27 invalided; of whom 20 admissions, 7 deaths, and 18 invalided are in the returns from India. Fatty degeneration of the heart has given rise to 106 admissions, 121 deaths, many of them sudden, without doubt, and 25 invalided. In the first quinquennial period, the term in use is degeneration, but I have here arranged them under the one heading. The men most liable to this disability are those employed as canteen and mess waiters, or in situations where tipping habits may be indulged in with considerable impunity. The effect of loss of tone from nervous exhaustion induced by malaria, tropical service, etc., is seen in the higher admission-rates in India than at home. The death-rate and invaliding-rate are almost equal in both armies. The small admission and high death-rate indicate a disease which is insidious in its progress, and rapid in its fatal termination. The abuse of alcoholic liquors, the effects of over-feeding in warm climates, and the tendency to inactive habits engendered by excessive solar heat, account for the predisposition to weak, flabby, fatty hearts so often exhibited in soldiers returning from foreign service. These points have been fully insisted on by a succession of able administrative medical officers in India.

Aneurysm of the heart is given as the cause of 30 admissions, 8 deaths, and 1 invalided. Madras is credited with half the admissions and half the deaths in one year, which is singular if not due to an error in the returns.

Rupture of the heart has occasioned 5 admissions and 13 deaths, 4 admissions and 6 deaths being from India.

Angina pectoris figures largely in the first quinquennial period, causing 216 admissions, and but 52 in the second; nearly two-thirds are from India. There are 8 deaths, and 28 invalided in the decade. [To be continued.]

EXPERIMENTS ON THE INFLUENCE OF DRUGS ON THE EXCRETION OF UREA AND URIC ACID.

By EDMUND ALLEYNE COOK, L.R.C.P. Ed., L.R.C.S. Ed.

(Continued from page 858.)

Action of Powdered Malt on the Excretion of Urea and Uric Acid.—The commencement of this set of experiments was somewhat irregular, inasmuch as the excretion of uric acid was not normal in amount when the administration of the malt-powder was commenced; and the experiments were somewhat marred by a meeting in close rooms, which had its own influence on the excretion. The experiments were commenced November 17th, 1881, immediately after the last tomato experiments, and when the uric acid excretion, which had been sent up to 19.3 grains, had gradually decreased to 15.3 grains.

Date.	Urine.	To Litmus.	Sp. Gr.	Urea.	Uric Acid.
November 17	30 oz.	acid	1023	345 grs.	16.0 grs.
" 18	43 "	"	1023	385 "	16.6 "
" 19	39 "	"	1023	447 "	13.5 "
" 20	37 "	"	1026	477 "	20.0 "
" 21	51 "	"	1018	443 "	15.8 "
" 22	36 "	"	1028	493 "	15.0 "
" 23	30 "	"	1029	416 "	15.0 "
" 24	34 "	"	1026	400 "	14.4 "
" 25	33 "	"	1028	385 "	12.5 "

On the 16th, the first dose of malt-powder—sifted, to free it from large husks—was taken in the evening. The diet was as stated in former papers, and the quantity of liquid consumed was about six ounces more, *i.e.*, fifty ounces. On the 17th, after each meal, half a teaspoonful of malt-powder was taken, and the diet in all other respects was without variation. All day, a semi-headache was experienced, such as would ordinarily be expected with constipated bowels, but the bowels continued regular. On the 18th, the same amount of malt in the same manner, as also on the 19th; but a meeting was attended on the evening of the 19th. No change of diet. On the 20th, the regular doses of malt were taken, and again on the 21st, and then its administration was discontinued. When the malt administration began, the health was perfect. The second day, an ill-defined headache and sense of bodily fulness was experienced, and this continued more or less throughout the administration; the bowels were regular, and the exercise and sleep as usual. Setting aside the meeting, which apparently caused the large increase of uric acid in the collection of the 20th, the effect of the malt-powder seems to have been to increase the urea excretion considerably, and the uric acid also. There was no other assignable cause for the excretion continuing so much above the normal than the use of the malt; and, on the cessation of its use, the amount excreted fell. The amount of malt used would not itself produce uric acid or urea, but the action of its diastase on the food would

convert the cooked starchy material into maltose much more completely than would ordinary digestion; and this, being conveyed to the liver, and probably stored as glycogen, would increase the liver-activity; and, if the urea be a product of liver-action, the increase would be explained. These experiments are, perhaps, best considered in conjunction with the following.

