amputation.—Jane Strangemore* had the thigh amputated on the 27th of September 1823, for disease of the knee-joint; on the 28th, the pulse which had been eighty rose to 100, in the evening to 120; on the evening of the 28th she became sick, and vomited a quantity of bilious matter. October 1st, better, but looking irritable and ill, no pain, no sickness; 8th, wound looks well, edges have nearly healed; on the 9th she complained of pain in the other thigh and leg, (principally felt in the calf and heel,) which parts on the 10th swelled and became tender to the touch without redness. Vomiting again of bile; tongue furred; 17th, mostly the same, the sickness and vomiting of bile abating at intervals; 25th, slightly jaundiced in colour; died on the 27th, thirty days after the amputation.

Dissection.—The termination of the vein on the face of the stump in a sloughy state, as high as Poupart's ligament; the inside of the vein bore marks of adhesive inflammation; above that it contained purulent matter, lymph, and blood, partly coagulated, partly broken down; these appearances were extended up the cava beyond the

* Med. and Phys. Journal. Vol. LVI. p. 35.

diaphragm, and traces of inflammation could be distinctly observed almost into the auricle; the inflammation had descended along the left iliac vein into the pelvis, and along the femoral as far as the foot; at the left groin the iliac vein becoming femoral was distended with pus; the viscera were healthy.

Case 16, after excision of a portion of Varicose Vein.—John Dodging *, æt. 35, had a portion of a varicose vein excised from the right leg on the 25th of June 1828. The vein was a branch communicating with the posterior saphena. The following day he was attacked with sickness and vomiting, of greenish matter; his pulse rose to 120, with symptoms of inflammation along the thigh of the operated limb. On the 28th, there was pain in the epigastrium, great sickness, difficulty of breathing and restlessness.

30th. The left arm exhibited tension and other symptoms of phlegmonous erysipelas. On the 1st of July, the inflammation of the right leg had in a measure subsided; difficulty of breathing and pain in the epigastrium still present; the arm continues swollen and painful, as also the other leg, but less than on the previous day. 2d. Pain and tension in the head, with dry and brown tongue, and depression of power both mental and bodily.

* London Medical Gazette. Vol. II. p. 284.

3rd. The patient evidently sinking ; the pulse fluttering, variable, and very frequent ; the skin deeply jaundiced. The cornea of both eyes opaque, the vessels of the conjunctiva injected, the eyes constantly closed. The patient, though deprived of sight and in a great degree of sense, was still able to recognize the voices of those who spoke to him, and could by a strong effort open his eyes and put out his tongue when desired to do so, the latter being dry and nearly black ; he died on the 4th.

Dissection.—Inflammation had extended to and along the posterior saphena as high as the ham, where it terminated abruptly ; in this course the vein was partly plugged with lymph, and in places contained pus. Several smaller muscular branches contained fluid pus.

Deep seated abscesses had formed beneath the fascia of the left fore-arm and leg, separating the muscular fibres to a considerable extent ; in the right fore-arm there was also sero-purulent effusion between the muscles.

No diseased appearances were found in the abdomen.

In the chest, a small abscess, evidently the product of recent acute inflammation, was found in the superior lobe of the right lung.

In the head, there was considerable effusion into the cellular tissue of the pia mater, particularly towards the basis, and the serum in the veins was of a deep yellow colour. Lymph was effused around the trunks of the carotid arteries, the nerve of the third pair on the left side was evidently flattened and softer than that on the right; the nerve of the fifth pair on the right side had undergone a similar change to a greater extent. It has been remarked that during life, great opacity of both corneæ had taken place, the surfaces of which had become rough. On removing the right eye, destructive changes were found to have taken place within the globe, the crystalline was so soft as to yield to the slightest touch, the vitreous humour was of a reddish yellow colour, and red vessels could be distinctly seen traversing its membrane; the retina was of deep red colour.

Case 17, after division of the Saphena.*—A middle aged man had the saphena major divided where it passes over the inner condyle of the femur, on account of a varicose state of the veins of the leg, and an ulcer near the ankle. About three on the morning of the second day after that on which the operation was performed he had a shivering fit, and was rather light-headed; at noon his pulse was weak and quick, his tongue was slightly furred; he complained of sickness and

* Hodgson on the Diseases of Arteries and Veins. London 1815. p. 555.

head-ache, he was restless, his strength was depressed, and his countenance had assumed an appearance of great anxiety. He had no pain in the limb, he did not complain when it was pressed, nor was it tense or red. On the morning of the third day he was sick, and vomited some food which he had taken for breakfast; at noon, his pulse was frequent and low, his tongue was covered with brown fur, he complained of head-ache, and was much depressed. There was some redness of the thigh, but very little pain or tenderness. In the evening, the redness, pain, and tenderness of the thigh had increased and extended up the limb in the course of the vena saphena major; his pulse continued low and frequent: during the night he sunk, and died about three on the morning of the fourth day.

Dissection.—The external wound contained a small quantity of matter; the extremities of the vena saphena major, which had been divided in the operation, were united by coagulable lymph; the whole of the vein above the wound as far as its junction with the femoral vein was removed: its internal coat was rather redder and more vascular than natural, no coagulable lymph or pus was effused into its cavity, nor was any other preternatural appearance observed in it. The contents of the abdomen were examined, but all the viscera were in a healthy state. A portion of the

vena cava which was removed had a healthy appearance.

From these seventeen cases of fatal Phlebitis, the first conclusion deducible is, the total disproof of the assertion, that death results from the extension of the inflammation of the vein to the heart. In none of the ten instances following venesection was the superior cava affected, much less the heart; and in half this number, inflammation had not reached to the subclavian, or even to the axillary vein. In the cases where the inferior cava had become inflamed, viz. those of Crute, White, and Strangemore, the first is the only one in which the heart is represented to have been actually implicated; and here, the deposition of lymph terminating at the entrance of the emulgent vein, the observation is, that "there were marks of diffused inflammation extending to the right auricle of the heart, but the signs of adhesive inflammation terminated as described."

As a cause of death, then, the extension of the inflammation to the heart may be considered as a mere matter of assumption, the history of the error being simply this: Mr. Hunter's observations not having enabled him to form a decided opinion as to the cause of death, when this affection occurred in the jugular vein of horses, he suggested as a query, whether it might not depend on the

inflammation extending to the heart. By succeeding writers this suggestion was adopted, without examination, and without any evidence being offered in its support. Indeed the circumstance itself is of very unusual occurrence; for, with the exception of the instance just alluded to, I have only found two others in which it is alleged, that the inflammation had extended from the vein to the heart, and in these the description is not very precise. Both cases are mentioned by M. Ribes, in the *Revue Médicale* for July 1825. In one, occurring so far back as the year 1799, where the veins of the arm were inflamed, in connexion with gangrene of the hand from chilblain, “traces of inflammation” are stated to have been continued into the superior cava, and even to the interior of the right auricle and ventricle; and, in the other instance, where the saphena evinced some signs of inflammation, in a case of mortification of the leg and foot, it is stated in the same vague terms, that “the right auricle and ventricle of the heart, as well as the inferior cava, at its insertion into this organ, had manifest traces of recent inflammation.”

It is to be regretted that M. Ribes has not distinctly specified what the “traces” were, which he considered as indicative of inflammation in the lining membrane of the heart; an omission, which when contrasted with his immediately preceding minute description of the changes produced by

inflammation in the coats of the veins, leaves us in considerable doubt as to the comparative value of these traces as proofs of inflammation. Of course, it is not by these remarks meant to be denied, that inflammation may extend to the lining membrane of the heart from the veins; but considering the fact itself as not yet sufficiently established, it is perhaps not requiring too much that the evidence adduced in its support should be of an unequivocal character.

As the preceding remarks have indicated, there are considerable differences in the extent of vein occupied by inflammation in fatal cases of Phlebitis. Sometimes the disease has spread into several, or most of the veins of a limb from that primarily affected; at others, it has not proceeded beyond the vessel in which it originally appeared. This last circumstance, with that of the fatal consequences sometimes ensuing from inflammation, limited to a few inches only of a vein, (as of about six of the cephalic, in the case of Arnold,) justifies the inference that the dangerous consequences from Phlebitis bear no direct relation to the extent of the vein which is inflamed.

In endeavouring to ascertain the nature of the connexion between the primary and secondary affections in this disease, the question which next suggests itself is, whether the latter depends, as has been alleged, upon the entrance of pus into

the circulation. We are thus led to inquire into the contents of the inflamed vessels, and on referring with this view to the cases which have been adduced, it will be found that in a number of them, where an open wound existed in the vein, pus was discharged from it during life. Whilst in fourteen cases out of seventeen, (those of Brancher, Carr, Arnold, Goldinger, that by Mr. Broughton, Johnson, Dogherty, Clementine, Captain L., Fuller, Boyle, Mitchell, Strangemore, and Dodging,) pus, or pus in conjunction with lymph, was present in the vessel after death. In two instances, no mention is made of pus, the contents of the veins being described in the one (White) as "adhesive matter", in the other (Crute), where the cava was concerned, as "flakes of lymph". In one case only, (Mr. Hodgson's,) where the inflammation occurred in a vein previously diseased, or in a vein the branches of which at least were varicose, neither pus nor lymph was found in the vessel.

It results from this statement, that although pus is present in the veins in the great majority of fatal cases of Phlebitis, and that although it should appear from the character of the general symptoms, and the effects produced upon animals, by the injection of a similar fluid into their vessels, that the passage of pus into the circulation is probably the principal, yet the circumstances do not justify us

in regarding it as the sole cause of the secondary affection. In addition to the presumed absence of pus in two instances, and to its declared absence in a third, it may be remarked, that the early appearance of the symptoms in some cases seems scarcely to correspond with the time usually required for the production of pus, as in one which occurred to Mr. Freer*, where they came on, suddenly, four hours after ligature of the saphena. If then, the constitutional affection in Phlebitis is to be explained by the introduction of a fluid into the circulation, which contaminates the blood, and operates as a poison, this property must be attributed to inflammatory secretions generally from the vein, although not purulent; and it remains to be seen whether the symptoms of this affection are such as can be accounted for by the passage of pus only into the system.

Before quitting the subject of the local affection, I would allude briefly to a circumstance which has escaped the notice of those who have previously treated of inflammation of veins, viz. the point at which the inflammatory changes in the coats usually terminate. According to my observation, these changes are limited by the passage of a current of blood; where a trunk is concerned, the boundary being the en-

* Hodgson, on Diseases of Arteries and Veins. Case 53, p. 551.

trance of a branch, and where a branch is concerned, the boundary being the junction of this with the trunk.

My attention was first called to this circumstance, in examining the inflamed jugular vein of a horse, in company with Mr. Field, jun. of Oxford Street, whose kindness, in connexion with his zeal in all that concerns the pathology of this animal, procured me the advantage of so doing.

A horse being seized in the Park with paralysis of the posterior extremities, was with difficulty got back to the stable. He was immediately bled from the left jugular vein, and Mr. Field having seen him four hours afterwards, ordered the bleeding to be repeated, which was performed from the same orifice. The paralysis was not relieved, and the vein having inflamed, it was determined, after the lapse of some days, to destroy the animal.

On the 30th of June, seven days after the venesection, I saw him, and found great tumefaction all along the left side of the neck, in the course of the jugular vein, from the angle of the jaw to the chest, the parts being tense, firm, and tender to the touch. The aperture made in bleeding was covered by a small crust of dried blood. The vein could not be distinguished amidst the general swelling, but the facial, and all the other veins of

this side of the head and face were quite turgid with stagnant blood.

The horse was pithed, by passing a knife between the skull and the first vertebra of the neck, and the examination immediately made. The cellular substance beneath the skin, and over the course of the jugular vein, was loaded with coagulable lymph, becoming more firm as it approached the vessel, so that its cellular sheath was converted into a solid thick coat, having numerous red vessels distributed on its inner surface. The proper coats of the vein were enormously thickened; the aperture made in bleeding was filled with a granular-looking substance of a yellowish white colour, which substance (coagulable lymph) completely plugged the cavity of the vein opposite the puncture, and for an extent of about three quarters of an inch downwards. The great thickening and increased vascularity of the coats of the vein, together with a roughened red internal surface, extended three inches below the plugged part to the entrance of a small vein at the bottom of the neck, where they suddenly and abruptly terminated. The canal through this portion of the vessel was greatly contracted from the excessive thickening of the coats, but it was pervious; no blood had however circulated through it. At the entrance of the branch just mentioned, the coats of the jugular resumed their natural appearance, and the

blood brought in by this communicating branch, passed freely onwards to the heart.—Above the portion of vein which was plugged with lymph, the thickening of the coats extended, (but in a much less degree than below,) to where the jugular divides into the external anterior and the external posterior branches. The canal of the vessel for this extent was filled with coagula of blood adhering somewhat firmly to the inner surface of the vein, which here presented a smooth appearance; these coagula extended into the branches above mentioned, from the divided superior extremities of which they were forced, in the form of plugs, by the mass of fluid blood accumulated beyond them. The accompanying drawing presents an accurate representation of the principal points described.

Soon afterwards, on examining the body of a man, whose case will be subsequently described, and where there had been inflammation of the right femoral vein and the branches which contribute to form it, I found the diseased changes extending along the external iliac vein to the entrance of the internal iliac. Here, however, the great thickening of the coats, and the presence of matter, (resembling a mixture of lymph, pus, and blood,) in its cavity suddenly ceased; the coats and inner surface of the common iliac vein, together with those of the internal, being perfectly natural in appearance. No impediment existed to the

entrance of the morbid contents of the diseased portion of vein into the healthy; and as these presented themselves to the action of the current of blood passing from the internal into the common iliac, they must have been swept onwards by it to the heart.

