The causes nature and treatment of the changes observed in the constitution of the Urine.

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The causes, nature, and treatment of the changes observed in the constitution of the urine.

It is my intention in the following pages as briefly as possible to explain the functions of the kidney, to give the analysis of healthy urine, to state in what respects this secretion is altered in disease and lastly the characters of the different diseases and the modes of treating them.

The office of the kidney is to secrete the urine and thus to separate from the blood the superfluous watery portion of the fluids of the body; as well as the unassimilated superfluous and effete albuminous principles and other matter incident to or derived from these, and which are either in excess or are no longer required for the purpose of nutrition.

The urine is considered but an excretion, as it does not, like the bile, serve any secondary purpose; the bladder being merely a convenient receptacle for the urine until a greater quantity has accumulated than it is convenient to retain.

Healthy urine is transparent, of a light amber color, slightly aromatic odor, and reddens litmus paper. The color and signs depend upon the amount of its dilution with water; it is therefore lighter in color when voided soon after bland fluids have been taken; more particularly if the weather be cold and the
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largely as materially to increase the quantity of the urine, especially if less fluid has been taken by the mouth than is required for the wants of the system. From the foregoing statements it will not seem surprising that the kidneys of individuals of the same age are never exactly of the same size or weight and that while there is no material alteration in structure it is difficult to determine whether the size of the kidneys indicates atrophy or by hypertrophy or not.

Table of the constituents of 1000 parts of an average normal quantity of healthy urine of the people in this country; as deduced from the data of Mr. Bucquet and others by Dr. Brown.

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>96.7</td>
</tr>
<tr>
<td>Urea</td>
<td>14.230</td>
</tr>
<tr>
<td>Lithic acid</td>
<td>.468</td>
</tr>
<tr>
<td>Organic matters</td>
<td></td>
</tr>
<tr>
<td>Nitrogen free</td>
<td></td>
</tr>
<tr>
<td>Lactic acid</td>
<td></td>
</tr>
<tr>
<td>Lactate of ammonia</td>
<td></td>
</tr>
<tr>
<td>Coloring &amp; extractive matters</td>
<td></td>
</tr>
<tr>
<td>Materials of ammonia</td>
<td>.167</td>
</tr>
<tr>
<td>Fixed salts indecompos.</td>
<td></td>
</tr>
<tr>
<td>Cake at high heat</td>
<td></td>
</tr>
<tr>
<td>Lime, Potash, soda, Magnesia</td>
<td>8.135</td>
</tr>
</tbody>
</table>

1000.
Although the urine of healthy individuals is colorless slightly, it is generally compensated by the quantity voided.

Without any disease or permanent functional disorder of the kidneys, the urine may vary considerably as to the quantity and nature of its different ingredients (depending on changes of temperature and exposure), in consequence of excess in diet, excess or deficiency of exercise, state of mind, etc.

The quantity of urine may be diminished as in dropsy, fever, inflammatory affection of the kidney, etc. If the quantity or specific gravity are both much below the usual standard, the solid constituents are not thrown off in sufficient quantity; and whatever the cause may be, death must result, unless the normal secretion can be restored. The quantity of the urine may be much increased temporarily, as in hysteria, and some other nervous affections; also after taking stimulating diuretic drinks, or it may be constantly in excess, as in so-called diabetes insipidus, or more properly chronic diuresis; without any other variation except that the increase in the quantity of the urine is accompanied by an absolute increase in the amount of the solid constituents. The quantity is also much increased in diabetes melitides, more particularly at the commencement of the disorder.

Urea may be deficient in quantity in some diseases
of its history, and be retained in the blood, producing coma or some of its symptoms which precede coma; or it may appear in the urine as carbonate of ammonia, which is the result of a putrefactive change. There is generally an absolute decrease in fever, hepatic diseases, rheumatism, and other diseases accompanied with much constitutional disturbance; also in most cases of anemia and constitutional debility, from whatever cause it may arise. A relatively greater quantity of urea is generally found in the urine after dinner, but an absolute increase is not common.