Action of Pepsin on the Elimination of Urea and Uric Acid.

Date.	Urine.	To Litmus.	Sp. Gr.	Urea.	Uric Acid.
December 18	30 oz.	acid	1025	431 grs.	11.6 grs.
" 19	34 "	"	1022	400 "	13.1 "
" 20	36 "	"	1022	447 "	18.0 "
" 21	54 "	"	1016	478 "	18.8 "
" 22	40 "	"	1023	424 "	17.0 "

Christmas irregularities of diet interfered with and confused the conclusion of these experiments.

On each day, pepsin-elixir, of Symes and Co. of Liverpool, was taken in three separate doses of one drachm after each meal, the digestion and bodily health being perfect. On the second day after commencing the pepsin, there existed a feeling of great depression and restlessness, with feverishness, and this continued on the 20th, but in less degree. On the 20th, eight ounces more water were taken, and also on the 21st.

These experiments with malt-powder and with pepsin are by no means perfect, but they point to an increase of both urea and uric acid, caused by the administration; and, since the administration may be presumed to cause increased liver-action because of more perfect digestion, and there exists nothing in either malt or pepsin, in the doses given, sufficient to produce by its presence the increased excretion noted, the tendency of these results is to fix the production of both urea and uric acid on the liver; or, if we cannot go so far as that, we may say that increased liver-action is coincident with increased excretion of these substances. It must be noted that the increased liver-action was caused by increased nutrition, *i.e.*, an increase of nutritive material must have been carried to that organ, although the same diet was continued, because the diet was better digested.

To throw a little more light on the subject, in November 1882, with a diet in most respects similar, and of great regularity, the following was tried.

Influence of Euonymin on the Elimination of Urea and Uric Acid.

Date.	Urine.	To Litmus.	Sp. Gr.	Urea.	Uric Acid.
November 1	38 oz.	acid	1020	360 grs.	11.7 grs.
" 2	34 "	"	1022	382 "	14.3 "
" 3	50 "	"	1020	340 "	17.4 "
" 4	46 "	"	1020	375 "	14.3 "
" 5	43 "	"	1020	340 "	12.5 "

On October 31st, no drug was taken. On November 1st, one grain of euonymin (brown) was taken on an empty stomach and in solution. On the second, this dose was repeated, and again on the 3rd. On the 4th and 5th, no drug. The life was regular, and the increase of uric acid must be put down to the euonymin. It is seen there is no notable increase of urea. Now, euonymin is reported to be a pure excitant of the liver, and has no other action which has been well studied or which is prominent. The elimination of uric acid, after increasing, is seen to decrease, in spite of the continued administration of the drug; but it must be remembered that euonymin produces an increased action of the bowels, and this would carry off water and, doubtless, other material, which would otherwise pass by the kidneys. This looseness began on the 3rd, and continued, necessitating the conclusion of the experiment.

It has been proved that, when the liver is eliminated from the general circulation, the secretion of urine is entirely suppressed, and only recommences on injecting urea into the general circulation; hence has been deduced the proposition that the liver is the seat of urea formation. Parkes states his belief that urea is largely formed in the liver, and that in acute disease, the deficiency is in proportion to the amount of liver involved. I have not been able to ascertain whether this observation has been continued to the elimination of uric acid, though, of course, if the secretion of urine ceases when the liver is eliminated from the circulation, the excretion of uric acid must cease also.

