Various forms of neuralgia—as, for example, migraine, angina, asthma, etc.—are said by Da Costa to accompany uric acid gravel. Irregular action of the heart is a frequent accompaniment of the passing of gravel. Levison says constipation is a common occurrence; but this as a rule is, I think, due to some other cause than mere gravel. Frequent micturition is an accompaniment of even the mildest forms of uric acid gravel, and can be explained by reflex irritation.

In children, in mild cases the presence of uric acid sand is often overlooked on account of the child never complaining of any actual pain. Such cases only are recognised by examination of the urine on account of the child suffering from a frequent desire to micturate, which may be attended with sudden fruitless desires to go to stool, and a general restless nature. An ordinary examination of the urine often fails to discover anything abnormal about it. If, however, a fresh specimen of the morning urine is examined by means of the centrifuge, crystals are recognised and the case easily diagnosed.

In more severe cases, as pointed out by Sutherland, Goodhart, etc., the symptoms are more marked. Pain commonly occurs, which is as a rule not referred to the kidneys but to the umbilical or iliac region. The children are restless and active, sleep badly, and often talk while asleep. Besides the presence of uric acid crystals in the urine, albumin is often intermittently present, and tube casts, when properly looked for, are usually found. Frequent desire to micturate and the desire to go to stool also accompany these cases.

TREATMENT.

The treatment of uric acid gravel takes two directions, according as we desire to increase the solubility or decrease the amount of uric acid formed. It is well to remember that in the majority of cases uric acid deposits are due to an increased tendency to precipitation, and not to excessive formation of uric acid.

In cases due to an increased tendency to precipitation, we have to give drugs which help to hold uric acid in solution. In spite of the recent outcry against piperazin, I must say I have found it of great service, particularly in all cases in which gravel has been due to diminished solvents and not excessive formation of uric acid. In fact it appears to me to have no action whatsoever on the quantity of uric acid daily formed in the organism, but merely on its solubility. On this account I always give it in such cases in combination with alkalies either in the shape of alkaline waters, or potash bicarbonate combined with iodides. It is as well to remember that as the urine is naturally most acid at night and early morning, and therefore most likely to deposit uric acid, we can get over this by following Sir William Roberts's advice, and give the alkalines at bedtime. The diet in these cases is not of so much importance except in favour of salines and vegetables.

In cases, again, when the uric acid deposit is due to excessive formation, a carbohydrate diet is the most useful. Starch, sugar, and vegetables should, therefore, be the staple diet, and meat and fish only in small amounts. The old idea that sugar causes an increase of uric acid has no foundation, as I found in a series of experiments performed on myself when I took as much as a quarter or even a pound of sugar a day without causing any noticeable increase in the uric acid passed. Alcohol, on the other hand, should be prohibited, as it causes an increase in the quantity of uric acid voided.

Quinine and arsenic decrease the quantity of uric acid because they diminish the quantity of leucocytes, and therefore in cases where gravel is due to an excessive formation of uric acid they are most valuable. While moderate muscular exercise is of service, excessive exercise is, on the other hand, harmful.

In cases of excessive formation, although alkalies are of some assistance, they, like piperazin, are only of secondary importance by increasing the solubility of the uric acid formed.

The subject of treatment could well be gone into much more fully, but I think I have said sufficient to indicate the general principles on which it should be conducted.

IN WHAT WAY DO DIET AND DRUGS WHICH CLEAR THE BLOOD OF URIC ACID AFFECT THE ARTHRITIS IT PRODUCES?

By ALEXANDER HAIG, M.A. & D.M. OXON., F.R.C.P. LOND.,
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for Children and Women.

It appears to have been concluded by some of those who have read my previous writings that drugs which clear the blood of uric acid, and may under certain circumstances produce arthritis in doing so, must of necessity produce arthritis under all circumstances whenever administered. And so I have been asked to explain how it is that iodides and other drugs which I have shown clear the blood of uric acid are nevertheless useful in uric acid arthritis.

A similar question has also been recently raised in the *Medical Record*, January 26th, 1895, p. 113, with regard to the effects of meat diet in arthritis in connection with my paper on the direct introduction of uric acid in the *BRITISH MEDICAL JOURNAL* of December, 1894; and it is there evidently concluded that as meat diet introduces a lot of uric acid into the body, it must of necessity produce arthritis, and cannot possibly cure or prevent it.

I believe that a very brief consideration of the actual causation of arthritis by uric acid will suffice to show that these difficulties and apparent contradictions are without any foundation in fact.

