PROVINCIAL MEDICAL & SURGICAL JOURNAL.

ON THE CHANGES IN THE URINE EFFECTED BY DISEASE; AND THE TESTS TO DIS- TINGUISH THEM.

By E. J. SHEARMAN, M.D., Rotherham.

(Read before the Sheffield Medical Society,
March 20, 1845.)

It is impossible in a short paper to enter fully into this very interesting and important subject; but I have endeavoured to bring a few striking facts together, in order to induce some of you more able than myself, to follow up the investigation; and I propose to do so under the four following divisions:—

1. To shew what healthy urine is, and how produced.
2. To draw your attention to a number of diseases, generally accompanied by a certain abnormal condition of the urine.
3. To point out the easiest modes of detecting these diseased conditions.
4. Shortly to recapitulate those parts of the subject most frequently met with in practice.

1st.—NATURE OF HEALTHY URINE, AND HOW PRODUCED.

Our aliment is composed of carbon, nitrogen, hydrogen, and oxygen, with small quantities of soda, potass, lime, magnesia, and iron; forming animal and vegetable *albumen*, *fibrine*, and *casein*, (or protein.) These, after being properly eliminated, find their way, by a process you are well acquainted with, into the right ventricle of the heart, and from thence into the lungs; the oxygen of the atmosphere combining with them, the blood becoming arterial, is brought to the left ventricle of the heart, and then circulated: the renal arteries conveying a large quantity to the kidneys, which separate that portion of *nitrogen* which has been given off in the capillaries from the decayed tissues in the form of *urea* and *uric acid*, together with a large quantity of water. The kidneys are, therefore, the organs destined to remove from the system any excess of fluid, any mal-assimilated food, and the whole of the nitrogen, with some carbon, of the decayed tissues. The amount of tissue metamorphosed in a given time may always

be measured by the quantity of nitrogen, (*uric acid* or *urates*,) in the urine; and that condition of the body, which is called health, involves the conception of an equilibrium among all the causes of waste and supply. If the kidneys cease to secrete, the nitrogen and water are then absorbed into the blood, and produce disease of a very serious nature.

Healthy urine then consists of water, with urea and uric acid *always*, often with hippuric acid, phosphates of soda and ammonia, magnesia, potass, and chloride of sodium; sometimes with sulphate, the mucus of the bladder, and debris of epithelium, with the colouring matter.

Urea and uric acid are formed by the re-arrangement of the atoms of water, nitrogen, and carbon.

In a healthy adult, from thirty to forty ounces of acid urine are secreted in twenty-four hours; specific gravity about 1.020; containing about eight grains of uric acid, two hundred and fifty-five grains of urea, one hundred and thirty-eight of fixed salts, and one hundred and sixty of organic matters. It is of a pale amber colour, owing to a substance called hæmaphæin.

The urine of carnivorous animals is acid, but the urine of herbivorous animals alkaline. The natural state of the human urine is acid, but it becomes alkaline by living entirely on vegetable food.

Urine left to itself, is converted into a solution of carbonate of ammonia: the carbon of the urea combines with the oxygen of the water, and is converted into carbonic acid; the nitrogen combines with the hydrogen of the water, and is converted into ammonia.

2nd.—CERTAIN DISEASES, ACCOMPANIED BY AN ABNORMAL CONDITION OF THE URINE.

Excessive indulgence in animal food, with too little bodily exercise, dyspepsia, and want of perspiration, are always attended by increase in the quantity of uric acid and urates. Uric acid is frequently produced in great quantity in the bladder, by the hydrochloric acid, formed in the stomach, from disease of that organ; which being absorbed into the blood, and secreted by the kidneys, forms

hydrochlorate of ammonia, and deposits the uric acid.

In fever, and all diseases accompanied by rapid emaciation, the urine is of a high specific gravity, and of a dark brown red colour from excess of urea, uric acid, urate of ammonia, and sometimes blood and purpurine. *The lateritious sediment is urate of ammonia*; and in extreme cases of acute rheumatism and hypertrophy of the heart, very large quantities of uric acid and urate of ammonia are commonly found.

