

while the endogenous uric acid content of the blood is raised, the total result is a diminished uric acid output. But perverted function of one or more organs of the body has much to do with the origin of gout, and it is conceivable that a blood charged with highly complex chemical substances like purins or with toxic products of mal-assimilation may, on physico-chemical grounds alone, render it difficult for the cells to get rid of their own waste products. The gouty man may inherit a perverted function of one or more of his organs, and thus his intolerance for purins may be explained. But there is no doubt that in cases not frankly gouty we can find the same intolerance as is instanced in most of those I have mentioned, and one can hardly escape the conclusion that in them cell-metabolism is at fault, and is rendered worse by the cells being bathed in blood already full of the very products which are endeavouring to escape from them—the outcome being a low endogenous uric acid output. Another factor in the situation is the existence of ferments. Burian talks of xantho-oxidase for oxidizing xanthin into uric acid, and the uricolytic ferment (an oxidase discovered at Johns Hopkins Hospital) is supposed to be capable of decomposing uric acid into urea and other acid products of nitrogenous metabolism, but a good deal of this information is still too much in the realm of theory to help us greatly.

Of more importance, perhaps, in connexion with my series of cases is the fact that while many with powerful digestions and food assimilation can obtain their full allowance of nutriment from a fleshless diet, the average man in this country cannot, and it is worthy of note that carbohydrate foods induce a greater amount of purin in the faeces than flesh foods, no doubt because they break down a greater number of cells in the intestinal mucous membrane because of the difficulty in their digestion and absorption. May not this be the cause of the rheumatism so common in patients on a fleshless and tealess diet? It certainly is worth bearing in mind as a possible explanation of muscular rheumatism in all who are constipated, whether vegetarians or not, for if there be such a thing as auto-intoxication, then the endogenous purins may be absorbed.

In any research into the action of purins, the following considerations must always be borne in mind:

1. Personal idiosyncrasy has much to do with the diverse results reported, and in my opinion this is ultimately bound up with the metabolic activity of the cells, and especially the ability of the cells of the mucous membrane to withstand the onslaught of irritants such as purin compounds.
2. Small quantities of purin are almost invariably well borne, and only in isolated cases are larger doses not tolerated.
3. The ability to tolerate purins is markedly influenced by disease—for example, neurasthenia, so-called, and kidney ailments where the integrity of the cells of the convoluted tubules is doubtful, yet a man in perfect health with a so-called gouty tendency may tolerate them badly because they act as irritants to the mucous membrane of the hepatic ducts, and produce hepatic insufficiency.

It is suggested that one or more national institutions should be established by the United States Government for the isolation of lepers and placed under the management of the Marine Hospital Service. It is proposed that one should be established in the Gulf States and another near the northern boundaries of the United States. At present, as we learn from the *Maryland Medical Journal*, "the manner in which the States treat the sporadic cases which arise within their confines would be intensely ludicrous were it not so grave. When a leper is found, immediately a most ridiculous panic seizes those in his vicinity. He is refused admission to hospitals; an effort is made to convey him by stealth to another State; the States through which he must pass to reach his natural domicile refuse him passage; being unable to get rid of him, the authorities finally isolate him, it may be, in some hut in the woods, where he draws out his miserable existence till death relieves him from his sufferings. Such doings would seem almost a disgrace to a heathen country. There are leper colonies in the Southern Gulf States, yet the intervening States positively refuse to allow the leper to be carried to them, though making absolutely no provision themselves for such a contingency." In these circumstances it would certainly appear to be the duty of the American Government to make proper provision for the care of the lepers within its dominion.

A CASE OF TROPICAL ABSCESS OF THE LIVER RAPIDLY CURED BY MEANS OF THE FLEXIBLE SHEATHED TROCAR.

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In a paper contributed to the recent Sheffield meeting of the British Medical Association I pointed out the extreme difficulty in preventing post-operative sepsis in the open method of treating amoebic abscesses of the liver, at least 80 per cent. of which are sterile when first incised. I further suggested that, in the treatment of these protozoal produced suppurations, the indication is to combine aseptic drainage with repeated quinine irrigation to kill the causative amoebae, and described a flexible-sheathed trocar devised by me for this purpose. Although I had waited in vain for over a year for a suitable opportunity of testing this method before writing on it, yet, by a curious coincidence, at the very moment when Sir Havelock Charles was condemning it as a pretty instrument invented by a pathologist, it was, as a matter of fact, proving its practical value in as striking a manner as could well be conceived, as will be seen from the following case. I am very greatly indebted to Captain J. G. Murray, I.M.S., both for giving the method a trial and generously allowing me to make use of his notes, which are here recorded.