In another case which I have since seen, of inflammation affecting the left spermatick vein, (in a female,) producing thickening of its coats, and a deposition of lymph and pus into its cavity, the diseased changes involved the emulgent vein, but stopped precisely at the entrance of this into the cava, which was healthy.

I believe that in the case of Brancher, the inflammation in the basilick vein was bounded by the entrance of the subscapulary, the axillary vein not being affected. It will be found in the report of Carr's case, that immediately above the termination of the diseased appearances, the cephalick and several smaller vessels entered. In the instance of Goldinger, the inflammation extended in the cephalick, to where it terminates in the axillary. In the case of Mitchell, the morbid appearances extended in the common iliac, to where it joins the cava, which was not inflamed. In the case of Mr. A. related by Dr. Duncan *, they spread in

* Trans. of the Med. and Chir. Soc. of Edinburgh. Vol. I. p. 448.

the cephalick, to its termination in the subclavian, which remained quite healthy.

Of three cases of inflammation of the cava after parturition, seen by Mr. Wilson*, in two the diseased changes ceased at the entrance of the *venæ cavæ hepaticæ*, and in the other, at the entrance of the emulgent veins. In the instance of Crute, it is distinctly stated that the deposition of lymph in the cava terminated at the entrance of the emulgent. And it would be easy to show, by referring to the details of several of the other cases, that the point at which the inflammation in the vessel is stated to have ceased abruptly, corresponds precisely with that at which certain veins enter.

I have stated the foregoing facts regarding the limits of the diseased changes in Phlebitis, without pretending to explain how it happens that this same inflammation which has stopt short at the entrance or passage of a current of blood, may not only already have passed several currents, but have extended itself into the vessels conveying them.

The secondary affection in Phlebitis, usually shows itself in from two to ten or twelve days after

* Trans. of a Soc. for the Improvement of Med. and Chir. Knowledge. Vol. III. p. 65.

the receipt of the injury which has occasioned the inflammation in the vein; when the vessel has been previously diseased, sometimes sooner. The symptoms may be thus briefly characterized.—

Great restlessness and anxiety, prostration of strength and depression of spirits, sense of weight at the precordia, frequent sighing or rather moaning, with paroxysms of oppressed and hurried breathing, the patient at the same time being unable to refer his sufferings to any specific source. The common symptoms of fever are present, the pulse is rapid, reaching sometimes to 130 or 140 in a minute, but is in other respects extremely variable. There is often sickness and violent vomiting, especially of bilious matter. Frequent and severe rigors almost invariably occur, sometimes to the number of three or four in the course of a few hours. The general irritability and deep anxiety of countenance increase, the manner is quick, and the look occasionally wild and distracted.—When left to himself, the patient is apt to mutter incoherently, but on being directly addressed, is found clear and collected. The features are pinched, and the skin of the whole body becomes of a sallow, or even yellow colour.

Under symptoms of increasing debility, and at a time when the local affection may appear to be in a great degree subsiding, secondary inflammations of violent character, and quickly terminating

in effusion of pus or lymph, very frequently take place in situations remote from the original injury; the cellular substance, the joints, and the eye have been affected, but it is more particularly under a rapidly developed attack of inflammation of the viscera of the chest, that the fatal issue usually occurs. Whether this is observed or not, death is always preceded by symptoms of extreme exhaustion, such as those of a rapid feeble pulse, dry, brown, or black tongue, teeth and lips covered with sordes, haggard countenance, low delirium, &c.

The duration of this affection offers some variety. The following are the periods which intervened between the receipt of the injury occasioning the Phlebitis, and the unfavourable result in the cases which have been related and cited :

In Mr. Hodgson's case death took place on the morning of the 4th day after division of the saphena : in the case of Fuller, from venesection, and of Crute from amputation, six days : in Goldinger, from venesection, seven : in Dodging, from excision of the saphena, nine : in Clementine, from venesection, and Mitchell from amputation, fourteen : in Arnold, from venesection, sixteen : in Brancher, from venesection, seventeen : in Boyle, from puncture of the femoral vein, nineteen : in Captain L., from venesection, end of the third week : in Johnson, from venesection, twenty-two

days : in Carr, from venesection, twenty-nine : in Dogherty, from venesection, and Strangemore, from amputation, thirty : in White, after puncture and partial ligature of the femoral vein, thirty-two : and in Mr. Broughton's case, after venesection, the end of the seventh week.

The morbid appearances found on examination of the bodies of those who have died of Phlebitis, are very remarkable, and are such as we usually regard to be indicative of the recent existence of violent inflammation, and that too in various organs and distant parts of the body. These are :—

In the Chest—effusions of sero-purulent fluid into the cavities of the pleuræ and pericardium, exudation of coagulable lymph on the surfaces of the heart and lungs, hepatisation of the latter organ, the infiltration of pus into its tissue*, or small collections like a mixture of pus and lymph †. Such appearances presented themselves in ten cases (Carr, Goldinger, Mr. Broughton's case, Johnson, Dogherty, Clementine, Capt. L., Fuller,

* Pus was deposited in the muscular substance of the heart in a case of Phlebitis after venesection, which occurred subsequently to this paper being read to the Society, and an account of which, presented to me by Mr. Lawrence, will be found in the Appendix.

† In the Appendix will likewise be found the history of a case of inflammation of the jugular vein in the horse by Dr. John Sims, where depositions of a similar nature had taken place into the lungs.

White, and Dodging,) out of seventeen; in three, (Boyle, Mitchell, and Mr. Hodgson's case,) the thorax was not examined; in two, (Crute and Strangemore,) the condition of its contents is not noted; and in two, (Brancher and Arnold,) no diseased appearances were observed*.

In the Cellular Substance, intermuscular as well as subcutaneous—pus and sero-purulent fluid has been extensively deposited, sometimes in collections like abscesses, at others, appearing more like an effusion into its cells, than as resulting from the common process of inflammation. These collections most frequently occur in the vicinity of the joints. In two cases (Brancher and Dogherty) pus was deposited under the skin of the opposite fore-arm, near the wrist; in one, (Arnold,) with inflammation of the knee joint, into the intermuscular cellular substance of the correspond-

* A fluid state of the blood which has been remarked after death from Phlebitis, is neither invariably noticed, nor does it prevail throughout the whole of the circulating system. The cavities of the heart usually contain coagula. This was the case in Brancher and Carr, and I have observed the same fact in other instances, where, though of somewhat looser consistence, the fibrin had separated. In a case of inflammation of the saphena, I lately found both femoral veins filled with soft coagula, the blood in the cava fluid, and that in the heart again coagulated. The tendency to fluidity—a change in the colour of the blood—and a staining of the vessels, circumstances occasionally met with after death from Phlebitis, I am unable at present to appreciate the value of, as evidences of disease.

ing thigh, and into that external to the joint of the opposite shoulder; in one, (Dodging,) into the intermuscular cellular substance of the opposite leg and of both fore-arms; in one, (Goldinger,) into the interfibrillar cellular tissue of the corresponding pectoral muscle, and in another, (Dogherty,) between the sternal extremities of the two first ribs and pleura.

A Disease of the Joints,—consisting of a most violent inflammation of the synovial membrane, its distension with purulent matter, destruction of the cartilage, and baring of the bones (Arnold's case). These changes too, taking place in the brief space of a few days, the knee having been first attacked with pain four days before death, which again took place in sixteen from the date of the injury of the vein which caused its inflammation. In two other cases, (Brancher and Dogherty,) there was affection of the knee joint, but the parts were not examined after death*.

In the Eye—opacity of the cornea, injection of its blood vessels, and destructive changes in its humours or coats, occurred in Dodging.

* An instance of an affection of the knee and shoulder joints consequent to Phlebitis after venesection, equally destructive in its effects as in Arnold's case, has since occurred in St. George's Hospital, where, through the kindness of Mr. Keate, I had an opportunity of seeing the patient during life, and being present at the examination of the body after death. The case has been reported, *Med. Gazette*, Vol. II. p. 730.

Besides these affections, there were found in five instances, (Carr, Arnold, Goldinger, Mr. Broughton's case, and Dodging,) within the cranium, opacity and thickening of the tunica arachnoides, effusion between it and the pia mater, and increased secretion into the ventricles. In nine, (Brancher, Johnson, Capt. L., Fuller, White, Crute, Boyle, Mitchell, and Mr. Hodgson's case,) the head was not examined; in three, (Dogherty, Clementine, and Strangemore,) no morbid appearances were noticed.

The morbid appearances above described are, as it will have been remarked, met with singly or variously combined, in particular cases; and from the variety of situations in which these secondary local affections have been observed, it seems probable that there are few organs or parts in which they may not occur. But although some of them are generally found present, the constitutional affection in Phlebitis occasionally proves fatal, without a secondary local affection having developed itself.

On considering the progress of the secondary affection in Phlebitis, such as it has now been described, it is impossible not to be struck with the resemblance which this bears to that of diseases arising from the inoculation of a morbid poison. There is in the first place, a local affection, (it may be of very trifling extent and severity,) upon which the secondary affection

supervenes in the form of great constitutional disturbance followed by violent inflammations in one or more parts of the body. With this general resemblance to inoculated diseases, there is one to whose characters it more particularly approximates; viz. that which arises from the operation of poison received in wounds from dissection. We have an equally early appearance, and an equally rapid developement of symptoms nearly similar; succeeded by destructive inflammations in one or more situations remote from the primary affection, with equally fatal results. These secondary inflammations very much accord also in the parts which they attack. If the cellular substance* is in a particular manner affected, in

* The affection of the cellular substance as a consequence of wounds received in dissection, is, like that from Phlebitis, neither continuous, nor limited to the side of the body on which the injury has been inflicted.

In the case of Dr. Dewar, (Transact. of the Med. Chir. Society of Edin. Vol. I. p. 315.) pain, redness, and swelling took place in the opposite fore-arm, on the day before his death, which occurred on the sixth after the injury was received in dissection. The body was not examined.

In Mr. Cumming, (Ibid. p. 316.) inflammation attacked the opposite fore-arm on the fifth day after the dissection at which he had been present, and previous to death which took place on the eleventh day, occupied the whole limb from the fingers to the acromion. The body was not examined.

In the instance of Mr. Graves (Travers on Constitutional Irritation, p. 253.) who died on the thirteenth day after a puncture of the left finger in opening a body, the right fore-arm became inflamed and soreness of the right foot and ankle

consequence of the introduction into the system of the poison of dead animal matter, this also occurs as a consequence of Phlebitis, and some of the more obscure affections of the first class of also occurred. After death, purulent matter was found in these situations.

In the history of the case of M. Girard fils, (*Revue Medicale*, Tome Second. Paris, 1826. p. 96.) who likewise died from the consequence of puncturing a finger, of the left hand, in examining a body, it is stated, that "une circonstance fort remarquable, et qui sembla faire diversion momentanément aux autres symptômes, est une douleur qui se manifesta à l'articulation fémoro-tibiale gauche, et sur la crête du tibia: douleur qui sembla d'abord offrir les caractères d'un rhumatisme aigu, d'une inflammation profonde de l'articulation, ou de celle d'un nerf voisin. La moindre pression exercée sur la face antérieure de la jambe, et dans un point circonscrit, faisait crier le malade. On ne remarquait cependant ni gonflement ni rougeur inflammatoire; mais deux jours plus tard, il survint un peu d'empatement à la jambe, dans le point correspondant à la douleur, et un examen plusieurs fois répété fit soupçonner l'existence d'un peu de pus sous l'aponévrose tibiale, quoiqu'il n'y eût aucune fluctuation bien manifeste. J'y portai l'instrument, et je fis une incision de deux pouces, qui intéressa la peau, l'aponévrose tibiale et les muscles subjacens vers le quart supérieur de la jambe, près de la crête tibiale; il en sortit environ une cuillerée de liquide grisâtre, puriforme, qui semblait infiltré dans le tissu cellulaire inter-musculaire."

In Mr. Turner, who injured his finger in examining the head of a horse which had died of glanders, an abscess formed in the opposite arm, and another on the lower part of the back. Subsequently an abscess formed in his lungs, another in the kidney, and at the expiration of several months abscesses formed successively upon each knee joint. A short time afterwards Mr. Turner died.—Travers on Constitutional Irritation, p. 351.

cases may even perhaps be elucidated by the events of the latter.

Mr. Dease, who it is well known died from the consequences of a wound received in dissection, experienced severe pain at the point of the shoulder, accompanied by no external signs of inflammation, and without there being any trace or connexion between the wound and the seat of pain. The body was not examined. And Dr. Colles, who relates the case*, expresses himself as being at a loss to account for this pain. In Arnold's case, pain was felt in the same situation, in the shoulder opposite to that of the arm in which the Phlebitis existed, and without either swelling or redness; on examination of the body, the cellular substance exterior to the orbicular ligament of the joint was found filled with pus.

Mr. Shekelton, who died under similar circumstances to those of Mr. Dease, was attacked, on the eighth day of the disease†, by excruciating pain in the opposite knee joint, and the adjoining thigh was swollen, but not discoloured. He died on the tenth day. The body was not examined. In Arnold's case the affection of the knee commenced with severe pain in the joint on the twelfth day of the disease, and he died on the six-

* Dublin Hospital Reports. Vol. III. p. 210.