I have often produced arthritis in myself working under conditions where, all the factors being recorded day after day, I could see every move in the process; I have unintentionally done the same in others, and have seen it done very often indeed by others. The patient is of course said to have had a relapse; but look at the list of drugs used, and note their effects on the solubility and excretion of uric acid, and you will often have no difficulty in saying why the relapse occurred.¹

From such experience I see that if I was going to produce an arthritis—and I have complete confidence that I can do so at pleasure—I must bring about two things: (1) A considerable excess of uric acid in the blood, in solution probably with some salt of potash or soda; (2) the sudden supervention on (1) of some condition unfavourable to the solubility of uric acid in the blood so as to precipitate it on the joints. Unless (2) duly supervenes on (1) no arthritis results; and either excess of uric acid in the blood, or its absence from the blood, may occur alone without any arthritis.

Now as to mineral waters containing sulphates, it is, I believe, well known that their first effect is often to precipitate an attack of gout², that is to say, the patient comes to the Spa with (1) and the water taken produces (2), and the result is a more or less severe attack of arthritis according to the amount of uric acid present, and the rapidity with which it is driven into the joints. But when this attack has passed over, absence of urates from the blood continues, the sulphate water being continued; and there is no further arthritis as (1) is now absent, and the gout is said to be cured. With (2), and as its result, there is a general stimulation of nutrition and metabolism throughout the body³, and the blood is kept clear of urates for a considerable time, perhaps till the following spring or summer; but then, if not sooner, a repetition of the water is required, and the same sequence of events is repeated.

I believe, further, that a considerable number of drugs, or combinations of drugs, which I have no space to mention, owe their reputation for the cure of gout and rheumatism to their power of keeping the blood clear of uric acid. Now, it follows from what I have just said about drugs, and have previously said about diet, and am quoted as saying in the *Medical Record*, January 26th, 1895, p. 113, that meat diet, if it is well taken, well digested, and if the patient is young

¹ Excretion of Uric Acid in a Case of Gout, *St. Bartholomew's Hospital Reports*, vol. xxiv, p. 217; and *Uric Acid*, 2nd edition, pp. 84, 160, 292, and 315.

² I believe that physicians at these Spas tell their patients that the attack is a sign that the water is going to do good, and so it is. See also *Uric Acid*, pp. 31 and 292.

³ *Uric Acid*, 2nd edition, Ch. iv.

enough to have his nutrition stimulated by it, will produce absence of urates from the blood, and so long as it continues to do so there will be no arthritis. An excess of uric acid is being introduced, but it does not remain in the blood because the conditions are unfavourable to its solubility.⁴ Hence meat diet may prevent rather than produce arthritis.

Unfortunately, however, some patients are too old, others are already too feeble and wasted, to respond to any stimulus; and others may at first respond to the stimulus of meat diet, and later, from old age or other causes, fail to do so, and then their blood will become a good solvent of uric acid,⁵ and all the urate they have previously been introducing in meat diet, or retaining with drugs or mineral waters, will come through their blood and produce all the worst effects of severe uricæmia. For this reason I believe that the other way out of the difficulty—namely, to prevent the production of (1) by diminishing the intake and formation of uric acid is decidedly the better of the two; and it is by no means as difficult to accomplish as some would have us believe.

I conclude, therefore, that drugs which clear the blood of uric acid may, if there is much of it in circulation when they begin to act, produce an arthritis, but if there is but little in circulation the signs of arthritis may be so slight as to escape notice. After the first arthritis is over, and so long as they keep the blood clear of uric acid, they will prevent rather than produce arthritis. Meat diet, or uric acid itself regularly administered, act in the same way, and may produce the same results.

THE VISUAL TESTS FOR RAILWAY SERVANTS AND MARINERS.

By J. B. LAWFORD, F.R.C.S.ENG.,

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THE two cases of which I give brief notes have come under my notice within the last three weeks at Moorfields Eye Hospital. In both instances the lack of a properly conducted examination of the eyesight has proved a serious hardship to the individual; and although it is a matter for congratulation that in the case of the railway official the tests are now sufficiently well carried out to detect his colour blindness, it is more than likely that the examiners who passed this man as fit for a fireman also passed other men with equal defect as fit for engine drivers.

