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Thesis for Degree of M.D

Subject

Chyluria

by

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Lincoln
Chyluria.

Oil or fatty matter, either with or without albumen, occurs in the urine under a variety of circumstances. Oil alone may be passed with the urine in large quantities. Menninheimer records two such cases: one that of a man with disease of the Lungs, taking cod-liver oil; the other that of a woman, who was recovering from Inflammation of the Kidneys, and taking Emulsion of Bumelia Indica. Lehmann affirms, that it is sometimes present in the urine of persons affected with diseases attended by rapid wasting, or in certain diseases of the Liver, and in conditions with which hectic is associated.  

Oil or albumen together are met with in the urine of persons suffering from “Bright’s Disease,” particularly from the large fatty liver; but under these circumstances the oil is in very small quantity, and rarely in the free state. Again, they may be present as a transient condition, in the urine of buckling women. In all of these conditions, whether oil be present alone, or along with albumen, the urine, although it may have undergone certain alterations in colour, yet retains sufficient characteristics to render the secretion

a. Hassele’s “The Urine in Health & Disease.”
Easy of recognition by the naked eye alone... But when oil + albumen along with fibrine exist in the urine in certain proportions that secretion cannot be determined by the naked eye; for it either really resembles pure milk, or that found in various degrees of dilution with water. No allusion to this obscure affection is – as far as the writer can determine – met with in the writings of the Ancients; the term Chyphuria or Chlyphous urine was bestowed upon it by Dr. Prout, to whom is due the credit of having first investigated the affection in a thoroughly scientific manner (38; afterwards changed its name to Chlyphous urine, probably from altered opinions regarding its pathology). About the same time that Dr. Prout the affection was known to Brazilian Physicians under the name of "le Diabète Laitieux" & the same name was applied to it by a French Physician called Pierre Frank. However, the affection is now universally known by the name of Chyphuria. Its derivation indicates a mixture of Chyph – urine (from Χυφή), & the belief that it is such a mixture is warranted by the fact that the component parts of Chyph have been found in Chlyphous urine, both by Chemical & microscopic...
Examination. According to Dr. Carter, the strongest proof of the identity of chyle in this affection are given by comparing the relative proportions of albumen to fatty matters both in chyle or chylous urine. He argues, that if the albumen and fatty matters of chylous urine exist here as a part of chyle, they should be found in relative proportions similar to those of chyle, since neither is present normally in the renal secretion; this contention he seems to have thoroughly established by the analysis of chyle and chylous urine detailed in his paper.

Though very rarely observed in England or the Continent it is not uncommonly met with in the Indies, and is said to be endemic in the Mauritius, Isle of Bourbon, Brazil, West Indies, and India. In these countries in which it is endemic, it is generally associated with "Hernaturne." In the Isle of Bourbon particularly the latter affection is extremely common, M. E. Selleur, stating, that three fourths of the children there suffer from it. Reyss has frequently observed chylous urine follow - Hernaturne.

With reference to India, however, a place where this affection is stated by several authors on the subject to
to be endemic). The writer once adds, that during a stay of a month in Bombay he was unable to meet with a single case in any of the Hospitals he visited; and was informed by two Medical Officers of the Indian Army that in all their experience, they had never come across a single case, or were of opinion that it was not a common malady there.

The majority of Europeans, who have been subjects of this affection, have residing for a time in one of the above-named countries; although a few cases are on record (of which a case under the writer's own observation is an example), in which it has occurred in persons who have never been out of Europe.

Symptoms. A typical specimen of erythous urine has the following characteristics. It bears a striking resemblance to milk. In the case under the writer's observation, from the odour was like that of milk, the resemblance was so close that the difference could not be discriminated by the naked eye alone. Sometimes a slightly rosy tint is present from admixture with blood. Blood spots have also been observed.

On standing awhile, it usually turns into a trembling coagulum like eggs or jelly, sometimes taking the
would of the vesicle in which it is contained. This
coagulum becomes redissolved after the lapse of
three or four hours, the urine returns to its 
former milky condition. In some instances however,
this coagulation does not take place. If a large
proportion of fat exists, the fibrine if present is
often prevented by its presence from coagulating to
in the case under the writer's observation coagulation
did not occur; but it was noticed that the urine
lost its uniformly fluid appearance, became curdy-looking
These differences are doubtless due to the amount of
fibrine present. Coagulation sometimes takes place in
the bladder, giving rise to difficult & painful mict
urination, & some retention of urine.
The milky appearance of chylous urine is due to the
presence of fat in a molecular state; for the urine
is rendered clear, attaining the transparency & colour
of healthy urine, by agitation with Ester, an agent
which has the power of dissolving fat. Moreover,
under the microscope molecular fat can be seen,
resembling the molecular base of the Chyle. By standing
some hours this molecular fat is thrown up as a
creamy layer - the milky urine digested with Ester,

iv. Telling Bros. “Uriney Deposits”,
{ i. Pickles case "MD. Times Gazette," April 18, 1857.


on repetition yields three layers—an upper thin muscular solution—below this a thin serous layer of albumen precipitated by the Ether, to lowest the now almost perfectly clear urine containing some Ether.

Hindrichsen says, the matter extracted by Ether consists of a mixture of fats, fatty acids, & that the fats can be separated into solid & liquid by pressure between folds of thinulous paper.

Eggel has reported a case of chylous urine out of 390 c.c. of which he could extract by Ether matter weighing 2.65 grammes. In these he believes to have shown the presence of neutral fats, fatty acids, cholesterol, lecithin, & some of the products of decomposition of the latter.творе and phosphoric acid Ackermann denies the occurrence of fatty acids.

From two samples Bruce Jones obtained 8.37 and 7.46, and Bice from a third 13.9 parts of fat to 1000 parts of urine.

Under microscope also nuclei, granular corpuscles, leucocytes, unrelaxed masses of protoplasm, and red blood discs have been observed. Gubler states that the red blood corpuscles (globules leucrocytiques) have generally a diameter visibly superior to that of

k. "Pathology of the Urine" p. 367.
m. "Deutsche Klinik" 1868, u. 235, 244.

a. Harwell, op. cit.

b. "Gazette Médicale de Paris", 1858, p. 646.
ordinary blood-corpuscles, to that many of them bear "un aspect framboisé".

Fat-corpuscles have been found by Dr. Waters of Liverpool, but by the great majority of observers they have not been seen. The writer failed to find any but after the wine had been digested with ether, there was a tendency of the fatty molecules to aggregate together, to assume somewhat the character of oil-corpuscles. It may be under these circumstances that some observers say they have detected them. Beach, Stohler, Hindeman we have never found them.

According to Dr. Baxter, these chyle-corpuscles are to be seen, the claims the merit of being first described them.

On treatment by heat to nitric acid chyleous urine is coagulated showing the presence of albumen, this doubtless is invariably the result; for the only recorded case (as far as the writer can determine), in which this did not occur, is that of Bramwell.

This presents so many discrepancies as to render it open to the suspicion of not being a case of the disease in question. Thus, it did not coagulate... spontaneously; the fatty matter separated almost.

completely on its legs standing, it contained visible fat globules too small to be seen in diameter. The grease extracted by ether crystallized like stearic acid. The patient had never been out of Scotland. The amount of albumen was found by different observers performing nine analyses to vary between 0.2 and 1.9 per cent of the urine.

Prontt considers the albumen to be in a hydrated condition, and to coagulate on heat. V. Hindiehn states that he has seen with albuminoid matter in the imperfect albumen of Pront - in apparently normal urine of a patient with ordinary excited chylous urine. The albuminoid matter was not gelatinous, as it did not gelatinize, when the urine after evaporation on a water-bath was allowed to cool.

V. Parker states that the albumen is not unlikely to be sometimes in the condition of proptone (Wohmann) - the albuminoid of Mischke - which is characterized by its great diffusive property (Funske).

According to W. Roberts, casamine has never been found, the majority of modern observers are of this opinion - W. Wills, however, gives six cases, with references to sources whence obtained, in which the

4. Hindiehn's "Pathology of the Urine".
5. op. cit.
6. op. cit.
7. W. "The Composition of the Urine in Health and Disease."
8. Roberts "Practical and Bernely Disease."
Albuminous matter in the urine was considered to be identical with Bascine. (In all of these cases the albuminous matters fell as a precipitate on standing.) But it was denied by Payer (1) that the albuminous principles in these analogous cases were in reality Bascine.

Dr. Edwin Adolphus (2) considered the examples of Chylosus urine by Poisson to be cases of Bascus urine or urine containing the principle Bascine. Dr. Ralfe (3) records a case in which he believes Bascine was present.

On account of the great difficulty in separating Albumen from Bascine, the presence of the latter must be held to be still uncertain; Mr. Mayer of the Indian Medical Service has brought forward strong experimental testimony against it being an ingredient of Chylosus urine. On making artificial mixtures of human milk + urine, + ether, + boiling, he invariably obtained a precipitate of Bascine, but in no case did he obtain the same results in Chylosus urine.