In all acute diseases, attended by great emaciation, inflammation or disorganization, with *unhealthy digestive organs*, as long as the kidneys remain healthy, uric acid is secreted in abundance; but if the kidneys become diseased, as in morbus Brightii, diabetes, &c., then the secretion from the kidneys is perverted, part of the nitrogen remaining in the circulation; and the carbon, hydrogen, and oxygen, assuming the forms of albumen, sugar hippuric and oxalic acids, &c. In diabetes mellitus, when starch, sugar, &c., do not undergo the changes required to be converted into carbon or fat, the starch is converted into grape sugar by oxygen, and the sugar is excreted by the kidneys. In gout and rheumatism urate of soda is found both in the urine, and deposited in the joints and sheaths of tendons.

When pressure on the renal veins prevents the return of blood to the cavæ, as from tumor, pregnancy, &c., the elements of the blood are often poured out by the kidneys, and we find albumen, blood-discs, and hæmotosine; and in granular disease of the kidneys, and anasarca after acute disease of the skin, as scarlatina and extensive burns, albumen in large quantities is detected; but when the kidneys and skin regain their natural functions, uric acid and urea are again secreted in the place of albumen. When the functions of the liver are deranged, carbon is eliminated with hydrogen and cholesterine, which gives the peculiar colour to the urine in cases of jaundice.

In organic mischief in the liver or spleen, or great congestion of the vena portæ, the urine is very red, purple, or copper-coloured, owing to purpurine and urate of ammonia; but when bile is circulating in the system from disease of the gall-ducts, &c., the urine is very brown, and easily shows bile by the proper tests. In contracted, hobnail, or cirrhotic liver, the extent of the disease may generally be measured by the quantity of purpurine in the urine; and usually in ascites from diseased liver, we find purpurine; but in ascites from peritoneal disease, we find none.

When the liver and lungs are both so diseased as to prevent the proper quantity of carbon being carried off by their functions, hippuric acid is sure to be found in the urine.

In cases where organic mischief exists in the kidneys, the urine is frequently semi-solid when cold, and of a dark colour, like a mass of black currant jelly; and when hæmorrhage from some part of the urinary organs takes place, the urine is red, and shows quantities of blood-discs under the microscope. In fungus hæmatodes of the kidney, the urine looks like infusion of roses while warm; and like red currant jelly when cold, taking the form of the vessel.

During the progress of pneumonia, less carbon will be eliminated from the lungs, and, therefore, more will be in the urine and liver; consequently, hippuric acid is often found; and in confined situations, where animals are obliged to breathe impure air, the globules of the blood are not sufficiently supplied with oxygen; carbon can not be converted into carbonic acid in the lungs; and life could not go on unless the kidneys secreted more nitrogen and carbon in the forms of urate of ammonia and hippuric acid.

In hepatitis, the carbon is not converted into bile, and as long as the other secretions are going on properly, the carbon, which ought to form the bile, is converted into fat and oil, and is found in the blood and urine.

We often meet with melancholy, highly nervous, emaciated persons, simulating diabetes mellitus, but even more depressed in spirits, who merely complain of great debility and exhaustion, with some little pain in the back or loins, for which we find it very difficult to prescribe effectually. Dr. Golding Bird, (to whom I am greatly indebted for much of the contents of this paper,) has clearly shown that most of these cases are owing to imperfect assimilation in digestion, converting the urea of the nitrogenous part of the food into that state which is secreted by the kidneys as *oxalic acid* and *ammonia*, instead of sugar; which, combining with the lime of the phosphates, produces the oxalate of lime diathesis; and it is to the derangement of the stomach, duodenum, and liver, that we must look for success in the treatment of these cases. I have met with two patients of this description lately, whose cases would have puzzled me very much before I read Dr. Bird's paper.

