Paroxysmal Hematuria,
or
Paroxysmal, or Intermittent Hematuria
or Hemoglobinuria

Thesis by
Lionel Druitt.

M.B. Edin., 1877.
Paroxysmal Hysteria.

The remarks which I shall make upon this disease are founded chiefly upon my observations of a patient in whom I have had the opportunity of studying it for several years, and whose case is fully reported in the Medical Times & Gazette 1873 Vol II.

To this report I shall have frequently to refer as it is the which I have been able to verify by personal observation.

It is a somewhat rare disease characterized by the occasional presence of blood in a certain form in the urine. Some observers (ibid. Times 1875 Vol I; 8 D. Greenhow, 'Lancet' 1868 Vol I) state that the presence of abundance of albumen, urine, excess of urea as among the essential characteristics of the disease, but this is a mistake. The urine may be of high or of low specific gravity, may or may not contain albumen, may contain urea and urates in excess, or in deficiency.
these conditions depending upon circumstances
altogether apart from the distinguishing feature
of the disease, which is that after exposure
its cold, blood appears in the urine.
The history of the patient alluded to may be
summarized thus. He is a medical practitioner.
In the summer of 1866 being then 61 years of age
he underwent great bodily and mental fatigue
at Amiens, in connection with the Choleræ
epidemic. In September of that year he
got wet through while driving in the country
and remained walking or driving in wet
clothes the whole day. This was followed
on his return home by an attack of feverish
and biliousness, which lasted some days. His
colour became dunce and his features drawn,
and his right foot suffered to pits of
feverishness, which would be brought on by cold.
In May 1867, the patient себя

to have been poisoned by some indulgences.
Prisoners at Cambridge, and he had a
succession of febrile attacks followed on two
occasions by genuine ague fits, coming on
consecutive mornings at 10 a.m. He apparently
decayed from this and in September of the
same year went to Switzerland hoping to
reestablish his health. Here an exposure to
intense cold brought on the characteristic symptom
of his malady, viz. he liberated all the insomia,
and in the evening after a long railway journey
(from Zurich to Berne) he poured a large
quantity of wine black like port on which upon
standing, deposited a large quantity of blood stuff.
The subsequent history of this patient is not
in which this symptom constantly occurs, at
irregular intervals but with some appearance
of periodicity, and with periods during which the
malady seemed to be quiescent. He returned
to town in the Autumn of 1865, and then claims
that every day about 11 a.m., the wine formed a
turbid appearance, and gave a deposit of blood, chiefly at epithelium; this appearance being accompanied by a sense of great fatigue, and pains in the back and limbs.

In February 1860 he went to Bournemouth, but with no good result. He then remained for the first time that winter the influence of cold, his face became spotted with bluish patches resembling incipient gangrene. In March 1860, he returned to London, and the symptoms went as before, always appearing in the same tides, the influence of cold.

In September 1860, he went to Swanage, where under the influence of fine warm weather, he appeared to recover his health, but he became chilled on the journey home, and was then as bad as ever.

During the winter 1868-69, the periodic character of the disease was well marked. Every morning at about 10 a.m. the hands and feet became cold.
wet, blue and cramped, and from this time till a few
hours later, the urine was escaping freely. In the
afternoon these appearances would subside. The
evening the symptoms would reappear. During
the two p.m. the urine was escaping freely. For some
time after, the urine has decreased. The next day, the
symptoms would reappear. On the following
morning, the urine was escaping freely. In the
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afternoon the urine was escaping freely. The next day,
of his complaint, once or two occasions when he imprudently exposed himself to the cold winds which prevail there at certain times. To briefly recapitulate the most prominent points in this history, it will be observed that there is a history

1st. Of exposure to cold and wet.

2nd. Of excessive mental and bodily fatigue.

3rd. Of attacks of an intermittent fever, doubtless of an apoplectic or delirious nature.

4th. The account opens with a history of exposure to delirious madness.

5th. Of frequent attacks of jaundice, and other signs of liver disturbance.

6th. There is no history of apoplexy.

I will now give an account of this patient's general and specific symptoms, briefly sketching their progress down to the present time. We find that Feverishness is a prominent symptom in this case, and speaking broadly
the pyrexia is in inverse proportion to the
amount of urinary discharge. When the
disease became thoroughly established, the
patient complained constantly of restless nights,
in which he was hot and feverish, but the
urine passed at that time was of the healthy
quality. Then, toward the evening (9 to 10 a.m.) the
urine became turbid with blood and the temperature
fell below the normal. This nocturnal feverishness
continues up to the present time.

But apart from this almost constant nocturnal
feverishness, the patient suffered from eleven
distinct attacks. "Having the character of jaundice
agone or remittent shivering at about 10 a.m., rise
during the temperature to about 103° in the evening,
profuse perspiration at night and fall of the
thermometer to about 100° in the morning.
These attacks varied from two or three to fifteen
days in duration, were always attended with
intense drowsiness and jaundice, with profuse
excitation of bile, and prodigious discharge of mucus and great debility. Although these febrile attacks were the starting point and culmination from time to time of the whole illness, yet the urine never contained any blood itself during them; nor yet when there was feverishness from any other cause, as from a slight attack of influenza; nor yet when the patient was from any cause confined to bed, a chemic to lie in bed.

Thus it appears that heat had a remarkable influence in checking the elimination by the kidneys of the Materiae Insolubis, which was itself a cause of feverishness, until such elimination took place. Next in importance to the feverishness came the peculiar coldness and lividity of the extremities, by which the attacks of nocturnum were ushered in. There seemed to be a condition of what the late Professor Sayner called "Thermostrophic Palor", a lack of power to resist
the effects of cold. “Except during these
intermittent febrile attacks, the temperature of
the mouth and axilla was steadily 98.4°, but the
whole heat-producing power of the economy and
the power of resisting cold were deficient. Pressure
at 9:30 a.m. every morning (except in hot weather)
the feet became cold and blue. This coldness,
was accompanied by cramps, and a heightened
sensitivity of the palms and soles, precisely like
those of cholera patients.... In any brisk wind,
even if not very cold, the moderate abstraction of
heat from the skin would paralyze the capillaries
some part, the face or cheek, would become
first pale and hemmed, then red, purplish,
and at last quite black.... Of reaction against
cold, there was none.... These effects were
generally absent in the summer, when the thermometer
was about 70°. The irregular lividity of the skin
of the face always disappeared quickly if the
patient came into a warm atmosphere.
Some kinds of cold were more pernicious than others. Thus the act of walking on the better-kept floor of a railway station was enough at almost any time to take away all sensation in the legs and was followed by bloody urine. If a drop of blood were drawn from one of the shrivelled blue fingers of the patient, and examined microscopically, the corpuscles appeared disintegrated, though not to the extent that they appear in the urine. They are small and of irregular outline. In some it appears as if the hemoglobin were in the act of leaving the structure of the corpuscle, in others it seems to be collected together in the center of the corpuscle, like the stones clear, oval, and transparent in a ring round it.

