been titrated with the ammoniated cupric test *before* and *after* subjection to the converting influence of sulphuric acid and heat. The results have shown that no increased reducing action is given after treatment with sulphuric acid and heat.

The cupric oxide reducing principle, therefore, which is extracted by alcohol from blood, consists of glucose.

(To be concluded.)

ON THE INFLUENCE OF CONSTITUTIONAL DRAINS UPON THE DEVELOPMENT OF CANCER.

BY REGINALD HARRISON, F.R.C.S.,
SURGEON TO THE LIVERPOOL ROYAL INFIRMARY.

IN an address I recently delivered at the Liverpool Medical Institution, I urged the necessity for a still further search into the natural history of cancer as a likely means of adding to the limited resources we at present possess of controlling if not preventing it. There is one aspect of such an inquiry which it appears to me has not hitherto been sufficiently worked out, and that is the influence of what I may call constitutional drains, purulent or otherwise, on its production and reproduction. And though what I may have thought I observed, clinically, regarding this point in its bearing upon malignant disease may be of the nature of coincidences rather than of rules from which deductions are to be drawn, yet the narration of them may elicit from others similar or opposite conclusions, which still will be of value in making our knowledge of the life history of this disease more ample.

The frequent appearance of cancer in women at a time of life coincident with the withdrawal of a discharge has a significance when coupled with somewhat analogous circumstances. Of the considerable number of cases of cancer that have fallen to my lot to see in a town where the opportunities for doing so are ample, I can recall to mind several where, after removal of the local disease had been effected, some independent discharge, such as a sinus or a fistula, accidentally followed, which so long as they existed seemed, as far as I was able to trace the cases, to ward off a recurrence of the malignant disease.

Though the patient in the following case has remained free from a return of the disease for only the comparatively short period of twenty-one months, yet it was just one where there was every reason to believe, from the extent to which the skin was implicated by scirrhus deposits, in addition to other circumstances, that recurrence would probably be rapid. One case is that of Elizabeth O—, aged forty, who was referred to me by Dr. Davidson, and whose breast I removed at the Infirmary on April 8th, 1879. It was necessary to sacrifice a large portion of the skin, so much so that the wound has never completely closed. Beyond this small wound, about the size of an ordinary issue, she has suffered no inconvenience whatever, and there is no appearance, either in the operation wound or elsewhere, of a return of the disease. She has gained flesh in spite of the slight purulent running I have mentioned, and looks robust and well. I have requested her to report herself from time to time, and not to allow the issue to heal. Though the time since the operation is far too short in this case to draw such a conclusion as I could wish, yet if recurrence were to take place almost immediately, I should still maintain, having regard to the nature of the primary disease that was removed, that recurrence had been considerably retarded by the protracted suppuration of a healthy sore. This case happened also to afford me the opportunity of referring to this subject in the course of my clinical teaching.

On October 7th, 1879, I removed the breast of Mrs. W—, a stout lady, for scirrhus, with the assistance of Mr. Byerley and Dr. Craigmile of Seacombe. She also was of such a habit of body that I should not have been surprised to hear that recurrence had taken place within rather less than the average time. In the following month she consulted me for a fistula in ano, which had suddenly appeared, and which I declined to interfere with. Writing to me on Jan. 29th, 1881, nearly sixteen months after the operation, Dr. Craigmile

states, "She keeps very well and quite free from anything like a return either in breast or glands. The fistula now and then discharges very little, but gives almost no inconvenience."

Speaking generally, I have observed that when the removal of a cancer has been followed by a prolonged suppuration of the operation wound and its tardy closure, recurrence has been longer delayed than when union has been rapidly effected.

I remember a case occurring in 1860, where, under the late Mr. Long's direction, I removed a scirrhus of the breast by chloride of zinc, which he was then trying in the infirmary. The action of the caustic was so potent as to damage the surface of one of the ribs, and for some years this patient lived with a persistent sinus which at times discharged minute portions of dead bone. With this exception, for seven years I know she was in excellent health, and had no recurrence of the disease. About this time she left for America, and I have lost sight of her.