Alcaline Urine.—When, from any cause, as old age, excess of study, an injury to the spine, or stone in the bladder, the kidneys or bladder are deprived of their natural supply of nervous power; the elements of urea combine with those of water, and are converted into carbonate of ammonia, which, by irritating the mucous membrane, and neutralizing the solvent phosphoric acid, throws down the triple phosphates, and phosphate and carbonate of lime, and renders the urine alkaline. In cases of long continued calculi, be the calculus composed of what it may, the urine is strongly

alkaline, ammoniacal, and deposits phosphates of lime.

Fusible calculus is composed of ammonio-phosphate of magnesia and phosphate of lime.

In persons of sedentary habits, with great mental exertion, and occasionally obliged to use great muscular exercise for a few days, as clergymen with small livings, &c., alkaline urine, with the earthy phosphates is usually the consequence which causes great debility. The following rule of Dr. Bird's will be found useful in practice:—When the phosphates are found only in the evening urine, organic disease is rarely the cause of it; but when they are found both in the morning and evening urine, you may be sure organic disease exists. Towards the close of severe cases of typhus fever, where the nervous system of the kidneys is too depressed to secrete urea, the urine is frequently ammoniacal. In cases of irritation of the mucous membrane from retention of the urine in disease of the prostate gland stricture, of the urethra, or where a catheter is worn, it is always alkaline.

3d.—MODES OF DETECTING THESE DISEASED CONDITIONS.

We will now endeavour to point out the easiest modes of detecting the contents of diseased urine, under the following divisions:—1. *Crystalline contents*: 2. *Colouring matters*: 3. *Organic deposits*.

The only necessary apparatus are a urinometer, test tubes, watch glasses, spirit lamp, and a good achromatic microscope. The re-agents being well known.

CRYSTALLINE CONTENTS.

Urea.—When in excess, the urine is of a high specific gravity, and of a reddish colour. By adding an equal quantity of nitric acid, it crystallizes as nitrate of urea, and soon becomes solid when in excess. Combined with two atoms of water it forms carbonate of ammonia.

Uric or lithic acid, is the substance of which the greatest number of calculi are composed. The urine is high coloured, specific gravity generally above 1.020, and contains excess of urea. Uric acid is usually found as urate or ammonia. To detect it, warm the urine in a watch glass, and the uric acid deposited is seen in *red rhombic prisms* through the microscope. It is familiarly known by the names of yellow or red sand.

Hippuric acid.—This is rich in carbon, and found plentifully in the horse and cow. Evaporate the urine to a syrup, add excess of hydrochloric acid; uric and hippuric acids will then be separated and fall to the bottom; pour off the supernatant fluid, and wash in cold water; boil the residue in alcohol, which dissolves only the hippuric acid, and which gradually crystallizes in delicate needles, very visible with the microscope.

Urate of ammonia.—This is the *lateritious sediment*, and is soluble in four hundred and eighty parts of water at 60°. The colour of the urine is from pale to crimson, specific gravity from 1.012 to 1.025. The deposits are from fawn colour to purple. A drop of urine containing urate of ammonia, examined on glass with the microscope, shows an amorphous powder composed of myriads of minute globules; but add a drop of hydro-chloric acid, the muddiness disappears, and crystals of uric acid will be seen, the ammonia having left the urate to combine with the acid. The colour of urate of ammonia is always owing to its union with purpurine. In examining numerous deposits of urate of ammonia under the microscope, I have always found on the addition of weak nitric acid an appearance of *globules so like pus, but more coloured*, that I cannot avoid mentioning it, for I have never seen it named by any author, and it is so constant in its appearance, that I am led to conclude it depends on some chemical combination of the animal matter of the urea with the nitrogen of nitric acid.

Urate of Soda.—Very rare, except in gouty diathesis and fever treated by carbonate of soda. Heat does not dissolve the deposit so quickly as it does urate of ammonia.