Although an attack of bloody urine is invariably preceded by this blue shrivelled appearance of the limbs, the likeness of the limbs is not invariably followed by bloody urine. In the case
Of my patient the likeness of the limbs comes on at almost regular periods every evening, but under the influence of constant warmth he has for the last two years enjoyed immunity from the attacks of bloody urine, which now only appears under exceptional circumstances. I have already alluded to mental over-work and anxiety as occupying a prominent place in the origin of this disease; it is therefore to be anticipated that the continuance of these causes would have a material effect on its progress. If I said "mental worry and want of sleep, when they occurred were the most efficient agents in bringing on a discharge of blood by the urethra..." On the other hand, sleep was a supreme remedy... Fever did cause bloody urine at night, and once when the patient was unable to sleep through some sudden cause for anxiety... The manifestation of nervous disturbance in
In the curious unilateral character of some of the symptoms. "Numbness of the right foot and left hand (without coldness) were among the early and severe symptoms, though they ceased to be troublesome after a year or two." Subsequently, however, from 1876 onwards, when the disease became more advanced a weakness almost amounting to complete paralysis manifested itself in the left side, involving both arm and leg. The patient's present condition is as follow. If he sit down, the left leg now becomes painfully cramped, but he is powerless to rise or shift his position a fraction the leg in the least degree without assistance. When however, he is assisted to rise, and the left leg is lifted so as to start it, he is able to walk with great firmness. These phenomena appear to indicate some permanent lesion to the motor centre in the right side of the brain, but it is not easy to say whether
this stands in relation to the hematuria as cause or effect. In addition to this, the patient is afflicted with paralysis agitans of a peculiarly violent kind. Violent agitation of the limbs comes on in paroxysms lasting one or two minutes, which are quite uncontrolable. In some respects it resembles the agitation which results from disseminated Cerebro-Spinal Sclerosis, but it is dissimilar in that it continues independent of voluntary motion on the part of the patient. Only when the patient sleeps are the limbs at rest, and then, in place of motion, heat is generated, and the patient wakes frequently hot and feverish. The agitation disappears with renewed violence.

The vascular system of the patient showed marked signs of derangement. The heart's action being weak from the first and the pulse slow, from 60 in the morning to 50 in the afternoon,
Med. Times & Gaz. 1879 Vol II.
Excepting during a febrile attack, when it would rise to 100 or 120. The frequent and distressing stasis of blood in some of the cutaneous capillaries has been already alluded to as giving rise to blueness of the fingers and toes, and dark blue patches on the face. In a case reported in the Med. Times which closely resembles that of my patient, a patient under the care of Dr. Wilks lost his ears and nose by gangrene, resulting from the frequent stagnation of blood in the capillaries of those parts. Up to the present time, my patient has been able to ward off this result by carefully maintaining the heat of the affected parts, by means of warmed gloves on the hands, and compresses over the face well heated before being applied. Occasionally he is rendered apprehensive by the appearance of a blister on the end of the little finger, after it has remained cold and blue for some time.
The urinary system of the patient is the channel through which the most striking phenomena of the disease were manifested. Between the paroxysms the urine was and is still perfectly healthy. This is made apparent by the accounts of various analyses which I will shortly give in detail. The urine passed during the paroxysm I have already described as "bloody" and it answers to the chemical and microscopic tests for blood. A sample of urine passed by my patient in February 1802 was tested in my presence by Prof. Blixen of King's College, and with Guinecum and couplet of hydrogen and gave very nearly, the reaction of blood. Examined through the microtome, in exposure the corporules are seen, but instead, a granular debris highly colored, which suggests to the observer the idea of disintegrated blood, a blood in tissue.
Mark Times & Greg 1873 Vol I P. Hill.
Coloring matter only is present in the urine of the corporules having been left behind. As I have already stated, the urine may also contain oxalates and lithates, or uric acid &c., but these are accidental, in our way depending upon the disease under consideration.

The following analysis of eight samples of my patient's urine was made by the late Dr. W. J. Moore of Dublin on April 8th, 1869.

No. 1 paper 1 p.m. Dark brown color. Acid, when filtered leaves a quantity of the coloring matter of blood upon the filter. No bile. Highly albuminoses. Sp. Gr. 1022. Urin diminished. Deposit copious, of dirty brown color exhibiting under the microscope amorphous matter, albuminous, and casts. The deposit is dissolved by the addition of water of carbonate potash, which heightens the color of the fluid.

Experiments exhibiting the same microscopic appearance as No. 1. and similarly affected by Copaiba.

No. 3. Paper 7 p.m. Insufficient than either of the preceding. Acid. Sp. Gr. 1.26. Contains a trace of Alkali. Area in full proportion. On standing, the deposit turns tinge with preparatory deposit soluble in Copaiba. Which does not change the colour of the fluid.

No. 4. Paper 9 p.m. All but free from Alkali.

No. 5 Paper 7 a.m. Next day contains area in full proportion, and a mere trace of alkali. The deposit is pale and presents under the microscope nothing remarkable.

No. 6. Paper 10 a.m. Trace of alkali. When dried, deposits earthy phosphate. Deposit before being pale, and presenting nothing remarkable under the microscope.

No. 7 Paper 1 p.m. Contains a small quantity of alkali, area in normal proportion. Deposit large.

No. 8. Paper 6 p.m. Gives a very doubtful indication.
of a minute trace of albumen, deposit pale, and presenting nothing remarkable under the microscope.

Dr. Kethley also examined five samples of urine paper by the same patient a year later, three of the samples being papered at noon and the other two late, with the following results:

"The three samples papered at noon contain albumen No. 1. best, No. 3. least. No. 1 contains a purple sediment which is composed of altered blood dices with casts of tubes filled with red globular matter like coagulated blood. Examine with the spectroscope, it shows the absorption bands of blood or also gives No. 3. and No. 2 show them faintly. Wren is defined in all the samples but most so in 2, 3, 4, and in that order. Wren and is in normal proportion, except in No. 7, where it is in excess of the normal quantity. The fixed salts are generally below the average. Lastly I may state that..."
there is no trace of sugar in any of the tests.

The conclusion he draws is "..." as he has 2 or 3 little lepers left, the others being quite free from D. Lethely then gives his results in a form which I need not reproduce here, in the difference between the bloody urine paper at noon, and the comparatively healthy urine paper in the evening, in well known.

There are three forms in which blood may appear in the urine in this affection; which appear to indicate three different stages in the process of blood disintegration. First, a rare form, which occurs early in the process in which blood appears as a clear solution, bright red color, secondly there may be a dark brown sediment in dark red or brown, that is urine holding a large quantity of the colouring matter of blood in solution. Thirdly, it may occur as a dark brown...
"Treatise on the Principles and Practice of Medicine" 5th Edition
Philadelphia 1881. Page 923
blackish sediment in urine apparently other than healthy. In the first of these forms the process of disintegration is commencing; in the second it is advancing; and in the third it is completed as far as it goes in this stage disease.

The passage of urine of the character described above is always followed by great irritation of the bladder, and pains of an aching kind in the loins. This circumstance seems to be that any kidney irritation which may be is a result and not a cause of the hematuria.