The question whether urea and uric acid are converted, the one into the other, in the animal organism, has been often discussed and as often left unproved. Parkes remarks: "While the complete destruction of uric acid introduced into the body is quite certain, it is as certain that uric acid, or some amount of it, produced in the body, is not so destroyed, but passes off with the urine." Why should we not suppose that the unknown conditions, which in this case protect the uric acid, may be also protective if uric acid is formed directly from food? In other words, is the parallel drawn between

uric acid artificially introduced and uric acid supposed to be produced from food in the circulation a correct one, and the argument deduced from it valid? We do not at present know enough of the transformation of uric acid into urea to enable us to give an answer; but we may safely say that if uric acid be produced from food in the circulation, it must be destroyed and pass into urea, unless sound protective influence is present. So that, unless we introduce an unauthorised conjecture, we must suppose that if urea be formed only from tissues, uric acid must have a similar origin."

I do not think I can yet offer any further light on this supposed conversion, but I would submit that these experiments, so far as they go, show: 1st. That an action on the food, which will certainly tend to increase liver action, tends also to increase uric acid and urea; 2nd. That a direct action on the liver by a drug, while it increases markedly uric acid, does not increase urea elimination. If, then, the liver be probably the seat of formation of urea, it is also, probably, the seat of formation of uric acid; but the excitation of the liver which is sufficient to increase the acid, is not sufficient to increase the urea, unless digested food be conveyed to it at the same time.

SOME COMMON AFFECTIONS OF THE ANUS OFTEN NEGLECTED BY MEDICAL MEN AND PATIENTS. *

By A. S. MYRTLE, M.D., HARROGATE.

NOTHING has impressed me so forcibly with the importance of a close investigation, even to minute, sometimes disagreeable details, regarding the condition of every case coming before us, than the fact that I have, in a very great number of instances, been consulted by patients who have suffered for months and years from affections of the anus; and neither they, their medical men, nor consultants even, have been aware of the nature of the mischief or its extent. Patients are to blame for this oversight as much as their attendants. They are often very reticent: women especially dislike to speak of symptoms, however distressing, occurring daily, or at least after each defecation; and even men in like condition seem ashamed to own that there is anything wrong with them. We, at all events some of us, are cursed with an excess of modesty, or, because the part is not the most savoury, are disposed to fight shy of it; or we attach too little importance to the patient's statements, and fail to make a physical examination.

Moreover, whilst every week's publications are rich in literature upon uterine displacements and ovarian growths, anal difficulties seldom find a place, although I believe that the latter are infinitely more frequent than, and of equal importance with, the former.

The commonest affection is itching; pruritus ani, I dare say, is so common, that every one of us has had some personal experience of the nuisance, but few know what a terrible thing it becomes when it obtains a firm hold of one; the agony then is something maddening. The causes are carelessness in cleansing the part, acrid discharge from mucous follicles, irritation from reflex action, the presence of certain eruptions, and functional derangement of the peripheral nerve-filaments, all requiring special treatment for the successful removal of this intolerable evil. When it has existed for long periods, the mucous membrane, from scratching and the action of remedies, becomes thick, hard, and corrugated; then nothing will afford a cure but removal of the whole affected skin and mucous membrane by the knife. I had a case of this kind, in a young lady, whose life had become a burden to her on account of the itching, where Mr. Jessop dissected away all the hardened hypertrophied part with the most complete success. To show the alarming symptoms which may arise from pruritus ani, I shall relate one case which came before my notice in March last. An Indian merchant was found in his office in London on his back in a death-like faint; he remained so for about half an hour. When he came to himself, he complained of giddiness, and loss of memory and brain-power; he could not understand the purport of certain business letters, and had to give up work for the day. These attacks became rather frequent; and, becoming alarmed, he consulted me. He was quite well, he said; everything was natural. On cross-examination, I found that there was something wrong with the anus, and I examined it; there was a ring of chronic eczema, and the itching was so fearful, that, when a fit of it came on, the dread and agony were so great, that they induced the serious functional derangement of nerve-centres I have just described; this one local ailment was making life very bitter, and causing him to fear that he was suffering from serious disease of the brain. The

eczema yielded to treatment, and in three weeks a cure was effected.

