of gonorrhœa in both sexes—which, however, have been studied from the standpoint of a general surgeon, and without any gynæcological proclivities—may be summarised as follows:

1. Gonorrhœa in the male is an entirely local and thoroughly curable disease.

2. The so-called "latent" gonorrhœa is due to changes in the mucous membrane of the urethra which, while they may be due to the persistence of a specific microbe, are apparently explicable by other circumstances, namely, the delicacy of the mucous lining of the urethra, and the conditions of approximation of its surfaces during the intervals of micturition, which is here, as elsewhere, unfavourable to the disappearance of granular or injected areas, or of the traces of inflammation; the periodical passage along the canal of a secretion, the urine, which is especially liable by reason of changes in its constitution to become an actual irritant; the exposure of the whole region at times of erection to intense congestion of its vessels; the effect of gravitation, the proportionately excessive supply of blood to the region, and the absence of extravascular resistance due to the elastic character of the spongy tissue, all of which conditions favour the persistence of any vascular engorgement or congestion left after a first attack of urethritis. When in addition we consider the frequency with which gonorrhœa produces submucous thickening at some point in the urethra, causing an encroachment on the calibre of the canal and, from obvious mechanical reasons, the production of discharge, we can understand that many of the cases of "latent" gonorrhœa can be explained without reference to the existence of a specific poison.

3. While awaiting definite microscopical evidence upon the subject it should not be forgotten that there are marked differences between gonorrhœa as we observe it clinically and those diseases known to depend upon a specific poison. The absence of a definite period of incubation; the fact that it may be produced with all its characteristic symptoms by a variety of agents, chemical, traumatic, and infectious; that it predisposes to, instead of protecting from, a second attack; that it is associated only with the ordinary processes of inflammation, and that it may be reawakened or produced at will by mechanical irritation seem strongly to differentiate it from most specific diseases.

4. It is quite possible, even if gonorrhœa does not depend for its origin primarily or exclusively upon the gonococcus, that under certain circumstances the suppuration which accompanies it may favour the development of these or other forms of bacterial life, which in such cases might greatly increase both its contagious quality and the probability of its rapid extension in the infected individual. These cases in women constitute the class which comes most naturally under the attention of the gynæcologists, to whom, indeed, they have usually been referred by the surgeon or general practitioner. They do not happen, after all, with great frequency, and, when they do occur, are by no means followed in all or even in the majority of instances by the serious and alarming sequelæ which have been described.

5. In many such cases a line of treatment which includes rest in bed, elevation of the pelvis, counter-irritation, hot antiseptic vaginal injections, and anaphrodisiacs with arterial sedatives will result in cure.

6. In some instances gonorrhœa undoubtedly produces consecutively endocervicitis, tubo-ovarian abscesses and pelvic peritonitis, and necessitates a resort to operation, but I repeat emphatically that these instances are comparatively rare or exceptional.

PERCHLORIDE OF IRON IN DIPHTHERIA AND SORE THROAT.—In the *Vratch*, Nos. 8 and 10, 1888 (p. 148), Dr. V. P. Kürtchinsky, of Oster, highly recommends the internal administration of perchloride of iron as the best remedy for diphtheria, as well as for sore throat of any description. The following formula was used: ℞ Liq. ferri perchloridi, *Ph. Russ.*, ℥ ij, glycer. puriss. ʒ ss, aq. destill. ʒ vi. M. From a half to one teaspoonful to children, one dessertspoonful to adults, every half hour day and night. Of fifty-three diphtheritic cases treated in this way, only one (1.9 per cent.) died, the remainder recovering rapidly. In cases of sore throat, good results were obtained in catarrhal, scarlatinal, and mycotic angina. In the *Russkaia Meditzina*, No. 39, 1888 (p. 622), Dr. J. S. Kolbasenko, of Kopal, writes that he tried Kürtchinsky's mixture in thirteen severe cases of acute catarrhal pharyngitis of infectious origin. In every case the first five or six doses, taken in the course of two or three hours, produced relief of pain and dysphagia, and complete recovery took place in from twenty-four to thirty-six hours.

ON URIC ACID AND ARTERIAL TENSION.

BY A. HAIG, M.A., M.D.Oxon., M.R.C.P.,

Physician to the Royal Hospital for Children and Women, Waterloo Road; Assistant-Physician to the Metropolitan Hospital.