Uric, or Xanthic Oxide.—Very rare resembles uric acid if noticed inattentively, but is insoluble in carbonate of potass, whereas uric acid is soluble. The deposit is a grey powder to the naked eye, but under the microscope resembles small particles of *yellow wax*.

Cystine.—This is very rare, and contains 26 per cent. of sulphur. This urine looks like diabetic urine, but is of a low specific gravity, smells like sweet-briar when fresh, but soon putrefies and evolves sulphuretted hydrogen, and is usually found in scrofulous habits. It is soluble in ammonia, but not in the carbonate of ammonia. An evaporated solution of cystine in ammonia *crystallizes in six-sided laminae* very distinct. It requires caution to distinguish this from chloride of sodium in urine, which crystallizes in octahedrals, when combined with urea.

Oxalate of Lime.—This salt was considered very rare in the urine, but Dr. Bird has proved in his lectures in the *Medical Gazette*, that it is even more common than the earthy phosphate; the urine is acid; specific gravity from 1.015 to 1.025; generally with some epithelial scales, and always with a large quantity of urea, uric acid, or urates. To discover the oxalate of lime, set aside the urine for many hours in a glass vessel; decant the upper eight-tenths of it; pour a little of the bottom into a watch glass, warm it, and the oxalate will fall to the bottom; then remove the top part of the fluid with a pipette, add a drop of distilled water, and under the microscope we find the beautiful *trans-*

parent octahedral crystals of oxalate of lime. Ignite these crystals on platinum foil; oxalic acid is decomposed, and carbonate of lime is left, which dissolves in dilute nitric acid, with effervescence. These crystals are unaltered by acetic acid or solution of potass.

Ammonio-phosphate of Soda, or microscopical salt.—This is usually decomposed by uric acid in the bladder; urate of ammonia is formed, the *phosphoric acid being set at liberty, which becomes the source of the natural acidity of the urine.* The soda unites with uric acid, forming urate of soda.

Ammonio-phosphate of Magnesia, or Triple Phosphate, and the Phosphate of Lime.—These are nearly insoluble in water, unless it contains a small quantity of acid, as the phosphoric acid in healthy urine. By adding a small quantity of ammonia to urine containing earthy salts, deposits of triple phosphates take place, which are seen by the *microscope*, either in *minute white triangular prisms, stellæ, or acicular prisms, or foliaceous crystals*, and are easily detected. They disappear on the addition of a drop of any acid. They are abundant in alkaline urine. *Phosphate of lime* is never found in crystals. A drop examined between plates of glass appears white by *reflected*, and yellow or brown by *transmitted* light. Deposits of triple phosphates can only be distinguished from pus and blood by the microscope. To distinguish them from mucus, add hydrochloric acid, which dissolves the phosphates *not* mucus; from albumen, add nitric acid which *deposits albumen* but dissolves the phosphates.

Carbonate of Lime is sometimes deposited in alkaline urine. Wash the deposit with water, which dissolves carbonate of ammonia, and add any dilute acid, which will dissolve the carbonate of lime with effervescence; examined by the microscope they appear *small transparent spheres*, like globules of glass, and strongly refract light.

Silicic acid has rarely been found as a deposit in urine, but it is often used by impostors, which it is necessary to be aware of.

COLOURING MATTERS.

Purpurine.—It is of consequence to become acquainted with this substance, as its presence always indicates serious functional or organic mischief in some of the organs connected with the portal circulation. It has been considered as the same substance as purpurate of ammonia or the murexid of Liebig; but Dr. Bird has proved it to be a substance *sui generis*. Purpurine is soluble in alcohol; purpurate of ammonia is *insoluble*. *It always combines with urate of ammonia, causing that deposit to vary in tint from a mere flesh colour to the deepest carmine, and it is often mistaken for blood.* The appearance under the microscope is that of the red urate of ammonia in amorphous powder. Add

hydrochloric acid to a small quantity of the warmed urine, and a colour varying from lilac to purple will be immediately produced, if purpurine be present.