The question of whether Bascine (Glucose) is ever present is still a moot one. St. Roberts (4) denies that it has ever been

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1. "L' Experience" No XIII
5. — op. cit.
born found, it certainly has not by the great majority of observers. But if, as it asserted by some, Chyluria is sometimes accompanied by diabetic symptoms, it does not seem improbable that sugar may be present in such cases. — Dr. Harly 4 says, "Diabetes may be associated with Chylous urine. From observations of Dr. Babington (Todd’s Cyclopaedia of Anatomy & Physiology) it might almost be concluded that a cachexic condition of the blood predisposes to this disease; for many of the patients suffering from Diabetes, whose blood Babington examined, were found to be suffering from psoasemia (milky urine)."

Table 2, who holds the opinion that Chyluria is due to the presence of lymph, not Chyle, says: "One would be able to object that the sugar, which I have myself seen in lymph, is not present in Chylous urine. But it seems to me quite natural that a substance so easy of transformation as glucose should disappear.

Dr. Ail Morison 2 gives the case of a Jewess, in which he found sugar on twelve occasions.

Bruce 3 says: "Nothing has been found, though especially looked for by Bruce Jones, Waters, Isaac, Bright & Roberts. The writer failed to detect any after numerous examinations.

The specific gravity, according to the Warte's observations, varies considerably. Dr. Roberts states it to be generally high. The ordinary ingredients of healthy urine are generally present in normal proportions. Poont is noticed in one case a deficiency of urine after food, and Raym also gives a case in which the urine failes were in small proportion; but in all his other cases there was a good account.

The excellent health, which many persons affected with this complaint have, proves that within the course of metamorphosis, nor the process of elimination can be much interferred with.

### Chylous Urine

<table>
<thead>
<tr>
<th>Analysis of Chylous Urine</th>
<th>Analysis of Healthy Urine</th>
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<tbody>
<tr>
<td>Water: 967.3</td>
<td>Water: 967</td>
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<tr>
<td>Solid Matter:</td>
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<tr>
<td>Fat: 9.9</td>
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<tr>
<td>Urea: 6.0</td>
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<tr>
<td>Albumen: 6.6</td>
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<tr>
<td>Uric acid:</td>
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<td>Lactic acid:</td>
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<td>Animal excretion:</td>
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<td>Tracey excretion:</td>
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<tr>
<td>Urine: 3.8</td>
<td></td>
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<tr>
<td>Mixed salts:</td>
<td></td>
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<tr>
<td>Fixed salts: 2.0</td>
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<tr>
<td>Alkali: 1.2</td>
<td></td>
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<tr>
<td>Salts: 32.7</td>
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<td>1000</td>
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The urine sometimes does not present the character of
of chylous urine but in lymphatic it would be well to apply the term "Lymphurine".
Albain is present causing spontaneous coagulation but fat is absent
causing thereby an absence of the opaque milky appearance
which depends on it. According to Roberts the coagulum in lymphatic urine resembles calf's foot or
current jelly.

In chyluria the subjective symptoms generally disco
firmed are pains in the loins &epigastrum, and
a feeling of lassitude & suppression to exertion. In the
initial case these were present to a striking extent,
and at times a burning sensation along the spine. After his discharge from hospital, two
long intermissions intervened between the attacks, the
Patient stated that he often threw when chylous urine
was going to be passed by a burning sensation at its"his inside turning over". The pain in the back
does not seem to be situated in the region of the
kidneys, for it is not increased by pressing deeply
in that direction. In some instances no pain is
complained of - only a little debility.

m. sp. cib.
Sometimes symptoms resembling those of Diabetes are present in whole or in part. In Dr. Whitman's case the appetite was greater than natural, but in other respects the general health was good.

The disorder may last, without any change in the character of the urine, for a few days, a few months, or many years, then either suddenly disappear completely, or the urine may pass through various stages before it quite loses its chyloous symptoms. It then returns to the normal condition.

It thus appears that there is an intermittency in the progress of the affection, but periodicity of intermittence is rarely observed. However, this does happen sometimes. In one case the urine always became chyloous eight days previous to menstruation; in another the attack always manifested itself prior to attacks of epilepsy, or dyspepsia, or accompanied them.

In Dr. Pratt's case the affection occurred when the patient was suckling her children, and ceased shortly after weaning them.

As regards the period of day at which chyloous urine is passed, there is great variation. In some cases the urine is chyloous throughout the twenty-four hours.


O. Roberts, M.D.

In others it is natural or lymphous or first rising in the morning becoming chylous during remainder of the day, especially after dinner.

In Mr. Cobbit's case cited by Bratek the urine was only chylous on rising in the morning, to rise at any other time. In the case under the writer's observation the patient passed chylous urine in the morning after a night's rest; but on the next micturition the urine was perfectly clear, it remained so during rest of the day. If he awoke in the night with call to micturate, the urine then passed was perfectly natural in appearance. Towards the close of his residence in hospital, when the affection was beginning to abate, the urinated urine became its milky appearance. To assume the character of chylous the whole of the urine passed was for three successive days slightly milky; since his discharge, however, he has never passed milky or water-like urine at any other time than on first rising in the morning.

In Ackermann's case the urine became perfectly natural when the patient lay on his right side, and immediately showed its chylous character when he stood up.

2. Bratek, "Kidney Diseases and Urinary Deposits."
Dr. Bruere Jones found in a case observed by him that meals and exercise had a marked influence on the character of the urine. Shortly after a meal the urine became chyleous; if the patient failed to take exercise the urine was lymphous; if he failed to remain perfectly tranquil it became natural.

In Mr. Butler’s case the urine voided during the day was clear or fæm from chyle, while that voided during the night or in the morning was deeply loaded with it.

Diagnosis. — There can be no difficulty in diagnosing chyleous or inspissated urine from the market urine. The only other conditions of urine, with which it can possibly be confounded, are fatty urine, urine to which milk has been added, the urine of pregnant women, foetid or putrid, phosphate urine, or fatty urine. The winter caramels to indicate the presence of fat in albuminous urine depends on organic deposit of the kidneys; but the combination rarely exists in such a manner as to give rise to chyleous appearance of urine. (It is asserted in Eyland’s dictionary of Medicine. Sec. on chyluria: to sometimes give rise to this appearance.) If it do so —

microscopic examination detects the difference, for
fat is seen in form of globules very in the molecular
condition of Chylosis urine; again much casein could
most probably be found.

Chylosis urine is distinguished from urine of
pregnancy or urine to which milk has been added
by its power of spontaneous coagulation (which does
not always take place), by absence of milk-globules,
and casein, which substance, though found in large
amount in the two latter, is either entirely absent,
or is found in very small quantity. Indeed it
has been denied by many to be ever present.

In the urine of pregnant women the milkiness is
very slight, so the condition could not be confounded
with a typical specimen of chylosis urine. After
the lapse of thirty or forty hours a deposit takes
place of white, fleshy, pelliculant, semisolid matter,
driving the casein or peculiar principle of the milk
forward in the breasts during gestation. This deposit
resembles much the layer of fat which forms on the
surface of fat broth when cool. V. - Several pictures
are on record in which chylosis has disappeared
during pregnancy, preparing after parturition.

W. S. Churchill "Theory and Practice of Midwifery," 3rd Ed.
Purulent peric can be easily recognised by means of the microscope - the characteristic pus-cells being revealed - by phlegmatolic urine by the urine becoming quite clear on boiling. But these two latter conditions are scarcely worth consideration, there being little probability of confounding them with Chylosis peric.

CAUSE.--Residence in a tropical climate is the only predisposing cause made out with certainty.

In Roberts' collection of cases, twenty-four out of thirty had been born, or had passed a portion of their lives, in the Mauritius, India, Zanzibar, West Indies, or India. It is sufficiently attested that Chylosis prevails endemically in these countries. (vide, Certin, Pont, Rayen re.)

The cases that the writer has been able to collect of the complaint occurring in persons who have never been out of Europe, are, a case recorded by Pont; Mr. Gour's case cited by Bird; St. Lucas's case related by Brake; Roberts' case; Dickinson's case; and the case under the writer's own observation.

As a rule, Chylosic peric manifests itself suddenly, no assignable cause being detected. Sometimes the
invasion is gradual. In some instances it has been thought to be connected with a certain cause, such as a fall or shock (Effen); hard work or bodily labor; after parturition (Roberts); drinking of cold water while person warm (Pont); exposure to cold (Pont). In the cases under the patient's observation the occurrence of the disease appears to be associated with bad living. But all these views are problematical and rest on no sure foundation. For the present we must admit that the question has not yet been solved.