PROFESSOR BURDON SANDERSON[1] says: "We have already seen that the sphygmograph is of no use as a gauge of arterial pressure. It is possible, however, by the comparison of observations made at successive periods on the same individual, to determine whether the arterial tension has changed, and in what direction the change has taken place." And it is in this relative and restricted sense that I am now going to treat of arterial tension and some results I have obtained with the sphygmograph. I hope to be able to show that, in a given individual, arterial tension is always relatively high under some conditions and relatively low under other conditions; and, further, that by altering these conditions I am able, within certain limits, to produce changes of arterial tension at pleasure.

The late Dr. Mahomed[2] attached great importance to the sphygmograph as a means of estimating arterial pressure, and he laid down the rule that, if any part of a trace rises above a line drawn from the apex of the upstroke to the bottom of the notch preceding the dicrotic wave, such trace shows high pressure. Dr. Broadbent, on the other hand,[3] attaches comparatively little importance to the records of the sphygmograph, but says: "I am of opinion that we learn by means of the educated finger all that the sphygmograph can teach and more."

Looking, therefore, at these two opinions, I have always endeavoured in my experiments to combine the two methods by estimating the tension with the finger and writing down the result before applying the sphygmograph; and all the notes appended to the traces which will be presently given have been obtained in this way by independent observation, and are not mere descriptions of the trace.

I may say at once that the finger and the instrument I have used (Dudgeon's) seem, as a rule, to correspond very well. When there is high tension well marked to the finger, it is equally plain and distinct in the sphygmogram, and the same with very low tension; but in intermediate conditions I have sometimes been led to think that the sphygmograph is more accurate than the finger, or it has sometimes seemed to explain conditions which were misleading to the finger. Be this as it may, my results have always been obtained by both methods, and they have been practically constant, similar conditions and symptoms showing similar pulse-tension.

Dr. Liveing[4] quotes remarks by many observers showing that the pulse is generally considered to be slower than natural and hard during the headache. I have remarked in previous papers[5] on the slow high tension pulse of the uric-acid headache. When I afterwards found that I was able to produce this headache at will by influencing (as I believe) the uric acid in the blood, and that I could also produce a considerable amount of mental depression by the same means,[6] I became greatly interested in Dr. Broadbent's remarks[7] on high arterial tension as a very constant symptom in melancholia, and to an even greater extent in Dr. Mahomed's remarks on the clinical aspects of chronic Bright's disease.[8] For while Dr. Broadbent's observations showed me the very constant relation of high tension of the pulse to some conditions which I believed to be due to uric acid, Dr. Mahomed's writings convinced me that many of the symptoms of the prealbuminuric stage of Bright's disease, together with the high-tension pulse on which he lays such stress, are the work of uric acid and are due to its excess in the blood.

Having found, as above stated, that I could produce a headache or a fit of mental depression by influencing the uric acid, it occurred to me that I ought to be able to produce a high- or low-tension pulse also, and the experiments I am now going to relate show, I believe, that this is the case.

[1] *Handbook for the Physiological Laboratory*, p. 220.
[2] *Guy's Hospital Reports*, 1879.
[3] Croonian Lectures, 1887.
[4] *Megrim and Sick Headache*, p. 329 *et seq.*
[5] *Med.-Chir. Trans.*, vol. lxx, p. 3 of papers.
[6] *Practitioner*, November, 1888.
[7] Croonian Lectures, 1887.
[8] *Loc. cit.*

With a view of testing this point, I proceeded to produce in myself from time to time a uric-acid headache or a fit of mental depression, to take traces and observe the pulse during their presence and to drive them away and produce the opposite mental conditions of happiness and well-being, again observing the pulse, both by fingers and sphygmograph. I also made traces of my pulse under all conditions of time, temperature, digestion, etc., and noted any variations these appeared to occasion. And in patients with headache, mental depression, or gout, I have taken every opportunity of investigating the tension of the pulse under various conditions.