Clinical History. From the history above given it will be seen that I have been treating of chronic disease which does not tend to destroy life. There are two cases recorded death during [I cannot say from] the complete while I will describe in detail later on. One is a fatal result, that of Flint.
Fresh Times & Gaz 1873 Vol I p 461.
his work on medicine states that no case of
death from this disease is recorded. Between
the paroxysms any patient's health was always
fairly good, and is so still now in the
paroxysms which his infirmity during the last
few years.

Treatment. This, in the case of any patient
has been very unsatisfactory. Astringents
had no effect at all in checking the hotness,
cholagogue remedies such as 'Thubarol', 'Ferring',
& had no permanent effect beyond relieving
accidental constipation. When taken in small
doses with the hope of producing a constipating
effect, burning seemed to start off the boils,
and increase the patient's discomfort. They have
given any relief to the symptoms from which
he frequently suffered.

Comminution, cryotherapy to the back
with fine-wool oil, and oil of turpentine, bad
of use as a palliative remedy, so relieving th
Jusn Fris & Gaz. Loc. Cit.
pain in the rising, after a paroxysm. The only remedies of any real service were (1) warmth. "It seemed as if all the fingers of which the blood, wine, was the climate were suffused when the patient was made warm early in the day, and kept so," and I have already spoken of the effects of heat in warding off the paroxysms. It is most effectually applied to the extremities by means of thick, toasted gloves on the hands, and hot water bottles to the feet. A mustard-lint taken the last thing at night was also followed by beneficial results.

(2) Iminine was the only drug which had any effect in checking the symptoms. It was first taken in small doses in 1869, when the disease had been established rather more than a year. In March 1870 he first took an eight-grain dose, which was followed by striking results. The extremities, from being blue and cold, became
to their natural color and warmth, and he felt altogether better than he had done during the previous two years. He dose was repeated twice daily for ten days, and for twenty-one days following the illness seemed to be suppressed. But after that interval it returned again, and was again banished by a daily single dose of the grains. Gradually, the beneficial effect of quinine wore off, and after two months of daily use, it ceased to have any effect on the progress of the disease until it was again left off for a time. Quinine was also used with great benefit during the febrile attacks allowed to arise.

At present, the patient often seems to be intolerant of quinine if taken for any length of time, even in small doses, though an occasional small morning dose undoubtedly helps in warding off a paroxysm. Other alternatives, especially arsenic, were used
Achilles - Chirurgical Transactions 2nd Series
In the whole with negative results. The patient always clotted himself warmly, but clothing obviously can only become warm when heat is generated in the system; and as he was frequently compelled to take off his worsted gloves, and thick stockings, to warm his hands and feet at the fire, in the absence of the best natural heat forming process.

I will now proceed to give abstracts of one or two other cases of this disease, which have from time to time been published, noting particularly the points wherein they differ from the case of my patient.

Case 1. Mr. Dr. George Harley. A medical practitioner after some years residence in the West Indies, returned to England in consequence of repeated attacks of Intermittent fever. In two years after his return he was subject to attacks of the same kind, and occasionally he was seized with spirogomas lasting 1 or 2 days, during
which, he passed once in 24 hours pure mucus of bloody urine. After this a few days the phenomena suddenly ceased.

Three samples of wine were examined.

No. 1, 4 p.m., Clear, pale, $pH$ 10.25. Alcoholic 10.5, no albumen.

No. 2, 4 p.m., Dark brown, chocolate-likeOpacity, turbid $pH$ 10.32, and depositing albumen containing a large quantity of albumen, some sugar, and a large exudate of mucus (3.5%). Depositexam.

Microscopically contains nucleated epithelial, granular cells, hematin, and tube casts. The tube casts were filled with pigment, there were a few hyaline casts. No blood corpuscles were found.

Sample 3 was quite healthy.

The patient had liver derangement, probably from the effect of the malaria, and was jaundiced. He was treated successfully with full doses of quinine and ipecacuanha, the treatment being directed especially to the liver disorder. The symptoms
Gradually ceased, and he had no relapse for four years.

Case 2. A Blacksmith, Oct 32 years.
In December 1862 he first observed that his urine was occasionally of a dark color.
In November 1863 the urine became of the color of blood. The dark urine was always passed after feeling cold. Temperature of pulse of hands during the paroxysm was 60.7. In March 96.7.

He never had again. He had a dark complexion and yellow look, due to liver disturbance. He was treated by quinine and mercury, the treatment in this case also being directed to the liver. It was unsuccessful, the symptoms in a short time disappeared altogether.

Dr. Harley says, steep, and apparently with justice, upon the coexistence of liver disorder, being that treatment directed to the correction of this disorder, was followed by the total disappearance.
Edinburgh Medical Journal, May 1875
page 1005.
of the symptoms. It will be seen that in only one of these cases is there a history of
inhalation, and in neither is there any history
of cough or phthisis.

The two following cases were communicated by
Dr. J. Warburton Begbie, to the Pathic-Chirurgical
Society of Edinburgh, April 1875.

A.H., clerk, 21, 25, had good health till Sept
1873, when he began to pass dark-colored urine.
After some weeks the urine became hemal, and
remained so till the Autumn of 1874, when for
quite three months he passed bloody urine every
day after Friday. He slept poorly any before
11 a.m. He was over-exerted himself by work
and had been exposed to cold and damp.
There is no history of any injury to the back,
or Sundays, when keeping in the house the whole of
the dark urine does not appear. The passage of
dark urine is invariably preceded by a sense
of shivering, and general discomfort. The patient is
Oh. Cit. p. 1010.
Antenome, and there are no signs of any other form of hematurine. The blood when examined with the microscope shows a diminution of red corpuscles but no increase of white ones.

The urine is of acid reaction, coagulable by heat and citric acid, in standing a considerable deposit falls to the bottom which when examined microscopically is found to consist of reddish or brownish red granular matter with numerous casts.

The urine was analyzed by Dr. Affleck, who found that the amount of urea was increased by one fourth, and no bile acids were found.

Dr. Begghe observed — "As to the presence or absence of bile acids, I had suggested to Dr. Affleck the importance of determining this point in the urine of hematurine, keeping in view the observation of Hahn that the bile acids have a powerful defibrinising effect on the blood cells, and the suggestion of Dr. Parkes that some cases of hematurine might be owing to"
An action of this kind is felicitous. The patient was at first treated unsuccessfully with 15 grain doses of gallic acid three daily. On Dec. 11th, 1874, he began to take linmine in 5-grain doses, increased in a few days to 7 grains, and then grains of Ammonio Citrate of Iron, after meal. The effect of this treatment was apparently to lessen the amount of blood-colouring matters in the urine, and for two days together on one or two occasions the colour entirely disappeared. While continuing the medicine, the hematemesis returned during the cold weather which immediately preceded Xmas, but it was limited to the afternoons, and often the patient confined himself to the house it died out after Xmas. On Dec. 28th I ordered 20 grains of Chloride of Ammonia to be taken single dissolved in water three daily. On the 20th day of January 1875, I found that from the day on which the medicine was commenced, no dark urine had
Of Cat Page 1012
been paper... After this date, the patient
has on two occasions omitted the remedy, with
the effect of the laetamurium returning. I had
prescribed tincture of ferric chloride of iron in 15 drk
does three daily, and while taking this medicine
the dark urine disappeared.