† Ibid. Vol. IV. p. 243.

teenth. The description of the symptoms and appearances on dissection, may serve to explain the occurrence in Mr. Shekelton's case.

These considerations show that the secondary effects of Phlebitis are connected with a vitiated state of the circulating fluid; a further proof of which may be found in the yellow colour of the skin, so constantly observed in cases of this disease.

In conclusion, it results from the foregoing facts and arguments, that death, in cases of Phlebitis, does not take place from the inflammation extending to the heart; whilst the history and character of the symptoms which precede this event, the very small portion of vein which is sometimes found to have been inflamed, and the general presence of pus in its cavity, all tend to establish, that the entrance of this fluid into the circulation is the principal cause of the alarming and fatal consequences of Phlebitis, a similar influence being perhaps also possessed by any inflammatory secretion from the vein*.

* In drawing the inferences contained in the text, from the seventeen cases of fatal Phlebitis previously detailed, it may be here stated that a case mentioned in the Lond. Med. Repos. Vol. 7, p. 288, and another related by Dr. Chapman in the Philadelphia Journal, No. 14, p. 322, have been excluded, because the history of the first is imperfect, and the examination of the body in the last was incomplete. So far as they go, they support the views derived from the other instances of the disease here given.

PART II.

The fact of purulent matter being sometimes deposited without much sign of previous inflammation, in a part of the body remote from one in a state of suppuration, has been long known in the history of medicine, under the name of abscess of Metastasis; and it was formerly supposed that the matter was taken up and transferred, ready formed, to its new situation.

Subsequently to the middle of the last century, such views were entertained also in this country. Mr. Cheston, Surgeon to the Gloucester Infirmary, whose valuable *Pathological Observations* were published in 1766, in his chapter on abscess of the liver succeeding to injuries of the head, after relating a case, and seeking, like the French writers of the period, for a special explanation of the occurrence, remarks, that, “ translations of matter from one part to another are by no means uncommon, but are frequently to be met with after amputation of the larger limbs, where the *vis vitæ* is impaired, and cannot support that discharge of matter, so necessary to complete the design of nature in healing a large wound; but, under such circumstances, there is very little, if any, appearance of an inflammation, and the matter is rather disseminated through the viscus on which it falls, than is collected in one or more large vomicæ.” p. 38.

Upon the subject of a translation of purulent matter, Mr. Hunter's opinions were very decided; he discredited it as an occurrence, and, as an operation, he declared it to be absolutely impossible*. He denied also, that the absorption of this fluid was attended with those pernicious effects which had been generally attributed to it, and, in his argument against the purulent origin of hectic, remarks, with some inconsistency, that "although matter too is frequently found in the inside of the veins in cases of inflammation of their cavities, and the matter cannot fail of getting into the circulation, yet in these cases we have not the hectic disposition, but only the inflammatory."† And it is probably in some measure owing to the influence of these opinions of Mr. Hunter, that affections of the viscera, which had formerly been regarded as arising from a metastasis, ceased, for a time, to interest or attract the notice of English pathologists and surgeons.

In Italy, the authority of Morgagni, and a pathology less exclusively founded on the action of the solids than those which prevailed in this country or in France, have prevented this subject being overlooked. Monteggia, in his *Instituzioni Chirurgiche*, published at the commencement of the present century, attaches a degree of import-

* Hunter on the Blood. 4to. London, 1794. P. 360.

† Ibid. P. 501.

ance to the subject of Metastasis, which he states can only be appreciated by those who, like him, have frequently seen patients, more especially surgical patients, very unexpectedly carried off by its occurrence; and who, like him, have made numerous morbid examinations, with the view to the investigation of it. He describes the serous membranes of the great cavities of the body, as being particularly liable to the operation of the absorbed matters or vitiated humours, in the transmission of which he believes, and that upon these, a secondary inflammation with rapid effusion is in consequence produced; but, he continues, “however frequent in its occurrence, it is not to the enveloping membranes only, that a Metastasis takes place, for with this, viz. the affection of the serous membrane, there are frequently conjoined abscesses in the form of separate tubercles in the substance of the viscera, especially in the lungs and liver; in the former organ, these being usually superficially situated. At other times the Metastasis is limited to the simple infiltration of purulent matter into the cellular substance of the viscus, and that most frequently in the lungs, without the presence of much serum or pus in the cavity of the chest, or of tuberculous abscesses. These last also have not usually the appearance of regularly formed abscesses, but consist of whitish masses, somewhat firm, infiltrated with purulent matter, rather than hollow cavities filled with pus, and probably owing to the occurrence of death pre-

vious to the suppurative process being completed."*

These morbid appearances in the viscera are referred by Monteggia to the absorption of pus and other diseased secretions into the blood, in consequence from his having frequently found in the examination of limbs, which had been the seat of extensive suppuration, and, in cases of wounds, the neighbouring lymphatick vessels and veins, but particularly the former, filled with purulent matter.

Mr. Guthrie †, in directing attention to a sudden and insidious attack of inflammation of particular parts, and especially of the lungs, as a cause of death after secondary amputation, (and of which inflammation, when the viscus affected is other than the lungs, he believes the termination is less rapid, suppuration taking place and abscesses being formed,) considered it as depending "on the alteration which takes place in the sanguiferous system, in consequence of the amputation, and the suppression of the discharge causing fever, and a determination to, and irritation in, a particular part."‡—"The viscera in each person most pre-

* *Instituzioni Chirurgiche. Edizione Seconda. Vol. I. Milano, 1813. P. 86.*

† *On Gunshot Wounds. 1st Edition, 1815, p. 73 et seq.*

‡ *Ibid. 2d Edition, 1820, p. 235.*

disposed to disease, being most likely to be affected.”*

Mr. Bell†, in describing inflammation of the lungs to be by far the most frequent cause of death in severe wounds, and especially in compound fractures, states, that independent of all pre-disposition or previous derangement, where a patient is reduced by the discharge or irritation of a wound, on any inflammatory action being stirred up, the lungs are most prone to become inflamed; that in such cases the characters of the symptoms are altered by the patient's condition, and the first stage is past before the surgeon is aware of the formidable nature of the attack.

Pleurisy, and tuberculous abscesses in different organs of the body taking place subsequent to great surgical operations and suppurating wounds, have been the subject of several valuable communications from M. Velpeau‡.—Like Monteggia, he attributes these occurrences to the absorption of pus, having repeatedly found that fluid in the veins. He considers § that they receive it, from the lymphatics which open into them, by imbibition.

* Guthrie on Gunshot Wounds. Second Edition, 1820, p. 253.

† Surgical Observations. Vol. I. 1817, p. 241. et seq.

‡ Revue Médicale. Juin, Juillet, et Decembre, 1826. Mai, 1827.

§ Ibid. Juin, 1826, p. 447.

tion, or by the numerous branches (viz. of veins) which remain open in the wound; and that the fluids in the chest* and the matter in the secondary abscesses are the result of an actual metastasis, having been brought from the part in a state of suppuration†.

In the remarks which precede the very interesting cases of depositions of pus or lymph in the viscera after injuries, detailed by Mr. Rose in the last volume of the Society's Transactions, that gentleman considering the cause of these occurrences as very obscure, does not make any attempt to account for them.

In the statement which has been now made, I have not alluded to the theory which attributes the formation of these abscesses to a disturbance of the nervous system, the opinion itself being so purely conjectural, and the operation of the cause so undefined and unintelligible as to render this unnecessary. In fact, the only view of the subject supported either by evidence, or argument, is that which considers the origin of abscesses and inflammations in remote situations after injuries, as connected with the absorption into the circulation of purulent matter from a wound. That they do depend on the entrance of such fluid into the blood, the consequences which have been ob-

* *Revue Médicale.* Decembre, 1826, p. 390.

† *Ibid.* p. 398. *Ibid.* Mai, 1827, p. 236.

served to follow Phlebitissimply, sufficiently testify, and it becomes a question, whether the occurrence of Phlebitis, and the passage of pus from an inflamed vein into the circulation, is not of itself sufficient to account for the secondary affections of wounds, without its being necessary to resort to an absorption of the same fluid from their suppurating surfaces.

The secondary affections succeeding to wounds, are, effusions of pus and sero-purulent fluid into the cavity of the chest, and inflammation of the pleura; similar affections of the cellular substance; effusion of pus into, and inflammation of the synovial membranes; depositions of pus and tuberculous abscesses in different organs of the body, viz. in the brain, lungs, heart, liver, spleen and kidney.

Now when it is considered that abscesses have formed in various parts of the body from the ligature merely of a vein, as of the saphena *—that pus was deposited under the skin of the fore-arm in the case of Brancher,—that rapidly destructive inflammation in the knee-joint took place in the case of Arnold,—that the same occurred in the eye in the case of Dodging,—that where symptoms of inflammation of the chest were observed during life, the effects witnessed, on examination after death, were of very disproportionate degree and

* Carmichael, in Trans. of the King and Queen's College of Physicians. Vol. II. p. 346.

extent,—and that effusions of coagulable lymph, and sero-purulent fluid into the chest, together with abscesses in the lungs, were found where no symptoms had indicated their existence ;—I say, when it is considered that *all* these consequences ensued from so simple and definite an injury as the puncture, division, or ligature of a vein, it is impossible to resist the supposition that, where similar secondary affections have succeeded to a more extensive wound, they may in reality have originated in the same cause, viz. inflammation of a vein or veins.

If such view of the subject is correct, we ought, on the one hand, in cases where the consequences already mentioned have succeeded to wounds and injuries, whether of the extremities or head, to find evidences of inflammation of the veins of the part which had been primarily or mechanically injured, and, on the other, to meet with similar secondary affections in cases where inflammation of the veins is known to be of common occurrence, as after parturition; that this is actually the case, I shall now proceed to show.

AFFECTIONS OF THE VISCERA, OF THE JOINTS, AND CELLULAR SUBSTANCE, AFTER INJURIES OF THE EXTREMITIES.

In the following four instances will be found secondary affections of the viscera after injuries of

the extremities, in connexion with inflammation of the veins in the wounded limb.

Case I.—Came under my own observation.—J. R. æt. 52, had the left leg amputated on the 18th of November, 1826, on account of mortification of the foot succeeding to a severe bruise from the tread of a horse. Considerable bleeding took place from the surface of the stump, and amongst other vessels, two veins were tied. The wound did not unite: constitutional disturbance with anxiety of countenance and great exhaustion ensued, and death, on the 3d of December. On dissection, a large quantity of sero-purulent fluid was found in the left cavity of the thorax, and the pleura pulmonalis was covered with coagulable lymph. The right lung contained a small abscess. The coats of the vena-saphena were thickened, and its cavity, for the last two or three inches of its course, just before its junction with the femoral, filled with pus, no impediment to the entrance of which into the femoral vein existed. The capsule of the left hip-joint was distended, with purulent matter. Ulceration of the synovial membrane, and absorption of the cartilage in the head of the femur around the ligamentum teres had taken place, so as to expose the bone for a small extent; the synovial membrane offered no other indication of previous inflammation. Similar appearances were found in the opposite hip-joint.

*Case II.**—A man, who had compound fracture of the left leg, for some time went on favourably. He was then attacked with fever; the wound assumed an unhealthy appearance; the whole limb became œdematous, rigors occurred, and the integuments of the face and body had a yellow colour. He died within the month. On opening the chest, there were found in the right lung, which was unadherent and presented its natural colour and density, four abscesses, two in the superior and two in the inferior lobe. In the left cavity of the chest was contained a quantity of sero-purulent fluid, and in the lung of this side, which was likewise soft and elastic, but of a livid colour, there were several detached and scarcely suppurated tubercles. The crural vein was inflamed, and its cavity filled with purulent matter; the inflammation extended along the vessel to the iliac vein, as far as the junction of this with the cava, which was healthy.

Case III.†—Henrius, æt. 19, underwent amputation of the second metatarsal bone of the right foot. On the 9th day the skin was jaundiced, and a slight redness was perceived on the back of the left hand, where fluctuation was already felt, and from which situation pus was evacuated by puncture on the succeeding day; he died on the evening of the 10th under symptoms of great exhaustion. The left lung contained a number of small abscesses;

* Palletta, *Exercitationes Pathologicæ*. Milano, 1820, p. 21.

† Velpeau, *Revue Médicale*. Juillet, 1826, p. 68.

the cellular substance of the left fore-arm and arm was infiltrated with pus; the joint of the shoulder externally appeared sound, but on dividing the orbicular ligament, it was found to contain an ounce and a half of thin yellow pus. The synovial membrane was neither red, thickened, nor opaque, or its polish at all changed, in fact, with the exception of the yellow colour which it shared in common with all the tissues of the body, it presented a perfectly natural appearance. The veins on the dorsum of the foot were red, greatly thickened, and their cavities filled with pus.

*Case IV.**—Frederick Wells, a robust countryman, æt. 25, had the right leg amputated in St. George's Hospital, by Mr. Rose, on the 9th of June, four hours subsequent to an accident, by which the metatarsal bones of the foot had been fractured and dislocated. Two days after the operation, a degree of irritability and morbid quickness was observed in his answers, which increased. The stump did not unite, but assumed a sloughy appearance; he was restless; the complexion became sallow, the features pinched; he had rigors, and the pulse ranged from 100 to 140; pain was felt in the course of the vessels, and he died nine days after the accident. In the right lung were several yellowish masses, which appeared chiefly formed of coagulable lymph, but when cut into were found

* London Medical Gazette. Vol. II. p. 127.

to contain pus; the liver was large, and ecchymosed spots were observed upon its surface, but it was healthy in other respects; the femoral vein was filled with pus from the ham to the point where it is joined by the profunda vein, and its internal surface was covered with a thick layer of coagulable lymph.