Trace No. 1 shows the ordinary slow high-tension pulse of a uric-acid headache, and if we apply Dr. Mahomed's line to it, some of the trace would clearly come above it. For my part I feel inclined also to lay some stress upon the relative size of the

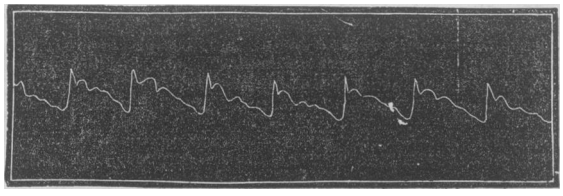


Fig. 1.—November 8th, 1888, 7.30 A.M. Sitting pressure, 5 oz.; pulse, 57; tension plus; decided headache.

predicrotic and dicrotic waves, and here we have a large predicrotic and an obviously much smaller dicrotic wave. A further point is the notch preceding the dicrotic wave, which here comes high up in the trace above the middle of the upstroke.

No. 2 is also the trace of a uric-acid headache, but here the pulse is quick, 92, owing to exertion, and this alters some of its characters as compared with No. 1, but the predicrotic wave is still as large or larger than the dicrotic, and Dr. Mahomed's line

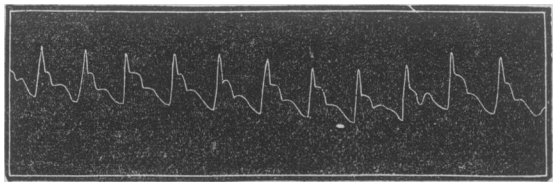


Fig. 2.—October 15th, 1888, 5.30 P.M. Sitting pressure, 5 oz.; pulse, 92; tension, moderate; surface warm after exercise; headache bad.

would still, I think, cut off some part of the predicrotic wave. A Trace No. 2 B taken two hours and a half before it, when head-

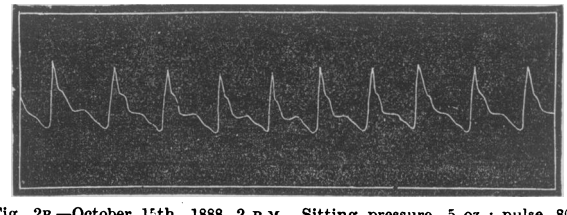


Fig. 2B.—October 15th, 1888, 2 P.M. Sitting pressure, 5 oz.; pulse, 80; tension, slight; headache passing off.

ache was for a time better, shows much less tension, though the pulse is only 80.

No. 3 is the trace of the same pulse as No. 2 some two hours later, the headache having meanwhile been driven off by the use of acids. Here the predicrotic wave is smaller than the dicrotic,

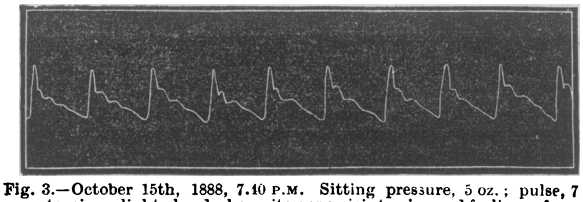


Fig. 3.—October 15th, 1888, 7.40 P.M. Sitting pressure, 5 oz.; pulse, 7 tension, slight; headache quite gone; joint pains and feelings of well-being.

Mahomed's line would cut off little or nothing, and the notch preceding the dicrotic wave is not above the centre of the upstroke. The pulse rate is 72, or about normal, so that quick pulse had nothing to do with apparent low tension.

No. 2 is the pulse of a pretty severe headache made worse by the exertion. No. 3 is the pulse of the bright and happy mental condition of well-being, with some shooting and pricking pains in the joints, the usual results of the cure of a uric-acid headache by acids. My observations have also convinced me that the tension of the pulse and the excretion of uric acid correspond very closely, and that tension is, *cæteris paribus*, always higher at the time of the "alkaline tide" of digestion, that is, after breakfast in the morning, again in the afternoon from about 3 to 6 P.M., and last in the evening about 10 P.M., and it is just at these hours that uric-acid headaches come on or increase in severity. It also appears to me that though temperature affecting the surface vessels and the extremities, and exercise quickening the pulse and causing perspiration do affect the character of the trace to some extent, they do not remove all signs of tension when a headache is present as in Trace No. 2; nor, on the other hand, can cold and contraction of surface vessels alone produce so much tension as is shown in No. 1 or No. 4. No doubt if the exercise which affected Trace No. 2 could have been persisted in to the extent of causing free perspiration, it would have removed all signs of tension, but it would have removed the headache also. Exercise increases the pain of a headache, and it is not generally possible to persevere with it; but if strong exercise is taken when a headache is threatening, it will prevent it.