Cyanurine gives a blue colour to urine, is insoluble in water; moderately soluble in boiling alcohol; soluble in diluted acids, which become brown or red. The solution in sulphuric acid leaves by evaporation a carmine-red extract, soluble in water. It is distinguished from indigo by not subliming when heated in a tube, and from per-cyanide of iron by not yielding sesqui-oxide of iron when heated with carbonate of potass.

Indigo gives a dark-blue colour, which deposits by repose in the urine, and may be collected on a filter. Carefully heated in a tube it sublimes in purplish red crystals.

Percyanide of iron, or Prussian blue, now and then occurs when iron has been taken some time as a medicine, by combining with cyanogen—the result of the re-arrangement of the atoms of urea. This solution is precipitated blue by sesqui-salts of iron, and brown by sulphate of copper.

Melanurine and *melanic acid* are rarely found in the urine. Their chemical composition is not well known.

Hæmaphuein is the yellow colouring matter of the urine, which gives to urate of ammonia its yellow colour.

Cholesterine is a substance very rich in carbon, and is supposed partly to give the colouring principle to the bile, and is often detected in urine in the form of bile.

ORGANIC DEPOSITS.

In addition to the former substances found in urine, the elements of blood—*albumen, hæmotosine* and *blood-discs, pus, mucus, organic globules, epithelium, milk, fat, sugar, bile, spermatozoa, and vibriones*, are often discovered. Very few remarks on each of these substances will suffice.

Blood.—Urine containing blood coagulates into blackish masses like currant jelly, and often comes from the urethra in pieces like leeches. The urine containing the liquor sanguinis coagulates spontaneously, and looks like blanco-mange, owing to the fibrine in it. The blood corpuscles, particles, discs, or globules, are shown most distinctly by the microscope as little rings; but, by minute examination, are really double concave discs, of a uniform size, and yellow colour.

Albuminous urine is clear, straw-coloured, sometimes a dingy red, from blood; and then it contains less albumen. Its specific gravity ranges from 1.008 to 1.012. It may be detected by *heat, nitric acid, bichloride of mercury, ferrocyanuret of potassium with acetic acid, and caustic potass.* Put some urine into a test tube, hold it over a spirit lamp, and if the urine contain *albumen* it will

become opaque without boiling; if the urine is *alkaline*, heat will *not* deposit albumen, but nitric acid will.

Pus.—This urine is generally acid or neutral, and slow to become putrid. By repose pus falls to the bottom, but mixes with the urine on agitation. Agitated with æther fat is dissolved. Alkaline urine requires great care in detecting pus. Phosphatic deposits sometimes resemble pus very closely, but by microscopic examination the pus particles are distinctly seen floating in liquor puris. They are *white, round, roughly granulated outside*, and much *more opaque* than blood corpuscles. By adding a drop of acetic acid to them, while under the microscope, the interior of the particle becomes visible, and is found filled with several transparent nuclei. The earthy phosphates give their usual crystalline appearance.

Mucus.—Urine depositing mucus is generally *alkaline*; soon *putrefies*, becoming ammoniacal almost in the bladder. It is very *viscid* and *tenacious*, forming a continuous rope when poured from one vessel to another. If the upper stratum of urine is acid, the mucus is always alkaline. Mucus will not mix with the urine as pus does. The microscopic appearance of mucus granules is very like pus, but they float in a viscid glairy fluid, (liquor mucii,) which does not coagulate by heat or nitric acid, as does the liquor puris.

Organic globules, large and small, can only be detected by the microscope. They are larger than those of pus and of a darker colour.

Epithelium.—This is part of the mucous membrane of the genito-urinary organs. Under the microscope they appear like oval or angular flattened cells, with a central nucleus.

Milk.—In utero-gestation I have found milk in the urine, and Dr. Bird gives very clear and satisfactory proofs of its frequent occurrence. To detect it, allow the urine to repose in a cylindrical vessel, exposed to the air, for a few days, and the milk (kiestein) will rise to the surface in a fat-like scum, remaining permanent for three or four days.

