striking concurrent variation was the diminution in the aromatic sulphates.

Lysidin.—The augmentation of the uric acid excretion by lysidin is distinct, other variations being inconsiderable.

Urotropin is a drug specially efficacious as a urinary antiseptic. Its influence on uric acid excretion is shown in the table to be practically negative. The average is certainly higher than before the administration of drugs, but there is actually a slight fall relative to the excretion of the previous day.

Sidonal.—It has been claimed for sidonal that it reduces the production of uric acid to a remarkable extent, but it will be observed that the figures in the table are distinctly antagonistic to that claim. Of all the drugs used sidonal is the one with which is associated the most marked advance in the uric acid excretion.

Colchi-Sal.—As regards uric acid colchi-sal stands at the opposite end of the scale from sidonal with a minimum excretion. On the other hand it will be noted that the ethereal sulphates rise to a point above the normal proportion of 1 to 10 in relation to the preformed sulphates, the figures being the highest in the table. Curiously enough the patient was of the opinion that he derived greater benefit from colchi-sal than from any of the prescribed substances.

Subsequent to the investigation of the drugs just reviewed, my attention was drawn to tetra-ethyl ammonium hydrate, a uric acid solvent the power of which was demonstrated in Edison's laboratory to be ten times greater than piperazin. If a reliable biurate solvent were available it would provide an important means of treating gout. I therefore tested *in vitro* the solvent properties of the drug in this respect. The method employed has been described in a previous paper dealing with the solvent action of mineral waters on sodium biurate. The subjoined table indicates the result:

Table showing the Solubility of Sodium Biurate in 100 c.cm. of Distilled Water at a Temperature of 38° C., and in Distilled Water containing various Proportions of Tetra-ethyl Ammonium Hydrate.

		Sodium Biurate Dissolved in Terms of Uric Acid.	
Distilled water...	...	...	0.115 gram.
1 per cent. tetra-ethyl ammonium	...	...	0.142 "
3 "	"	"	0.240 "
5 "	"	"	0.360 "

It will be seen that a 0.5 per cent. solution is a moderately powerful solvent for biurate. The substance being strongly alkaline it was a question whether the effect depended on an inherent chemical attribute or was the outcome of its alkalinity. To decide this point approximately liquor potassae was then tried, and its solvent power found to be comparable with the other. The experiment was carried a step further by exactly neutralizing the alkalinity of tetra-ethyl ammonium hydrate with hydrochloric acid. This resulted in an absolute loss of solvent power. The clinical test is, however, the more important. The dose is 10 to 20 minims of a 10 per cent. solution. This drug should not be confounded with tetra-methyl ammonium, which is a powerful poison.

SUMMARY OF OBSERVATIONS.

1. There was an increase in albumen coincident with the development of a subacute attack of gout.
2. A preponderance of serum globulin over serum albumen was observed.
3. There were present in the blood the peculiar leucocytes described by Chalmers Watson.
4. Lithium benzoate and urotropin were ineffective as regards uric acid excretion.
5. Tartrate of piperidin, piperazin, lysidin, and sidonal in the order named showed an increasingly augmenting effect on the uric acid excretion.
6. The excretion of uric acid was diminished during the administration of colchi-sal and the conjugated sulphates increased.
7. The solvent action of tetra-ethyl ammonium hydrate on sodium biurate probably depends upon its alkalinity.

DONATIONS AND REQUESTS.—At a meeting held on January 16th on behalf of the Hospital for Women in Birmingham £13,000 was raised, of which Mr. Arthur Chamberlain and Mr. Barrow Cadbury each gave £2,000.—The Chelsea Hospital for Women has received from "H. M. E." a further donation of £2,000.—Under the will of the late Mr. William Wells, of Guildford, the Royal Surrey County Hospital receives a legacy of £1,500, and the Surrey Convalescent Homes, for Men at Seaford and for Women at Bognor, receive £1,000 each.

ON A CASE ILLUSTRATING THE VALUE OF PHYSIOLOGICAL REST.*

By W. M. WILLIS, F.R.C.S. ENG.,

Assistant Surgeon, Nottingham General Hospital and Nottingham Children's Hospital.

IN that delightful book of the late Mr. John Hilton, entitled, *Rest and Pain*, are recounted numerous cases illustrating the facility with which obscure cases of disease were accurately diagnosed by an ingenious process of reasoning from a knowledge of the anatomical distribution of nerves applied to the situation of pain complained of by the patient. The ingenuity of the reasoning and the accuracy of diagnosis arrived at by this anatomical knowledge cannot but excite admiration; and one is struck, as is usual with great truths, by the simplicity of the whole.

In addition to these lectures dealing with the diagnostic value of pain, there are others, which equally excite interest, in relation to the value of mechanical and physiological rest as a curative agent in injury and disease.

The case which forms the basis of this short paper is one which illustrates this truth very forcibly.

G. K., aged 72, is a man whom I saw in consultation with my friend Dr. Fulton on February 27th, 1902.

History.