The effects of nitro-glycerine on the pulse-tension are well known, and it is interesting to compare with the above some traces I obtained on another occasion by taking a *B. P.* tabloid during a headache.

No. 4 shows the trace of the headache before the tabloid was taken, and it sufficiently resembles the headache trace previously given to need no further comment.

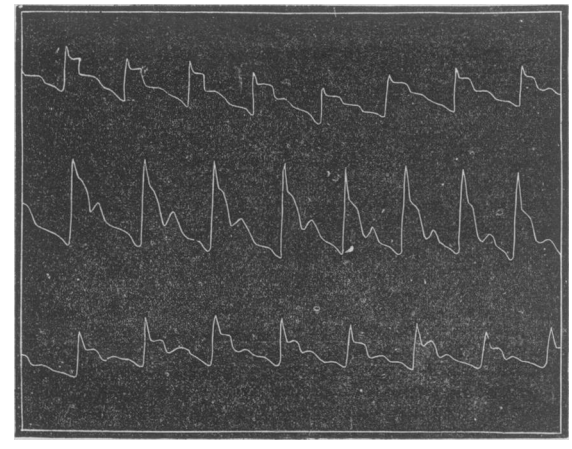


Fig. 4.—December 15th, 1888, 9 P.M.—Sitting pressure, 5 oz.; pulse, 68; tension moderate, and slight headache.

Fig. 5.—9.15 P.M. Sitting pressure, 5 oz.; pulse, 80; tension, slight.

Fig. 6.—9.25 P.M. Sitting pressure, 5 oz.; pulse, 75; tension, moderate.

No. 5 is 15 minutes later than No. 4, and 10 minutes after the tabloid was taken, and its characters are in marked contrast with No. 4, The predicrotic wave is either absent, or represented only by a bend, and Dr. Mahomed's line would, in most of the curves, cut off nothing. The dicrotic wave is relatively very large, and the notch preceding it has almost two-thirds of the upstroke above it.

No. 6 is a trace taken 10 minutes later, showing the effects of the nitro-glycerine passing off, and the pulse tending to return to the condition in No. 4.

It may be interesting to say that the headache was slightly relieved while the effects of the nitro-glycerine lasted, but quickly got worse as the tension returned. And here we are brought face to face with a very interesting problem, namely, supposing all these things—headache, epilepsy, mental depression, and others—are due to uric acid, are they due to the direct action of the poison on the tissues or nerve-elements concerned, or are they due to it indirectly through the high tension it occasions?

Dr. Broadbent[9] says that the convulsions of uræmia are not due to the poison, but to the high tension deranging the cerebral circulation. He further remarks that the pulse in epilepsy is of very low tension, but in the Croonian Lectures he explains that either very high or very low tension may lead to the same results as regards the cerebral circulation; and he further speaks of some cases of epilepsy associated with chronic high tension of the pulse which are very amenable to treatment by a milk diet, these latter facts being strongly in favour of the causation of some cases of epilepsy by uric acid, as I have suggested.[10]

The causation of mental depression receives, I think, also some important elucidation, for, if the effect of either high or low tension is to cause derangement of cerebral circulation amounting to anæmia, we have a simple explanation of the association of melancholia with either high or low tension, for if the high tension is in some cases due, as I have reason to think, to uric acid, it can be removed, and the melancholia cured; but if it be due to low tension and weak circulation, especially in old people, there is but little to be done for it, and this corresponds with their relative curability as pointed out by Dr. Broadbent.

I have a patient suffering from slight mental depression whom I see occasionally, and who has noticed a point of some interest in this connection—namely, that violent muscular exercise causing perspiration, or a hot or Turkish bath, will remove his mental depression, and these things would, I should imagine, affect the arterial tension without affecting the uric acid, so that it looks as if the depression depended directly on the arterial tension, and only indirectly on the uric acid. The same patient has told me another interesting fact—namely, that he sometimes gets an attack of "rheumatic" pains, and then his mental depression clears up at once, so that some of his friends have even been led to notice that he is more cheerful with the pains than he was before them. It will be noticed how exactly this history corresponds to my headache, and depression which often accompanies it, clearing up with an acid, and being replaced by joint pains and bright and cheerful feelings of well-being. And I have several times met with gouty patients who suffer from marked depression in the intervals of their gout attacks, but never have depression at the same time as an attack, and in *St. Bartholomew's Hospital Reports*, 1888, I have given notes of a Case of Gout in which the attacks always coincided with high and rising acidity and retention of uric acid, conditions which, as we have seen, produce mental brightness and sense of well-being.[11] The pulse of mental depression in myself is practically the same as that of headache, though with less marked characters, but I have never found a pulse like that in Trace No. 3 coexisting with mental depression.