Etiology — According to Roberts, Syphilis prevails mostly in youth and middle age. Of thirty cases collected by him, there were under twenty; born between twenty and thirty; born between thirty and forty; six between forty and fifty; and three over fifty. Of these thirty cases nineteen were males and eleven females; but it appears that in the countries where the disorder is endemic, it is more common among women than men. The greater majority of it among men in the European cases is explained by the far greater number of men, who as sailors, merchants, colonists, etc., pass a portion of their lives in tropical climates.

C. Roberts, op. cit.
D. , op. cit.
The youngest example is mentioned by Petit &c. as male infant of eighteen months, of the oldest mentioned case, in which the patient reached the age of seventy eight years. Dr. Priest states that he has never seen it among old people or children, scarcely in young but very often at age of puberty, more often than in women, especially those of nervous temperament. Dr. Simon also considers it the more frequent amongst women than men.

The writer was informed by Dr. Jackson of Cape Town, South Africa, who had been twenty years in practice... that he had only met with three cases of the complaint all occurring in Children below the age of three, who also suffered from Aeroiemia.

Pathology: Various theories have been advanced into the pathology of Rhagades Ursus, but at present, none, in the writer's opinion, gives an entirely satisfactory solution of it. Of these theories we may make two broad divisions, viz, one in which the affection is believed to emanate from some disarrangement of the assimilating organs, viz. the kidneys, or of both continuo; the other in which the...

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\* Petit - op. cit. p. 114. 5.T.E.
\* Kayra op. cit.
\* Kayra - op. cit.
Lymphatic system is believed to be the former hypothesis. The former is the more ancient of the two theories, until recently, the greatest number of advocates amongst these being St. Pont."

The writer proposes to give all the theories that he has been able to collect, with a critical review of the leading ones, and will commence with the first division, giving the priority to the views of St. Pont."

According to this authority, no well-marked line of demarcation can be drawn between chylous urine and albuminous urine under which designation he includes the various forms of "Bright's Disease". In fact he considered chylous urine to be only a variety of albuminous urine, or under this proposition he changed its name to that of chyle-albuminous urine. Albuminous matter, he says, occurs in urine in two distinct kinds, viz., chylous and albuminous; in the first case supposed to resemble the albuminous matter in chyle - in the second case to be identical with those in the Blood. Distinct defined instances of both varieties are rather uncommon, those of mixed character being by far the most frequent; that is to say, the albumin in the urine partakes more

i. Pont. op. cit.
or else of both Chyluria and Sour Character. The principal views of the causation are expressed as follows: The proximate cause of the affection seems to lie partly in the assimilating organs, partly in the kidneys. The chyle from some derangement of the processes in assimilation is not raised to the blood-standard, consequently being unfit for the future purposes of the economy it, accordingly to a law of the economy, ejected through the kidneys; but these organs instead of disorganizing it, or reducing it to the crystallized state as usual, (that is to say, instead of changing the chyle into the狀態 of ammoniac) — permit it to pass through them unaltered. 

Now if derangement of the assimilating organs was associated with the pathology of Chyluria, it would be natural to infer that symptoms of Dyspepsia would be, as a rule, present. However, on reviewing the recorded cases which he has been able to meet with the writer finds that Dyspepsia was absent — in fact, or in those in which it did occur was probably but a coincidence, or due to the debilitating effects on the economy by the loss of a nutritive fluid, being thus a secondary instead of a
primary condition. Again if the Chyle in the urine be derived from the Blood that fluid ought, in the ease of persons suffering from Chyluria, to be milky, or at least present deviations from the normal.

Dr. Pott says, further in support of this view: "If the Chyle were properly converted into Blood, not Chyle but Blood ought to be thrown off by the Kidneys. On the other hand, it may be stated, as proof that the Kidneys are likewise affected, that these often found Chyle in the Blood, when a trace of albuminous matter has not been perceptible in the urine. In a healthy condition of the Kidneys, therefore, even when Chyle does get into the haemogenous system, it is not necessarily ejected as Chyle, but in passing through the Kidneys is subjected to the usual changes. These views are not borne out by recent investigations. Prof. Hoppe-Seyler analyzed the blood of a female patient of Prof. Nissen's, with following results.

The Blood contained 4.13 per cent of serum of -
greenish color, barely turbid, & not the least milky. Perfect coagulation of Blood & serum. Not of fatty nature as urine. Smaller proportion of albuminoids than usual. The Whole Blood contained

1.7 per 1,000 of fat - the urinary 35.9 per 1,000 - urine 72 per 1,000.
In a case of Dr. Gaff's & Dr. Guibourd found that the blood was not milky. It differed from normal blood in having a smaller proportion of fibrine, but larger quantity of albumen & oily matter. There was spontaneous coagulation.
Dr. Royce observed in one case, in which bleeding to 12 oz was practiced, that there was no milky appearance of the blood (It was not examined microscopically or chemically)
Dr. Bruce Jones has also examined the blood of patients affected with Chyluria without detecting a milky state of it. In our case he found no increase in the proportion of fat, both before and after carmination.

The affinity of Chyluria urine to Zones urine (Bright disease), as affirmed by Pont, seems to be completely disproved by the absence of the grave lesions, such as Scupay 9c, not well in the latter. Indeed Dr. Pont admitted that the affection of the kidneys was only functional, & exhibited at his Subtoma. Lectures in 1831 the kidney of a girl aged fifteen.

C. "Le Prise Medicale" April, 1837.  
M. op. cit.  
K. Roberts op. cit.
in which no trace of disease could be detected. Chylous urine in comparison with other conditions of urine, such as eaecharine & albuminous urine to stand alone in its utter freedom from any of the complications of these affections (Doubtless these conditions may be present in some cases of chyluria). Again if defective assimilation & functional affection of the kidneys are the cause of chyluria, one would expect to find in the recorded cases more uniformity with respect to the characteristics of the urine, & the period of its occurrence. For instance, in some cases spontaneous coagulation occurs, whilst in others this does not take place. Again the whole of the urine passed in the twenty-four hours may be chylous, or it may be only chylous at some particular period of the day being normal at other times.

Dr. Isaac's wishes we are justified in regarding chyluria as a functional disturbance of the kidneys, & which probably depends upon a peculiar condition of the renal nerves & capillaries not as yet made manifest to the naked eye, but known to be aided by the Microscope.

"American Journal Of Medical Science" 1860
In Dr. Ellerton's opinion, the complaint is due to an affection of the kidneys, or of that portion of the urinary system upon which their function depends — if these be such a part to such a dependence.

Dr. Corn. Reid seems to favour Poisseuille's view, for he says, speaking of a specimen of clays from a mine which he examined, "the microscopical appearances gave little doubt that the chyle passed into the kidney."

Dr. Willis "candidly" admits the malady due to affection of the kidneys, for he says, "on the treatment of this peculiar action of the kidney I have nothing to offer".

Dr. Bostin considers it an external symptom of inflammation "permanent et morbide".

According to Dr. Rayne, the action of the urinary excretion is manifestly dependent upon a particular state of the Blood, viz., that the transformation of the chyle poured into the blood is made in an incomplete manner, "c'est-a-dire en un vice de l'administration".

Mr. Simon considers it a severe affection of the urinary organs, which prevents the secretion of them.

Dr. Nature of Liverpool states his views of the pathology as follows: "I have come to the conclusion..."
that the affection is one in which the main pathological feature is a relaxed condition of the capillaries of the Kidneys; that as a consequence of this condition the albumen, fibres, fat and blood-corpuscles are filtered from the blood-vessels and make their appearance in the urine.

In the case recorded by Dr. Waters no evidence of arrangement of the accumulating organs was present; the tongue being clean, teeth regular, appetite good, no hepatic or splenic enlargement; and it is therefore the assumed that he does not regard the Chyle as the urine to be derived from a chylous state of the blood, but to be formed from some of the constituents of normal Blood. Now, according to Dr. Waters, the albumen, fat in chylous urine exist in relative proportions (the proportions being nearly equal) similar to those in Chyle. In blood itself, fat and albumen do not occur in relative proportions, therefore the Chyle does not enter the urine by filtration from the Blood, but once its presence there to some other power (vide analyses of Blood by Biezma and Motte, Denis, Lecer, Linné, Gomont, Lehmann, etc.).

Dr. Bence Jones holds the following views—"Dilution
eliminate secondary osmotic actions give place to events at places of greatest pressure that resist small, but for the striking phenomenon produced, might almost escape notice. In such a structure as a kidney it might almost be expected that from the immense force on the arterial vessels albumin of not blood-glubles would be constantly forced through the dialysing membrane. In the prucl actitg the pressure cannot be much less than one-sixth of the weight of the atmosphere, a considerable portion of this falls on the Mulpifian tubes, thus to be resisted by the walls of the vessel which separate the blood from the urine. By osmotic action this membrane is made less resisting albumen may be forced through, when the pressure is increased blood-glubles may pass into the urine, when the pressure is diminished the blood-glubles pass through the albumen may disappear. Also in other parts of the kidneys where there is less presence than in the tubes, as in the Capillaries or the tubes in the medullary structure, a osmotic action in the texture may allow an increased pressure in the Capillaries to force out substances which would not escape if the dialysing membrane were thicker.
From our or other of these places, fat, albumen, and blood-globules may pass into the urine, and constitute the complaint known as Chylous urine."