Sero-purulent effusion into the chest,—abscess in the lungs,—disease of the joints and cellular substance having been found to succeed to Phlebitis simply, may not the same occurrences in these four cases be referred to the inflammation and suppuration of the veins which existed?

AFFECTIONS OF THE VISCERA, OF THE JOINTS, AND CELLULAR SUBSTANCE, AFTER INJURIES OF THE HEAD.

Abscesses of the liver after injuries of the head long excited much curiosity, and a variety of speculations were indulged in, to account for the occurrence. They were attributed by some to an increased quantity of blood returning from the head through the superior vena cava, proving an obstacle to the ascent of that through the inferior; by others, to a smaller quantity of blood being carried to the brain, and consequently a larger quantity being sent to the abdomen; they were attributed by some to concussion of the brain, and the nervous system was supposed to be the principal agent

in their production ; by others, they were referred to direct injury of the liver at the time of the accident. The first two of these speculations fell to the ground, when it was remarked, that abscesses occur in the viscera of the chest, as well as in those of the abdomen, after injuries of the head, and the two last, when it was observed, that they have taken place when neither the brain nor the liver have been the subject of concussion or of direct injury.

But of what nature are the injuries of the head, to which secondary affections of the viscera, of the abdomen, and chest succeed, and what are the circumstances under which these occur ? Upon neither point do systematic writers afford us any information ; and those whose attention has been more particularly directed to the subject have been too much occupied with their own hypotheses, and their own limited observation, to allow them to form a comprehensive and correct estimate of these circumstances.

With the view of supplying this deficiency, and of enabling us to arrive at more satisfactory conclusions as to the origin and cause of secondary affections in distant parts after injuries of the head, I have referred to a number of cases, and, taking every one which presented itself, I have noted the following particulars.

*Case I.**—Compound fracture of the cranium near the sagittal suture, with division of the membranes of the brain; the patient died delirious and hemiplegic. Abscess in the cerebrum, a large quantity of pus in a cavity in the left lung, pus on the surface and in the substance of the heart.

Case II.†—Compound fracture of the os frontis over the left eye, with laceration of the dura mater, from the thrust of a lance (Shikan.) Death on the fourteenth day. Large abscess in the liver.

Case III.‡—Fracture and depression of the bones of the cranium near the lambdoid suture, trepan applied: did well until the twentieth day; pain in the right side a few days before death, which took place on the twenty-eighth. Abscess in the liver.

Case IV.§—Compound fracture, with depression of the os frontis, from a blow. Death on the twelfth day, preceded by fever and pain in the right

* Nicolai Massæ, *Anatomiae Liber Introductorius*. Venetiis, 1559, p. 56.

† Ephemerid. Germanic. Curios. Dec. I. Ann. II., p. 198. Jenæ, 1671.

‡ Meekren, *Observationes Medico-Chirurgicæ*. Amstelodami, 1682, p. 23.

§ Ibid. p. 38.

hypochondrium. Inflammation of the surface of the liver to nearly the extent of a hand's breadth.

*Case V.**—Compound fracture of the sinciput, from a fall from a height; stupor, loss of sense, and vomiting. In a few days recovery of the mental faculties, then fever and pain in right hypochondrium; on the eleventh day rigors; on the fifteenth trepan applied; sixteenth, jaundiced, frequent rigors, and death. Nothing unusual in the viscera of the chest; tubercles on the surface, and abscess in the substance of the liver.

Case VI.†—Compound fracture of the occiput without any bad symptoms; did well until the eightieth day, when an attempt being made to remove a small portion of bone adhering to the dura mater near the lambdoid suture, rigors and fever were excited, pain in the right hypochondrium, bilious vomiting, and death on the third day subsequently. Thickening and inflammation of the dura mater, with effusion on its inner surface. Nothing unnatural in the chest; large abscess in the liver.

Case VII.‡—Compound fracture of the right

* Pacchioni Antonii Opera, edit. 4to. Romæ, 1741, p. 63.

† Ib. p. 64.

‡ Mémoires de l'Académie Royale de Chirurgie. Tome I. edit. 12mo. Paris, 1743, p. 322.

parietal bone from a fall; no loss of sense; bleeding from the nose and ears. Rigors with stupor after the tenth day; pain in right hypochondrium, increasing fever with irregular shiverings. Death on the seventeenth day. Abscess in the great lobe of the liver.

*Case VIII.**—Nature of the injury not stated, but three crowns of the trepan were applied. Abscess on the anterior surface of the liver, containing seven ounces of pus.

Case IX.†—Wound penetrating to the dura mater which in two months had so far healed as to allow the patient to return to his work as a labourer. In a few weeks inflammation of the integuments of the head, with constitutional disturbance and yellowness of the skin, came on, terminating in death, upwards of three months from the receipt of the injury. No morbid appearances within the cranium; Abscess on the convexity of the liver immediately beneath the peritoneal coat.

Case X.‡—The injury of the cranium not par-

* Mémoires de l'Académie Royale de Chirurgie. Tome IX. Paris 1757, p. 140.

† Id. p. 142.

‡ Id. Tome IX. p. 152.

ticularly described, but the trepan was applied; fever supervened; the skin became of a yellow colour; pain and swelling took place in right hypochondrium; fluctuation was perceived, a puncture made, followed by a discharge of pus. Death six days after the puncture, which had opened an abscess of the liver.

*Case XI.**—Starred fracture, with depression of the right parietal bone; stupor; trepan applied; fever and delirium, yellow colour of the skin, pain in the right hypochondrium; increase of fever, rigors. Death on the ninth day after the operation. Several abscesses in the liver towards its connection with the diaphragm.

Case XII.†—Fracture of the parietal and temporal bones; four crowns of the trepan applied; fever; jaundice; laborious respiration. Death on the eleventh day after the operation. Liver seemingly larger than natural, and gorged with blood; its surface was inflamed, but at no point in a state of suppuration.

Case XIII.‡—Small contused wound on the left parietal bone, with bleeding from the nose and

* *Memoires de l'Academie Royale de Chirurgie. Tome IX.*
p. 168.

† *Id.* p. 169.

‡ Pouteau, *Mélanges de Chirurgie.* Lyon, 1760. 8vo. p. 135.

ears, and loss of sense, but of which he shortly recovered; the wound healed in a few days. On the sixteenth, a violent attack of fever with severe pain in the head; next day the wound was found open, a state of stupor ensued, and death on the eighteenth. Bone not fractured; no disease within the cranium; liver of a deeper colour than natural, and in the great lobe, a cavity, the size of an egg, filled with a sanies-like fluid.

*Case XIV.**—Compound fissure of the os frontis from a blow from a stone, which knocked the patient down, but he immediately rose and pursued the person who threw it. Fever and rigors towards the eleventh day; death on the fourteenth. Dura mater injured, pus between it and the pia mater. Tubercles and abscesses in the lungs.

Case XV.†—Compound fracture of the sinciput, from a stone thrown, the patient being knocked down and somewhat stunned; after the fourteenth day fever occurred; delirium and death on the twenty-fifth. Some sharp particles of bone sticking in the dura mater; the lungs very red, contained small abscesses full of pus.

Case XVI.‡—Wound on the left side of the sinciput.

* Morgagni, De Causis et Sedibus Morborum. Venetiis, 1761. Tomus II. p. 285. Epist. 51—17.

† Id. 51—18.

‡ Id. 51—19.

put exposing the bone, from a blow with a stone; the patient fell, but afterwards walked to the hospital; did well until the twentieth day, when violent and repeated paroxysms of fever came on; cough and purulent expectoration. A large abscess observed on the back the day before the patient's death, which took place two months after the accident. Caries of the bone, separation of the sagittal suture, dura mater of a livid colour, and several particles of bone adhering to it, a small abscess under it in the substance of the brain; tubercles and numerous abscesses in the lungs; no connexion between the abscess of the back and wound of the head.

*Case XVII.**—Wound of the soft parts over the left side of the sinciput, from a blow with a stick, without any symptoms. Came by himself to the hospital. Bone not fractured, and remained well for fourteen days; then rigors, fever, pain in the abdomen, difficult respiration, cough, and purulent expectoration. Death on the twenty-second day. No lesion of the bones of the cranium or brain. Both cavities of the chest full of pus; tubercles and abscesses in the lungs and in the liver.

Case XVIII.†—Laceration of the scalp covering the os frontis, from a fall; coma; bone

* Morgagni, *De Causis et Sedibus Morborum*. Venetiis, 1761. Tomus II. Epist. 51—20.

† Cheston, *Pathological Observations and Inquiries*. Gloucester, 1766. p. 36.

appeared to be uninjured. On the third day a large portion of the scalp was cut away, and the arteries suffered to bleed plentifully; upon this, all the symptoms abated, and on the eighth day the lad was able to walk about the room. He did well until the end of the third week, when pain was complained of in the abdomen, which appeared swollen; the wound became unhealthy; and he died the end of the fifth week. Dura mater sloughy, and pus on its surface, substance of the brain sound: serous fluid in the abdomen, several distinct abscesses in the liver.

*Case XIX.**—A young woman, who had laboured under pain in the head, epilepsy, and gutta serena for a year and a half, admitted into St. George's Hospital, had a triangular incision made behind each ear, and the additamentum squamosum laid bare about the size of a sixpence, by erasing the pericranium. On the tenth day she had violent rigors; on the twelfth, fever and pain in the side; and on the seventeenth, she died.

On opening the skull, a little thick matter was found on the dura mater immediately under the part where the external incision had been made; that membrane seemed also thickened. A little higher was some pus upon the cerebrum. The lateral ventricles were distended with serum to the

* Cheston, p. 142.

quantity of half a pint in each. All the viscera in the thorax and abdomen were sound, except the liver, in which there was a very large abscess.

*Case XX.**—Compound fissure, about the middle of the frontal bone, from a fall; no symptoms of extravasation; patient had got nearly well, when an attack of fever took place; symptoms of inflammation of the lungs, delirium, stupor, pain in the right side, and death on the fourth day of those new symptoms. Dura mater of a yellowish colour. Right lung in a state of suppuration; three small abscesses in the liver containing a brownish pus.

Case XXI.†—Lacerated wound, by a musket ball, of the integuments and pericranium covering the anterior part of the right parietal bone, which was contused, but not fractured. No unpleasant symptoms existed, and the patient went on in the most favourable manner, until the seventh day, when febrile symptoms appeared. These became attended with exacerbations, assuming the character of paroxysms terminating in perspiration, with rapid, feeble, irregular pulse, and great debility; collections of matter formed in the vici-

* Hautesierk, Recueil d'Observations de Médecine des Hopitaux Militaires, Paris, 1772. 4to. p. 344.

† Schmucker, Chirurgische Wahrnehmungen. Erster Theil. Berlin, 1774. p. 55.

nity of the wound. By the eighteenth, there were two paroxysms of fever daily, with extreme exhaustion; the wound discharging freely. The patient died suddenly, on the twenty-ninth day of the disease, under rapidly developed symptoms (within the last twenty-four hours) of inflammation of the chest.

The surface of the injured bone rough, and the corresponding portion of the dura mater of a dark colour; a small quantity of pus in the posterior part of the superior longitudinal sinus, and a firm fibrinous coagulum in the anterior part; the inner surface of the dura mater besmeared with puriform matter; effusion between the tunica arachnoidea and the pia mater. Both sacks of the pleuræ filled with a turbid yellowish serum, having numerous portions of coagulable lymph floating in it; a coating of the same lymph on the pleura pulmonalis and costalis; numerous small ulcerations on the surface of the lungs, the inner substance of which was almost destroyed, and in some places converted into a brownish sanies; the pericardium was filled with fluid. The convex surface of the great lobe of the liver was inflamed.

*Case XXII.**—Two sabre cuts on the head, one

* Dessault, Journal de Chirurgie. Tome II. Paris, 1791.
p. 11.

dividing the external table of the os frontis. Being unattended with pain, the patient paid little attention to them for some time. Eight days after the accident, he came to the Hotel Dieu. On the sixteenth day he was attacked by vomiting, with increase of fever, agitation, and delirium. Death took place on the twenty-fifth. Fissure of the inner table of the skull where the external had been divided by the sabre; a greenish matter on the surface of the brain. Numerous small ulcerations in the liver, the entire surface of which was covered with a thin layer of purulent matter.

*Case XXIII.**—Seven sabre cuts, all on the parietal bones, but chiefly the left; two of these divided both tables of the skull. On being picked up on the field of battle, he was in a state of stupor, but soon recovered himself, and walked unsupported to be dressed. Did well until the twenty-fourth day, then rigors, fever, paralysis of the right side, hurried respiration, and death on the twenty-ninth. Effusion of pus beneath the dura mater, which was penetrated by a splinter of the inner table of the skull. In the left cavity of the chest a large collection of matter; the surfaces of the posterior part of the lung, of the pericardium, and diaphragm, covered with a thick purulent membrane; the lung bore the appearance of inflammation. The spleen large and softened.

* Klein, Chirurgische Bemerkungen. Stuttgart, 1801. p. 114.