Till I began to examine the point systematically, I was under the impression that my pulse always showed high tension, which, though markedly greater during the headache, did not otherwise vary much,[12] but I soon found that this was not the case, and that of five or six traces taken at intervals of a few hours during the day no two would be exactly alike.

Trace No. 7 shows my pulse after three hours of hard exercise, and it will be seen that the predicrotic wave has disappeared, the dicrotic wave is large, and the notch preceding it has three-quarters of the upstroke above it—characters which are the exact reverse of those met with in headache, and differ considerably from those of my average pulse. Some sufferers from the uric

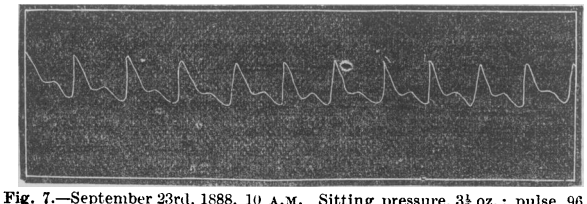


Fig. 7.—September 23rd, 1888, 10 A.M. Sitting pressure, 3½ oz.; pulse, 96; no tension; after three hours' exercise on tricycle, with perspiration.

acid headache, however, may have a pulse that at other times shows little or no tension, as I know of a medical fellow sufferer, whose pulse, when he is well, much resembles mine in Trace No. 7, and shows no tension whatever appreciable by the finger; but he tells me that when he has a headache the pulse, as observed by himself and others, has a very different character, and some of his urine passed during a headache showed an excess of uric acid.

I could show many more traces of interest, and some giving almost all intermediate characters between the lowest and the highest tensions I have now given, and I have numerous traces of headache and mental depression all showing the same thing; but I hope that what I have shown will suffice to prove that, just as headache and mental depression can be produced by influencing uric acid, so the high pulse-tension which accompanies them can also be produced or removed.

I think it will be interesting here to examine the causes of high tension mentioned by Dr. Broadbent in the Croonian Lectures, and first stands:

1. *Heredity.*—Of this I have no special knowledge, but it seems very often to mean heredity of gout.

2. *Kidney Disease of all kinds, except such as is attended with suppuration; but the most marked tension is met with in the Contracted Granular Kidney.*—I will only remark that it seems to me not improbable that the tension or the conditions associated with it are the cause of the kidney disease rather than the other way, and in this matter I quite agree with what the late Dr. Mahomed has written, and I would further point out that Dr. Mahomed made use of the fact mentioned by Dr. Broadbent that tubercular or suppurative diseases of the kidney are not accompanied by high tension as an argument in favour of his hypothesis that in chronic nephritis the high tension and other signs of a poison in the blood are not the result of, but precede by some years, the kidney lesion which is secondary to them.

3. *Gout and Allied Conditions.*—I have no objection to this, and, indeed, I think that many of the other causes should be included in this one.

4. *Lead Poisoning, with or without Renal Disease or Gout.*—Sir A. Garrod[13] has shown that there is excess of uric acid in the blood in chronic lead-poisoning, so that this might, perhaps, be included in gout; and I have pointed out[14] that lead causes retention of uric acid, and anything that retains uric acid in the body causes it to be every now and again in excess in the blood.

5. *Anæmia.*—Dr. Broadbent remarks: "There are rare and exceptional cases of anæmia with extremely low tension." I cannot undertake to give any precise explanation of the high tension of anæmia; but it has occurred to me that anæmia often means debility, with falling production of urea and falling acidity of the urine, and increasing alkalinity of the blood and tissue fluids; and this last factor would, as I can show, entail the washing out into the blood of any uric acid that had been retained during previous times of good nutrition and high acidity, and during the washing out of this uric acid I should expect a high tension pulse. I give this hypothesis for what it is worth; but I have every intention of examining the matter more closely.