We must all have seen cases of malignant disease which have first shown themselves, in apparently middle-aged healthy persons without any known constitutional taint, a very short time after the sudden arrest of some long continuing drain, such as that of a fistula, or of bleeding hæmorrhoids. I can recall several. Again, the first appearance of cancer has been frequently observed in persons such as those I have mentioned, immediately after they have exchanged a life of bodily and mental activity for one of comparative indolence and luxury. Some of the most rapid and uncontrollable cases of cancer I have seen under these circumstances. For the most part cancer seems the more frequently to appear in the plethoric and torpid rather than in the spare. That a change of type in the individual who may be suffering from malignant disease is not unfrequently attended with some alteration in the growth has often been noted, and has served to explain instances where a cancer has ceased to show any signs of active progress. I believe that it would not be difficult to show that cancer is on the increase; that it is far more common amongst us now than it was one hundred years ago. If such a statement is correct, what bearing has it upon the advance of civilisation, of which we are disposed to boast?

It has often occurred to me whether our forefathers, who were shrewd observers, if they were not advanced pathologists, in the practising of the regular bloodlettings were quite as unreasonable in their views as to the "humours of the body" as we at the present day are disposed to regard them. Has the use of drains and of setons, after the removal of the obvious signs of cancer, had a sufficient trial? I am disposed to think that it has not, and, further, that there exist grounds for their employment under certain conditions. I am now making use of them; as, however, it is desirable to obtain as much collateral information upon this point as possible, to avoid the employment of treatment which has previously failed to give any encouraging results, I have taken the opportunity, when the attention of the profession has been more than usually directed to this subject, to refer to it in these columns. Of the various plans of treatment that have been adopted with the view of preventing the recurrence of cancer, that of setons and issues will, I think, be found to afford the most promising results. Writing upon this subject, the late Mr. C. H. Moore remarks (Holmes's System of Surgery, vol. i., p. 605) "a greater good may be asserted to have attended the establishment of a slight drain from some part of the surface which is near enough to influence the locality of the disease, *without itself being liable to taint* [the italics are my own]. The existing evidence appears sufficient to warrant the insertion of a seton beneath the shoulder, after the patient has recovered from the effects of the operation of removing a scirrhus mamma."

Whether this deduction is drawn from the experience of the French surgeons Rayer and Boyer I cannot say; but if it were, and having regard to the very imperfect manner in which the primary disease was often removed before the general introduction of anæsthetics into surgical practice, I should not be disposed to think that it represented the full amount of benefit which might accrue under the most favourable circumstances—that is to say, where a complete removal of all tissue obviously infected with cancer had been accomplished. One condition necessary to the obtaining of even such a partial success as the postponing of recurrence implies is obviously dependent upon the fulfilment of this.

I cannot help agreeing with those who think that the

fluids of the body have more to do with the production of malignancy than the tissues; and, if this be so, may not the initial lesion resolve into one where "supply and demand" are the most important factors?

PYÆMIA FROM AN UNUSUAL SOURCE, SIMULATING ENTERIC FEVER.

By E. F. FUSSELL, M.B., M.R.C.P.,
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ENTERIC FEVER is so frequently under our observation that its easy recognition would be thought to follow from constant attention to its special features. Nevertheless, those amongst us who are occasionally called upon to give an opinion upon the more complicated cases of this disorder are obliged to confess that, in spite of clinical and pathological knowledge, our diagnostic acumen may be every now and then hampered, if not entirely baffled. To rightly interpret anomalous phases of the disease in question we are often compelled to pass in review other complaints which produce symptoms akin to those that are perplexing us. There are several such, too well known to need enumerating. I recite the following case because, in our researches to explain its somewhat obscure symptoms, we detected an unexpected source of evil, which we believe to have been the means of enabling us to arrive at a precise diagnosis of our patient's illness. Moreover, in my opinion its peculiar features recall forcibly to one's mind the notable observations on the absorption of septic products, published as leading articles in THE LANCET of April 2nd and 16th, under the title of "Blood Diseases and the Germ Theory."

I was requested to see in consultation a young man, in good circumstances, reported to be suffering from typhoid fever. I am indebted to a medical friend for the following notes:—

F. B.— was first visited on December 6th, 1880, suffering from diarrhoea without abdominal tenderness; temperature 103°; pulse frequent, 120; white tremulous tongue, not red on the tip or edges. Complained of having, for about a fortnight, what he termed a severe cold, aching limbs, and general depression. He had taken medicine from a chemist. He gradually became worse. The pulse became more frequent, with a peculiar thrill, very compressible, and for two days before death, which occurred on December 14th, it rose to 140 and 150. The temperature rose and fell rapidly without any corresponding alteration in the general symptoms. He passed on several occasions copious stools, much resembling the discharges from the bowels in enteric fever. Throughout the illness there were "no spots." During the last week pleuro-pneumonia supervened, affecting the lower half of the right lung. In the night of December 10th he had a prolonged rigor, and for the last four or five days profuse cold sweats. No enlargement of the spleen could be detected. His urine was high coloured and slightly albuminous. He became very deaf, but his mind was clear till four days before his decease; he was without headache or obscurity of thought. The last forty-eight hours he was delirious, talking and shouting. About ten months previous to this last illness he contracted a chancre, which was followed by an unusually severe attack of eczema.