*Case XXIV.**—Several sabre cuts on the head, two on the right parietal bone, extending to the diploe; one on the occiput, chiefly on the right side, cleaving the bone. Knocked down by the first stroke, he immediately sprung up, and then received the others. The patient walked about the ward, and did well until the fifteenth day, when the pericranium separated from the bone; fever took place, with sense of heat and weight in the chest, and pain in the region of the liver. On the seventeenth, extreme exhaustion, hurried breathing, dilated pupils, stupor, great restlessness, and death. Dura mater gangrenous to the extent of a dollar, its inner surface on the right side lined with coagulable lymph, and gelatinous effusion between the tunica arachnoidea and pia mater. Spleen twice its natural size, soft and full of blood. The liver large, and of a dark colour, had a number of small ulcerations on its convex surface; one large, and several smaller abscesses in its substance. The left cavity of the chest natural; the right nearly filled with purulent matter; the lung covered with a thick false membrane, and in the superior lobe a small abscess.

Case XXV.†—Wound from a blow with a stick of the soft parts over the left parietal bone, which was denuded, but not fractured. Was not knocked down, and walked two leagues afterwards. Did well for some days; but on the tenth, rigors, fever,

* Klein, Chirurgische Bemerkungen. Stuttgart, 1801. p. 120.

† Ansiaux, Clinique Chirurgicale. Liege, 1816. p. 41.

and death on the fifteenth. Abscess in the right hemisphere of the brain. A number of white spots on the convex surface of the liver, which, on being cut into, gave issue to a quantity of purulent matter.

*Case XXVI.**—Contused wound and exposure of the pericranium, in a boy aged 15, from a fall from a tree. Did well for ten days, going about as usual. On the eleventh, fever, delirium, and vomiting; on the thirteenth, severe pain in the chest, and bloody expectoration. On the fourteenth, examination of the wound showed the pericranium raised and detached; it was cut away, and a small fissure of the bone discovered. Trepan applied, and pus discharged. Death on the seventeenth day. Pus on the surface of the dura mater and on that of the brain. An abscess of considerable size in the middle lobe of the right lung.

Case XXVII.†—Sabre cut, carrying off a portion of the external table and diploe of the right parietal bone, the internal table uninjured. Did well for ten days, then redness and tumefaction of the edges of the wound; fever, pain in the right hypochondrium, rigors, cold sweats, and death on the thirtieth day. Pericranium violently inflamed; the corresponding part of the dura mater red and tumefied; brain healthy. A quantity of purulent

* Ansiaux, Clinique Chirurgicale. Liege, 1816. p. 45.

† Larrey, Mémoires de Chirurgie Militaire. Tome IV. Paris, 1817. p. 232.

matter in the cavity of the abdomen, derived from an enormous abscess in the liver.

*Case XXVIII.**—Sabre cut, carrying off a thick slice of the right side of the occipital bone, the internal table being spared. The dragoon did not fall from the blow. Did well for fifteen days, then fever, inflammation of the edges of the wound, pain in the head and right hypochondrium; and death on the thirty-seventh day. Violent inflammation of the pericranium, bone, and dura mater; an abscess of considerable size in the liver.

Case XXIX.†—Sabre cut on the right side of the os frontis, dividing the outer table. First ten days, no bad symptoms, then general disturbance, with stupor, depression, pain, and tumefaction of the right hypochondrium, irregular shiverings and nausea. Trepan applied, and gave vent to some matter. Died, under all the symptoms of adynamic fever. Pus on the surface of the dura mater; inflammation of this membrane and the pericranium. A very large abscess in the liver.

Case XXX.‡—A boy, aged 14, died of an

* Larrey, *Mémoires de Chirurgie Militaire*. Tome IV. Paris 1817. p. 233.

† Id. 234.—Larrey remarks, p. 237, that in none of the three cases here given did the patient fall at the time of receiving the blow.

‡ Mr. Mayo, *Med. Chir. Transactions*, Vol. XI. p. 104.

affection of the brain, connected with fracture of the skull. He survived the injury about three weeks. Four days after the accident, a joint of one finger and one ankle joint appeared swollen and painful; the swelling extending some distance above and below the affected joints: there was no discolouration of the surface, which might lead to the supposition that these parts had been bruised. The swellings suppurated, and were opened previously to the boy's death. On dissection, it was ascertained that the abscesses, which had been extensive, did not communicate with the joints in their vicinity, the capsules of which contained no excess of fluid. On opening the articulation of the affected finger, the extremities of the bones were found wholly bared of cartilage; and on exposing the cavity of the ankle joint, the surfaces of the astragalus and tibia were found almost wholly stripped of theirs likewise.

*Case XXXI.**—Wound, from a fall whilst drunk, over the left parietal bone, which was denuded, but not fractured. The patient was not stunned. On the eighth day had an attack of erysipilas, but was apparently recovering from this, when on the twenty-third day, the abdomen became tense and painful, the conjunctiva and skin of a yellow colour, the pulse frequent and hard, with great

* *Ephemerides Médicales de Montpellier. Tome VII. 1828. p. 216.*

distress and difficult respiration. Pleuro-pneumonia of the right, and pleurisy of the left side of the chest, were detected by auscultation the day before death, which took place on the twenty-sixth. Pericranium in a state of suppuration and detached at the seat of the wound ; dura mater healthy ; arachnoid thickened with subjacent effusion ; brain injected. Traces of recent peritonitis ; intestines covered with albuminous effusion ; twelve or fifteen yellowish white spots on the surface of the liver, caused by as many subjacent collections of matter ; the cavities were in some instances lined by a membrane, in other places pus could be squeezed from the incised surface. Several pounds of purulent serosity in the right cavity of the chest ; in less quantity, and less turbid in the left.

*Case XXXII.**—T. B. æt. twelve, was admitted into St. Thomas's Hospital, on the 26th of October, 1827. Ten weeks previously, he received a blow on the forehead, which was followed by an abscess that was opened, and found to contain several ounces of pus. From this he recovered, and a cicatrix only was left at the part. Three weeks before admission he had a fit, of an epileptic character, and to this succeeded incomplete paralysis of the left side. When admitted, his limbs were shrunk, his face pale, he had a peculiar wildness of the eye, and a peevish expression of counte-

* *Lancet*, February 9th, 1828.

nance, mingled with anxiety. He was restless and irritable, screaming when spoken to or roused, and the only reply that could be obtained from him was, "my head aches," at the same time lifting his hand to his forehead. The pulse was small, 120; the skin cool in general, but the scalp hot; the pupils, especially the right one, much dilated; the bowels were much relaxed, several fetid motions having passed daily, unconsciously; the urine also dribbling away. He could not move the left upper or lower extremity, and pointed to any thing which he wanted rather than ask for it. The head was shaved, leeches applied, &c. and mercurial ointment ordered to be rubbed in every night; this was continued until the 12th of November, when the paralytic affections had somewhat diminished.

Nov. 25th.—Has passed a very restless night, and is exceedingly irritable. There is a distinct puffiness over the seat of injury, at the part where the cicatrix was described, and it extends to the left eye-lid; upon close inspection, it is apparent that there is an accumulation of fluid in the cellular tissue; the skin is not red, but there is a tenderness on pressure. The pulse continues small and quick; he can move both extremities with equal facility; the pupils are dilated, but act somewhat more freely; the pain in the head continues, and the bowels are regular. 26th. There is great peevishness manifested to-day; the boy cries on

the slightest disturbance. The swelling of the scalp is greatly increased, and the veins of this part are seen much distended, even so as to render their minute branches perceptible. A lancet was plunged into the swelling on the forehead, when a continuous stream of blood (equal to that which issues from a free opening of the median-basilick vein) flowed uninterruptedly for more than a minute, when it ceased spontaneously. No pus escaped from the puncture, and the swelling was unreduced; a deeper incision, or puncture, was made, and about half an ounce of cheesy matter exuded. 30th. The wound of the forehead has healed; it discharged a small quantity of pus for a day or two. 2d of December. There is evidently some improvement; he says that he has less pain, and he is stronger; his appetite is improved. 12th. From the date of the last report, nothing material has occurred; the pulse has been variable with respect to its quickness, so also with respect to the pupils and amount of pain in the head. It is remarkable, however, that when the pain is violent, then the pupils are dilated, and vice versâ. 18th. A further collection of matter was discharged from the forehead, and also from the angle of the left jaw. The bowels at this time were very much relaxed. 24th. Is much reduced; the purging continues. 31st. He died this morning, without any marked change having taken place in the symptoms.

The body was examined on the 1st of January. The scalp formed the anterior boundary of the frontal sinuses, the bony wall having been absorbed; there was very little pus found in the cavities, and the frontal bone was carious to some extent around. It was almost perforated in many places, and completely in one, which opened into the skull. The adhesions between the dura mater and calvarium were observed to be much firmer in the course of the longitudinal sinus, and in the vicinity of the injury. Numerous red vessels were observable in the dura mater, and over the sinuses it was very vascular. There was no pus between the dura mater and bone, at the seat of injury, notwithstanding that the perforations in the bone at this part were of sufficient size to admit of the introduction of the point of the dissecting forceps. The tunica arachnoides was slightly opaque; the vessels of the pia mater were loaded with blood.

The longitudinal sinus was almost filled with thick pus, and lined with a layer of organized lymph, such as we see forming the cyst of a vomica. There was a small abscess on the surface of the right hemisphere of the cerebrum, contiguous to the sinus; and upon cutting into it, it was found to extend some way into the cerebral substance. There was no distinctly traceable communication between the abscess and the sinus, but many of the veins of the pia mater, at their entrance into the sinus, and also for some distance,

were filled with pus. The left lateral, the inferior longitudinal, and the left inferior petrosal sinus, were quite distended with pus. On the right side, the only sinus so filled was the lateral, and a portion of firm lymph had been effused where the sinus makes its turn to get on the temporal bone; this lymph had acted as a plug, preventing the pus from extending farther. On the left side, the sinus was filled with pus as far as the foramen lacerum basis cranii, and probably the internal jugular vein, but this was not examined. In the left lobe of the cerebellum was a large abscess, the pus in which resembled that in the sinuses, but there was no connexion found between the two.

There were several abscesses in the lungs, and a muco-purulent secretion issued from the bronchi; the largest vomica was in the upper lobe of the right lung. An abscess was found in the left kidney. The bowels were contracted so as to appear very small, and there were a few minute ulcers to be observed on the mucous coat of the ileum and colon.

*Case XXXIII.** A gentleman, falling from his horse, pitched on the side of his head, and remained insensible until the time of his death, on the 23d day. On examination, there was found extensive

* Rose, in Med. Chir. Trans. Vol. XIV. P. 276.

fracture of the base of the cranium; rupture of the brain; and pus between it and the pia mater. Liver and spleen studded with soft tubercular masses consisting of lymph mixed with pus, and circumscribed abscesses of different sizes.

From a consideration of these cases, it appears that affections occurring as secondary to injuries of the head were observed, in twenty-one, seated in the abdominal viscera*; in five, in the thoracic; and in six, in the abdominal and thoracic conjointly. That they consisted of collections of pus in the liver and in the lungs; and of effusions of pus and sero-purulent fluid into the cavities of the chest. That combined with some of these, there was further observed, a deposition of purulent matter, in one case, in the substance of the heart; in one, in the kidney; in one in the spleen; and in one, under the integuments of the back; in one, albuminous effusion on the surface of the intestines; and in one, inflammation of

* Although these thirty-three cases show the nature of the secondary affections succeeding to injuries of the head, they cannot be considered as offering a fair representation of the comparative frequency of the occurrence in the abdominal and thoracic viscera. Previous to the time of Morgagni, abscess of the liver subsequent to such injuries had in a measure engrossed attention, and accordingly it will be seen that, out of thirteen cases from writers previous to his time, in twelve, disease of the liver is noted, and in two of these only, the condition of the thoracic viscera mentioned.

the liver, without the formation of matter. In two cases, inflammation of the surface of the liver without suppuration was the only morbid appearance observed. In one case, an affection of the joints, and the deposition of pus into the cellular substance around them occurred without any disease of the abdominal or thoracic viscera having been noted.

The injury which the head had sustained in these cases consisted, in twenty-three, of fracture or fissure of the cranium, in all compound, with the exception perhaps of two, where the circumstance is not stated. In ten, the osseous covering of the brain was neither fractured nor fissured; but with the wound of the soft parts, which uniformly existed, there had been in several a portion of the outer table and diploe sliced off, whilst in all, the bone seems to have been exposed. The wound of the soft parts was in several instances of trifling extent, and had, in some nearly, and in one actually, healed over when the unfavourable symptoms commenced; but in these cases disease of the bone seemed to have remained, as the pericranium now became detached. With regard to the morbid appearances within the cavity of the cranium, it will be sufficient to state, that whilst these vary considerably, in several there was inflammation simply of the dura mater, without any appearance of purulent matter, and that in three instances no diseased changes whatever were ob-

served. In short, the only circumstance these thirty-three cases have in common is a wound of the soft parts.