CASE I.—W. B., aged 30, an engine driver's fireman in the employ of one of the large railway companies, came to the hospital to ask if he was colour blind. He had been examined before promotion to the rank of engine driver twice in the previous week, and had failed in the colour tests on each occasion. The examiner was an "inspector," not a medical man. The patient's eyes are perfectly sound, his acuity of vision and refraction normal, but he is the subject of typical red-green blindness. He entered the railway company's service eleven years ago as engine cleaner; four years later he became fireman on a locomotive after passing the so-called tests for vision and colour vision. He is now, seven years later, qualified as an engine driver, but is thrown out by reason of his colour blindness, which ought to have been detected at the previous examination. The examiner was not the same on the two occasions.

CASE II.—W. W., a sailor, aged 33, came to the hospital complaining that he could not see properly when on the look-out. He had been at sea since boyhood, and had only recently found his sight defective. On examination, he was found to have healthy eyes, but with abnormal refraction—a high degree of hypermetropia. With suitable lenses his vision was normal; without them it was reduced to $\frac{1}{3}$, and this he found insufficient to enable him to "pick up" lights, etc., at sea. Colour vision was normal. Thus, after spending the best years of his life, he becomes disqualified for his calling by reason of a defect which, although latent, could easily have been detected by a skilled examiner before the lad went to the sea.

⁴ See paper in BRITISH MEDICAL JOURNAL, December, 1894.

⁵ *Uric Acid*, Second Edition, p. 120.

These cases are illustrative of several of the points in relation to the testing of vision of railway servants and sailors—both from the side of the travelling public and that of the men themselves—which the Committee of the British Medical Association have recently brought before the notice of the Board of Trade. I have therefore thought it worth while to send them to the BRITISH MEDICAL JOURNAL for publication.

A CASE OF SCARLET FEVER COMPLICATED BY ABSCESES OF RIGHT EYELID AND OF TIBIA, AND BY BRONCHO-PNEUMONIA: RECOVERY.

By MARK JACKSON, M.D.,

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THE publication of the cases of scarlet fever with œdema of the eyelid by Dr. Sidney Phillips in the BRITISH MEDICAL JOURNAL of January 26th, 1895, has induced me to send you the notes of a similar case.

A boy, aged 12, was sick on August 25th, 1894, and complained of sore throat, which developed into scarlet fever followed by "profuse desquamation of the skin." The rash, when the case was first seen in bed on August 31st, resembled measles, and was accompanied by marked congestion of the conjunctivæ. The temperature for the first week ranged from 103° to 104° F.

On September 2nd, there was noticed slight œdema of the right eyelids, chiefly of the upper lid. This subsided temporarily, but by September 8th the right upper lid had become very œdematous, red, and shiny, occluding the eyeball, though pus issued from between the lids. On September 16th, this swelling burst and discharged pus freely.

The boy was noticed to be slightly deaf on September 8th, and there was enlargement of the cervical glands of both sides of the neck. On this day too the temperature rose from 101° to 103.6° F., with pulse-rate of 106.

Next day signs of broncho-pneumonia were detected in the left lung, with more general bronchitis on the right side. About this time there was otorrhœa from the right ear, accompanied by œdema of the scalp above the right ear and over the mastoid process with tenderness down the right side of neck. Movement of the head was resented because of the pain induced.

On September 10th the pulse was 102, the temperature 103.4°, and the respirations 36. There was free sweating, more marked on the left side of the face, and the patient complained of feeling cold. The conjunctiva of the left eye was very congested; the pupils were equal and there was no squint.

On September 14th the pulse was 108, the temperature 101.6°, and the respirations 36. He had complained of pain in the left leg on September 13th. There was slight swelling over the tibia about 2 inches from the knee-joint. The following night the boy was very restless and could not sleep owing to the pain in the leg. The left pupil was dilated.

On September 21st chloroform was given and an incision made into the swelling over the tibia, which discharged pus, exposing the bone. Later it was found necessary to make a counter-opening at the posterior surface to secure better drainage, and convalescence was soon established and the lung symptoms cleared up. There was a trace of albumen in the urine on September 11th.

REMARKS.—It will be seen that this case resembled closely those published by Dr. S. Phillips, though further complicated by abscess over the tibia and broncho-pneumonia of the left lung. For days the boy's condition was most critical and I feared suppurative meningitis. It can scarcely be doubted that infective elements obtained entrance into the circulation and caused the two abscesses of the lid and of the leg and also the broncho-pneumonia. œdema of the lid was noticed as early as September 6th, before the occurrence of otorrhœa had been observed. Dr. Macewen, in his able work on *Pyogenic Diseases of the Brain and Spinal Cord*, states that "in thrombosis of the cavernous sinus the eye symptoms, though unilateral to begin with, become bilateral at a later