The second case is that of a 22 yr. Oct 57 yrs.
The patient suffered from a general diarrhea
resembling ague. Under the influence of cold
he passed the characteristic dark urine
containing blood-colouring matter. Under the present
there are visible granules casts of the tubuli
uriniferi, a few crystals of phlebitis of lime,
and some of uric acid; also much amorphous
and granular matter, but no blood traces.

The attacks of dark urine could always be
thwarted to lapse into cold, while warmth
waved off the attacks. The patient was
directed to avoid exposure to cold and fatigue
and generous. Out take much animal food.
and drink only light wine. To commence, 30 drops of Dr. Ferri Permutate, with 4 drachms of Dr. Arsenicals Wine daily after meals. Afterwards Quinine in full doses was given, and to relieve a severe attack, oil of turpentine in doses of 20 to 30 drops was given. This treatment was unsuccessful. The patient gradually became worse, the attacks became frequent, and ultimately syncope was developed. Dr. Bezhis considers this state of importance, believing that there is some connection between this disorder and the formation of hematin in the urine. In support of this belief, he quotes Dr. Mackay's two cases.

It will be observed that in only one of these cases is there any history of inhalation by touch; but in both cases exposure to cold seems to be the immediate exciting cause of the attacks. Moreover, in both cases Quinine
acted as a palliative; but failed to cure the disease.

Sir W. Gould relates the following case.—

J. G. at 35 yrs. Labourer. Admitted to Guy's Hospital January 31st 1866.

Past history good. No history of malaria, syphilis, or intemperance. I first exposed to "wet" in the pursuit of his calling.

Five months previously he first observed his urine to be of dark color, as if containing blood.

This appearance continued for two days, after which the urine again became normal.

Two weeks afterwards the color returned, and continued up to the time of his admission to the hospital, accompanied by severe pain in the loins. It is more marked after any exertion.

On Admission, the patient was anemic, but well nourished. Skin moist. Temp. 97.5. Heart sound, healthy. Pulse 60, small and weak. Lungs healthy. Respiration 24.
Complains of shortness pain in abdomen, from the umbilicus to the loins. No pain in the rectum. No edema of legs.

Urine dark colored, 11 July 1814. On standing, it deposit a light cloudy sediment. Contains no sugar or bile. Under the microscope, a few granular epithelioid cells are seen, and some granular urates. No Blood Corpuscles are seen.

The clinical history that follows is quite characteristic of the complaint being well shown. He was treated at first by diet, citric acid, and infusion of Cascara. Tinct. internally.

On February 26th (26 days after admission) some swelling in the glands behind the angle of the jaw was observed.

On March 14th, he was ordered to take two drachms of Tinct. Cinchonae Comp. Three daily. After this the symptoms entirely subsided, and on March 26th he left the hospital.
Transactions of the Clinical Society
Vol I, page 40.
having passed two bloody urins for 20 days. In this case, the almost immediate relief following the use of Chininna would seem to point to some malarious taint, though this does not appear in the history.

In discussing the possible causes of this complaint Sir W. G. will relate the case of a young lady who hurt her back by a fall, and soon after, passed some bloody urine, in which two blood corpuscles were detected, and which had all the characteristics of urine passed during a paroxysm of this disease.

I will now give very brief abstracts of four cases related by Dr. Greenhow.

Case 1. A man, Ael, 31 years. First seen Sept. 17th, 1867. No history of malaris, save of exposure to cold and wet. Had erysipelas four years ago, with secondary eruption of the skin, and pains in the bones.

15 months ago, he had rigors, and pains in the
lions, followed by hematuria. 3 months ago he had rheumatic pains and swelling in both knees, and the right ankle, and pain in the loins, 14 days afterwards he had strepempy and pain in the loins followed by hematuria. The patient is sallow and slightly jaundiced.

For three days after admission, the urine was perfectly healthy. On Sept 20th, patient had a return of the rigors, and the hematuria returned in the same way daily till the 24th. At noon on the 24th the patient had a severe pain in the loins, and passed some dark red albuminous urine. Temperature at 10:00 1/4.

Treatment. At first, he took full doses of quinia and perchloride of iron. On Sept 24th he was ordered half drachm doses of Syrup of Iodide of Iron, and two grains of Iodide of Potassium three daily and two grains of Sulphate of Iodine at night.
This treatment was apparently successful; on October 11th he left the hospital having had no return of the symptoms since Oct. 24th. In this case we find for the first time syphilis among the predisposing causes.

Case 2. Boy of 8½ years, first 10th November, 1866. There was a history of Gout and Rheumatism in family, heart of Insane or Syphilis.

During five weeks residence in the hospital he had paroxysms of the neural kind. After this he left the hospital apparently convalescent, but in February 1867 the attacks returned after an exposure to wet.

He was treated by fifteen doses of Tinct. Ferri Perchlorat. 2 and Acid Hydrochlor. Dil., and one grain of Sulphat of Aminium three daily, but apparently without benefit.

1866. History of Rheumatism in family, none of Malaria or Tiphly. Figurs and patient came on after exposure to Colder and Damp. She was treated unsuccessfully by Quinine in full doses iron and Hydrochloric Acid.

Case 4, Man Oct 34. Admitted Nov 7th 1866.

History of great intemperance, patient had been in the habit of drinking a gallon of beer per day, besides spirits. No history of Malaria. Had a swelling in the testicles supposed to be phthisic, but there was no definite history of this complaint.

Suffered from the usual parasymptoms after exposure to cold and wet. He was pallid and cachectic, and the conjunctiva were jaundiced.

Treated for the bronchial jaundice. Given and iron in full doses; for the jaundice dilute nitric hydrochloric acid, and purgatives. After his last attack he was ordered half a draught of Syrup of Ipecac, three times a day, and those pains
Bologna, Tipografia Sava e Garagnani, 1880.
of Iodine of Potassium.

This treatment was entirely unsuccessful. He ultimately left the hospital in an unpromised state of health, having gained twenty pounds in weight, and being free from symptoms.

In estimating the value of the medicinal treatment in these cases of suppressed cure, it must be remembered that hospital life is associated with rest in bed, warmth, and freedom as far as possible from mental anxiety; and these influences probably play an small part in bringing about the successful result.

The latest and most complete account of "Paroxysmal Hemoglobinuria" is given in a monograph by Prof. Augusto Merri, professor of clinical medicine in the Royal University of Bologna, who gives three clinical histories, two recoveries, and two deaths, with post-mortem examinations, one of the deaths
being that of a patient whose clinical history is not given.

Case 1. Angelo Bertozzi. At 58 years, a Case.