Fatty Urine has the appearance of diluted milk: it often spontaneously gelatinizes like blanc-mange on cooling. On agitating the fresh urine with an equal bulk of æther, the fat is dissolved, and when the æther is evaporated in a watch glass, it leaves globules of oil.

Spermatozoa.—When in the acid urine of a man there exists a cloud, which is not cleared by nitric acid or heat, this may be suspected. Allow the urine to subside, and view a drop of the bottom under the microscope. These minute beings will be easily detected as minute ovate bodies, with a bristle-like tail, which is more distinct when viewed dried on glass.

Bile often tinges the urine of a deep-brown

colour. Pour a small quantity of urine on a white plate, so as to form a very thin layer; carefully add not more than a couple of drops of nitric acid in the centre; an immediate play of colours, in which green and pink predominate, results.

Sugar is the principal ingredient in the urine of *diabetes mellitus*. It is generally clear, of a lemon colour, secreted in large quantity; specific gravity from 1.030 to 1.055. When this urine is left in a warm place, a scum forms on its surface, which, if examined by the microscope, consists of what is called *torulæ*; and, if put into syrup, grow so quickly as to be seen under the microscope almost increasing. By evaporating to an extract, digesting in hot alcohol, and evaporating the tincture spontaneously in a cupping glass, granular masses of sugar crystallize on the sides of the glass.

Trommer's Test.—Add to the suspected urine in a large test tube a few drops of solution of *sulphate of copper*; *phosphate of copper falls*. Add *liquor potassæ* in great excess, *hydrated oxide of copper first falls*, which re-dissolves in the excess of alkali, forming a blue solution. On gently heating the mixture to ebullition, a deposit of *red oxide of copper falls*.

Moore's Test.—Add to two drachms of the suspected urine in a test-tube half its bulk of liquor potassæ, heat it over a spirit lamp, and keep it boiling for a minute or two, the pale urine will become an *orange brown or bistre*, according to the proportion of sugar present.

Vibriones are minute animalcules, occasionally developed in urine, which is pale, neutral, of low specific gravity, and speedily becomes putrid. Under the microscope these animals appear minute linear bodies, not so long as the diameter of a blood disc; they are alive, and move in an oscillating manner in the fresh urine.

4th.—RECAPITULATION.

To recapitulate.—Gentlemen, I will only detain you another moment, while I beg to assure you that it is a very easy task, after a few trials, to discover, in a few minutes, the contents of almost any ordinary specimen of urine; and, without this knowledge, it is quite impossible to become acquainted with the changes which are constantly occurring in the urinary organs.

For instance, you are called to a patient complaining of excruciating and deep-seated pain in the abdomen, shooting down the thigh, which resists the usual mode of treatment. Examine the urine, and you may there find blood, pus, oxalate of lime, uric acid, or phosphates. This at once explains the nature of the malady, and you can confidently tell your patient that he has a small calculus of a certain description in the ureter, and your treatment is no longer empirical. Or you may be consulted by a person with various

anomalous symptoms of a cachectic nature, which you find it impossible to give a name to, unless you examine the urine chemically; when you discover either albumen, sugar, or oxalate of lime excreted; and this at once explains the case.

A patient consults you, much reduced in strength, depressed in spirits, and emaciated, his appetite being good, and digestive organs healthy, as far as you can discover, there being no evident cause for such a state. Take the specific gravity and quantity of the urine; if it is high, without deposit, and the quantity not great, add nitric acid to it in a watch-glass, and you will most likely discover a large quantity of urea, sufficient at once to account for the symptoms; or if the quantity of urine be large, you may discover sugar.

During the course of febrile and inflammatory diseases, urate of ammonia is generally deposited; but if the symptoms increase, instead of diminish, under this deposit, examine it, and perhaps you may find the deposit to consist of phosphates and purpurine, and the urine alkaline. This will at once warn you to be watchful of your patient, and cautious in your prognosis.