His complaint was of pain in the rectum and the passage of large quantities of pus and blood. The passage of a motion was attended by severe pain, which was aggravated if the faeces were hard. In addition to the pus and blood which accompanied the motion there was a similar discharge coming through the anus in the intervals also. He had to some extent lost control over the sphincter, and was therefore in the horrible condition of a person who has involuntary evacuations. A short time before he began to complain of rectal symptoms he had sustained some accident by being crushed, but no bones had been broken, and the injuries were chiefly bruising and the shock which such an accident would entail on an old man. There was no evidence to show that his accident had any bearing upon his rectal disease, but it was in the course of his enforced rest in bed which the accident entailed that he first made any complaint about his bowel.

Fifteen years previously he had suffered from fistula in ano, and had been operated upon for this condition. This had been well for years, and did not appear to have been in any way connected with the condition for which I was asked to see him. Quite recently he had had an attack of urethritis; whether this had any bearing on his rectal trouble I cannot say.

Shortly after he began to have trouble in his rectum a large slough was passed per anum, and thereafter, in spite of treatment, he continued to pass pus and blood, and to suffer much pain, especially when the bowels acted.

Physical Signs.

On examining the rectum, which had to be done with the utmost gentleness on account of the pain it produced, there was discovered a large ulcerating surface on the posterior wall, and extending around the greater part of the circumference of the bowel, and reaching down to within about 2 in. of the anus. It had a ragged feeling to the touch, but was not indurated to a greater degree than that usual in inflammatory tissue which has been newly produced. A little above the lower edge of the ulcerated surface the finger entered a hole, and without the slightest force passed into a sinus or fistula which appeared to traverse the rectal wall in the direction of the upper part of the sacrum; it was of such a length that its upper limit could not be defined. The finger could, however, reach healthy mucous membrane beyond the upper border of the surface ulceration.

Dr. Fulton agreed with me in my belief that we could exclude malignant disease from the fact that there was an absence of the extreme induration of the edges of the ulcer which usually characterizes that condition. In addition, it is uncommon for a growth in the rectum to be attended with so large a discharge of true pus as in this case.

There was nothing in the history of the patient beyond the fact of the fistula, which existed years ago and had been well for so long, to excite a suspicion of it being tuberculous in character. His age, and the acuteness of the trouble also rendered tubercle improbable. His sex and the characters of the ulcer were opposed to the idea of its being syphilitic, and in addition to that there was no history suggesting that he had at any time had syphilis. Dysentery could also be excluded in the absence of any symptoms of this disease, and from the fact that the rectum is rarely ulcerated in this condition.

To what then was it due? At the time, the most I felt I could say was that it was of an inflammatory nature, but that

* Read at a meeting of the Nottingham Medico-Chirurgical Society.

there was insufficient evidence to show what was the cause of the inflammation.

In the most recent textbooks I have failed to find much guidance on the matter to enable me to conclude what is the pathology of the condition. In the *Clinical Journal*, however, for August 6th, 13th, and 20th, 1902, are three lectures delivered at the London Polyclinic by Mr. F. C. Wallis, entitled the *Diagnosis and Treatment of Diseases of the Rectum*. In speaking of ulceration of the rectum, he describes a condition which he says is "the commonest form of ulceration which has come under his notice" since his connexion with St. Mark's Hospital, and which is due, in his opinion, to sepsis. In his own words: "By this I mean ulceration due to some septic discharge from the outside attacking the greater portion of the mucous membrane, and so progressing; or, what was a common cause in the past, post-operative sepsis." In many respects there was a resemblance between this case and those described by Mr. Wallis as being of septic origin. There was, however, an absence of some other signs which, as described in the lectures, should have been present if the ulceration was of this nature. Thus there was no oedema of the muco-cutaneous margin around the external sphincter, with fissuring and ulceration between the oedematous portions.

The virulence of the inflammation as evidenced by the large slough which came away strongly suggested an acute septic process, and in the absence of any other discoverable cause, the question arose whether the gonorrhoeal urethritis previously mentioned had any bearing on the rectal ulceration.

I felt that the best chance of quickly improving his condition was to produce complete and immediate physiological rest in the rectum, and this could only be secured by colotomy. I therefore advised that this should be done, and through the courtesy of Mr. Joseph Thompson he was admitted into the General Hospital under my care. On March 3rd I did the first stage in the operation for inguinal colotomy by bringing a portion of the descending colon out through a small wound in the abdominal parietes, and fixing it there by passing a glass rod through its mesentery, the ends of the rod resting on each side of the wound, on the belly wall. There being no stitches used and no distension existing, as so often is the case when a colotomy has to be performed, this operation is perhaps the simplest in surgery, and occupies three or four minutes only. Three days later I opened the bowel in the wound, and the faeces were subsequently discharged through the opening thus made above the ulcerated rectum, which latter was by this proceeding placed at complete physiological rest.

For about a week after the colon had been opened I had the rectum washed through once daily, and on three or four occasions 1 oz. of iodoform emulsion was thrown into it after the irrigation.

There is but little to add to this part of the case, and at the end of less than a month all the ulceration was healed, and he was discharged from the hospital wearing a colotomy belt.