Had always enjoyed good health. Was prone to 5 or 6 paroxysmal attacks, followed by acute and sweating, which he attributed to overwork. Before 1872 he was in perfect health. He first observed that his skin was of an intense yellow color. This began in November 1872 and lasted 50 days. Then it gradually diminished. It reappeared in about a month, and again in the following February. It reappeared a third time but left intensity from January to April 1875. Finally, in the Spring of 1876 he entered the hospital, having had a very yellow skin for about 20 days, previously but the color now became less intense. He suffers from loss of appetite, especially for fat. He felt a sense of constriction along the throat. Acid eructations, rumblings in the stomach, which preceded the evacuation of stools, all of which he
did not assume the colour. The evacuation took place every two days. On two occasions he vomited without losing any bilious colour during the jaundice he had a great itching of the skin.

It could not be ascertained whether the following phenomena appeared before or after the jaundice. It is however certain that for about a year, especially during the period of the jaundice when he got out of bed he felt very cold especially about the lower extremities. His respiration was weak and cough ensued. A cessation of weight in the hypochondriac region caused the patient to fast water, and the urine appeared deeply coloured with red. He also felt, besides cold as ill that he was obliged to go to bed again. In inanition constipations the urine was at first crimson-red, and afterwards of its natural colour. Simultaneously with the cessation of cold, and the passage of red coloured urine
he suffered from great thirst, which he drank freely in order to satiate. After the attack, the quantity of urine became much more abundant. He felt slight headache, fulness, and weight in the epigastric and right hypochondriac region, but neither the perspirations nor the heat was increased. The attack ceased soon after the patient returned to bed.

During the jaundice in 1875, there appeared another symptom, swelling in the lower extremities as far as the knee, but more on the left than on the right side. The jaundice having ceased, the swelling spread almost entirely over the right leg, and nearly the same in the left leg. These phenomena, which lasted two or three months in the winter during the four preceding years ceased entirely on the arrival of the summer.

Kestoggzi, who while he was at home carefully watched himself, took exercise to counteract the cold, but he agrees
this hard work always increased his weakness and the red colour of the urine. As the primary cause of his illness he can only assign a prolonged mental worry — but it should be noted that his business compelled him to sleep out of doors upon a cart, especially late at night and in the morning. He was often obliged to remain exposed to the rain, wind, frost and sun. His food consisted always of maize flour. Bertogzi has a wife, and healthy children, and according to his statement he was never inmoderate in wine or in sexual indulgence.

When we saw Bertogzi, he appeared to us rather thin and very anaemic; his skin was flabby, and of a yellowish white colour. His lumbar spine was exceedingly pale, his eye was pale, his conjunctiva power weak, and his spirits depressed. Physical examination showed that there was slight enlargement of the spleen and liver, with no other peculiarities of constancy or tendency.
In these organs, ...(some signs of valvular disease of the heart were here described at length).
The blood appeared much discolored, and under the microscope the red globules appeared pallid and of various sizes, there being one or two white ones. An examination of the urine repeated every day, and many times on each day, fully confirmed what had been said by Bertozzi; it was normal as to colour, quantity, specific gravity, and composition while the patient remained in bed, but became uniformly red or black when he rose from bed; then a chemical analysis discovered albumen and blood coloring matter, the quantity being scarcely recognizable at times, sometimes slight, and then very marked. A microscopical examination of the sediment revealed the presence of hyaline and granular casts in variable abundance, but no red globules came one a few very small and undefined ones in the form of a ring, as described by Flanter.

There were instead, cells of kidney epithelium tinted with brownish-red molecules. The reaction of the urine was always acid. 

The history of Bertozzi is here broken off, but it subsequently appears that after several years of frncephile treatment, he was finally cured by antisyphilitic remedies, i.e., injection with the trecurial ointment, and large doses internally of iodide of potassium. This treatment was perfectly successful, the patient having once more three winters in perfect health.

Case 2. Isabella Giovannini: coffee-house keeper. Oct. 40 years, does not remember having had any illness till his 25th year. He then had gouty rheuma which was often followed by general aches of every kind, and in his 30th year he had indolent symptoms of syphilis. Having now entered the hospital for these disorders, Gummere syphilitic was diagnosed for which he was treated, and cured. With the exception of these complaints, the
frequency of which is explained by his consumption of vinless insane, Giovannino, suffers only from a fever at the age of 28, with respect to which it is to be noted that it was preceded for some days by great prostration of strength, and that it continued about twenty days. He believes that the sickness from which he is now suffering began 8 years ago. During that time, the illness was not constant but appeared only in the winter season. At that time his legs began to get so cold that they felt as if they were hemorrhaged and frozen. In order to warm them, it was necessary to keep in bed for several hours. The feet, hands, and tip of the nose and thin of the ear assumed a bluish color, according to the patient, whose anomaly is domestic in uncertain, this bluish color, which in the first years of his illness was the only change observable in his thin, in the succeeding winters exhibited a strange
contract, increased as it had at one time become yellow. The patient also states that the parts of the body above mentioned, having become cold, lost all sensation, and caused him great discomfort when he attempted to move himself, but on becoming warm, both the irritation and the blue colour disappeared. The skin of his ears, from the beginning of his illness, became covered with a crust and remained in that state throughout the winter. This fell off when thesteam became warmer and it was then observed that a great part of the ear had become corroded on both sides.

These facts are of importance, as they warned the patient many times to enter the hospital and in part he only complained of great deterioration of strength. In the first year he was treated with cold douche in the head and back, and in the spring he left the hospital cured. But this
did not last long. On the return of the winter he was attacked by the same disorders. The bluish colour was nearly as intense, his hands appeared as if they had been dyed. He entered the hospital at the beginning of October 1870 was treated by Faradise electric, and after some months he left the hospital cured before the winter ceased. — but a little while afterwards, he re-entered the hospital and was treated for Abluminunia, which ceased in two or three days.

"The patient thought that the dark color of his hands had not become more intense since 1870; but in addition to this disturbance a new symptom appeared in 1873 which consisted in the sensation of frosty time like indigo. Every time the patient looked from the sensation of cold already described. As the limbs became worse, the same became left, dark, and finally altogether beclouded.
Except for this, the winter of 1873 was as the preceding winters. He entered the hospital and did not leave till the spring. It was the same in the winters of 1874, 1875, 1876. He suffers from the same disorders which were attributed to the same causes. He was continually obliged to resort to the hospital, and whatever might be his condition, the end of the cold season invariably found him cured. Each successive winter he found himself worse — and this ended the patient's narrative; but we could not discover the real cause of his illness.

(Patient's family history is bare grime, and is quite insignificant.)

His past history is good save for his general exempt. As to his present condition — "He is somewhat slender and weak; of sad countenance and weak winded; skin very soft and white; fat of face, in aches always, flabby, colour..."
always pale. When he had remained several days in bed, the pallor became yellowish. If he were exposed to cold, this became more intense; the skin and conjunctiva assumed a distinct yellow. The arteries of the ear then became dark blue, but the nose, hands and feet assumed this colour only when the patient exposed himself to the action of the air. Nothing particular was discovered when he was examined; lungs healthy, heart sounded regularly, pulse frequent and collapsing. Their last had somewhat firmer than usual (a defect of the liver is here described). The spleen was a little enlarged. The fundus, a symptom is escape on the left side, and the tendency to heat is somewhat increased. . . .