A European male, aged 24, was admitted to the General Hospital under Dr. Murray on July 25th with the following history: He had suffered from dysentery on and off since December last, but during the past month had had only loose stools without blood or mucus. Recently he had had fever in the evenings, night sweats, with pain and tenderness over the liver. At the site of the pain there was very distinct swelling about the size of the palm of the hand between the seventh and tenth ribs in the mid-axillary line, with tenderness and deep fluctuation. The liver dullness extended from the fifth space to 1 in. below the costal margin; x rays showed the diaphragm to move badly on the right side, but no shadow was present. The lungs and other organs were normal.

Operation.

On July 27th Captain Murray aspirated through the ninth space in the mid-axillary line, and withdrew 10 oz. of typical, thick, reddish liver-abscess pus, which only partially emptied the cavity. Rogers's flexible sheathed cannula was then inserted by the side as the aspirating cannula, and the latter withdrawn. A long rubber tube attached to the end of the flexible cannula was carried to the bottom of a bottle containing carbolic lotion and a superficial dressing applied round the base of the instrument. The pus was sent to me for examination, and proved to be sterile. No amoebae were found; this is usual with aspirated pus.

Progress.

July 28th. A small quantity of pus has drained into the bottle. Aspiration was applied to the cannula, and a little very thick pus was withdrawn. An attempt was made to pass some quinine solution in through a funnel, but it did not run well. The patient has been comfortable, and has recovered well from the slight shock of the operation.

July 29th. A little matter has drained from the tube. On applying aspiration a few drachms of thick pus were removed. The cavity was then irrigated through the silver Y tube with bihydrochlorate of quinine solution, 5 grains to the ounce, which had been sterilized by boiling, a glass syringe being used for the injection.

July 30th. A little shreddy pus has drained into the bottle, but less than at first. The patient was attended to by the writer, and a few drops of thick pus were removed by aspiration and the cavity irrigated with quinine solution as before. It has contracted so much that it would only hold a little over ½ oz. of fluid at a time without causing pain. He has slight evening rise of temperature still (as shown in the chart), but is quite easy and feels much better.

July 31st. He complained for the first time of the cannula hurting him slightly. The discharge is much less and distinctly thinner than before the quinine injections. Very little matter is obtained by aspiration and irrigation.

August 1st. Some shreddy discharge in the bottle. Irrigation continued.

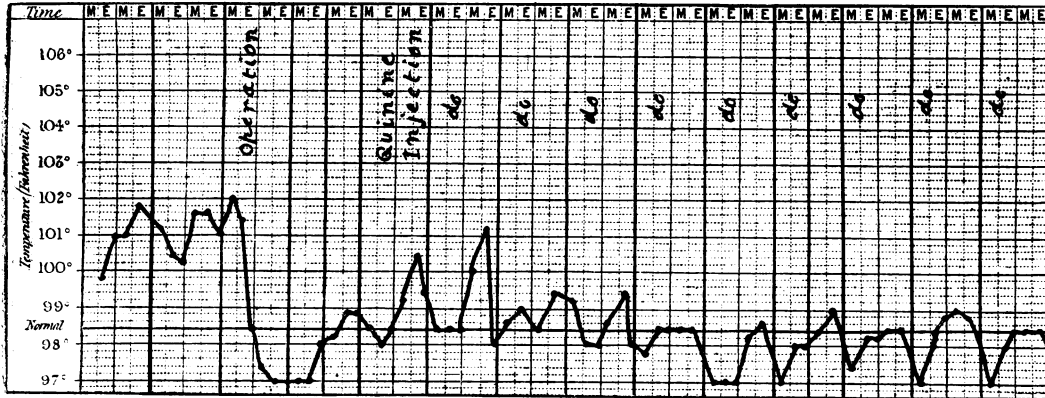
August 2nd. Still a little discharge. Temperature now quite normal.

August 4th. Discharge much less and thinner than before. No fever.

August 5th. Hardly any discharge, the carbolic lotion in the bottle showing only a haziness. No pus obtained by aspiration, and only a little shreddy material by quinine irrigation.

August 9th. The siphon drainage was stopped last night and the end of the tube clamped. On applying aspiration this

in universal use for the treatment of septic abscesses are not necessarily the best for dealing with suppuration produced solely by a protozoal organism.



In conclusion I desire to thank Sir Havelock Charles for the very strong support he has given to my contention that post-operative sepsis plays an important part in the mortality from tropical liver abscess. Coming from a surgeon of such unique experi-

morning, to obtain some pus for microscopical examination, none could be got, showing there had been no accumulation during the cessation of drainage throughout the night.