Lactic or wine acid is a constant ingredient of healthy urine, in combination with ammonia as lalibate of ammonia; and occasionally as lalibate of lime or soda. The higher the temperature of the urine, the greater the quantity of lalibates it can hold in solution and hence the tendency to deposit of lalibates in the urine of children and old persons; in whom the temperature of the urine is lower than in the adult. The lalibate of ammonia only is precipitated from the urine on cooling, in the form of amorphous sediment, and is entirely redissolved by applying heat. The sediments are generally of a laticious (brick dust) or pink color which is owing partly to the coloring matter of the urine, and partly to some modification of the purpurate of ammonia (the mucron of Liebig); or according to Dr. Pearl to the presence of nitric acid in some unknown state.
of combination in wine containing lactic acid. In all
gastro-duodenal complaints, the lactic acid is reduced. Lactic
acid is generally in excess in acute and chronic disease
of the liver and spleen; albumin fever, whether edematous or
consequence of functional or degenerated organic disease.
Lactic acid is deficient in cases of debility and during
convalescence from acute or exhausting diseases, also in
granular disease of the kidney, in the last stage of which
it is sometimes almost entirely absent. Dr. Baugher states
that in a case of albumin, in which the kidneys were healthy,
the normal quantity was diminished 75%. The increase of decrease of the coloring matters of the
wine, follows nearly the same laws, as that of lactic acid.
High colored wine contains for the most part an
absolutely greater proportion of lactic acid, whereas in
pale colored wine it is generally deficient.
The color of the wine is affected by some kind of
food, beef tea, by some medicines, as ipecacuanha.
It has sometimes a yellowish-green appearance from
the presence of bile, a rude test for which is that a piece
of white linen steeped in it, will on drying be stained
yellow, and on being touched with hydrochloric acid
will be turned green. The wine has occasionally a
pink color, in cases of dyspepsia accompanied with
organic disease more particularly of the liver.
Such as may be reddish brown or smoke color from the
presence of blood, are tints produced by the admixture
vary however very much.

The blood corpuscles are of course easily detected by means
of the microscope. Urine containing blood has often a very
dark brown or almost black color, in consequence of
having been acted on by some free acid present in the
urine, most probably acetic acid.

The odor of the urine is liable to be altered by various kinds
of solid and fluid foods or medicine, as asparagus,
terpentine, capers, onions, coffee &c.; more especially in
persons who suffer from dyspepsia.

Albumin derived from the secreting lining membrane of
the urinary passages, is always present in the urine.
It is often present in large quantity in diseases of the
bladder; or as a consequence of the presence of calculi
in the urinary passages. In such cases it gives the
urine a glairy appearance (as if white of egg had been
mixed with it) owing to the absorption of water and may
be distingushed from albumin, by not coagulating on
the application of heat.

Of the fixed salts. Nitric acid in combination with
potash or soda, may be present both in the blood and
urine; albumin combination with ammonia in the urine,
and is supposed sometimes to cause the preecipitation of
lithic acid by separating the lactic acid.

Chlorine is present in greater quantity than usual, in
those who eat salted meats, and is deficient in those
who live principally on vegetables, and in cases of extreme
dehility, and the last stage of chronic diseases.
Sulphur exists in combination with the alkaline matter, and is one of the constituents of the cystic oxide calculus. It is present also in some unknown state of combination. Phosphorus exists in the urine in combination with soda, lime, or magnesia, and may be in excess giving rise to gravel and calculi.
Potash, Soda, and Ammonia are present in combination with the sulphuric, phosphoric, muriatic acids. The fixed and volatile alkalies are often in excess, in organic affections of the bladder with excess of carbonate of ammonia.
Lime and magnesia are present in the urine in combination with phosphoric acid, and if in excess are deposited and may give rise to calculi.
The proportion in the urine of the various principles and their compounds varies much, and is relatively much greater in fever, but absolutely less on account of the small quantity of urine secreted.
Besides excess or deficiency of the preceding ingredients, the following are found in the urine under certain circumstances.
Albumen in the acute form of Bright's disease, in cases of dropsy, often febrile fever, and some other states not well ascertained.
Fibrin and the red particles identical with those of the blood in oligospermous urine, a disorder not unfrequent in
Tropical climates, more particularly among the negroes in the West Indian islands.

Hematite (which really consists of crystallized phosphate) frequently found in the urine of pregnant women, formerly supposed to be peculiar to them, but which is found also occasionally in a few cases of men and non-pregnant women.