The general course of these cases seems to have been this, and in the great majority, twenty-four, it is so stated, that the patient for some time did well, having recovered his consciousness, where this had been lost, which was frequently not the case, was free from fever, and the wound suppurating kindly; that afterwards unfavourable symptoms took place, consisting of fever, rigors, nausea and vomiting, delirium, yellow colour of the skin, and sometimes, shortly before death, pain in the right hypochondrium, or affection of the chest. There was some difference in the period at which these symptoms appeared; but of nineteen cases, the earliest of which was the seventh, and the latest the twenty-fourth day, the average was between the thirteenth and fourteenth day after the accident. The average period of the fatal termination of the same cases was between the twenty-second and twenty-third days, the earliest being on the fifteenth, and the latest on the thirty-seventh subsequent to the injury. In one instance, not included in the above number, the patient did well until the eightieth day, when, on an attempt being made to remove a portion of bone adhering to the dura mater, general disturbance took place, and death in a few days. In another exception to the more ordinary pe-

riods, the same event occurred four months and a half after the receipt of the injury.

From the preceding summary, I think it will appear, that abscesses and inflammations occurring in the viscera of the abdomen and chest, after injuries of the head, present a resemblance to similar affections succeeding to wounds of other parts of the body, sufficient to justify the inference, that they arise from the same cause. That cause, I ventured to suggest, might be inflammation of the veins,—the consequent production of pus in their cavities, and the entrance of this into the circulation. And, in accordance with this view, we find that in the only cases in which the state of the part is described, (number 21, from Schmucker, and number 32, which occurred in St. Thomas's Hospital) inflammation of the superior longitudinal sinus existed, its cavity, in both instances, containing purulent matter, in the one, with a firm, fibrinous coagulum, and in the other, with a layer of organized lymph on its inner surface. But we need not confine ourselves to inflammation of the sinuses within the cranium in cases of this description. It must be evident, that this process taking place in the numerous veins which ramify between the two tables of the skull, and in those distributed to the soft parts externally, will be attended with similar consequences to those which succeed to phlebitis in other parts of the body.

With respect to inflammation of the cerebral sinuses, after injuries of the head, I may here mention, that Schmucker * relates another case, where a patient having compound fracture of the os frontis, did well for ten days; unfavourable symptoms then occurred, and he died on the eighteenth, having for the last two days complained of pain in the right side. In this instance, a spiculum of the inner table of the skull was found penetrating the superior longitudinal sinus, which, in its anterior part, contained an atheromatous looking matter, and posteriorly, pus mixed with blood and polypous concretions. The condition of the abdominal and thoracic viscera is not described; but it is subsequently remarked, that the inflammation of the liver in this case would undoubtedly have ended in suppuration, had not death intervened. †

* Chirurgische Wahrnehmungen. Erster Theil, p. 160.

† Inflammation of the cerebral sinuses unconnected with external injury, occasionally takes place. In the following case which recently occurred, I examined the body of the individual who was the subject of it.

A young lady, about 19 years of age, was attacked three weeks before her death when in apparent health, with the ordinary symptoms of catarrh, limited to the mucous membrane of the nose. In a few days, pain took place over the region of the frontal sinuses, with some swelling and puffiness in the same situation; fluctuation was then perceived, and on a puncture being made, some highly offensive purulent matter was evacuated. The swelling subsided, and the discharge gradually diminished, but the general symptoms continued and increased. There was pain in the head, but neither constant

AFFECTIONS OF THE VISCERA, JOINTS, EYE, CELLULAR
SUBSTANCE, AND SKIN AFTER LABOUR.

In examining the bodies of women who died after parturition, of what he described as inflam-

nor very severe; the patient was restless, had occasional fits of chilliness almost amounting to rigor, followed by re-action, during which, the pulse rose to 120. About the middle of the second week, she was attacked with numbness of the right hand and foot, which in two or three days terminated in complete paralysis of the side of the body, with difficulty of swallowing, and impediment in the articulation, but with perfect consciousness remaining, as evinced by signs. At this time also, the skin generally, and the conjunctiva of the eye, became of a yellow colour. About a week after the paralysis had commenced, the tongue, which had hitherto been moist and tolerably clean, became suddenly dry and black, and she died on the following night. The patient had been attended by Dr. Macleod and Mr. North, at whose request I examined the body, and from whom I have derived the foregoing particulars.

The body presented all over its surface, the yellow hue above alluded to. There was no tumefaction in the neighbourhood of the lancet wound in the forehead, which indeed was nearly healed. On turning down the scalp, the bone in the situation of the frontal sinuses was found to be denuded of its pericranium; its surface rough to the extent of about half a crown, and smeared over with a thin layer of purulent matter. On raising the calvarium, the first appearance which attracted attention, was a large foul ulcer of the dura mater, beneath the middle of the frontal bone, it was triangular in shape, and nearly equilateral, the base about an inch and a half in breadth, extending in a transverse direction a little above the orbits,

mation of the uterus, Dr. Clarke * found pus contained in the veins of that organ. Mr. Wilson

the apex pointing upwards and backwards over the site of the longitudinal sinus. The surface of the ulcer was of an ash colour, with a dark sloughy looking spot, as large as a sixpence at the apex. The inner surface of the skull-cap corresponding with the ulcer, was of a dull white colour, and slightly roughened. The contrast in appearance with the surrounding parts, rendered the figure and extent of the diseased portion of bone readily perceptible to the eye. On reflecting the dura mater, the surface of the arachnoid membrane enveloping the left hemisphere of the brain, was found to be covered with a layer of lymph and purulent matter, the membrane itself being thickened and opaque. On slitting open the longitudinal sinus, its parietes were found thickened, and it was filled with pus and lined with a layer of coagulable lymph through its whole length. The coating of lymph terminated at the division into the lateral sinuses; but, on removing a fibrinous coagulum from the right lateral sinus, this broke, and pus flowed from its centre. A portion of the os frontis over the root of the nose was now removed so as to expose the frontal sinuses, which were found to be denuded, and to contain purulent matter. The liver was perfectly healthy. The thoracic viscera were not allowed to be examined.—In this case inflammation, originating in the membrane lining the frontal sinuses extended to the bone; this was followed by separation of the pericranium externally, and by that of the dura mater internally with ulceration of its surface, upon which supervened inflammation of the superior longitudinal sinus, and of the arachnoid membrane.

A case of suppuration within the left lateral sinus, connected with disease of the temporal bone and preceded by purulent discharge from the ear, has been briefly related by Dr. Abercrombie, in his work on Diseases of the Brain, p. 49.

* Practical Essays on the Management of Pregnancy. London 1793. p. 70.

described * the morbid appearances in one case, and alluded to two others, in which inflammation of these vessels extending to the cava, had taken place subsequent to labour. Since then, inflammation of the uterine veins spreading to the adjoining trunks of the venous system, has occupied the attention of Dr. Davis†, M. Velpeau‡, and others.

Inflammation, then, of the veins of the uterus may be regarded as by no means of unfrequent occurrence; and although some of those who have treated of the subject have had chiefly in view the primary local affection and morbid appearances, yet there is sufficient evidence to show that inflammation and suppuration of these veins also, are followed by various secondary affections.

Case I. An abscess was found in the liver containing an ounce of pus, in the instance described by Mr. Wilson, where inflammation had extended along the uterine and spermatic veins to the cava.

Case II. M. Louis § relates the history of a patient who was admitted into the Hospital on the 3d of January 1826, twenty days after delivery;

* Trans. of a Soc. for the Improvement of Med. and Chir. Knowledge. Vol. III. p. 65.

† Med. Chir. Trans. Vol. XII. p. 419.

‡ Archives Générales de Médecine. Octobre 1824. p. 220.

§ Id. Mars 1826. p. 338.

labouring under great debility and pain in the right thigh, with a tongue hard and dry, intense thirst, sickness, and vomiting, and a countenance expressive of anxiety. On the 6th the debility increased, the eyes and skin became of a deep yellow colour, and the countenance dejected. She died on the 12th. The inferior lobe of the right lung was of a red livid colour, on its surface was a false membrane, the size of a five franc piece, covering a portion of somewhat firm lung, in which were two small abscesses filled with healthy pus, and a third, containing a sanious fluid, existed in the same lobe, which was elsewhere elastic, and neither gorged nor hepatized. The right spermatic vein contained pus through its whole length, and its coats, greatly thickened, were lined internally by a false membrane.

Case III. In the following instance, that unusual event, gangrene of the lung, succeeded to inflammation and suppuration in the left spermatic vein. The case occurred in a patient in the St. James's Infirmary under the care of Mr. Baker, who obligingly gave me an opportunity of examining the parts after their removal from the body, and from whose notes I have taken the account.

Ann Cromer, æt. 42, a healthy woman, being taken in labour, on the 22d of July, was attacked with profuse uterine hemorrhage; this was found to be occasioned by the placenta being attached

over the os uteri, which rendered it necessary to introduce the hand, and deliver by turning. Notwithstanding, she lost a large quantity of blood, which occasioned alarming exhaustion. On the evening of the following day, her pulse rose to 140, with head-ache, heat of skin, and intolerance of light; on that of the 24th she had a slight rigor, and again on the 25th another exacerbation of fever, the pulse 140, and the breathing hurried. For some days subsequently, she had less fever, and without evening exacerbations; the pulse ranged from 100 to 120; the last portion of urine (which it was necessary to draw off by the catheter) had a semi-purulent appearance, with a peculiar and unpleasant smell. No pain was felt on pressure of the abdomen, although some mischief was evidently going on. On the 2nd of August, her breathing had again become much oppressed, with slight cough and no expectoration. The next day, after close questioning, she admitted that she had some pain in the left side of the chest, and sixteen ounces of blood were taken from the arm. On the 4th the pain was relieved, and on the 5th entirely removed, but the pulse remained at 120, the skin was hot and dry, there was expectoration of a little frothy mucus, and a disagreeable smell about her. On the 6th there was less fever, she was excessively weak, the features were sharp and anxious, and the breath was very offensive. On the 7th the expectoration was more free, thick, and purulent, and although the linen of

her bed had been changed, the unpleasant smell was not diminished, and was evidently caused by her breath. Death took place on the 9th, eighteen days after delivery.

Dissection.—On opening the chest, an extremely fetid odour issued from its left cavity, in the lower part of which were contained between three and four pounds of a turbid serum mixed with portions of coagulable lymph. Superiorly the lung was glued to the parietes of the chest, by recent loose adhesions; inferiorly, the pleura pulmonalis, and the corresponding pleura costalis were covered with a dense coating of coagulable lymph. In addition to this, there was on part of the surface of the inferior lobe of the left lung, a quantity of the same substance in a loose flaky form, on removing which, there presented itself a portion of the lung in a state of complete gangrene; this, about the size of a walnut, formed a black pulpy looking mass, of insufferably fetid odour, was contained with some dark coloured fluid in a sort of cavity formed by its separation from the sound lung. On making a section of the parts, passing through the gangrenous slough, one half of this fell out of the cavity in which it was situated, the other remaining attached to the parietes by a few thread-like adhesions. The cavity itself was lined by a layer of coagulable lymph having the appearance of a uniform membrane. Immediately beyond this, the substance of the

lung was somewhat livid in colour, but seemed to have undergone little change in its texture; elsewhere, it was quite healthy. On cutting through the uterus, which was of the usual size a month after delivery, a few drops of pus flowed from one of the divided sinuses, which, being traced, was found to communicate with an abscess in the left ovarium; the spermatic vein of this side was now observed to be diseased, and on cutting it open at its lower part, was found to contain pus; its coats were much thickened, and its inner surface was lined with a layer of coagulable lymph, which nearly obliterated the cavity. These diseased changes occupied the whole course of the vein to its junction with the emulgent, the coats of which were also thickened, and the cavity lined with lymph. The vena cava was perfectly healthy. No affection of the peritoneum, or effusion into its cavity, existed.*

* Whilst this paper was passing through the press, I have had an opportunity of observing the following case: Elizabeth Rogers, æt. 25, was received into the Middlesex Hospital under the care of Mr. Mayo, having been delivered sixteen days previously, after a natural labour, of her second child. For some days she had done well, but was then attacked with a severe rigor, followed by fever and suppression of the lochia, upon which, in a few days, erysipelas had supervened, and it was the aggravation of this which led to her removal to the Middlesex from the Queen's Lying-in Hospital, where she had been confined. On her admission, the left fore-arm and hand from the knuckles to the elbow were greatly swollen, somewhat red and painful, and, on the outside of the former near its middle, fluctuation was felt over an extent of several inches, a sensation

In adverting to an affection of the joints taking place subsequent to labour, I consider it necessary to offer some prefatory remarks.

which was again recognized on the back of the hand. The back of the right wrist was in a similar manner affected with swelling, moderate redness, and a more obscure sense of fluctuation. The integuments of the right leg and foot were in a state of violent inflammation, being generally of a vivid, and in some places of a livid red colour; on several parts of the leg incipient vesication existed; the swelling was moderate, and there was little tension; no evidence of effusion into the cellular substance could any where be detected. The woman had a haggard, anxious, and sallow countenance, the tongue was dry and brown, but bright red when moistened; the pulse was frequent, voluminous, and soft; there was no tenderness of the abdomen.

Between two and three ounces of pus were evacuated by puncture, from the left fore-arm, a tea spoonful or two from the back of the hand, and a few drops from the right wrist. Gangrene of the integuments of the leg took place, and the patient died in three days after she came into the Hospital.