I think this theory may be offered the same objection as to Dr. Water, viz., that the fat and albumen in Chylous urine are present in the same proportions to those in Chyle; and as fat and albumen are not in their relative proportions in the Blood, it does not seem probable that Chylous urine owes its character to exudation of fat and albumen of the Blood through the relaxed walls of the Capillaries of the Kidney.

Dr. Bristow *asserts, "No casts have ever been detected in it, or other evidence that the Chylous material comes from the Kidney."

Again it seems difficult to understand how large quantities of Albumen should be excreted by the Kidneys in this affection without being followed by any of the grave lesions observed in "Bright's Disease." Even in those temporary attacks of Albuminuria due to simple congestion of the Kidneys, * where it is reasonable to suppose there is a relaxed condition of the Capillaries of the Kidneys, distempers as it is generally present Dr. Priestley holds the following views, "The close —

1. "Theory & Practice of Medicine".
connection observed between chylous purine & hemorrhage in the countries where both are endemic, combined with what is known of the transformation of the materials of the blood into fatty granular matter while in contact with the tissue, may lead in these later days to suggest the probability of the disease in question being rather of nature of a true hemorrhage of kidney, than disease dependent on faulty assimilation.

Dr. Buchanan's case 1 of "White Fibro-seme discharge from the thigh" may be mentioned here, as the theory which he deduces is best illustrated in the First Division of Theorics of the Pathology laid by the Writer. A poor woman aged 46 came under his care; suffering from excessive discharge like milk from inner posterior part of left thigh. It flowed from semi-excoriated surface the size of palm of hand. Over this numerous pearly vesicles, from which a constant stream. Five or more collected in course of an hour. Variations in food produced no alterations in quantity or quality. Had had several attacks of phthisis & many attacks of inflammation of the left inguinal region. Analysis of discharge by

Professors Anderson gave following results:

<table>
<thead>
<tr>
<th>Material</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>94.57</td>
</tr>
<tr>
<td>Solid Matter</td>
<td>5.43</td>
</tr>
<tr>
<td>Fatty Matter</td>
<td>1.71</td>
</tr>
<tr>
<td>Albumen</td>
<td>2.88</td>
</tr>
<tr>
<td>Other organic matter</td>
<td>0.62</td>
</tr>
<tr>
<td>Ash</td>
<td>1.24</td>
</tr>
</tbody>
</table>

Dr. Bachaman concludes that the milky-like fluid must be white serum from the blood, that the determination of the fatty matter to part of them from which the white serum transmitted depends upon the vermiculate activity of multitudes of epithelial cells—the function of which has been perverted. He thinks the sudoriferous glands chiefly concerned.

According to Bate, Dr. Bachaman's theory is absolutely untenable. "Can Dr. Bachaman bring forward any facts whatever to justify the conclusion that the epithelial cells of the skin, sudoriferous glands, the sebaceous glands in a space the size of the palm of the hand secretes five to five fluid containing more than five per cent of solid matter in the course of an hour?"

b. op. cit.
Division II — Theories attributing the cause of Chyluria to some affection of the Lymphatic System

Dr. Carter of the Indian Medical Service appears to have been the first to depart from the theory advocated by Penz (which till then had been accepted almost without dissent), to search for the cause of the malady in some other quarter. He was led to the conclusion that there was some connection between Chyluria and the Lymphatic System by observing that a chylous or lymphous fluid... sometimes exuded from the surface of the Section, or some other part of the immediate neighbourhood, in certain cases of disease of the lymphatics of those parts, so that this fluid was not to be distinguished from chylous perspiration (allowing for the presence of the... normal primary ingredients). Further corroboration being given by the fact that in some of the cases a discharge of chylous perspiration either alternated with or appeared simultaneously with the chylous exudation from the Section. In the condition in which the chylous exudation is found the Section is thickened congested or enlarged, the bed of tubercles, or pimples, of various forms of eyes, from whence the...
dilations occur. The glands in the neighborhood or occasionally throughout the body generally are enlarged, inflamed, prone to suppurate. The general health is but little impaired.

Dr. Baxter found that in this disease there was dilatation of the lymphatics, the valves being partially disturbed; the consideration that in Chylosis a similar condition of the lymphatics exists extending as far as the thoracic duct. As a consequence of this the flow of Chyle is reversed, regeneration taking place, or the Chyle makes its way into the pelvis of liver, or some other portion of the primary apparatus.

The characters of Chylos urine, in his opinion, will vary according to the particular part of the lymphatics at which the admixture takes place. These differences are expressed in the following Table.

<table>
<thead>
<tr>
<th>Source of Chylos urine arranged in physiological series</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st series: Chyle from lacteal vessels.</td>
</tr>
</tbody>
</table>

**Character**: Albumin plentiful; generally no coagulum or fibrine; nucleolar base abundant; oil-globules of varying size; rare nuclei

**Example**: Brawn b.c. pp. 395, 403 (in this case blood also affected); J. Brit. med. Rep. pp. 392, 394; Framuselle.

Cases in which fibrine is at all times totally wanting are of doubtful occurrence.

2nd series. Chyle from the Abdomen.

Characters. Albuminoid + cordicular base diminished, oil-globules few. Fibrine appears. Two nuclei few. Inseparable Chyle-corpuscles. The colour is white and coagulation imperfect.


Characters. Fibrine abundant. Chyle-corpuscles more numerous, more perfect, of larger size. No free - nuclei or few. Incipient red-corpuscles. Coagulation quick & complete, but varying. A decided red tint on exposure to air. Fat floats on serum.

Examples. Rogers, l.c. p. 390, 407; Prasri; Med. Times Gaz. 1857, p. 332; Elliotson, l.c. p. 288; Jones, Phil. Trans. 1856, p. 651; own cases.

4th series. Lymph Urine.
Character. The urine coagulates; albumen is present; corporcles few, but no fatty matter, or a few granules.
I add this paper believing in its real existence. The urine would have the above character in the intervals of digestion, or after fasting. In this case also the fibrine may seem to be absent, or even albumen not to be detected by the usual tests (Studiehun 1.c. p. 240).


That there is other proof of this state extending as far as the thoracic duct, Mr. Carter believes is shown by the fact, that the fluid exuding from the thigh or is not pure lymph but chyle.

Dr. Carter has further expressed his view, "It may suppose that distention of the delicate lymphatics & lacteals in the lumbar region is at length followed by exudation of their contents at one or more points, or rupture, taking place a fistulous orifice remains which gives free exit to the chyle or lymph at times of recurring distention; or an abnormal pleurocoel (rectanculum) may be found, which periodically discharges its contents into the pleura of thorax, uterus, or bladder,"
"It is possible that the large quantity of Olife often mixed with the urine may be partly derived from
the hypertrophied glands."

This theory of the pathology of the disease appears to
the writer much more worthy of belief than the
theory of mal-assimilation or functional derangement
of glands; but it can not be accepted as conclusive,
insomuch as Dr. Carter has not been able hitherto to
obtain anatomical proofs of the accuracy of his
views. Again when it is considered how well provided
the lymphatics are with valves, it is difficult to
understand how such universal destruction of these
could take place, as to permit of regurgitation so
far as the thoracic duct.

In the venous system it is common to meet with
dilatation of the veins & thinning of their walls, with
destruction of their valves, allowing regurgitation and
exudation of the watery part of the Blood; but in
veins the valves are much less numerous than in
lymphatics. The causes for ingenuity to the outward flow of the Blood are much more
obvious. One would imagine that the causes for the
various state of lymphatics must be similar to, or
identical with those for the like condition of mind; and that in the subjects of Chyluria, varieties arise which would be commonly met with. No mention, however, is made of such a coincidence, in any of the cases the writer has read.

Dr. Carter, it is true, says that the complication with Hematuria, which according to Regnault is common, is explicable on the assumption of a contracted state of the walls of the Blood-vessels, the plate would accompany a similar condition of the abscesses, both being indicative of structural idiosyncrasy. "I have often been struck with the delicate texture of the walls of vessels seen in the bodies of natives of India.

Finally, Dr. Carter believes that the appearance of Chyluria urine is intimately associated with the action of "food" or stimulus of excretion. "It is clear that the rapid formation of Chyle in the first case, is its quicker circulation resulting from excretion, or whatever stimulates the general circulation of fluids in the body, will be accompanied by an increase of the local changes, by an increased distension of the varicose lymphatics, or overflow of any part dilated into a kind of receptacle to the consequent passage of
Chyle into the primary passages. The case of phlegm generally is the same—hemoptysis etc."