Hematite oxide (the oxide of hematite) though very rare, occurs in the urine of persons who have taken a large amount of it, and occasionally forms calculi.

Sugar in diabetics mellitus, and also under other circumstances as will be noticed under diabetes.

Uric acid generally in combination with lime, in certain severe forms of dyspepsia supposed to be formed from uric acid.

Carbonic acid (supposed to originate in the decomposition of urea, and occurring in combination with lime magnesia and ammonia.

Uric acid, dispersed by many.

Potassium, after the administration of potassium.

Botany matters as indigo, Persian blue, etc, from unknown causes.

Fatty matters, oil globules in chylous and urine, and in the last stages of Bright's disease.

Semen and prostatic fluid from probably direct or indirect irritation of the genital organs.

Petrol from abscess or ulceration in the genital urinary
passages.

Hands from unknown causes.

Fibrinous coats of the tubes in Bright's disease.

Excess or deficiency of the solid constituents of the urine,
or the presence of morbid matters not washable in healthy urine, may be owing to disease or functional derangement of the liver or kidney, or to derangement of the primary or secondary assimilation, or one or more of all of these causes.

As regards primary assimilation, the reducing power of the plasma may be defective or excessive; and the combusting power may be defective or lowered.

Malaria, cold, and wet, debility, and other depressing influences will be exciting causes in the predisposed.

The precipitation of the earthy bases in combination with acid, may and often do give rise to the formation of calculi of:

Lithic acid, Lellate of ammonia, oxalate of lime, cystic oxide, Phosphate of lime, the ammoniac magnesium phosphate, the fusible calculi, the numerous varieties of alternating calculi, the mixed calculi, the carbonate of lime calculi.

Diabetes

Is an affection of the kidney in which an unusually large quantity of urine is secreted. There are 2 kinds recognized by most authors, Diabetes insipidus and diabetes melilitus. Diabetes insipidus is by some termed chronic
diuretic, to distinguish it from diabetes mellitus, which they simply term diabetes.

Of diabetes insipidus there are 3 varieties, Hydruria, Anhydruria, and Cyoturia.

In Hydruria the relative proportion of the solid constituents of the urine is materially diminished, and the absolute quantity slightly increased; it consists therefore chiefly in a great increase of the watery portion of the urine.

Anhydruria differs from Hydruria, in a great diminution of the absolute quantity of urine. In both the urine is pale and of very low sp. gr. sometimes not higher than 1002.

In Cyoturia the relative and absolute amount of urine is greatly increased, and the sp. gr. so high as to cause it, sometimes to the mistaken for diabetes mellitus, if the urine be not tested for sugar.

Diabetes insipidus is apt to occur in nervous dyspeptic individuals, who are mostly susceptible of internal and other influences; and in whom stimulants of all kinds are apt to induce increased action of the kidneys. Except the variety Anhydruria which usually occurs in connection with Bright's disease, this affection is mostly transitory, and generally soon removed by studiously avoiding the exciting causes. When however not relieved by these means, it is not amenable to treatment, at the same time it does not in many cases
Diabetes mellitus

Any one passing vinegar in which trace of sugar could be detected, was until very recently considered to have diabetes mellitus, and the greater the quantity of vinegar and the higher its sugar the greater the amount of sugar, the more confirmed the disease was considered.

Recent researches have however satisfactorily proved that sugar is not only found in the liver but also in the stomach of healthy persons, and that whenever respiration is impaired, either by sudden or acute disease, as pleurisy, asthma, epilepsy, so sugar is apt to appear in the excreta. It has also been found in the urine of the fetus, and in old persons generally, and it is supposed to occur in them in consequence of respiration being deficient. It has been detected also after intoxication and after the administration of carbonates of iron. It has been found moreover in all the secretion of the body (excepting the saliva) of healthy persons.

The presence of sugar in the urine can therefore only be said to be morbid, when present in large quantity and accompanied with symptoms of gradual emaciation and debility.