On examination of the body, the peritoneum covering the uterus, as well as elsewhere, presented its natural appearance. A small collection of matter, about a tea-spoonful in quantity, was found between the neck of the bladder and symphysis pubis. An incision made into the uterus on its anterior surface shewed no morbid changes in its thickened parietes or in its venous sinuses at this part, and, from particular circumstances, a further examination of the organ was not made. The left spermatic vein contained pus and sero-purulent fluid in its lower half; its coats were here opaque and slightly thickened, the internal surface had lost its polish, but there was no appearance of lymph upon it. The vein contained no blood, and its coats at the upper part towards the left renal vein presented their natural appearance. The abdominal viscera and lungs had a healthy appearance. The surface of the heart over the left auricle presented numerous small spots of ecchymosis, and was crowded with vessels

The occurrence of a disease of the joints in consequence of inflammation and suppuration in a vein simply, has been proved by the cases of Arnold, Brancher, and Dogherty, and its characters established by the examination of the knee-joint in the first mentioned case, the cavity of which was found filled with pus, the synovial membrane inflamed, the cartilages exposed, and the bones laid bare. And it has been further seen, that in the cases of J. R. and Henrius, where effusion of purulent matter into the joints of the hip in the one, and into the shoulder-joint of the other, succeeded to amputation of the leg and of a metatarsal bone, I referred these to inflammation and suppuration of veins in the limbs operated upon.

The fact itself, of an affection of the joints occurring after injuries, has been noticed by several writers. Dr. Hennen * states, that in three instances he had found purulent matter in the hip-joint after amputation of the thigh ; and another case of the same nature after amputation below the knee, will be found at p. 272 of his work, headed "Death after Amputation, from disease of the lungs, and a collection of matter in the hip-joint." In a case, related by Mr. Rose, to-
gorged with dark blood: its cavities contained fibrinous coagula. The head was not examined. The joint of the right wrist was healthy.

* Principles of Military Surgery. 2d edition. London, 1820. p. 269.

gether with abscess in the liver and lung, purulent matter was effused into the articulation of the clavicle and sternum, after bruise of the foot and fracture of the fibula*. In another instance, which recently occurred in the practice of M. Lallemand, where abscesses in the liver succeeded to an operation performed for the cure of accidental hypospadias † purulent and pseudo-membranous effusion into the articulations of the right knee, and of the ster-

* Med. Chir. Trans. Vol. XIV. p. 272.

† The wound from the operation had not cicatrized at the time of death, and an abscess was found in the bulb of the urethra.

In the following case, also, the venous structure, the erectile tissue of the penis, was the seat of inflammation. A healthy looking man, 40 years of age, was cut for the stone, under which he had suffered for two years. He did well until the sixth day after the operation, when he was attacked with severe and repeated shiverings, followed by fever, shrinking of the features, yellow colour of the conjunctiva and skin, red, dry tongue, great depression of strength, temporary muttering delirium, oppressed breathing, and death on the fourteenth day after the operation. The surfaces of the inferior lobes of the right and left lungs were covered with coagulable lymph, and there was purulent matter between the former and the diaphragm; numerous depositions of pus had taken place into the substances of both lungs, not collected into foyers, but infiltrated; collections of a similar description in both kidneys; albuminous effusion between the liver and diaphragm, and on the surface of the spleen. "Small, closely approximated phlegmons were found in the erectile tissue of the penis, from the bulb of the urethra, upwards as far as the commencement of the scrotum."—*Ephemerides Méd. de Montpellier*, Tome I. 1826. P. 126.

num and clavicle of the left side, were likewise present*. And I have already mentioned, at page 87, a case related by Mr. Mayo, where an acute affection of the joints followed fracture of the skull.

It will be inferred from the preceding course of argument, that I regard the disease of the joints, in these several cases, as having been connected with inflammation and suppuration of the veins of the part which had been the seat of mechanical injury. To others, this opinion may seem scarcely warranted by the degree of knowledge which is yet possessed upon the subject; so strong, however, is my own conviction of the reality of such connexion, that, in the following case, where no injury had been sustained, the disease of the joints, and the occurrence of abscesses in different parts of the body, led me to anticipate the existence of inflammation and suppuration of the veins, which anticipation being confirmed by dissection, tends evidently to establish the accuracy of the previous conclusions. The subject of the case was a patient in the Middlesex Hospital, who attracted my attention soon after he had been transferred from the physician's ward to that of the surgeon.

Thomas Griffin, æt. 30, came under the care of Mr. Bell, about the middle of November 1827, with disease of the left knee and right shoulder

* *Ephemerides Médicales de Montpellier*. Tome VII. Mars, 1828. P. 225.

joints, a collection of matter over the scapula, and another over the sacrum. He gave the following history of his complaints :—Until about six months previously he had enjoyed perfect health, but then, without being able to account for it, he became unwell and feverish, several abscesses formed in the right side of his neck, and he was attacked with rheumatism in all his joints, principally, however, in the left knee and right shoulder. In consequence, he came into the hospital in the month of June, under the care of the physician, and, after remaining five weeks, went out much relieved. On his way home to Norwood, he got wet, and was confined to his bed for five weeks without medical advice. During this time, the left knee became swollen and painful, and he lost the use of the right shoulder-joint, but with little pain in this situation. The swelling on the scapula first appeared at this time, and he re-entered the hospital six weeks after he had left it, as a medical patient : two months afterwards, he was removed to the surgical ward.

The left knee was now much swollen, felt hot, and was the source of great suffering ; the leg was somewhat bent, and every attempt to extend it was prevented as much by the stiffness of the parts, as by the excessive pain it occasioned. He had no power over the right arm, but he could move the fore-arm and hand freely ; the muscles about the shoulder seemed wasted, but handling

the joint gave no pain. The situation of the abscess on the back was over the inferior angle of the scapula, and that on the sacrum was over the right sacro-iliac symphysis; the integuments covering both of these had a natural appearance. Leeches, issues, moxas, &c., were resorted to locally; and mercury, colchicum, and sarsaparilla, &c., were administered, but without in any degree arresting the progress of the disorder. The knee-joint became more enlarged, a swelling formed over the head of the fibula, which eventually burst, and the head of the tibia was drawn behind the condyles of the femur. The abscesses on the back were repeatedly punctured, the apertures closed, and they ultimately dispersed. In the course of this time the patient's health became progressively worse; a collection of fluid formed over the right shoulder, without pain, which, after the lapse of several months, was punctured, about four ounces of purulent matter evacuated, and the aperture readily healed. On the 13th of August, 1828, the man died.

On examination, the articulating extremities of the left tibia and femur were found completely denuded of cartilage, the same was the case with the glenoid cavity of the right scapula, and the corresponding head of the humerus. The ligaments of the joints were completely destroyed, and the heads of the bones were surrounded by a quantity of thick purulent matter, contained in a

cyst formed by a blended mass of muscular and cellular substance. On cutting down upon the right hip-joint, which was healthy, I opened a vein, out of which grumous pus exuded, and on tracing this vein to the femoral, into which it entered, this last was found twice its natural size, its coats greatly thickened, and its cavity filled with a quantity of coagulable lymph mixed with some pus, slightly tinged with blood. These changes occupied all the branches contributing to form the femoral vein, viz. the saphena, the profunda, and the continuation of the femoral itself as far down as examined about two inches below the origin of the profunda; also the epigastric and smaller branches, and they extended up the external iliac vein *to the entrance* of the internal, where they ceased. Up to this point the diseased vein contained within its cavity the matter already described; here this was in a more loose form, and no impediment existed to its entrance into the common iliac. The coats of this vessel and those of the internal iliac were quite healthy. The iliac and femoral veins of the left side offered no appearance of disease. The right subclavian and axillary veins were in an equally natural state. Nothing unusual was met with in the viscera of the abdomen or chest.

It is to be remarked, that this patient had never complained of the right thigh, or leg; it is true, he had been confined to his bed for the last

eleven months, but retained the power of moving this extremity. Latterly, both this leg and the other had become œdematous. No cause could be discovered for the inflammation of the veins; the limb showed no sign of external violence, with the exception of a small cicatrix on the inside of the leg.

With the permission of Mr. Bell, I place before the Society the vein taken from the subject of this case, stripped of its thickened cellular coat, which formed a solid covering to it, having been the chief cause of its apparent increase in size. It will be seen that coagulable lymph adheres in large quantity to the internal surface of the vessel.

That a violent and destructive disease of the joints takes place in the puerperal state, although not attracting particular attention, the following details will show. Mr. Cheston, in his chapter "On White Swelling"; treating of suppuration of a joint, its symptoms, and the danger which attends it, has the following note:—"A critical deposition in the joints is frequently productive of a similar event, (viz. suppuration,) and many women in particular, as Dr. Simpson has observed, have contracted it under the diary fever they are subject to in childbed. Of this, a remarkable case has lately fallen under my care, where the patient was saved by a timely amputation." Unfortunately, the case is not related, and Dr. Simpson's remark is merely this, "several of those

I have had under these cases, could give no account of the rise of the trouble. Some women have contracted it under the diary fever (the weed) they are subject to in child-bed."

The following case detailed by M. Cruveilhier*, in a paper entitled "*Usure des Cartilages Articulaires*," will be found interesting, both from the period at which it occurred, and the nature of the affection.

A lady, after a severe labour, was attacked by acute articular rheumatism, which successively affected all the joints. The pains diminished, but did not subside; by degrees, the knee-joints became stiff, and she heard or felt a crepitation on the least motion, even in turning in bed. The hip, the shoulder and elbow-joints, those of the wrist and metacarpus, soon became affected in a similar way. Various remedies were tried. Moxas were applied to one knee, and were imagined to afford relief; but at the end of three months, which time they took in healing, the joint was as stiff as before. M. C., who had latterly seen the patient, recommended daily motion of the limb, but the pain which this occasioned could not be borne. It was hoped that ankylosis might put a stop to the sufferings, but this did not take place. At length, in endeavouring by examination of one of the joints of the fingers to ascertain the nature

* *Bibliothèque Médicale*. Janvier, 1827, p. 80.

of this singular disease, a grating was recognized, and the same sensation being verified in all the affected joints, palliatives only were henceforth resorted to.

On enquiring of Dr. Merriman concerning a disease of the joints in puerperal women, that gentleman informed me that he had seen such cases, but that he did not know of one which had terminated favourably.

In the following case communicated to me by Dr. Robert Lee, no examination of the body was made; but the relation of it here, may, by calling attention to the disease, lead to an examination, in fatal cases, of the affected joints, and also into the state of the uterine veins, with inflammation of which, I believe the affection of the joints to be connected.

“ Mrs. A. æt. 30, was delivered on the 1st of June, 1828, after a tedious labour. A portion of the placenta having been retained in the uterus several hours after the birth of the child, a profuse hemorrhage took place before it was extracted. Until the 10th she appeared to recover in the most favourable manner, when a violent febrile attack was experienced, with delirium, and a painful diffused swelling soon after took place around the right knee-joint.

“ On the 13th, when I first saw her subsequent to delivery, the febrile symptoms continued unabated, she was delirious, and there was a peculiar expression of wildness in the countenance. The muscles of the face and extremities were affected with tremors. The pulse was 130, and very weak; respiration hurried and anxious, with frequent cough. The skin hot and dry, the tongue was of a glossy red colour and moist. Thirst not urgent; bowels open. There was no sickness or vomiting, the abdomen was uniformly soft, and pressure over it produced no uneasiness. The right knee-joint was stiff and swollen, but the integuments were not discoloured. On the 14th, the symptoms continued, and in the night a painful circumscribed swelling had taken place in the middle of the calf of the right leg, where the integuments were hot, and of a dark red colour. On the 18th, there was a marked remission of all the symptoms, and for ten days it was hoped she would recover. From the 1st of July till the 24th, when she died, (completely worn out with diarrhoea, fever, and the painful affection of the extremities,) the right knee-joint had become much more swollen, and a considerable effusion had taken place into it. Over the right radius and ulna, near the wrist, a painful diffused swelling also took place without discolouration of the integuments, and for a week she suffered excruciating pain in the left ankle and right shoulder

joint, but in neither of these situations, was any thing, except a slight puffiness to be perceived.”*

Upon the connexion of this affection of the joints in puerperal women with inflammation of the veins, there is an appearance of direct evidence in two of the cases related by M. Velpeau, in his paper on Phlegmasia Alba Dolens, although the description is somewhat incomplete. In one of these, death took place on the sixtieth day after labour, in the other, on the twenty-sixth, under great constitutional disturbance and exhaustion. In both, purulent matter was contained in the hypogastric and femoral veins. In the first case,

* Since this Paper was read to the Society, an instance of destructive disease of the knee joint consequent to delivery, has come under my observation. The patient had been confined six weeks previously, being then in perfect health; ten days after this event, and preceded by slight symptoms of fever for a day or two, the right knee became affected with swelling and pain, which gradually but rapidly increased. When I saw her, subluxation of the joint existed, the leg was bent to nearly a right angle upon the thigh, and the head of the tibia drawn backwards on the condyles of the femur. There was great swelling of the lower part of the thigh, caused by the presence of matter in this situation, which was evacuated by puncture. The integuments were not discoloured, and little pain was felt, except on attempting to move the leg. The pulse was 120, and she laboured under great constitutional disturbance with exhaustion. Another collection of matter formed, and was evacuated on the outside of the leg a little below the joint. Symptoms of affection of the chest with purulent expectoration soon showed themselves, and the woman is now sinking under the combination.

the interpubic cartilage was softened, and pus was found in this situation; the same appearances were observed in the left sacro-iliac symphysis; the hip joint, also, contained purulent matter. In the second instance, the sacro-iliac and pubic symphyses were in a state similar to that just mentioned.