This assertion may be true of some cases of chylosis, but is by no means to be accepted as universally so; for how can it be compatible with those cases in which the flow of chylosis urine only took place on first rising in the morning after a night's rest, when it is to be presumed food had not been taken for some time, nor exercise indulged in?

Dr. Dickinson & thinks gastric veins are... confirmed by the fact that in most cases in which there was a superficial chylosis discharge, this took place from the pelvic region, or hypogastrum, or thighs, parts to which the chyle would probably be regurgitated, if the thoracic duct was obstructed. The common occurrence of the urinary channels would be in the same region of lymphatic supply, & might be similarly the seat of retention of chyle.

Dr. Bell says he has long suspected that... the chyle passed into the primary tract by course more direct than usually supposed; & has considered it important to search for a direct communication between lacteal vessels & urinary tract. Moreover,

that Dr. Carter misunderstood his observation that
"the Chylous character of the urine was intimately
associated with the absorption of Chyle" if the meaning
he intended to convey being, that after Chyle had
been undergoing absorption by the lacteals of the
intestine, the chylous state of the urine was
observed in some recorded cases.

Professor Carl Berteli is of opinion that some
abnormal communication must exist between the
lymph and Chyle. vessels on one side and renal organs
on the other, so that it is easy to suppose dilatation
of lymphatics or rupture of their walls. "Anatomical
proof has been given of occurrence of lymphangiosmas
of the kidneys, so that the conjecture appears
justifiable (Russell-Wiener medicinsche Wochenschrift
1866 No. 31)." Still even should communication
between lymphatics and urinary passages be found to
exist, the appearance of Chyle in urine will still
remain unexplained, since it is not lymph with
which we have to deal, but true Chyle. So we are
forced to conclusion that owing to insufficiency of
valves in the lymphatics actual Chyle from the
chyle duct forces its passage backwards into the Lymphatic System.

of "Termerini's Elements of Practice of Medicine" Article on
Diseases of Kidneys by Prof. Carl. Bantel
M. Gubler * considers Chyluria due to presence of lymph or of its principal elements — that the lymphatic of the kidneys have become varicos in the presence of those of the thigh of a woman named M. Camille. Dejerine has given the history, * that an habitual lymphophagia adds increasingly its product to those of the urine.*

Dr. Roberts believes that the true pathology of Chyluria is to be sought in the lymphatics of the urinary passages, * that the real analogues of the disease are to be found amongst those curious cases of Chylous lymphorrhagia discharges from the cutaneous surface, of which numerous examples have been recorded in late years. * It would appear in our present state of knowledge, that some of these cases are due to a parasitic cause, or others to a structural change of a non-parasitic character.” He gives an example of the latter, which presents so many interesting features, that the writer ventures to give it somewhat in detail — W. Robinson who was admitted May 21st, 1866 — always resident in Lancashire. Suffered from loss two years before admission with large subcutaneous abscesses.


k. Roberts, op. cit.
One of these was in lower part of abdomen about two inches in diameter. One might be picked off easy. Abscess this extended during night & next day fluid like gum-water. After this number of opaque transparent mucus, no larger than pin's head, collected on right iliac region, over & around site of old abscesses. At first two or a dozen pin pricks, but in few weeks began to multiply, until in a few months they dotted surface of lower part of abdomen, almost as low as pelves or high as umbilicus. Some of them began to discharge pale watery fluid. By day the mucus & discharge began to become a thick milky appearance. On admission, lower part of abdomen studded with mucus filled with milk-like fluid, arranged partly irregularly, partly singly, some only just visible, others large as peas. Most superficial—others—some bluish or irregular, some thick & soft, top dull red color—spongy—did not pit. High pressure caused no pain, but tender on deep pressure. In normal state peculiars closed, a great majority remained so, but some dozen or so ruptured & discharged immense quantities of lymphatics or Graysky fluid—in amount of discharge varied much.
Discharge sometimes like thick milk - sometimes like
thinned milk - sometimes like gum-water. Always
spontaneously coagulable. The degree of milkiness
at any particular moment always the same in all
the separate vessels, showing that the cause of
variation was not a local one particular to any
vessel, but something affecting the secretion generally,
and depending presumably on the state of the blood.
The effect of food found to be tolerably constant in
kind, though not uniform in degree. Vessels were
fuller in morning before breakfast after the prolonged
fast of night. Soon after breakfast began to grow
 fuller & whiteer & as a rule the milkiness increased
through the day attaining maximum about 8
hours after dinner. Vessels in substance of later
surface - wall composed of something besides epithelium
no direct communication between neighbouring vessels.
Discharge soon set into flocculent jelly - in few
cases separation into clot + serum.
Under microscope myriads of minute fat globules
observed, sometimes mixed with larger oil-globules
- also pale corpuscles like white blood-corporcles -
During discharge urine was remarkably scanty in
quantity of high up - gr. no albumin, or sugar found. the 2d. urin milky, twice - quite a chylosus urine. jan. 15th. chylosus urine, 16th. 17th. fed found under microscope, though urine not markedly milky. Eruption on three two days dry. On the other days urin constant no albumin.

General symptoms - chilliness, shivering, attacks, great weakness, sometimes aches in abdomen - general health, however, not much impaired, until recurrence of tubercle. In next March began to lose weight, temp rose from (97-98.5) to (99-102) - Pthisis came on. Pthisis increased. Nails got flecked - pale - discharge watery - scanty, and stopped five days before death.

Antopsy. - lungs tubercular (gray granulations + cornical); kidneys + bladder healthy. Integument - thick + spongy. No enlargement of thoracic duct + vessels (lymphatic).

Microscopic examination of skin - disease was superficial, not deeper. Skin very thick + sputum to subcutaneous tissue by a half - pick part of tissue, cuttin surface pale - pale, glandular-looking, and
full of small channels. Those lacunae intercommunicated
by small mouths. The sacicles formed surface
boundaries of the lacunae. Lining stratum of
lacunae smooth, if scraped gave a white debris
of epithelial nucleated cells like those discharged
in life. Sweet & thin glands found quite normal,
no had no connection with these glands.

In commenting on this case Dr Roberts compared it
with a case of Chyloous. The fibrin-albuminoid
fatty elements of the discharge are identical with
those of Chyloous urine. The sudden coming & going
of the discharge, capricious duration, & actual
occurrence of Chyloous urine on two occasions, all
point to resemblance. Put this Chylo affection in
the bladder, Chyloous urine would be the result
probably. Part of the bladder was probably affected.
though not found at the P.S., as weakness before
death became the symptoms.

The skin I, we know, mucous membrane also
full of lymphatics forming a close network of
communicating channels. The cells lining these
lymphatic channels perform a glandular function,
alter the lymph going through the channels. Now
suppose lymphatic vessels to be largely hypertrophied at the spot, the channels to get varicosities, the cells to assume the power of cells lining the ducts of these glands, so that the superficial varicosities project above the skin in a purulency mucous membrane. Then finally, if these varicosities should burst into external air, or into Bladder, we should have the cholera condition exactly as above."

Dr. Roberts' views derived from the case cited above seem so convincing, that one would be almost inclined to accept them as final (for the occurrence of choleral disease on two occasions would quite suffice to support the assumption), that a like condition of the mucous membrane of the Bladder, or some part of urinary tract existed -- analogous to that found on surface of the skin; were it not for the fact that all the symptoms and deviation whatever from the normal could be detected in any part of the urinary mucous membrane. Dr. Roberts says, "part of the Bladder was partially affected, the rest found at the P.M. as weakness -- before death, observed the symptoms." That if there had been such a condition during life, it fit --
sincerely punishable to presume that the advent of death could have affected all traces of it; for if this did occur, why did it not with the lymphatics on surface of the abdomen?

Dr. Roberts, however, does not say whether he made a microscopic examination of the Bladder - possibly a various state of the lymphatics if that viscous might have taken place not visible to the naked eye.

Dr. Audicom in favour Roberts' view. He mixed fatty serum from human blood with healthy poison in certain proportions to obtain a liquid, which could not by either aspect, or chemical, or microscopic examination be distinguished from ordinary Ulymus urine (!) — & he concluded that the nature of the liquid would be explained perfectly by the existence of such a communication between the Canins of the Bladder & the urinary passages. This communication, he believes, is most possibly the result of distinctive function of some parasite, since that by chance is the lymphatic system of the urinary passages.

Dr. Bristow & believes that the piece of Roberts as to the pathology are correct, & considers that the disease...

1. "Pathology of the Urine" p. 98q.
2. "Theory and Practice of Medicine"
in fact from his point of view is identical with what has been described under name of Elephantiasis Lymphangiectasis. This affection is usually limited to one of the lower extremities, or to upper part of thigh, or contiguous part of abdomen, or to genital organs, or perineum; and it may be added that there is good reason to believe that Elephantias is due to a similar affection involving the serous membrane of the bladder, or that of other parts of the urinary tract.