The urine of diabetic patients is generally transparent of a light straw or greenish yellow color, having a peculiar faint odor, which some consider resembles hay, whey, apples, or milk, and its essential character...
-tics are; that it contains sugar and is of high alkali. The higher the alkali the greater the amount of sugar, the more serious the disorder. The absolute amount of saline matters is generally about the same as in healthy individuals, as is also the area which, however, is concealed by the sugar. It is very similar in composition to grape sugar, and often in so great quantity that the urine spits on the clothes, leaves when dry sparkling spots of saccharine particles. In consequence of the great amount of fluid passing through the kidneys, the skin is generally dry and often hardly the bowels, causing the faces very solid; and by reason of the great amount of solid materials eliminated by the kidneys, the appetite is usually voracious, if not and the disorder be confirmed. The wasting is of course more rapid. The nearer the disease approaches to fatal termination, the greater the irritability and other symptoms indicating loss of power from defective nutrition. The sign of the urine is seldom below 1020, and generally about 1040, and may reach 1060.

This disorder has been ascribed to impaired function of the digestive apparatus, or according to Dr. Poindexter, imperfect primary assimilation; and this has been各个环节 universally received as the most probable hypothesis, as well because an exclusively animal diet reduces the quantity of the urine and the amount of sugar nearly the normal standard; as also because
habitual intemperance, excess of every kind, shall have a depressing influence on the system, are exciting causes in the predisposed, who for the most part inherit a tendency to this disorder.

From recent researches both in this country and abroad, which tend to prove that the occasional presence of sugar in the urine is a consequence of imperfect change in the blood attributable to defective respiration, it would seem to be a result of imperfect secondary assimilation or inability of the various tissues to transform or assimilate the nutrient materials of the blood in such a manner as is required to maintain them in a healthy condition.

In support of this doctrine, I may observe that it seems to be very doubtful whether there have been any recoveries from this disease. The 2 or 3 apparent cases may possibly have been cases of simple hypochondria with temporary excess of sugar from transient causes.

Moreover although the quantity of the urine may by restriction from animal diet combined with other measures be reduced to nearly the normal amount, the sp. gr of the urine often remains decidedly above the healthy standard, and experience proves that so long as this is the case there is not safety for the patient; and that the least disturbing cause will immediately induce the return of the symptoms in all their former severity.

Pulmonary disease very frequently supervenes on this disorder, when long established, most probably in consequence of impaired
vital power of the system; in the same way that it super-
venes on long continued suppuration of joints or any
other wasting disease, and although it may be urged
that in the majority of practical patients the disease is
not associated with diabetes but has arisen independently
of such affection, it may be because in them the drain
upon the system takes place in another way through
another channel. That functional disorder of the digestive
apparatus is the cause does not seem to be satisfactorily
established, since in the majority of cases of diabetes
mellitus, the appetite and reducing power of the stomach
are exceedingly good; and as regards the converting power
of the stomach into intestines, the elaboration of the ingesta
as far as can be judged by the faces, is perfect except
as to the presence of sugar which being found in all
the secretions may be supposed to be derived from the blood.
It is stated moreover that the formation of sugar in the
stomach of diabetic patients is not ordinarily greater
than in healthy persons.
The disease would therefore seem like one arising from
premature failure of the vital powers, either in persons of
naturally weak or of unsound constitutions, or in consequence
of their having incurred that state by weakening excess.
The post mortem appearances of the stomach shew no light on the pathology of this disorder
otherwise than more than hypertrophy and increased vascu-
larly as might be expected in consequence of their increased
functional activity.

The existence of this disease is to be ascertained by testing the urine for sugar, by adding sulphate of copper in solution with excess of liquor potassa and then applying heat; if diabetic sugar be present a crimson brown precipitate of oxide of copper will be shown down.

The severity of the disorder is indicated by the urine, the higher the sugar, the greater the amount of solid matter as shown by the table of Dr. Henry.

As regards the treatment, the formation of sugar is to be kept in check, by restricting the patient to an exclusive animal diet as the powers of his digestive organs will allow; always remembering that few persons can endure this long, and that it must therefore be modified according to circumstances and the idiosyncrasy of the individual; such things being allowed as seem the most easily digested, excluding as much as possible farinaceous matters, more particularly the low kinds, and every variety of the crystalline exccharine principle entirely. Gluten or brown bread may be allowed, and green vegetables when they do not disagree, by producing flatulence and dyspepsia which may in a great measure be avoided by enjoining abstinence from liquids during and after meals, until digestion may be supposed to nearly completed.