Fissure is of much more common occurrence than any one would believe; and it is found in the most unlikely subjects, delicate young ladies leading the most regular lives, and jolly middle-aged fellows not quite so regular in their habits; it is very frequently overlooked. In 1878, I had ten cases among visitor-patients, every one being ignorant of the nature of the local affection. Mr. Teale operated on the whole of these successfully. I shall only give one case. A young lady, the subject of general debility from anæmia, was sent to Harrogate for treatment. She was very tall, very spare and feeble, and complained of various neurotic pains, and of great mental depression, as well as physical. After seeing her two or three times, I was struck with the pinched suffering look she had; and at that visit I went more thoroughly into her case. I learned that she had a dread of going to the closet; that, after she passed a motion, she had to lie down flat on her back from a sense of pain and faintness; this occurred with every motion, and had been in existence for over eighteen months. I diagnosed fissure. She was operated on; and the third morning, to her amazement and joy, she passed a tolerably formed motion without discomfort; after that she rapidly recovered, neuralgia, anæmia, low spirits, all vanished, and now she is in perfect health. I believe that, in cases like this, the constant fear of what must be endured has the most injurious influence on all the functions of the body.

In August 1881, a lady aged 60 was sent to me on account of irritability of the mucous membrane of the bowels. She suffered from diarrhoea, alternating with constipation, flatulence, and dyspepsia. She had been under her own medical man for nearly two years, and during the last six months she had been seen by a celebrated physician once a fortnight. Something about the old lady made me ask her about the condition of the lower bowel, and this led to an examination. I found two small piles, an ulcer, and fissure. I at once sent for Mr. Wheelhouse, who came the same day, operated, and at the end of a week my patient left me quite well and hearty. I heard of her last season: she had never required a dose of medicine since the operation. Wherever there is a fissure there is spasmodic stricture, so that stretching is necessary as well as division.

With hæmorrhoids I need not take up your time, although they deserve much more attention than they receive. Patients who suffer from them, who are constantly losing blood, are too often put off with the remark, "Never mind, bleeding piles are safe. Do not interfere with them, and do not be operated on; take a spoonful of electuary at bed-time." And so the patient goes on thinking that, were this safety-valve closed, the roof of his head would be blown off, or he would have a fit. Now I do not hesitate to say this is bad advice. I have met with cases where the most grave symptoms have developed under these circumstances. Last year I had a young Austrian whose life was nearly lost in this way. He had consulted several German surgeons and physicians, without one going into his case. He was a keen sportsman, and fond of going out with his gun after big game. Sometimes he would lose so much blood as to be so weakened he could not reach his camping ground for a considerable time. A friend and patient of mine met him on one of his hunting tours, and, learning something about his symptoms, never allowed him to rest till he brought him here. On examining him, I found him suffering from an enormous cluster of piles, ulcerated and offensive; the least touch caused hæmorrhage; I allowed him two days' rest. After that Mr. Teale removed the mass. The operation was a very tedious one, but in a fortnight the patient was quite well.

The last affection I shall mention is not quite so painful, is purely neurotic in its nature, and very fitful in its attacks, coming on at long intervals, and when the subject of it is apparently in the best form; he will go to bed perfectly well, and awake at any hour with a gnawing, grinding pain in the sphincter. This gradually increases in intensity, acquires its maximum in a few minutes (which seem very long), and then gradually goes off without treatment; the patient feels very faint and exhausted, and is held down by the commanding nature of this pain. This is a form of neuralgia, produced by exposure to cold, either from the bedclothes getting off the part, or being too scanty or insufficient to protect it. During the day it may arise from sitting on a cold seat. However or whenever caused, it is at once relieved by the application of warmth. I have never seen any signs of local mischief in these cases, and I know one gentleman who has suffered from repeated and severe attacks during the last forty years. It was he who directed my attention to heat as the best remedy. One severe frosty morning, he was seized with

* Read before the Yorkshire Branch.