The last circumstance to which I shall at present allude, is the occurrence in the puerperal state, of a disease of the eye, similar to that which took place in the instance of Dodging from the inflammation and suppuration in the vena saphena. It will be recollected that in this case the corneæ became opaque, the vessels of the conjunctivæ injected, and that after death, destructive changes were found within the globes. Now, although a remarkable, this is not an isolated instance of a peculiar disease of the eye succeeding to inflammation of a vein from mechanical injury.

The following case occurred last year, excited much attention at the time, and gave rise to many conjectures as to the cause of the affection of the eye. A young man had a ligature placed on the left carotid artery, for an aneurismal disease of one of its temporal branches. Considerable difficulty was experienced in passing the needle round the vessel. Venous hemorrhage took place during the operation, recurred at night, and occasionally afterwards, for nine or ten days. On the fifth day

after the operation, the patient had a severe rigor, succeeded by heat of skin and general febrile symptoms. These increased, the pulse rose to 120, and the constitutional disturbance assumed a very violent character. About the tenth day, the vision of the left eye became impaired, and was quickly lost, the pupil was contracted, the iris immoveable, and the cornea had a somewhat hazy appearance: effusion took place under the conjunctiva, and the eye-lids were greatly swollen, giving the appearance of the globe being much protruded; at the same time, there was a degree of deafness, considerable stupor, with occasional slight delirium. In the course of a few days, the coats of the eye sloughed at the upper part, and its contents were evacuated. Whilst these changes were occurring in the eye, collections of matter formed without pain in different parts of the body, on both shoulders above the insertion of the deltoid muscles, over the sacrum, &c. The constitutional disturbance abated, the collapsed eye healed over, but he never recovered his health. Five months subsequently he died, labouring under lumbar abscess and worn out by hectic. On examination of the body, (at which I was present), a portion of the jugular vein to the extent of two inches was found wanting; the upper and under extremities being shrunk, ligamentous, and gradually lost in the cellular substance. On opening the head, pus was found effused in great quantity between the tunica arachnoidea and pia

mater, along the base of the brain, and the whole length of the spinal cord. The inter-muscular cellular substance of the loins was loaded with pus. The viscera of the abdomen and chest were not examined.

When we consider the circumstances of this case, the venous hemorrhage, the constitutional disturbance, the formation of abscesses, and the appearances presented on dissection, and compare them with the consequences which have been observed to follow inflammation and suppuration of a vein, and the occurrences in the case of Dodging, can it be doubted that the affection of the eye in this instance, arose from the inflammation of the jugular vein, and from the entrance of an inflammatory secretion, probably pus, into the blood?

A disease of the eye, similar to that observed in the two cases above mentioned, occurs in the puerperal state, and has been described by Dr. Marshall Hall, and Mr. Higginbottom, in a paper published in Vol. XIII. of the Society's Transactions, under the title of "Cases of Destructive Inflammation of the Eye, and of Suppurative Inflammation of the Integuments occurring in the Puerperal state, and apparently from Constitutional causes." In all of these cases, six in number, five of which came under their own observation, the affection of the eye took place in from five to eleven days after delivery. It was preceded

and accompanied by serious indisposition, in every instance terminating fatally, and under symptoms of extreme exhaustion. The affection of the eye was characterized by redness of the conjunctiva, intolerance of light, and contracted pupil; rapidly followed by opacity of the cornea, and excessive chemosis. In four instances, dissolution took place before the coats of the eye gave way; in the two others, this occurred, during life: and in one, where the process was observed, by ulceration of the coats round the cornea. In both of these cases, the collapsed globe had healed over previous to death. In each instance only one eye was affected, and that the left; with the exception of the case communicated by Mr. Ward, where it does not appear which eye was the seat of disease. With the disease of the eye, there also took place an inflammation of the integuments, first observed on the hand, but on careful examination found in the inferior, as well as the superior extremities, and under which, matter quickly formed. In one case only, there was no such inflammation.

The authors of this communication conjecture, that the morbid affection of the eye had a constitutional origin. No examination after death seems to have been made in any of these cases.

Considering the circumstances under which the affection of the eye took place, its characters, and the deposition of pus under the integuments of

the body; are we not justified, (on comparing these with the known consequences of inflammation of veins, and the frequency of this affection in those of the uterus after parturition,) in attributing such disease of the eye to inflammation of the uterine veins, and to the introduction of pus into the circulation?

Such are the facts which have induced me to conclude, that the inflammations and abscesses which arise in remote situations, after *injuries*, whether of the extremities or of the head, or after the *process of parturition*, are attributable to the existence of phlebitis in the part of the body primarily affected.

In concluding these remarks, the object of which has been to point out the relation between the primary and secondary affections in phlebitis, and to establish the introduction of pus, or other inflammatory secretion, from the surface of the vein into the circulation, as the cause of the latter; I have not felt myself called upon to advance any opinion as to the manner in which this cause operates, in giving to some of the secondary affections their peculiar characters,—I allude more particularly to the depositions of pus and lymph, unattended by those changes in the texture of the parts, which usually precede the production of these fluids. I think it right, however, to state,

that I must not be considered as regarding the matter so deposited to be actually that which has been brought into the circulation from the inflamed vein or veins. The disease of the eye, in which pus is not deposited, and the affection of the joints, exclusive of other considerations, clearly prove that the question is no longer one of a translation of matter merely, but one which involves the very difficult subject of the pathology of the blood, especially the share which diseased changes in this fluid have in the production of those phenomena which we are in the habit of comprehending under the term of inflammation.

APPENDIX.

Case of fatal Phlebitis, Deposition of Pus into the Substance of the Heart.

Since the preceding paper was read to the Society, I have received the following communication from Mr. Lawrence. The case therein detailed, presents several points of much interest, both as regards the primary and the secondary affection in phlebitis, while it supports the pathological views which I have ventured to take.

“ 18, Whitehall Place, 27 Nov. 1828.

“ MY DEAR SIR,

“ A fatal case of phlebitis has just occurred at Bethlem, the examination of which has disclosed some very interesting facts. I lose no time in sending you a statement of them, as you are occupied in investigating the pathology of this important affection, and I place the case at your disposal, should you be inclined to make use of it in your valuable paper. The inflammatory affections of the pericardium and heart seem quite analogous to the inflammations of the pleura and lungs, which have been observed in other cases. One cannot help referring these affections to the phlebitis; yet the inflammation of the vein stopped suddenly at the part I have specified. It may seem strange, that the left side of the heart should suffer rather than the right,—we should remember, however, that the latter is very rarely, the former very frequently diseased; so that, if a cause of irritation should be applied to the organ, we might expect, *a priori*, that its effect would be evidenced on the left side, as in the present instance.

I have sent the inflamed vein and the heart to Mr. Langstaff.

“ Believe me, ever,

“ Very truly yours,

“ WM. LAWRENCE.”

“ A. B., 34 years of age, having been brought to London, from some distance, was received into Bethlem Hospital on the 12th of November, 1828, in a state of mental derangement, which was represented to have existed about fourteen days. When he was undressed, it was found that his right arm was inflamed, and a deep impression on the forearm shewed that the limb had been very tightly confined on the journey. I saw him on the following day, and found the limb red, swollen, and very painful, on the palmar aspect, from the middle of the forearm to the axilla. The skin had a bright pink tint, and was firm to the touch, especially at the bend of the elbow, and induration could be felt, for about two inches, in the course both of the cephalic and basilic veins, and the same kind of hardness extended to a similar distance in the forearm. Over the median cephalic vein there was a small puncture in the skin, giving issue to a little thin matter; a similar puncture, which had nearly closed, was situated over the basilic vein. The tongue was white, the pulse frequent, the skin rather hot, the countenance sallow, sharp, and expressive of anxiety. He was restless, and too much disturbed in mind to give any clear account of his illness or his sensations. Leeches were applied to the limb, and repeated several times; fomentation and poultices were employed; and he took active aperients with saline antimonial draughts. The redness, swelling, and pain, of the limb lessened, and had

entirely gone for some days before death. The general disturbance, however, still continued,—the pulse was very frequent, the skin remarkably hot, more particularly that of the head. There was difficulty of breathing, with some cough and mucous expectoration, and pain of the epigastric region. A blister was applied on account of the latter symptom. He complained of feeling hot air in the throat. The pulse, which continued frequent, became very feeble, and he sunk on the night of the 25th. The body was examined fifteen hours after death.

“The subcutaneous tissue at the bend of the elbow, and in the neighbouring portion both of the arm and fore-arm was partly thickened and hardened by the inflammation it had undergone, partly infiltrated with serous fluid, which flowed out abundantly during the dissection. The median cephalic, and cephalic veins, were converted into impervious cords; this change extended, in the latter, more than half way up the arm, where it terminated abruptly, the continuation of the vessel being healthy. A portion of thick pus, about equal to a large pea, escaped when the integument was dissected back in the situation of the puncture. The median basilic, and two or three veins on the ulnar side of the fore-arm, terminating in it, or in the basilic, were closed from inflammation. The basilic vein was thickened and indurated, cutting almost like cartilage:

the inner membrane was more particularly affected, and exhibited longitudinal wrinkles. It contained neither pus, lymph, nor coagulum. The axillary and subclavian veins were less thickened and indurated; but the cavity was furred over by a light brownish coating of lymph. This change extended to the very termination of the subclavian, where the cavity of the vessel was completely blocked by a somewhat soft yellow mass of lymph, to which a loose coagulum of blood was connected, filling the internal jugular and superior cava. Both these veins were healthy. The cellular tissue round the axillary and subclavian veins was infiltrated, and the axillary glands were enlarged from inflammation. There was no coagulum of blood in the basilic, axillary, or subclavian veins; nor could there have been any circulation through them for some time before death.

“ The pericardium contained six or seven ounces of opaque and rather turbid fluid of a light yellowish brown. Its serous surface was highly inflamed in its whole extent: it was loaded with minute red vessels, roughened by numerous minute inequalities, and covered at a few points by thin portions of yellow lymph. In other places it exhibited portions of ecchymosis more or less extensive. The increased redness and the ecchymosis were most observable on the left cavities of the heart; the left auricle, at its posterior part, was almost one

continued mass of ecchymosis. A bright yellow patch, of irregular outline, about as large as a sixpence, and two or three much smaller spots were observed on the surface of the left ventricle, about the middle of its left and posterior part. The serous membrane was entire, smooth, and not prominent. On making a section, the muscular substance was found softened and partially broken down, while yellow pus was effused into the broken textures, but not collected into an abscess.

“The linings of the cardiac cavities were healthy.

“A small portion of the right lung was rendered impervious to air by recent inflammation; and lymph had been effused on the corresponding surface of the pleura, so as to agglutinate partially the two contiguous lobes.

“The mucous lining of the trachea and bronchial tubes was inflamed; and they were filled with frothy mucus. The liver was partially tuberculated on the surface; and the peritoneal covering of its concavity was thickened and opaque. The gall bladder was connected by strong adhesions to the neighbouring viscera.”

Case of fatal Phlebitis in the Horse, with the Appearances on Dissection. By Dr. John Sims.

On the 29th of September, a horse belonging to Mr. W—— slipped one of his legs over the halter, and in endeavouring to disengage it produced a wound three inches long and half an inch deep, by friction of the limb on the rope.

On the 6th of October the wound was granulating, but as he continued lame, a neighbouring farrier saw him, who gave him a strong cathartic and bled him in the jugular vein with the usual instrument.

9th. A tumor about the size of an egg appeared over the wound in the vein. Matter formed, and a discharge was kept up from the orifice.

On the evening of the 10th, a rattling noise was observed in respiration, and other symptoms of inflammation of the lungs, attended with fever, occurred: they continued to increase, and resisted the remedies used for their relief.

24th. He has been gradually becoming exhausted by the disease: this evening a quantity of blood flowed from his nostrils, which, apparently, came from his stomach.

25th. He died suddenly in the morning, nineteen days from the time he was bled : he was previously in perfect health, except the lameness mentioned above. His instinctive faculties were active throughout the disorder.

26th. I was present when the carcase was examined by Mr. Jempson, Veterinary Surgeon of Chelsea, who saw the animal several days before he died.

I removed about eight inches of the jugular vein. The part surrounding the orifice is ulcerated : the coats of the portion of vein extending towards the head are nearly three times their natural thickness, and changed in colour : the internal coat has a dark, rough surface. These changes terminated two or three inches beyond the orifice. This part of the vein contained dark coloured pus. Immediately below the orifice, three inches of the canal are obliterated in a direction towards the heart. Proceeding downwards the vein is quite natural, and contains coagulated blood.

The heart was softer than usual. The internal coat of the superior cava, and that of the cavities of the heart, did not present any trace either of inflammation or its products.

The substance of the lungs was generally soft-

ened: the texture of a considerable portion of the posterior part (or that opposed to the diaphragm) of the left lung was broken down, and in the interstices a substance deposited resembling dirty tallow or adipocire, in many places in masses the size of an egg. The same change was observed in the corresponding part of the right lung, but not to so great an extent. There were no tubercles. The pleura pulmonalis adhered to that covering the diaphragm in both cavities, and for a small space on the right side. A few ounces of serum were found in the cavities.

The villous portion of the internal surface of the stomach was deeply red, and this organ contained several pints of fluid, the greater part of which was blood.

The internal coat of the bladder was vascular, in patches, and the muscular coat corrugated. The intestines healthy. The liver and other viscera were softened, in other respects natural.

THE END.

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THE END.