The thirst which is generally concomitant in this disease is to be relieved by tepid drinks, advising the patient to abstain
as far as his comfort will allow. Natural or artificial waters containing carbonate of lime, or magnesia in solution, seem to work best. Porter or bitter ale in small quantity may be allowed, if they do not disagree.

The dryness of the skin and puckered state of the mouth, are best relieved by the use of the hot air bath; and by the exhibition of small doses of iracencan or other diaphoretics. Constipation of the bowels is to be removed by the mildest laxatives, such as castor oil, electuary of aconite, or mercury, and other alteratives, to be given only when imperatively called for (as in functional disease of the liver or in cases of inflammation) on account of the risk of salivation or cold in variable climates.

Dr. Jones describes the origin of many cases of renal disease to the frequent exhibition of mercury in consequence of its powerfully stimulat[ing] influence on the organs of secretion and assimilation, he states moreover that in diabetes mercury increases the app[ar]e[nt] of the urine, it usually clears it, or increases the discharge or otherwise disturbs it.

To allay the excessive irritability generally accompanying this disease, the continued use of some enodyne preparation is rendered absolutely necessary; notwithstanding the tendency to constipation of the bowels, Dovers powder or some other preparation conjoined with a mildly acting diaphoretic is commonly employed.

An ounce often proves in the last stages of diabetes, most probably from the impoverished state of the blood.
allowing the watery portion to pass through the vessels, inasmuch as it often occurs when the secretion of urine is copious, it occurs also probably in many cases as a consequence of sudden febrile disturbance; so apt to occur in the latter stages of this disorder, inducing congestion of the kidneys utterly diminishing their secreting power.

Bright's Disease

is an affection in which albumen is voided with the urine, the kidney being at the same time in a state of disease, varying from simple vascular engorgement to absolute degeneration of structure. The different conditions of the kidney occur all of which are included under Bright's disease which is therefore by some improperly termed granular degeneration, these conditions are a organic disease consequent on inflammation of the kidney and consisting in induration or contraction in many cases supposed to be a consequence of intemperance in alcoholic liquors, or of obstruction of the tubuli uriniferi by urinary deposits especially urate of ammonia in so large a quantity that the amount of the watery portion of the urine is insufficient to wash it down to granular degeneration from deposit of oil globules in the secreting cells contained within the tubuli uriniferi occupying these suspending thin portion and of course incapacitating them for the elimination of area.

This condition occurs most frequently in individuals of a scrofulous constitution, who are peculiarly liable to
This species of degeneration of tissue, as also in other organs more particularly the liver,
cellular or disorganization which would seem to be a mixture of the preceding varieties and consisting in some of the usual changes consequent on inflammation and at the same time a deposit of oil globules as occurring in simple granular degeneration.

It has been suggested by Dr. Salom that the cause of the presence of albumin in the urine, even being deficient, may be the formation of albumin at the expense of the cells, but this has been disproved by Dr. Chasten, whose researches show that the quantity of albumin is in direct proportion to the amount of cures and moreover where there is a deficiency of urine in the urine, it accumulates in the blood, although it does not in such cases always produce the drowsines & other symptoms of coma usually attending its non-elimination.

Dr. Chasten proves also, that one or more of the diurnal conditions constituting Bright's disease are present,

1. in most cases of pyelitis dysuria, 2. in dysuria attended with diuresis, the urine not being abnormally acerene.
3. in dysuria where the specific gravity of the urine is below 1010, whether albuminious or not, 4. in cases of anaemia where the pulse do not put up on pressure, i.e., where it has subsided suddenly, 5. rapidly.