August 10th. Tube clamped as before at night, but no pus could be obtained by aspiration this morning, so the cannula was withdrawn, and a dressing applied over the long sinus which remained. The cannula had been in position for just fourteen days.

August 13th. The wound was dressed this morning and found to be "practically healed," only a minute surface wound, and no sinus, remaining.

August 20th. Dressings removed and the wound found to be soundly healed. He was now getting up, had no pain or tenderness, and declared himself to feel perfectly fit, and at his own request was discharged from hospital to go to friends in Calcutta, this being twenty-five days after the operation. He was seen several times during the following week, and on examination with x rays his diaphragm was found to be moving perfectly on both sides. He remains quite well and will report his condition from time to time. The tube of the cannula stripped during its removal. It has been sent to Messrs. Down Bros., so that they shall be made stronger in future.

I saw the patient every day and can testify to the correctness of the above notes. Dr. Murray authorizes me to say that the instrument perfectly fulfilled the objects of the inventor, and that he will most emphatically use it again at the first favourable opportunity. He had never seen such a rapid recovery in a liver abscess of this character and size. The sterility of the wound is clearly shown by the healing by first intention of the sinus, which must have been 3 or 4 in. in length. The cannula caused much less pain than the large rubber drainage tubes combined with resection of a rib, which are necessary in the ordinary open method for such an abscess. The drainage might probably have been shortened by a few days, but it was thought better to err on the safe side in this respect. The temperature chart shows a normal line as soon as the discharge became thin as a result of the daily quinine irrigations to destroy the causative amoeba. Unfortunately, by this time no pus could be obtained by aspiration, and that mixed with carbolic acid or quinine would have been useless for examination, so the exact date of disappearance of the amoebae is uncertain, but probably it was when the pus became thin, as in many other cases I have been able to find them in scrapings taken at dressings as long as typical thick liver abscess pus continues to be discharged. Post-operative sepsis, unfortunately, does not kill the amoebae, as I recently found them in unusually large numbers in liver abscess pus which contained many thousand streptococci, staphylococci, and bacteria in every field of a stained smear.

It would, of course, be absurd to draw any wide conclusions from even such a remarkable success as the above in a single case, as it will require much further experience and a long period of time before the exact limitations of my method can be ascertained. Every new instrument, especially when it aims at introducing a new principle, must have a beginning, so in view of the criticisms of an experienced Indian surgeon already referred to, it seems well to put this case on record without delay, as it so conclusively demonstrates that the flexible sheathed cannula does fulfil the purpose for which it was devised, and may be safely recommended to the notice of those surgeons who realize that the methods

of the disease this pronouncement must carry great weight, and will materially hasten the further trial of my instrument, the main purpose of which is to produce rapid aseptic healing of the cavities, and thus prevent secondary bacterial infections, which, when not rapidly fatal of themselves, at least much prolong the healing process and the consequent sufferings, and put a great and unnecessary strain on the powers of already much-enfeebled patients.

AN OUTBREAK OF AN ACUTE INFECTIOUS ERUPTIVE DISEASE (RUBELLA).

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I do not describe this outbreak because I myself think further evidence is necessary to prove the specific nature of rubella, but because opportunities of studying localized epidemics and observing the "incubators" do not seem to have been frequent.

A patient, N. J., was admitted as a case of scarlatina to Ward A (acute) on January 4th. Three days later he had a rash without rise of temperature, and was isolated for three days, but then returned to Ward A. It was the custom to transfer cases from Ward A (acute) to Ward B (convalescent), cases going to Ward B in small batches twice weekly. On January 24th a case, L. H., which had been transferred from Ward A to Ward B on January 15th, showed signs of the disease which I shall presently describe. There followed during the next few days eight similar cases, all occurring in patients transferred from Ward A. But in Ward B there were patients transferred from other acute scarlatina wards. Later the eruptive disease appeared amongst them. The shortest periods were in L. B., who was transferred from Ward C to Ward B on January 22nd, and developed the rash on February 10th, and in J. A., transferred the same day, and having the rash on February 12th. We thus get nineteen days as the longest possible incubation period in L. B. More cases occurred in Ward B up to the number of fifteen. In other wards receiving patients from Ward A four cases occurred. No other such cases were observed in the hospital.

I shall now describe the disease as it occurred, using my experience of all the cases to make a picture of a typical case.

I never succeeded in identifying the cases before the eruption appeared, although several times I went round the wards examining for enlarged glands, etc. In no case was there any prodromal symptom. A rash appeared suddenly on the face of a child apparently in good health. It was made up of pink macules with frequently a slight general facial oedema, best marked about the eyelids. I could never see any injection of the conjunctiva, and never saw any extension of the rash to the mucous