More important than all this is the diagnosis of the urine, which, so long as the patient remained in bed for any time was about 1200 cubic centimetres in 24 hours. Specific
Gravity 1015. Acid reaction containing salts, in normal proportion, nearly free from pigment, were 20 to 23 in 1000. No deposit, no immersed element. But immediately the patient exposed himself to the action of cold, albumin and hemoglobin appeared in variable quantities, but always in a certain proportion to the duration and intensity of the cold. The urine was no longer pale and b limbid, but red, and, when cold, even thicker. Very soon an abundant deposit of urates collected at the bottom of the vessel. Examined through the microscope, these were seen, in addition to various forms of these, many cells of cylindrical epithelium of various sizes, and generally mingled with them were sometimes bare, sometimes leafy, fatty granular casts, free cell of fatty epithelium (renal), masses of blood-colored material, red and globules.

From the microscopic examination of the blood
gave always this result. The red globules were of the regular form and size. Rather highly coloured, the white corpuscles were 2 to 5 in the field. More granular than normal; many white granular cells, both free and in clusters. Giovanni did not die from the immediate effect of his hemoglobinuria. The last appearance of this took place in February 1877. At that time, the temperature being higher, he could rise from bed, and walk out of the ward, through the passages, without injury. During the winter months, several remedies were tried, but without effect, especially quinine and the preparations of iron, which seemed likely to be of use to improve his anemic state; the bowels were regulated; it was sought to promote his appetite with bitter tonics, he was given nutritious food and good wine, but all was useless unless the patient was well protected.
from cold. The little strength and nutrition which he began to acquire in bed was very quickly lost when two or three attacks were reproduced.

In the beginning of March, Giovannini complained of a pain in his thigh. This was relieved by antisyphilitic treatment — iodide of potash, internally and mercurial injections. This was preceded with for about two months.

Giovannini died on the morning of the 26th of September 1877. During all this time (since March) his inactivity gave no further indication of its existence, except that the urine which in other respects showed nothing abnormal save a scarcity of protein and of urates, presented in the last day of his life some very fine hyaline casts and a small quantity of albumen. But of
Hemoglobin there was no longer a trace. The post-mortem examination was made twenty-six hours after death. (The examination of the head and thorax is here described at some length, nothing remarkable being discovered, save that the lungs were studded with large quantities of filiform tubercles.)

The cavity of the abdomen being opened, the great omentum was found with its surface gathering by fine filils to the peritoneum, and its margins were firmly adherent. It was of violet color, and disseminated with innumerable tubercles, still in an immature state, and the fat had almost disappeared. The diaphragm was strongly adherent to the liver. Also the intestines appeared crowded with tubercles. They were seen especially on the serous surface of the intestine, more particularly in the lower...
a Aorta.  c Vena Cava.  r, r Left Kidney.  e1 Left Renal Artery.
v1 Left Renal Vein.  u Uterus.  r, r Right Kidney turned forwards.  e2 Right Renal Artery (middle).  e3 Right Renal Artery (inferior).
v2 Right Renal Vein (inferior).  v3 Right Renal Vein (inferior).  i ilium.  u Uterus.  g, g Enlarged lymph glands.

After Mourin, P. Ill.
portion of the ileum. The intestines are
much distended, and of dark grey color.
The stomach retracted, small and empty.
Neither when opened presented anything
beyond a trace of hyperemia without
ulcers or ulcerations.
The spleen has a violet colour, moderate
firmness, and on its external surface, as
also on section shows a yellowish debris,
formed by the confluence of several tubules,
with which sometimes the gastro hepatic
ligament is sprinkled. Upon the capsule of
the liver was seen a thick and constant
false membrane which appeared full of
tubular granules.
Of the kidneys, the left extended from the
first lumbar vertebra to the crest of the ilia,
and measured twelve centimetres in length.
The right kidney is much lower, inasmuch
as it corresponds with the second lumbar
vertebra, and extends obliquely externally two finger's breadths over the ilium. Its concavity is towards the vertebral column, its figure is rounded, with the anterior surface flattened. The ilium is placed somewhat high, and the ureter arises from the lower portion.

From the Aorta arise three renal arteries, the superior, 5 centimeters long comes in the renal way to the left kidney; the middle, which measures 6 centimeters, 5 centimeters below the preceding, and the centimeter along the Aorta bifurcation, suplies the right kidney through a figure which leads to the ilium. The third renal artery, 6 centimeters long, arises at the level of the bifurcation, runs for some distance along the superior margin of the same kidney, and branches itself in a figure through which it finally reaches the ilium. Parallel to the Superior Renal Artery,
runs a small vein, which passes over the aorta and joins the inferior portion of the left renal vein.

The large right renal vein, leaves the superior margin of that viscera, together with the third renal artery, and joins the vena cava opposite the third lumbar vertebra. The left renal vein descends, and joins the vena cava close to the celiac bifurcation. At the level of the left renal artery, the vena cava is displaced to the right by a group of enlarged lymphatic glands, which surround the aorta, the above-mentioned renal artery, and displace the left renal vein externally.

Upon section, the right kidney appears hypertrophied; the cortical substance is somewhat increased, the straight raphes, and the straight tubules are very plain. The left kidney is more moist, less colored, and in it, instance, the cortical substance is increased. In both kidneys
Tubercular granules are seen here and there. The text, when removed, is of triangular shape; the distance between its extreme points transversely is 31 centimeters, its greatest thickness 8 cent. Its vertical diameter 17 cent. It is of reddish color, with prominent granulations, and fissures and scars of large size. The cut surface of the liver is Villigerated with many grayish-yellow points. The lymphatic glands displacing the costa are enlarged; when cut they are juicy, homogenous, and of reddish flesh color. The mesentery gland are normal. The Inferior, Axillary, and Cervical gland are somewhat enlarged.

Nothing remarkable about the bladder.

Microscopical Examination. On examining a thin section of the left kidney slightly magnified, a few tubules were seen resting in the cortical substance, and the urinary...
tubule were incompletely separated from each other by the increased interstitial tissue. Under a somewhat higher power, it is seen that the connective tissue between the tubules is generally fibrillar, and immersed among lymphoid cells in the neighborhood of the tubules. Some slight hyperplasia of the interstitial tissue, though it was observed as much in the cortical as in the medullary substance, is not uniformly distributed, but is in some places a little more in others a little less abundant, but it prevails mostly toward the lower part of the cortical substance.

The epithelium of the tubules presents very diverse appearances. In some, the cells are regularly disposed, and normal, with nuclei well colored by carmine, and protoplasm slightly granular. In others, they appear large and deformed, but distinct one from another, with protoplasm much more granular, and with nuclei very
indistinct. The cells thus altered are very easily detached, for which reason some of the tubes are empty. The epithelium of the straight tubes is always normal, that of the convoluted tubes in some cases present no lesion, but in others as has been said, a degeneration more or less advanced is seen. The glomeruli of Malpighi, a little enlarged, have the capillaries of Bohan somewhat thickened.