As cure appears the chief natural directive, perhaps its non elimination and still more if retention and accumulation in the blood, might warrant the inference
that the condition of the kidneys is such as will not allow the solid constituents of the blood to be accreted, and one therefore in which stimulants diuretics are either inadmissible, or might prove dangerous, in such cases pure water would in chronic cases be the safest diuretic. This disease may be either acute or chronic. In acute cases the pain is excitation, pain in the lumbar region, scanty urine, (which on being tested yields albumen) together with the drowsiness consequent on diminished excretion of urine, render it difficult to diagnosis almost impossible. In the chronic form however, the disease often approaches so gradually, that it is apt for a long time to be overlooked on account of the obscurity of the symptoms; the pain in the urine being perhaps referred to chills or excess in diet, the head affection perhaps also beares or some anxiety, etc. It is therefore necessary to enquire into the characters of the urine, which besides being albuminous is apt to be red brown or bloody from adrenalin with some of the coloring matter of the blood. But as albumen may be present in the urine from other causes it is necessary to be aware of these to avoid error, viz. almost constantly after scarlet fever, occasionally also in some febrile disorders, and as an effect of the exhibition of mercury. It is found likewise in some cases of heart disease accompanied with dyspnoea, in delirium tremens, after the application of a blister. One of the earliest symptoms of Bright's disease is the frequent desire to make water, particularly when in the
horizontal posture. This and the characters of the urine are the only symptoms that would make one suspect this disorder, and as they are not conclusive, it is necessary to test for albumen and to find if that is present to ascertain its probable cause. In testing for albumen the following rules must be observed. If the urine contain mucous in considerable quantity, it will be cloudy and should be filtered before applying the test.

Add nitric acid in excess, and then apply heat, the albumen if present will be deposited in quantities varying from a few flakes to gelatinisation of the whole mass. The addition of nitric acid is necessary to prevent the deposition of the earthy phosphates, and also because albumen contained in neutral or alkaline urine will not coagulate. It is necessary to add it in excess because albumen enters into combination with a certain quantity of nitric acid but is precipitated by an excess.

The amount of albumen in the urine is liable to vary and occasionally to disappear for a few hours or even days. As a general rule it is most abundant at the commencement of the disease; gradually diminishing toward its close.

The sp. gr. is generally low, seldom at the commencement higher than 1021 and diminishing till often not higher than 1004, but averaging 1013 and at the same time the quantity of urine is usually far below the average. The cause of the low sp. gr. results from the diminished amount of the solid constituents of the urine.
The sp. gr. of the serum of the blood affords valuable information in this disease, it being in definite inverse proportion to the quantity of albumen in the urine. The quantity of albumen in healthy blood averages about 69 parts in 1000 whereas in Bright's disease it is often reduced to 16 and in some cases to 6 parts in 1000.

As the disease progresses the urine will be found to contain other matters, blood, serum, oil globules, epithelium in unusual quantity, fibrin, moulded into casts the shape of the tubuli of the kidney or urinary ducts, but the chief characteristic symptom in such cases is the gradually increasing failure from diminution of the red corpuscles of the blood, and gradually increasing muscular debility inducing dilatation of the cavities of the heart more particularly of the right side, venous congestion and as a consequence engorgement of the abdominal viscera ultimately ending in an anaemia or general dropsey which may be cardiac or cardiac and renal combined. When dropsey supervenes suddenly, there not being any signs of structural disease of the heart or liver it may be inferred to be purely renal and amenable to the treatment by hydrogenous cathartics and other measures usually employed in such cases, the activity of the means employed and the frequency of their repetition being determined by the strength of the patient, the intensity of the disease, the state of the bowels and the necessity for interference. Of acute secondary affections in this disease, inflammation of the serous membrane is
much common and frequently fatal. The disease is apt to occur after middle life on account of the increasing liability at this period to congestive diseases and decreasing power in the body to withstand their effects.

Diuretics are notoriously uncertain in this operation, more particularly in congested states of the kidney, as might be expected a priori, hence the frequent success attending the abstraction of blood previous to their exhibition. They are mostly employed in cases of dropsy occurring in consequence of cardiac disease if the kidneys are tolerably sound, inasmuch as the premonition consequent on the exhibition of hydrogogue cathartics might in these cases produce fatal syncope.

In cases of advanced renal disease it is considered advisable to disperse the trophical effusion by purgatives tapping acupuncture in preference to diuretics which not only often will not act, but are liable to aggravate the renal disorder.