He describes this disease as arising independently of all inflammation, being sometimes concurrent, so that it is chiefly, if not entirely, due to obstruction of lymphatics with consequent dilatation of those below, that of obstruction, accumulation of lymph in the textures, or overgrowth of the connective tissue textures. But uncommon in the Sylips is attributed by Dr. Lewis to presence of Tissues in the Blood, or obstruction of lymphatics by three intestines. The disease first proceeds itself by simple increase in bulk, which goes on insidiously, until the hypertrophy becomes considerable, the tissues more or less indurated or dense or surface pale, compressed, or otherwise modified in colour, and either smooth, papular, or tuberculated.
After a time groups of vesicles are apt to make their appearance, sometimes widely distributed, sometimes in irregular patches, sometimes in linear series, and generally embedded as it were, in the solid tissues. Some which are really dilated lymphatic spaces are apt to rupture from time to time, and to exude considerable quantities, sometimes several pints. Pleural fluid which accumulates after its escape, is sometimes yellowish and translucent, sometimes milky, from the presence of molecular fat.

Dr. Lewis considers that Chyluria is due to parasitic agency. In July 1872 he saw in the blood of a Hindoo suffering from Sbewna nine minute unarmed worms, in state of great activity.

Mr. Cunningham coincided with Lewis that they were precisely the same kind, as those seen by him two years previously (1870), as being constantly present in Chyluria urine. In this case the patient, a dey, associated East India, was kept under observation two months, during which time the urine was milky, yellowish-white opaque, formed in vesicles.

On a small portion of the gelatinous substance being teased with needles delicate filaments were seen, which

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at first were considered to be filaments of a growing fungus. After being watched for some time they were seen to coil and uncoil themselves, so that all doubt as to their nature was at an end. At this time Dr. Lewis did not know of the existence of these worms in the blood.

Lewis has observed about twenty cases of chylous urine, in all of which microscopic filariae were present on every occasion. In one case the patient had granular eyelids, a slightly milky fluid constantly oozed from corners of eyes, and in this fluid filariae were detected.

Opportunity of suspecting the kidneys of a person, who had suffered from chyluria, was afforded to Dr. Lewis; and in every frequent of them, no matter from what part of the kidneys removed, numerous microscopic filariae were invariably obtained (Full particulars of the Actinid are given in the section on Modern Anatomy). Dr. Lewis comes to the following conclusions:

1. Blood of persons resident in Injies occasionally invaded by filariae, which may remain in system for months, or years, without any marked evil consequences being observed; but which may on contrary...
(2) Phenomena produced by blood vessels affected due to mechanical interruption offered by aggregation, perhaps, of the fibrin. To the flow of nutritive fluids of the body in various channels, giving rise to obstruction of current within them, rupture of walls. (3) Observe phenomena, such as described, often present.

In favour of Dr. Lewis' views, it may be urged that he is the only writer on the subject, who has been able to produce by empyema investigations pathogenic appearances in support of his theory, and the varying characters of the purule, as seen in different cases, more fully explained by his views than by any other. But it may be asked, are the boastful appearances of the history, that he describes really explanatory of the pathology of the affection: may they not be mere coincidences, nothing more?

In the present state of our knowledge, the writer thinks it may be conceded that in the cases which came under Dr. Lewis' observation, parasitic agency was at work. One of the cases in particular gave sting presumptive evidence in favour of this view. In this case a milky fluid exuded from outer coat...
of the eyes. In their fluid, filaria were detected. From Dr. Lewis' well-known skill as a Microscopist, the precautions he takes in investigations, we may discuss the idea that he has possibly mistaken - vibriosis, or bacteria for filaria.

But when we come to consider the cases that have been recorded in England or the Continent, the writer is of opinion that the presence of hematozoa can not be accepted as the cause. In one case of these cases (as far as the writer can find) have filaria langiniensis hominis been detected, with the doubtful exception of one case. In this case, which was under the care of Dr. Ralf, a microscopic examination of the poems was made by Dr. Mitchell Bruce, who found several peculiar, elongated, or ovoid-shaped bodies almost the breadth of red blood-corpuscles, strongly defined or highly refractive granular, which he considers were possibly altered filaria langiniensis hominis.

It may be said that previous to 1852 (the date of publication of Lewis' pamphlet) filaria were possibly overlooked, attention not having been directed to them. The more so as, according to Dr. Lewis, numerous -

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W. "Lancet" Nov. 24, 1877.
examinations have often to be made before they can be detected. But since then filariae have been particularly looked for, but without success, & in 1877 some specimens of Chyluria urine were submitted by the Pathological Society of London to a Committee for examination; & it is not probable that the distinguished members of that committee would have failed in detecting filariae if present.

D. Bancroft of Brisbane, Australia says, Chyluria is not uncommon there, & that he has detected filariae both in the urine & blood. The latter was informed by Dr. Sydney Smith of Bombay, that he had seen them in two cases.

D. P. Smith is of opinion that Chyluria is due to direct passage of Chyle into the Blood-Vessels beyond the Mesenteric glands; & argues that this would agree with Lewis' observations of the passage of parasites causing the formation of direct sinuses between blood-vessels & chylie vessels. Possibly, he continues, additions between such vessels may lead to the passage of Chyle into the Blood, an explanation less difficult of conception, than that of a regurgitation of Chyle into the pelvic & inguinal lymphatics.

" Roberts op. cit.
" Lancer" Dec. 8th, 1877.
If Dr. Smith's theory of the direct admixture of Chyle with the Blood be generally true, this ought to be observed in a milky state of the Blood: for if the Chyle, entering the Ascending Blood vessels, it would flow into the general circulation, to be excreted by the Kidneys. However, according to most observers, a milky state of the Blood has never been observed in cases of Chyluria.

Amidst this Chaos of conflicting Opinions, in the absence of sufficient post mortem data, this pathology of the effusion must be still considered to be obscure. But the writer considers that sufficient studies have been made since the days of Pott to dismiss the theory, that the disease is due to faulty assimilation, or functional arrangement of the Kidneys; or to establish the fact of a leakage of Chyle or Lymph from the lymphatics into the kidneys, or urinary passages. The variations in the character and composition of the Chyle, which vary in different cases, such as its coagulability, opaqueness, or non-coagulability, differences in degree of milkiness, or support the latter; for Physiology teaches us that the Chyle or Lymph in its passage towards the thoracic duct presents differences in composition at various stages of its progress there. Thus, the Chyle in the pericard, or from
cattle near them contains only fatty molecules in an albuminous fluid, & is not capable of spontaneous coagulation. But as the chyle passes on towards the thoracic duct the quantity of molecules & oily particles gradually diminishes; cells, to which some of chyle-corpuscles is given, are developed in it & by development of fibres it acquires property of coagulating spontaneously in the thoracic duct besides the higher & more abundant development of the fibres, the lymph & chyle-corpuscles are found more advanced towards their development into red blood-corpuscles; sometimes soon the development is completed, & the lymph has a purplish tinge from the number of red blood-corpuscles that it contains.

But when we come to consider in what way the chyle makes its exit from the lymphatics into the urinary tract — whether by rupture of various dilatations — resorption through vessels devoid of valves — through a lymphatic fistula, or by passage of parasites; we are bent with great difficulty, from the objective results obtained in all, but one, of the post mortem examinations — in this particular instance results were obtained sufficient to corroborate strongly Dr. Lewis' theory of parasitic agency; but as the Wisdom,
was previously observed, it is very improbable this is the cause in the cases observed in Great Britain & Continental.

It is to be apprehended that the examination of the thoracic duct & lymphatics, in the cases in which an autopsy has been made, has not been sufficiently exhaustive. To support the theory of Carter there remains the fact to be shown, that coloured fluid injected into the thoracic duct will pass into the veins of the liver, and into the vesi
cer, or bladder. The writer concludes to the views of Roberts more than to those of any other observer, for the coincidence of chylous discharge from various lymphatics of the abdomen in the case under his observation was very striking; reasoning by analogy was justified. Unfortunately the post-mortem examination afforded no clue.

Prognosis — The duration of life does not appear to be shortened by the existence of this disease; no
does, as a rule, such impairment of the general health arise, as one would expect to occur under the loss of a nutrient fluid, upon which the animal economy depends for its existence.

In those cases, in which death has taken place, it...
has been occasioned by some intermittent malady, not by the disease under consideration.

As regards the cure of it, the prognosis is very unfavourable. The writer has not been able to meet with any well-defined case in which such a desirable result has taken place, although intermission for a very brief period may result.