Suppose you have a surgical operation to perform on a patient apparently out of health, but with no decided disease. If, on examining the urine, you find albumen, oxalate of lime, or the ammoniophosphates of magnesia, in abundance, you may feel assured the person is in an unfit state to bear any operation, and by waiting and attending to his general health, you will feel more confidence in the successful event of such an operation.

Although Sir B. C. Brodie, Dr. Prout, and other late writers on diseases of the kidneys, have laid great stress on the cachectic state of the system, accompanied by alkaline urine, it was reserved for the splendid discoveries of Bright and Bird, to elucidate the real value of these pathological changes.

The little that I already know of this subject has convinced me that, when properly studied by medical practitioners, they will find in it as true a diagnosis to the diseases of the abdominal and extra abdominal viscera, as percussion and auscultation are to the diseases of the chest.

E. J. SHEARMAN.

Rotherham, May 19, 1845.

The various deposits of a great number of specimens of urine were successfully exhibited to the members.

NOTES AND ILLUSTRATIONS OF THE DISQUISITION ON PUERPERAL FEVER. I.

By EDWARD BLACKMORE, M.D.

(Continued from page 324.)

Dr. John Clarke mentions four kinds of inflammatory affections in child-bed; (a) inflammation of the peritonæum, (parietal and intestinal); (b) of the uterus and ovary; (c) the latter attendant on an inflammatory, (*i. e.*, more sthenic or synochal,) affection of the system; (d) a typhoid fever with an affection of the abdomen; *which is epidemic*.

It seems that Dr. Clarke regarded the last as the genuine puerperal fever: and vast mischief arose from the doctrine, that all cases of an epidemic—puerperal—abdominal affection were essentially a fever, and that fever of a low character, which required the early use of tonics and cordials. And this is a striking instance of the evil of forming general conclusions from the partial experience of a few years, or of one observer. The third class of cases would truly comprise some instances of puerperal fever, particularly those of Drs. Gordon, Armstrong, and Gooch, and Mr. Hey; and in this order Dr. Clarke bled with success. The fourth order Dr. Clarke knew to prevail in hospitals. So that here also, we see the discrepancies among enlightened observers are founded on a confusion of names, and on the erroneous association of ideas which the names suggest, and on the error of defining the disease from its symptoms in one class of patients.

Professor Burns, of Glasgow, accords nearly with Dr. J. Hamilton, in his description of puerperal fever, which he also appears to have taken from hospital cases, or from a particular epidemic; and which, while it truly portrays the disease as it usually shows itself among the poor population of a large town, does not absolutely apply to all cases, even those which are epidemic, in other situations. His enumeration of the symptoms are—"shivering, not constant; the head much affected; the mind dejected and restless; the belly speedily becomes tender and tumid, and the breathing oppressed; the countenance is peculiar; eyes dull; lips white; features ghastly, with an anxious expression; vomiting, generally at first bilious, then dark coloured; no high fever; tongue brown; aphthæ in the mouth; pulse rapid, and not so tight as in ordinary peritoneal inflammation; bowels lax; after a few days dark fætid frothy stools; urine with a brown sediment; the lochia have an unhealthy smell and colour, and may gradually cease, but do not always; the milk stops; low delirium and death on the *fifth* day. Few recover who have the belly much swollen. The same fluid is found as in (ordinary puerperal,) abdominal, and intestinal peritonitis—*i. e.*, serum, with coagulable lymph; the membranous inflammation may be slight; the uterus not more affected than the intestines; the thoracic viscera inflamed in some cases; gangrene unusual."

Dr. R. Lee's arrangement of puerperal inflammatory affections according to the parts affected, and his unrivalled account of the morbid appearances, have been lately referred to by an excellent practical writer in this Journal, Mr. Crowfoot. Dr. Lee makes four orders of these affections:—(1), Uterine peritonitis. (2), The uterine appendages diseased, a common attendant on uterine peritonitis: the constitutional symptoms in both these orders do not differ. (3),