Acupuncture and tapping are of course merely palliative as are also the other means employed; if the kidneys have undergone such an amount of change of structure as to preclude a possibility of return to a healthy condition. Where the renal affection is complicated with heart disease the case is more serious especially if structural disease of the heart in which case it must terminate fatally sooner or later, if since the defective disorder unrelieved a speedy fatal termination may be confidently antici-
reciprocated. The sp. gr. of the serum and the other characters of the blood; as regards the amount of fibrin, and of red corpuscles, and the characters of the urine (more particularly as to the amount of albumen) are taken collectively the only sure guides in forming an opinion of the amount of renal disease.

The state of the kidney in this affection as has been already stated, varies much. In size it may be increased or diminished, and otherwise changed in form. The surface may be speckled or variegated, rough or uneven from deposit of granular matter. In consistence it may be soft and flabby or hard and compact. Internally the cortical substance will be found most altered, being less or more pale according to the stage of the disease and having a speckled or granular appearance with confused stripe, displacement of the tubuli of the medullary portion from extravasation of solid matter, or the whole substance may be more or less studded with cysts or cells containing fluid supposed by some writers to be dilatations of the tubuli demanded to Epsid.

In the acute form of this disease as occurring after scarlet fever the patient has (if remedial measures are employed sufficiently early) a good chance of recovery without much mischief occurring whether the kidneys or other organs. When there is reason to suspect congestion of the kidneys from the character of the urine in consequence of its being bloody, higheored, scanty, thick
there being at the same time pain in the lumbar regions, accompanied with fever, coughing over the lungs, followed by serous phlegmations, the regulation of the bowels in accordance with the symptoms, together with abstinence from such drinks and avoidance of such medicines as may irritate the kidneys are the means to be adopted.

When coma threatens, immediate section followed by powerful purgatives; such as castor oil which is to be given in a larger dose than under ordinary circumstances.

As death generally occurs by coma both in the acute and chronic form of this disease, it is the more especially watched against; the danger in the chronic form is however much less as the patient by degrees becomes accustomed to the poisonous influence of the wine.

Among the marked constituents of the wine various deposits have been mentioned; some of which are apt to occur in individuals of a certain constitution as a consequence of morbid primary or secondary assimilation as in some cases perhaps both. The tendency to these affections may be either hereditary or induced in the predisposed by intemperate life or luxurious habits. The most common is a vitriolic acid, so called Cyprian or red sand or gravel. It occurs also in rhombic
prisms or modifications of that form, as calcifications or
brucinical sediments, or amorphous lithae of ammonia
in acid urine, or as lithae of ammonia in alkaline
or slightly acid urine, or as an iridescent, grey
looking pellicle floating on the surface of the urine.
The individuals in whom these deposits are liable to occur
are said to have the lithic acid Diathesis.

2. Phosphatic deposits either as amorphous phosphate of
lime or as a iridescent pellicle constituting Xanthine or as
crystals of the triple phosphate of ammonia and magnesium
occurring in the phosphatic diathesis.

3. Onalic acid in crystals of chaff forms as dumbbells
along prismatic edges as in the onalic acid Diathesis.
Among the symptoms usually occurring with these
deposits are pain in the kidneys and lumbar region,
in the course of the urters or affecting the genital urinary
organs generally, and as these occur in other affections
of the kidney, Nephritis and Nephralgia; it will be necessary
first to notice these. Nephralgia occurs as a consequence
of the presence of calculus in the kidney, or urters and
is often accompanied with pain in the testicle, or what
is occasionally retracted, there is frequent desire to make
water, which is generally high colored, and in severe cases
there is nausea, vomiting, and fever. Lumbar (a
vascular affection of the lumbar muscles generally a
consequence of exposure to cold) is distinguished from
nephralgia by the absence of nausea, vomiting, and of
disturbance of the urinary organs. This latter symptom also distinguishes colic from nephralgia. In rheumatism the pain is only felt when the affected muscles are moved, which is sometimes unavoidable as in pleurodynia. The presence of a calculus in the gastro-intestinal passage may be suspected if there be a frequent desire to pass water, and a difficulty or in ability to do so, and still more if the flow of urine is suddenly interrupted, provided these symptoms cannot be attributed to spasmodic or permanent structure, to inflammatory congestion of the mucous membrane as a consequence of gonorrhoea, medicines or other obvious irritating causes.