Dr. Elliot's relates case of a woman, who died at age of 47 having laboured under the affection for twenty years, the health during that time not being seriously impaired: however, she died unmarried. Jackson's records a case in which the patient, a native of the Isle of Boston, began to pass Clysons urine at age of 25. From this time up to age of 78 the constantly passed Clysons urine. At 73 the disease intermittent in the patient thought herself cured; but after about fourteen months the urine became again as Clysons as ever. It continued so until age of 78 beyond which report does not go. In the case under the Writer's observation there was (according to patient's own account) an intermission at the time of 15 months.

An inflammatory state of the system, according to

Point seems to be rarely provided in persons labouring under this affection. To strange to say, even such a state suppressed, the Chyloous condition of urine usually disappears, recurring again, however, on the elevation of the intestinal disorder.

**Morbid Anatomy.** — The cases of Chylouria in which post-mortem examinations have been made are very few in number, with one exception (that detailed by Lewis) there are but little upon the pathology of the complaint.

Subjoined are all the post-mortem investigations that the writer has been able to collect; in the majority of cases it will be observed, that Tubercular Disease of the Lungs was present.

(1) Case under Principal of Medical College of Calcutta.

**Autopsy by Dr. M'Cormell.** — **Special Examination of Kidneys by Dr. Lewis.**

Brain: normal. Some thickening of Mitral valve.

Lung right: infiltrated throughout with specks of softening tubercles. Two cavities in middle lobe.

Lung left: contained a few small nodules. One cavity.

Bronchiums: mamilated & congested.

Inter - minute pleurs in lower half. Sclerulus.

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f. op. cit.

g. Lewis, op. cit.
infiltrated with yellowish-white, tubercular-like substance.

Ascending colon — five or six circumcised places with raised, greyish-white edges.

Kidneys presented nothing abnormal to naked eye (the right & left weighed respectively 35.4 lbs & 35.6 lbs), except more than usually lobulated; & that in section, almost all the pyramids, especially near their apices, presented smooth hollow appearance suggestive of amyloid disease. No approach to characteristic lobular reaction could, however, be obtained; but when

Longitudinal sections were subjected to microscopic examination numerous translucent oil-like tubules of somewhat uneven appearance could be observed running alongside the uriniferous tubes, as if the lymphatics, or minute blood-vessels of the part had been plugged. These sections placed in boiling Ether did not appear to be materially affected by it — the translucent, oil-like tubules being quite as evident as before.

In every fragment, no matter from what part of the kidneys removed, numerous microscopic filariak were invariably obtained — if the tissue had been properly treated — precisely analogous to those detected in the...
Blood & Urine during life.

On cutting open any portion of the renal artery, gently scraping the inner surface with a scalpel, numerous hematogens could always be obtained. The Renal vein also yielded specimens, but they did not occur to be so numerous. The vessels themselves did not appear to be diseased, & each of the branches as could be seen with the naked eye did not appear to be abnormally large.


Every tissue and muscle. Liver—fatty degeneration of heart, small & flabby. Interior everywhere covered with whitish spots—something like atheromatous artery; & these spots evidently produced by some deposit raising up endocardium. Fatty degeneration of muscular structure.

Lung—right—upper part adherent to pleura, and studded with minute tubercles.

Kidneys—substance of both affected with marked fatty degeneration (in this case there were symptoms during life of “Huntington’s Disease”). Pelvis of kidney, arteries, bladder—nothing abnormal.

"op. cit."
(3) Case under Dr. Hope, at St. George's Hospital. Wt.
Left pulmonary Plura - patch of recent -
dense fibrin upon it - Pleural adhesion.
Lungs - red atelectasis. At base of left smaller spot of-
pulmonary apoplexy.
Heart - diseased - kidneys healthy - Stomach healthy.
(4) Dr. Roberts' case.
W - (For particulars of this Autopsy, vide section on
pathology - Roberts' paper).
(5) Dr. Isaac's case.
Lungs - studded with pulmonary tubercles.
Mesentric glands - small deposits of yellow -
tubercular matter in interior.
Prostate - three tubercles.
Kidneys - structure healthy. Only morbid appearance
few small scattered tubercles, which did not apparently interfere with their functions.
(6) Dr. Prout's case.
W - Dr. Prout had opportunity of examining the
kidneys of a girl aged 15, who had been under the
care of Dr. Peri; he found them to be perfectly...
healthy. The immediate cause of death was -
Inflammation of the Bowels.

Dr. "Medic. Chir. Trans." 1st XXXII, p. 79.
W. Of cit.
X. Of cit.
Y. Of cit. 5th Ed. p. 115.
Treatment. — Is very unsatisfactory. Considering that the disease has a natural tendency to persist for a long period together — it is very difficult to form a true estimate of the power of remedies over it; yet the more so as the affection has always returned some time or other in all the fully-reported cases (with the cases now under observation for many years), which the practitioner has been able to collect, in which treatment was prosecuted. A considerable number of drugs of various therapeutic powers have been tried, but the great number of these show that at present, there is no sound basis of treatment. On the whole, however, the preference seems to be given to Arsenic, especially to Iodic Acid in large doses; to certainly the best results ought to be expected from this if (as is probably the case) there is a partial condition of the walls of the lymphatics.

Dr. Tamam reports two cases in which the disease was apparently held in check by large doses of Iodic Acid.

In one case reported in Michigan, Ohio, June 21st, 1876, Dr. Black states. that he had effected a cure by

long continued pur of gallic acid; but the affection returned & resisted this gallic acid, tannic acid, sectes of lead, & nitrites of silver. Patient then went to Messrs. Indus where he remained for three months, the puric all the time being natural (his further history of the case is given in M. Jos. Dyer's case).

Dr. Godwin of Norwich gave a case treated by Mr. B., in which gallic acid could at any time produce the puric partly normal.

In Dr. Reffley's case the gallic acid had failed to the absolute or account of the great pancreas occasional. In the present case it was tried, but no particular benefit could be traced to its exhibition.

Mr. C. C. Burt, superintendent of Bloomsbury Government Dispensary, gives case in which the patient a male aged 24 had suffered from the disease for seven years, without deriving any benefit from treatment. Mr. Burt at first gave gallic acid, gave it to the dir. for five days, but the symptoms of symptoms improved. Mr. Burt. From Reffley, M. C. T. D., it was then tried, to this effect, improvement in three days - the puric being free from chyle at end of the week. He was kept under observation for four months longer, the puric

\[ \text{of cit.} \]
\[ \text{of cit.} \]
\[ \text{"Lancet," July 26, 1862}. \]
being quite normal during that time. His patient was admitted on 25 April 1862 and discharged 26 June 1862.

Mr. Geo. Davis reports case of a man aged 33, who had passed Cholera virus for three years; he was under his observation in Sept. 1858, with Cholera. Notes: Sick was given for the Cholera within 24 hrs. of the Cholera had disappeared, and up to June, 1860, had not returned.

Dr. Bonyer of British Guiana states that he cured a case with Rhizophora Raccoona (the mangrove bank), other remedies having failed. His remedy acts quickly on the skin; alters the character, & pierces the quantity of the pus; to improve the general health. In some cases under care of Payre & others, bleeding was practiced, but as can be imagined without improving the state of the patient.

Mr. Bresci had one case; in which after a great many remedies had been tried, the malady ceased under infusion of Valerian.

A. description of a herb called "Liquetifruile" (popularly known as "Anom. des champs") has been used in Brazil.

Dr. J. A. Wilson in a case of a young woman -

C. Payre, of Ch.
D. Payre, of Ch.
E. "Lancet" 1857, p. 327.
admitted into St. George's Hospital (London) with general aches and pains. Apparantly healthy, passed large quantities of bilious stools. Normal diuresis. Three or four times to sea with curves with little effect. He got quite well by use of hot-air baths and tonics.

Matic's, according to Bruce Jones, improves condition of renal, but does not prevent further passing off. This is probably due to consideration to be containing a stimulant essential oil.

In Mr. Elliot's case, the patient had suffered from the disease for 28 years, with extending courses. Stated that no medicine had been changed or suspended the disease — only serious illnesses of powerful emotion of the mind had any effect.

Dr. Waters of Liverpool Whole Fibre Hospital believes that he obtained good results from Gallic Acid in large doses 1 to 3 times per day. Since Dr. Young, Dr. B., and Dr. Inman, and later time being previously given without benefit. The Gallic Acid was given at first in doses of 0.5 to 2 grams in increasing gradually, until 155 grams per person was reached. Liberal diet was allowed throughout the whole course of treatment.

Dr. Brown states that the treatment is very unsatisfactory.
If inflammatory symptoms are present general or local blood-letting should be practiced. Local counter-irritative ointments exert much beneficial effect. In one case a rule of first pressed to do good; but the disease soon became as bad as ever. Mercurial ointments as insect, tartrate of lead, arrest affection for a while, though it has soon returned. Mr. Dickinson, looking upon the affection as aggregation of Chyle from the Peritoneal Cavity thought pressure might be applied with advantage.