6. *Pregnancy.*—It is easy to see in the large and active nitrogenous metabolism of this period a condition corresponding to gouty hyper-nutrition, and entailing some retention of uric acid, which must from time to time find its way into the blood.

7. *Constipation.*—I have pointed out in a paper on a Case of Gout[15] the part that constipation appears to play in raising acidity and causing retention of uric acid, and I have there attempted an explanation of the fact. With regard to high tension, then, the same explanation may apply to constipation as was used in the case of lead.

8. *Plethora.* — I have already spoken of this in connection with pregnancy, and the same explanation may apply to it when otherwise caused.

9. *Chronic Bronchitis and Emphysema.*—Of these I have no special knowledge, but they are so often associated with gout, granular kidneys, and allied conditions, that there is no great difficulty in supposing the high tension to have a common origin with them in excess of uric acid in the blood.

I do not for a moment assert that the causation is in all cases that above mentioned; I wish merely to suggest that it is not impossible to explain these associated conditions on the uric acid hypothesis.

For the present, I believe merely that uric acid is a cause of

[9] JOURNAL, vol. ii, 1883, p. 357; also in the Croonian Lectures, Lecture III.
[10] *Neurologisch. Centralblatt*, March 1st, 1888.
[11] See also *Practitioner*, November, 1888, p. 345.
[12] *M.D. Thesis*, p. 29. London: John Bale and Sons, 1888. Also JOURNAL, vol. ii, 1888, p. 11.
[13] *Gout and Rheumatic Gout*, page 240.
[14] *Med. Chir. Trans.*, 1888.
[15] *St. Bartholomew's Hospital Reports*, 1888.

high tension in some cases, just as I have previously stated that it is a cause of some headaches, of some epileptic fits, and of some mental depression or melancholia; but it must be left to the future to show in what proportion of these disorders it is the active agent, as well as to confirm or refute the facts I now bring forward.

I will now say a few words about some of the conditions of the prealbuminuric stage of chronic nephritis mentioned by the late Dr. Mahomed, which are of most interest to me, and some of these I have mentioned in previous papers.

Cold Hands and Feet.—These are very marked in myself at all times, but more especially during a headache, when it often seems to be impossible to get the feet warm by anything short of sitting with them in hot water, and where this can be done it gives some relief to the head. It seems to me that we have at this point very interesting connections with Raynaud's disease, if not, also, with paroxysmal hæmoglobinuria.

Imperfect Digestion, Bronchitis, and Gastric Catarrh.—Dyspepsia, I have no doubt, has important relations to uric acid, and some of these I have pointed out in previous papers; but if retention of uric acid produces, as I am inclined to believe, congestion of the liver, it may by this means produce portal congestion and gastro-intestinal catarrh. Headache, especially hemicranial, loss of memory, depression, weariness, cloudiness of intellect, and hypochondriasis are among other symptoms mentioned by Dr. Mahomed, and I have already said that I believe I can produce most of them by influencing uric acid.

With regard to kidney disease, bronchitis, gastric and other catarrhs, Dr. Mahomed says,[16] "I have tried to show that a poisoned condition of the blood is the primary condition—the bad blood produces a congestion of the excretory organs, that is, of the skin mucous membranes and kidneys;" and I am now attempting to show that uric acid in the blood will produce many of the symptoms he mentions.

In conclusion, I would express my very strong conviction that when the headache known as "migraine," "bilious headache," or "sick headache," is associated with a pulse-tension which is notably higher than that of the same individual in his ordinary health, such headache and high tension of the pulse are due to excess of uric acid in the blood, and will be found, on examination, to be contemporaneous with its excessive excretion in the urine, and may be cured or prevented by diet or drug treatment directed to the removal from the blood of such excess of uric acid.

The cases of epilepsy which Dr. Broadbent[17] has pointed out as being associated with chronic high-tension pulse, and as very amenable to treatment by a milk diet, are, I should think, in all probability due to uric acid.