The treatment of nephralgia is to give diluents to diminish the acidity of the urine, and to increase the quantity so as to favor the expulsion of the calculus (for the existence of nephralgia apart from calculus is doubtless a warm fomentations to the loins is a brisk cathartic if the bowels are confined, and opium to ease the pain if it be severe.

In Nephritis there is in addition to the symptoms of nephralgia, from the intensity of which depends upon the extent and amount of inflammation, and is characterized by hardness of pulse and usually ushered in by rigor. Unless speedy relief can be obtained expirations is apt to occur, which will be more or less serious according to the amount of kidney destroyed.
greater or less facility for the escape of gas in the event of its formation, and the risk of renal fistulae etc. The treatment should consist in cupping over the loins, followed by warm fomentations, venesection to such an amount as the degree of feverishness of the pulse may indicate; together with calomel and other antiphlogistic remedies and opium cautiously to allay pain.

It would seem that idiopathic nephritis is very rare, it is therefore obvious that arising as it generally does from the presence of calculi (the number, size and character of which cannot be determined) the prognosis should be very guarded.

In the acute and diastatic where the symptoms are not severe as to give reason to suspect the presence of a calculus or if present tender active treatment necessary, the indications are to give some preparation of calomel, combined with such purgatives as may appear best suited to each case; and the administration of alkalis to correct the acidity of the urine. Of alkalis the Bicarbonate of potash is to be preferred as it does not overneutralize the urine and is to be prepared besides the Erites of potash being soluble, those of soda insoluble in the urine, is because magnesia although unobjectionable in other respects is apt to form concretions in the intestines. Besides these remedial measures, direct attention to diet is necessary both as regards the quantity character of the
good which should be sufficiently nourishing but as little stimulating as possible, and proportionate to the previous habits of life of the individual, in all cases enjoining rigid abstinence from fermented liquors, saccharine substances and anything likely to generate acidity in the stomach. As perspiration is generally deficient in persons of this Diathesis, exercise, friction, and the warm bath occasionally are useful adjuvants. As an alkaline condition of the urine may be produced by the frequent exhibition of antacids giving rise to phosphatic deposits, it is necessary to keep the urine from time to time.

In the phosphatic diathesis the urine is sometimes pale, at others of an orange or copper color, is alkaline and speedily undergoes decomposition. It occurs in persons whose suffering from debility, by whatever cause induced, or as a consequence of injuries or diseases of the spine, in cases of paralysis.

It is necessary to distinguish 2 kinds of alkaline urine. One from the presence of a fixed alkali as carbonate of potash or soda, or alkaline phosphate of soda; and the other from the presence of the volatile carbonate or amonia. This last is the cause of the ammoniacal urine in the phosphatic Diathesis. The formation of the ripe phosphate is attributed to decomposition of the urine of the urine before it is voided from the bladder; with evolution of amonia which is then supposed to combine
with the phosphate of magnesia. The subject of this diarrhoea are more or less cæthotic, restless, languid, spirits, and exhausted.

The treatment consists in invigorating the system by as moderate a diet as the digestive powers of the patient and his ability for active or passive exercise will allow, tonics change of air, wine in moderate quantities, both of acids, and causing him to abstain from every thing that can exert a depressing influence on mind or body. Acid should be given merely with a view moderately to stimulate the digestive organs or to increase the efficacy of quinine or tincture for it is generally agreed that they have a very slight effect in rendering alkaline wine acid. Quinine is of all medicines reputed to be most effectual in this respect.

It is also necessary to counteract the depression so common in this complaint.

The colicis acid diarrhoea occurs for the most part in individuals of the melancholic temperament, whose of a dark, olive or livid complexion, or in those of a sanguine temperament whose complexion is of a dirty or dull greenish yellow.

Flatulent dyspepsia is a common symptom, and irregular action of the heart, most probably from the distension of the stomach with flatus after meals. The urine is generally clear and very free from sediment. The crystals of oxalate of lime being
transparent and of nearly the same size as the urine, require time about 12 hours outside of and are then visible under the microscope. Abstinence from ascendent articles of food, more particularly rhubarb (which contains crystals of oxalate of lime), hard water, attention to the state of the bowels, regular exercise and the nitric or nitromuriatic acid from time to time till the white begin to appear in the urine. In persons of this diathesis it would seem that there is a tendency to malignant disease.

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