Before he went home I informed him that should he wish it I would close the colotomy wound later on, but a few weeks' additional rest would do the rectum no harm in view of the severity of the inflammation to which it had been subjected.

As he was 72 years of age I thought it doubtful if he would desire any further operation, but he came to me in August saying that the opening was a nuisance and prevented him working, and he was readmitted to have it closed. This was done on August 26th by the method described by the late Mr. Greig Smith, without opening the general peritoneal cavity. The upper opening in the colon I first shut off by a plug of cotton wool, so as to prevent soiling during the manipulations, and an incision having been made through the skin just outside the margin where the mucous membrane joined the skin, this was deepened until subperitoneal fat was reached. The finger was then able to strip the peritoneum off the inside of the abdominal parietes in the neighbourhood of the wound to the extent desired, so that it, with the attached colon with its opening in it, could be delivered well outside the belly. A continuous suture was now applied, after trimming the edges of the opening in the gut, which took up mucous membrane only and closed the bowel in a transverse direction. A series of Lambert sutures was then placed over this, thereby inverting the first union, and the gut was closed. The muscles were brought together with buried silk sutures, a tiny drainage tube being placed just beneath them in case any leakage

from the bowel occurred, and the skin united with fishing gut.

There was never any leakage from the bowel, and the tube was removed next day. The whole thing was healed eight days after the operation and the stitches removed. There was some difficulty in getting the bowels to act at first, but this was eventually overcome by the use of enemata and some castor oil on the eighth day after the operation, and since then they have acted normally each day.

At the present time (November 19th) he is perfectly well and at work regularly, and there is moreover not the slightest indication of any narrowing of the lumen of the gut at the place where the ulceration existed.

He was cured of his disease solely by the application of "physiological rest" to the diseased part; and I am of opinion that no other agency which we could have employed would have so quickly, so effectively, and so satisfactorily produced this effect.

CASE OF PUERPERAL HYPERPYREXIA OF MALARIAL ORIGIN.

By THOMAS WILLIAM CLAY, L.R.C.P., L.R.C.S.,
Holyhead.

THE following case seems to be of sufficient interest to call for publication.

Mrs. A., aged 28, a primipara, was delivered by forceps of a male child at 6 a.m. on September 20th, 1900. The delivery was effected with but little difficulty; the perineum was slightly torn and was stitched. Progress was in every respect satisfactory, the last visit being made on the fifth day when the temperature was, as it had been all along, normal. On the morning of September 26th (seventh day) I received an urgent message to attend immediately. On my arrival, two hours after the onset of the attack, I was informed that the patient had been suddenly taken with a very severe rigor, felt icy cold, and soon afterwards became very hot, but that now she was feeling better. I found her bathed in perspiration, with a temperature of 102.4° F. After careful examination I utterly failed to satisfy myself as to the cause of the attack. The stitches were removed, the perineum being quite healed. The vagina was washed out with an antiseptic solution. Although the nurse told me that the bowels had acted the day previously, an enema of soap and water was given, with the result that a huge motion was passed. Three hours from the onset of the first rigor, and in my presence, she again had a rigor of such severity that her teeth chattered and the bed shook. Her temperature immediately began to rise, and rapidly reached 107.8° F.; she was now delirious, the pulse so weak and rapid that it could not be counted; in fact, she appeared to be *in extremis*. Stimulants were freely administered; a bath was not available, but ice was immediately procured from a neighbouring hotel; it was applied to the head, rubbed and applied directly to the skin of the abdomen and thorax. The effect was most gratifying; the temperature at once began to fall, and when 103.4° F. the ice was discontinued. The patient was dried and wrapped in warm blankets, perspired freely, and felt much better. Quinine in doses of 4 gr. was given every three hours. She had two or three slight shivers after this. The temperature, intermittent in character, never again rose higher than 103° F., and was normal in four days. The bowels acted naturally the day following the enema, the quantity being again quite exceptionally large. After this she made a good recovery.

The case caused me a considerable amount of anxiety, and I pondered a great deal over the possible nature and causation of the attack. The entire absence of all local signs of septic infection, as well as the non-elevation of the temperature until the seventh day, to my mind practically excluded a diagnosis of puerperal septicaemia. The quite unusual and extraordinary loaded state of the intestine appealed to me as a possible cause, absorption from the bowel, being, I believe, recognized as a cause of severe febrile disturbance during the puerperium.

The same patient, in April, 1902, after an easy, non-instrumental labour, gave birth to a second child. Things went on well until the evening of the twelfth day, when I was hurriedly summoned. The husband, who was much alarmed, informed me that she had had an attack resembling that after the first confinement; she complained of feeling very cold, shivered, and on taking the temperature he found it to be over 103° F. Arriving an hour later I found her perspiring freely, with a temperature of 101° F.

Remembering how puzzled I had been about the cause of the disturbance after the first confinement, and finding the patient again in a condition bearing such a close resemblance to the previous attack (also the absence this time of constipation), whilst at the bedside the cold, hot, and sweating