An abdominal Tourniquet was placed over the last Lumbar Vertebra. The immediate effect was striking—the pain passed after first application of pressure having a normal colour. To bring visibly Chylous at all. The pressure at first kept up every day, was afterwards employed only on alternate days & the result has been most satisfactory; the amount of Chyle being estimated to have fallen below one eight of its previous figure. The patient increased in weight from five to nine stone.

Dr. Bruce Jones employed in one of his cases the pressure of a belt on the abdomen, it over the Kidneys, with only slight effect on the urine, but...
with considerable relief to the pain in the back.

If, as Dr. Roberts believes, Colicuria is due to a septic condition of the lymphatics of the mucous membrane of the Bladder; the writer may suggest that a trial be made of the injection of astringent fluids into the Bladder, for the purpose of killing up the septic cords of the lymphatics. Of the various astringents offered for our selection the Lij. Ferric acid would probably be the best, in proportion of about two drachms to the pint of water.

Illustrative Case. — The following case came under the case of Dr. Dale, Physician to the West Norfolk & Lynn Hospital, of which Institution the Writer was at that time the House Surgeon.

J.E., labourer, aged 37, was admitted as out-patient on Nov. 15th, 1876. He complained of pain in the lower epigastrium of so severe a degree as to incapacitate him for his employment.

Altho' at the time of admission he was passing mucus in the urine, I had done so, moreover, for two months prior to that; he made no allusion to the state of his urine until Nov. 22nd. On examination of his back I slightly fluctuating swelling, which
had somewhat the appearance of a chronic abscess, was discovered. This swelling, which was not tender on the surface, measured three inches in length by two in breadth, extended partially downwards from upper border of last rib on the left side. Deco pressure on outer side of this swelling towards the spine caused slight pain; but none was elicited on pressing in the region of the Kidney. He was directed to punch the swelling once every two days with his Jodhi, to take 50 minims of Iodisch Pervi Pechlor, three times a day.

On Nov. 32nd, Patient stated that he was passing urine like milk in appearance. He also stated that about three years ago he suffered from pain in the loins to epigastrum, & on certain days the urine passed in the morning after a night's rest was like milk in appearance. During the rest of the day it was normal. This condition lasted between two & three months & then entirely disappeared. For this attack he did not seek medical advice. It reappeared about two months before admission to this Hospital, had the same characteristics except for the exception of this illness he always had.
enjoyed good health; he has never been out of Great Britain.

For a considerable time prior to both attacks of this complaint he had lived badly - not having spent more than once a week.

Present Condition. - Patient is a strongly-built man, his not emaciated, but has a pallid face and rather anxious expression. He complains of pain across the loin for Diptherium; difficulty so great as to render him unfit for work. Does not suffer from nausea or sickness, nor any other symptoms of Diptherium, this appetite is fairly good.

He states that sometimes his urine is exactly like milk - each urine being always passed in the morning, after a night's rest - to arrive at any other time. He further affirms that if he urinates in the night, after having been asleep, the urine is not milky. During rest of the day his urine seems natural. This milky urine is usually passed for two or three days in succession, then disappears; there being a considerable interval before its next
appearance. There is no pain during urination, no increased frequency of it.
No dyspepsia, nor signs of disease of any of the viscera.

Nov 29th — A specimen of the milky urine was examined. It had exactly the appearance of cow's blood serum, the odor of rich milk; acid reaction; pH 7.2. 18.35.

Coagulable with heat, by nitric acid, showing presence of albumin (or gelatine).

On agitation with ether in a test-tube, the milkiness entirely disappeared; the fluid assumed the appearance of ordinary urine.

On placing a drop of the milky urine under the microscope, myriad of minute particles were seen, apparently fatty in their nature, from their bright, iridescent qualities; but no oil-globules, blood-corpuscles or were seen.

Tube-casts were specially looked for, but instead of detecting the slightest trace, the urine was not tested for sugar, or calcium.

On standing some hours the urine became thicker, and a cream-like layer rose to the surface; but it did not form a jelly-like mass.
A specimen of the urine passed ordinarily was also examined, but it revealed nothing abnormal.

Dec 15. — Patient about the same. The following analysis of a specimen of the milky urine was received from Mr. M. Hamilton, F.R.S. of Lynn.

Composition in 1,000 parts: Water 927.77; total solid constituents (not examined) 72.28; specific gravity (taken at 15°/6) 1.0153. From its behaviour in the tests I have applied, I have no doubt, whatever, that it is Clydesdale urine. Mixtures of varying proportions of milk and urine throw most conclusively, that the substance examined was not an artificial mixture of milk and urine.

Jan. 6, 1777. — Made an In Patient. Ordered: ten gills of gallic acid and ten minims of bile sulphuric acid in Chlorof orm Water. Three times a day.

7th. Passed Clydesdale urine after night's rest, which had the same characters as on former examination, with the exception of some small cells: glycaltes. (The urine was examined daily during whole of stay in Hospital. The characters of the milky urine resembled in all material points those of
From date of admission to Jan. 13th we passed cholera purpure over morning, but on Jan. 13th the purue was formed throughout the whole day. In the following day slightly milky urine passed in the morning.

15th, 16th, 17th. Absolutely milky urine passed after night's rest.
18th. Urine the same. Complains of great dizziness & singing in the ears.
19th, 20th & 21st. Same report.
22nd. No cholera purpur. Has lost sensations of dizziness & singing in the ears.
23rd. Cholera purpur in the morning.
24th. Urine only slightly milky, passed not only in the morning, but throughout the whole day.
From this date to the 30th. The uricule of the urine passed was of this character.
30th. Urine quite normal.
31st. Urine of yellowish color with greenish tint.
Bile, pigment & albumen detected.
Feb. 1st. Character of urine similar.
Feb. 2nd. Urine still of greenish hue, but darker. Bile-
pigment detected, but not albumen.
21. 3r. - Urine peculiar.
- 4r. - Urine still bilious, but also albuminous.
- 5r. - Urine composed milky-looking, slightly albuminous.
6r. - Urine similar.
5r. - Urine normal. Patient feels considerably better, thus increased in weight. His urine remained normal up to the 21r., when it again became slightly opaque throughout whole day.
21r. - Urine slightly turbid, no albumen. He complained now of his spine feeling hot, tender to the touch.
March 22r. - Urine more turbid. Trace of albumen — has lost the tenderness to along spine.
5r. - Urine quite clear throughout the day. No albumen.
Made an out-patient. Feels better than when he entered the Hospital, but is not capable of working. On being made an out-patient was ordered to contain gallic acid in doses of 30-xx till this.
Up to March 22r. his urine continued to be normal, but from that date to April 4r. it passed slightly cloudy, urine every morning (after night rest).
Several specimens were examined with same results.
as before; in addition the urine was tested for sugar, but without showing any trace.

On treatment by Merat & Aetic Acid no precipitate was occasioned; some, all probability, Caustum was absent.

In some of the specimens pure blood-cells, Chyle-corpuscles, or oil-globules seen.

On April 4th urine became normal & continued so until May 7th; then it became again Chyleous (only in morning, after night's rest). In a specimen of apparently normal urine, with acid reaction on top of 1034, a trace of Albumen was detected.

On May 7th urine became again clear; continue to up to June 5th; on which day he was discharged.

The patient came to the Hospital on Oct 31st, stating that he had been at work now for more than two months (driving a light cart). Generally, now feels quite well & strong, but at times experiences a smarting in Epigastrum, 

"a sensation, as if his insides were going to turn right over", which causes him to feel faint. He has quite lost the pain across his loins, the swelling in the back has nearly disappeared. Since June 5th (date of discharge) his urine has been thoroughly normal. Now
again, perhaps once in a fortnight, has passed slightly milky urine; this has always happened on first rising in the morning.

He now lives well; always has meat once a day, generally two pints of beer per diem.

Feb. 27, 1878. Patient came to the Hospital saying he had passed “thoroughly milky urine” that morning (after nights rest). He brought a specimen with him. It was almost exactly like somewhat old milk, with not the slightest trace of previous odour. A cream-like layer soon rose to the surface.

Sp. Gr. 1026. Nitric Acid alone caused coagulation. It gave a slightly pink tinge to the urine. Combined with heat yielded a copious precipitate (5).

When freed from Albumen by filtration no sugar was detected by the casual test. The urine passed readily through filtering paper, leaving no residue. Microscopical examination revealed nothing more than minute molecules (no blood-globules, oil-globules, thypho-corpules, or renal casts). On examining a drop of urine digested with Ether under Microscope, an aggregation of the molecules was seen to take place, forming masses.
somewhat resembling oil-globules. Often on former occasions completely dissipated the milkiness, but the slightest tendency to spontaneous coagulation after standing 16 hours, slighty amberous smell was detected.

(The writer left the Lynn Hospital a few days after this, has not been able to follow the further history of the case.) *

* For good collections of cases - vide Bayes' "Traité des Maladies des Rins", Roberts' "Rural Veterinary Diseases".