In addition to these alterations in the epithelium the same tubes show, especially in the cortical substance greater or smaller collections of pigment of a color, some orange-yellow, some reddish, some black. The pigment in some cases occupies the interiors of the true cells, in other, it occupies more or less of the cell, in which case it shows a certain tendency to run towards the centre. Therefore it happens that the pigment cells in some sections are small and scattered, whilst in others they...
they are more abundant. The minute arterioles and veins in the substance of the pyramids are empty and generally somewhat enlarged. The small arteries show some increased thickness of their walls, especially in the tunica adventitia, while in many cases contains very many cells. In the cortex substance and more particularly close to the capsule, the capillaries are seen to be dilated and full of red globules. Sometimes it seems to be a simple and uniform dilatation, sometimes a variety. Finally with regard to the tubules it remains to be said that they are generally collected in groups of two or three, and their diameter varies from one to two millimetres. They are composed of a central amorphous, grey, slightly granular substance surrounded by lymphoid cells that gradually lose themselves in the substance of the kidney; they are therefore of a very irregular shape.
"In the right kidney, the same alterations are found, but to a lesser advanced degree.

Examination of sections of the liver showed dilatation of the small veins and arteries, as well as of the capillaries which were full of blood. There was some hyperplasia of the interstitial connective tissue, and some of the lobules were in an advanced stage of fatty degeneration.

Upon incisions being made in the connective tissue observed in the capsule, it was seen that these parts of the capsule were drawn in by broad bands of fibrous connective tissue, which are interposed between the lobules and compres them to such an extent that they are almost destroyed.

The tubules in the liver are round, isolated, in diameter about half a millimetre, regularly situated within the lobules, and towards its periphery."

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I have quoted this history and post mortem examination almost verbatim, because of the great interest attaching to it on account of its rarity. But, as Prof. Smirke remarks, it throws on light whatever upon the nature of the disease. Of the last two cases I shall give very brief abstract.

Case 3: Post mortem examination of Demarco Clementi, who died Sept. 29th 1877, opened 48 hours after death.

Head, nothing remarkable.

Lungs, dark coloured and emphysematous in their lower portion.

Heart somewhat dilated and hypertrophied. Arteries roughened by patches of atheroma, on its internal surface.

Stomach and liver healthy.

Spleen slightly enlarged and friable.

Kidneys, size increased by a good third, weight 150 grammes each. The capsule separato
easily, and was of a deep red color. A dark red viscid liquid exuded from the cut surface. The cortical substance was easily torn, of a darker color than the medullary and with the surface sprinkled with dark red spots. The pyramids of the cortical substance, very hyperemic, showed clearly a red stricture.

Microscopical examination of the kidneys.

In torn preparations made after 18 hours immersion in Müller's fluid, were seen many blood globules, fatty drops and granules, mottled and granular cells of epithelium from the seminiferous tubes. In some the nuclei were small, in others apparently not affected, and they were only swollen by acetic acid. Treated with Iodine and Sulphuric Acid they gave the reaction of Amyloid degeneration.

Sections taken in different parts showed very different appearances, the tubules in some being quite healthy, in others, being full of debris of degenerated
Epithelium.

Prof. Jevons remarks that these appearances point to nothing more than a mild diffuse interstitial nephritis, and do not at all account for the peculiar symptoms observed during life.

Case of L.C. born in Bologna, Oct 40 years. He was for the most part carried on the ceiling of prayer in a manufactury. In infancy he had a continuous fever. In youth he had some quasidie fever. After that, until two years ago, he enjoyed the best of health, except that he had gonorrhea on three occasions. He confesses boldly to the abuse of wine, and of sexual intercourse.

Two years ago he had an attack of acute inflammation, which he treated by hot baths, and salicylates internally with the result that he remained ill a month. It was afterward discovered that he had had an ulcer in the epigastria region, supposed to be of
of philitis nature, which was cured by medicating ointment applied externally. From that time till four months ago, he was in perfect health. Then he suffered a severe mental shock. After four or five days his skin became yellow, he lost his good spirit and began to feel intensely cold in the feet. He said that he never had fever, and that his appetite had diminished. In course of time the yellow colour became faint but the sensation of cold remained constant. In January he first complained of great debility, "which was worse after he had refused wine, red like Italian wine." Analysis of this wine showed that it contained pigment of bile and of this pigment was preceded by churning and irritations anorexia, prostration of strength, pain in the bones, and paresthesia in the upper and lower extremities. But all these phenomena disappeared when he retired for two

w three hours into a warm place. From this time the same symptoms were repeated every day, with greater or less intensity, every day.

The most striking phenomena in this case were the varying character of the urine; at one time being clear and limpid; at another time being dark red as already described; and a bluish colour of the ears, which by its constancy, and varying degree of intensity, was attributed by the patient to Chalklime. The body of this patient is deformed with curvatures of the spine, the skin is a pale yellow, also the conjunctiva. There is a palpable oedema, oedema about the umbilicus and the left hip. The inguinal glands are much enlarged. They are irregular, indolent and hard.

The patient used intermittent immersion for ten days, which was then suspended on account of stomatitis. The rash began to disappear.
and the inguinal gland seemed somewhat diminished after several days he began to take internally mercury, in combination with Jodhid of Potosin. The patient remained only very few days under this treatment, therefore the final result is very uncertain.

I might make almost immemorial quotations from the fascinating work of Prof. Janvay, but I will simply give his conclusions which are founded upon the cases I have quoted.

"The nature of the dysuria of the blood is a syphilitic infection."

1) "The essential condition of this disease consists in a subtile condition of the formations organs of the body, corpuscles, whence some of these are forever incapable of resisting the action of cold, even if moderate, and perhaps also the action of Carbonic acid."

2) A second morbid element consists in an abnormal state of excitability of the nerve centres.
through the vessel-filling plasma.

1. In account of the abnormal reaction of the nervous centres to the stimulus of heat and cold, the general calibre of the vessels is enlarged and the circulation of the blood retarded.

2. The thickening of the circulation causes that in those parts of the body furthest from the heart it (the circulation) is more feebly. Left endowed with "thermo-generate" principles, more exposed to the cooling action of the air. The blood cools, becomes more charged with carbonic acid, and the corpses, being less stable, decompose within the vessel.

3. The haemoglobin dissolved in the blood-plasma peps up far the most part in the secretion of the kidneys. A small part mixes with lymph in the tissue. Rarely a few traces.
first of all by the intestine. Hence, the "hemophilic
taphrosiphagic jaundice," and very rarely
"enterorrhagia."

h) The two necroscopic performances up to the
present time throw no further light upon
the intubis process. Therefore what is known
about it is founded solely upon clinical
observation and physiological induction.

x x x

The nervous elements of this disease depend
closely upon the nervous element. Similarly
upon that, but indirectly, depend the
diminution in quantity, the albuminous
contents, and high specific gravity of the urine.

x x x

The first cause of the abnormal condition of
the hemophilic organs has hitherto been
unknown, but how it is placed beyond
all doubt that these phenomena must
be attributed to a definite syphilitic tint.
Recent or old.

"The only efficacious remedy is the incision, but at present it has been tried only in very few cases. The hygienic precautions recommended as the more useful remedy do not remove the insidious condition, they only render it latent, when the patient is protected from cold; this being the only existing cause of a paroxysm.