In running through the various symptoms presented by this patient, notwithstanding that many of them resembled to a certain extent those of enteric fever, yet two were wanting, and these two so frequently found in the fully developed form of this disorder that my attention was at once arrested by their absence. (1) The tongue was not covered with a thin or thick white fur, nor were its margins red; (2) there was no eruption, rose-coloured or otherwise. There was no special sanitary defect about the house or premises; during the last few years no case of enteric fever in the village had come under observation; and I may here add that in the five months which have elapsed since the decease no case of fever has occurred in the young man's family. There were no signs of any affection of the joints, or evidence of subperiosteal abscess. We drew back a long prepuce, and exposed the glans penis; this was covered with an abundant creamy pus, and half its surface was occupied by a soft chancre in a sloughing state. We determined that

there had been absorption into the system of this pent-up matter, and that our patient was suffering from pyæmia. As the symptoms were acute—that form of pyæmia, in fact, from which patients rarely recover—we gave a most unfavourable opinion to the parents, without detailing our discovery.

It will, of course, be asked how it came to pass that an examination of the penis should have been made. In this way. Some months previously I saw this patient, who was then covered from head to foot with a most copious eruption of acute eczema. He confessed to having had a chancre, was treated with mercury, and gradually recovered. Fortunately, in the above difficulty our researches were thus aided, and our perplexity, as we believe, solved, by a previous acquaintance with our patient's proclivities. No post-mortem examination could be obtained.

Brighton.

OBSERVATIONS ON WHOOPING-COUGH.

By JOHN COLSTON, L.S.A.L.

WHOOPING-COUGH is a disease produced by a peculiar blood-poison which is absorbed and exhaled by the bronchial and pulmonary mucous membrane; therefore it is highly contagious, the air of the sick room and the evacuations and perspiration of the patient being charged with the poison. It is not a disease peculiar to childhood, but attacks all ages, though most common among children—indeed, I have known them born with it, the mothers having suffered from it for some time previous to their confinement. It is both endemic and epidemic—endemic in districts like this, where there is a very heavy clay soil with thick fog at night, sometimes even in summer. The poison may appear in many forms, as mentioned in my letter on the Welbeck poisoning, in THE LANCET of March 12th, but generally takes the form of catarrhal pneumonia, particularly in children. It may attack a person exposed to infection at once, as acute pneumonia, meningitis, &c., or may lie dormant in the system, even for months, producing merely slight weakness, till called into action by cold, change of air, or weather. A person may have an attack in winter, appear quite free from it during the following summer, but on the approach of winter again it returns.

In all the forms which this poison takes there are distinct exacerbations from about 4 P.M. to 8 or 9; then again from 10 or 11 till 5 or 6 A.M., after which time the patient may feel better until the afternoon. The exacerbations vary according to the part most affected by the poison; if the lungs, there is more cough, greater dyspnoea, often accompanied by disordered action of the heart simulating heart disease, but which arises from the circulation through the lungs being impeded by their congested state; if the brain is most affected, delirium is more violent, often more vomiting and diarrhoea. There is another peculiarity I have observed in patients suffering from pneumonia: the stools are occasionally almost white, as if the mucous coat of the hepatic and common ducts were affected in the same way as the pulmonary mucous membrane, and occluded for a short time by mucus. The pneumonia may also be preceded by convulsions, and seems to have a preference for the left lung.

On Dec. 22nd, 1877, I was sent for to see an infant in convulsions. When I arrived it was quite insensible, but not convulsed, except slight twitching of arms and legs; pupils contracted; thumbs turned into the palms. I examined its chest, as I invariably do under such circumstances, and found a mucous râle in the subscapular regions of both sides (which is the usual place). I applied two small blisters there, to be kept on for two hours, and followed by hot poultices changed frequently, and gave salines with tartrate of antimony. Next day the child was better. There had been no more fits, but it had coughed rather more (and this is often the case; when the congestion of the mucous membrane is relieved the poison passes off by it more freely, thus producing an increase of cough, which will improve as the treatment continues). The child continued to improve, and on Jan. 4th was quite well again.

The gravity of whooping-cough is not generally known or acknowledged, and if brought before some members of the profession is scorned, either because they cannot under-