In addition to the case of epilepsy mentioned in the *Neurologische Centralblatt*, March 1st, 1888, I have found uric-acid reactions in all cases of epilepsy I have been able to examine with sufficient care, though these are as yet very few in number; but in no case have I found a high-tension pulse at the time of the fit, though I have found it in many very fairly marked between the fits. I think, however, that very probably the exertion and struggling in the fit have been sufficient to quicken the pulse and remove the signs of high tension, at least to the finger,[18] though I should expect that a trace taken after a fit would show more signs of tension than a trace of the pulse in the same individual under normal conditions and quickened by exertion to the same rate, and I shall take the first opportunity of testing this point. With regard to mental depression associated with high tension, I feel just as confident of the causation of both by uric acid, as I do in the case of headache, for both these conditions I can produce and cure at pleasure in myself and others, and it is easy to say when they are present and when they are absent; but epilepsy presents in both respects a much more difficult problem, as the fits give little or no warning of approach or cessation. I have, however, met with several interesting cases where fits apparently occur only during a sick headache, and similar cases are recorded by Dr. Liveing[19] and other observers, and many points mentioned by Dr. Broadbent are of great interest in this connection.

I conclude from the facts, some of which I have given in this paper, (1) that, *cæteris paribus*, arterial tension varies with the amount of uric acid that is circulating in the blood. (2) That (as I have said in previous papers) when the uric acid in the urine bears a greater proportion to the urea excreted along with it than about 1 to 33 (1 of uric acid to 33 of urea), there is some excess of uric acid in the blood, of which the excess in the urine may be regarded as an index. I would here remark that my supposed normal relation of uric acid to urea (1 to 33), as given in previous papers,[20] is nearly midway between the relations of these two substances found by MM. Yvon and Berlioz,[21] their first published relation being 1 to 30, and their second 1 to 40; and practically I do not regard as abnormal relations coming between 1 to 30 and 1 to 36. (3) That it follows from the above that as I am able to vary the excretion of uric acid to a considerable extent at will, I am also able to cause alterations of arterial tension in either direction.

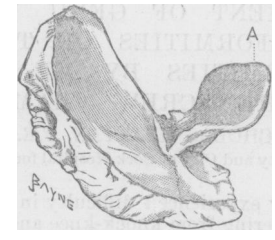
The high pulse-tension of headache has been noticed by Dr. Liveing and others, and that of melancholia by Dr. Broadbent. I have in previous papers suggested that both these disorders are in some cases due to uric acid, and I now make the further suggestion that the high tension is also due to uric acid, and may be controlled by altering the amount of it in the blood.

[16] *Loc. cit.*, p. 365.
[17] Croonian Lecture, No. III, 1887.
[18] See previous remarks on Trace No. 2.
[19] *Loc. cit.*

EXCISION OF THE INTERNAL SEMILUNAR CARTILAGE, RESULTING IN PERFECT RESTORATION OF THE JOINT-MOVEMENTS.

By THOMAS 'ANNANDALE, F.R.C.S.,
Regius Professor of Clinical Surgery in the University of Edinburgh.

THIS case, which closely resembles the very successful one described and shown to the Clinical Society of London by Mr. Croft on March 9th, 1888, is an additional proof that one or both semilunar cartilages may be removed without interfering with the after proper movements of the joint, as stated by Professor Kocher. The condition of the excised cartilage in the case presently to be recorded is illustrated in the wdoocut; and in addition to the tongue-like portion of it (see A), which had been



partially torn away, the body of the cartilage itself was thickened and undergoing a form of fatty degeneration. Had the cartilage been healthy I should have confined the operation to the excision of the projecting portion.

I think it may be fairly said that operative interference in connection with injured or diseased semilunar cartilages has now become an established procedure; and since my first case, operated upon on November 16th, 1883, and recorded in the JOURNAL for April 18th, 1885, and February 12th, 1887, additional and successful experience has been recorded by myself and by other surgeons. Six weeks ago I operated upon a case in which the attachments of the internal semilunar cartilage were so separated as a result of an injury that the cartilage was doubled up in the joint like a piece of folded cardboard. I was able to bring it into proper position, and by means of four catgut stitches to secure it so. This case has progressed without the slightest bad symptom, although the operation was a somewhat tedious one and the joint surfaces freely fingered, and the patient is now walking with a perfectly movable joint.

Further experience of these cases has confirmed my opinion that no mechanical appliances will cure cases in which the semilunar cartilages are much separated from their attachments or otherwise seriously injured. Such appliances may, by limiting the movements of the knee-joint, allow a patient to walk more

[20] See *M. D. Thesis*, previously referred to.
[21] *Rev. de Méd.*, September, 1888.