"The efficacy of antiphlogistic treatment in the case of typhus fever is proved by the history of the time; and this, with our knowledge of the first origin of the illness, affords some probability of its being treated effectually."

Pathology. The physiology of blood formation is still involved in obscurity, and it is only to be expected that the pathology of any disease of the blood, forming a class of its own, should be equally obscure. Of one thing we may be sure, viz.,
that this is not a disease affecting one or
more of the organs of the body.

D. Flint remarks, "A pathological condition
of the blood stands in an immediate
causative relation to the hemoglobinuria.
Either the hemoglobin escapes from the blood
corpuscles, or these undergo deposition within
the blood vessels. Hemoglobin, suddenly set
free in considerable quantity, is eliminated by
the kidneys. Hence the seat of the affection is
not in the urinary system. Similar blood
changes occur in eclampsia, purpura, hemoglobin
small pox, &c."

D. Bristow remarks, "This disease has been
supposed to have some relation with Ague, or
Oxaluria, and with Rheumatism. It has been
regarded as an affection of the kidney and
as an affection of the blood. But whatever
view be ultimately adopted, the patient suffers
from a cutaneous chill. Intense renal congestion
..."
attends the paroxysm, which is relieved by the discharge of blood in the urine. These phenomena are quite independent of any structural disease of the kidney, and are probably due to some influence through the vasomotor nerves of the kidney.

The two post-mortem examinations recorded by Prof. Nauritz show, as he says, no light upon the subject. The enlarged lymphatic glands of the ureter, in the case of Giovannini, which might at first sight appear to afford some clue, are in all probability a coincidence depending upon the syphilitic taint under which the patient was labouring.

Etiology. From the cases I have quoted from various sources it appears a variety of causes, singly or combined, may produce the phenomena of this disease. But these causes are all such as operate directly on the blood. The most important is undoubtedly
"Surgeons Vade Mecum" 11th Edition
Page 629.
Malaria. Dr. Errett remarks, "This appears to be one of the great family of paludos or malarial diseases, and generally affects people who have had intermittent or remittent fever, or have suffered severely from wet and cold. But, he it observed, that it is in itself a non-febrile phenomenon; that is to say, the patient may be subject to febrile attacks but the hematuria does not come on while these last; and before, and during the attacks of hematuria, the evolution of heat in the body is diminished, and it is difficult to get the thermometer up to the normal point in the arsilla or mouth. . . . Like other diarrheic diseases it is accompanied with irregular fit of aching in the spine and tenderness over secretion of deeply colored bile. There is sometimes an appearance of jaundice, that is, not from retention but from excessive formation of bile, which is, in fact
At page 234, Prof. Jenner acknowledges that malaria may in some cases be a predisposing cause of the disease.


Guy's Hospital Reports 3rd Series
Vol. XXX. P. 175.
another way in which imperfectly constituted blood is broken up. The hematinic seems ready to be a discharge of blood-corpuscles which have died in the capillaries and escaped conversion into bile and urine. Next in importance comes syphilis. Syphilis is the key-note all through Prof. James's book. But the cases occurring in this country in which there is an undoubted syphilitic taint are comparatively rare. Certain other poisons which are thus enumerated by Prof. James have the same effect when taken into the system: “Aelemixed Hydrogen, Carbonic Oxide, Chloride of Carbon, Ether, Ethyl Chloride, Methyleated Alcohol, Sulphide of Carbon, Chloride, Hydrochloric, and Sulphure Acids.” Sir Wm. Gull believes that the kidney plays a more important part in the production of this disease than is generally supposed, and that
the passage of so much haemoglobin in the urine indicates a loss by the kidneys of their power to convert it into urates. He illustrates his theory by reference to what occurs in convalescence from post-necrotic nephritis. "We frequently see haematuria as a sequel of Scarlet fever. The usual history is as follows: after an attack of Scarlet fever the child passes albumen and blood in its urine; the microscope shows that blood corpuscles are present... But when the child advances toward recovery, and the kidneys begin to resume their functions, though albumen may be present in the urine, we no longer find blood corpuscles these being replaced by haematuria. The kidneys have resumed their functions so far that they can now break up the blood corpuscles. In the next stage, the urine, still containing albumen in small quantities, presents urine acid and urine and we then know that the kidneys are recovering.
to recover themselves. In the fourth stage the wine contains no albumen, but matters, naer and its natural coloring matter. The kidneys have then totally regained their functions, and we have seen, step by step, the dynamical power of the kidneys return."

Sir Wi. Gull concludes his remarks by saying that "this disease is to be dreaded yet, and in account of the condition of the blood, as because an organ essential to life (the kidney) is losing its functions." In forming this opinion, however, Sir Wi. apparently overlooks two important considerations; in the first place, the kidney has nothing to do with the disintegration of blood peculiar to this disease, which takes place in the capillaries, and secondly, the passage of perfectly healthy urine between the parasympathetic nerves that the kidneys suffer. In both of "Dynamical" and whatever.
D. Harley and D. Walkerston Begbie both attached considerable importance to the occurrence of jaundice during the disease; and thought that this pointed to the liver as the real seat of the disorder. There is, it is true in every case I have quoted, a history of jaundice, a "callowess" of complexion; but this is not among the first symptoms of the disease. The jaundice is, as Dr. Druitt remarks, not the result failure of the liver to perform its functions. But I refer to activity. The liver is in fact aiding the kidney in their work of eliminating the diseased blood. Whatever difference of opinion may exist as to the nature of this disease, all observers are agreed that exposure to cold and wet is the immediate cause of the paroxysm. My conclusion may therefore be briefly summed up in a few words: —

The blood has, by some disease, either
Malarious or syphilitic, or by the action of some poison (vide page 74.), become so changed, that under the influence of cold the corpuscles become disintegrated in the capillaries and the hemoglobin is excreted as such, by the kidneys.

The accompanying drawings (after Kneri) show the disordered state of the corpuscles in hemoglobinemia. Fig. 1, 2, 3, and 4, represent the granular delica frozen in the urine. The others show the blood-corporcles as they exist in the capillaries in various stages of the process.

Examination of a drop of my patient's blood with the microscopist, made recently, showed a marked diminution in the amount of blood-corporcles, by nearly one-half. This is readily explained by the frequent discharge of the corpuscles in the capillaries and their kapsage by the kidneys or liver. Although there is now no doubt that the
"Practitione" August 1868.

"Report on Researches intended to promote an improved chemical identification of diseases." 1868.
stuff paper in the urine is really blood to high an authority as H. Stone has at one time maintained a contrary opinion, believing that it consisted of matter highly coloured with purpurea. This opinion, which was founded upon the entire absence of blood corpuscles when examined under the microscope, has since then been rejected, having been conclusively disproved. The recent discovery of D. Thurlow's, made about the same time, showed that the matter present in the urine was chemically, as well as physically altered blood. On submitting the urine to spectroscopic examination, he found that (1) the urine contains hæmato-crystalline and hæmatin in solution. (2) Hæmatin also occurs as a precipitate which increases on standing (3) Hæmato-crystalline is in part transformed into Hæmatin which for a time remains diphostate but is gradually depostate in an insoluble form.