I might quote many cases of various kinds which have been treated under my own observation, such as chronic varicose ulcers, burns, etc., all of which have exhibited increased growth of epithelium and hastened healing processes, but there are others to which I attach almost more importance because they have not been under my own immediate care.

Dr. Arthur Wallace records a case of an abdominal hysterectomy for fibroids; during the course of the operation gall stones were discovered, which were removed, and the gall bladder was drained. A fistula persisted for a month without any indications of closing. A light gauze wick saturated with allantoin solution was introduced twice daily into the fistula. From that time the track steadily narrowed, and ten days after the first application bile ceased to escape and the sinus healed up steadily.

Dr. Wallace also reports a case of abdominal hysterectomy for carcinoma of the cervix uteri, with pelvic dissection. On the day following operation an irregular area of skin on the right buttock was noted to be hyperaemic. The margins were sharply defined. On pressing against it sensation was found to be diminished, and the pressure was followed by temporary local anaemia. Such areas have been previously noted after this operation. Usually they disappear in a few days, but in a few cases necrosis of the skin has occurred, and this happened in this case. Experience of such ulcers in other cases has shown that they are long in healing, many weeks being required for the process.

September 21st. Ulcer measured 2½ in. by 1 in. Dressing with allantoin solution was begun.

September 28th. A rapid growth of epithelium has occurred during the week, and the ulcer is two-thirds of its former size.

October 2nd (that is, four days later). The ulcer measures 1½ in. by ½ in. It is surrounded by a zone of thick epithelial growth of whitish colour, softened by the solution.

The patient was then dismissed with a dry dressing. The remainder of the ulcer required a fortnight for healing.

Dr. Wallace writes that he has used the solution in several cases in which a drainage tube track has been slow in closing.

An example occurred in an obese woman whose healing powers were of a poor kind. Healing by first intention occurred, but the cicatrix was thin and weak, and broke down superficially without apparent cause. An immediate change took place when allantoin solution was employed as a dressing, the epithelial margin thickened and quickly spread in towards the centre, permanent healing being secured by the end of five or six days.

Dr. Kidston records an excellent result in a chronic myxodematous ulcer which was making very slow progress under other dressings, but with the use of allantoin the progress was steady, and a ring of young epithelium could be seen growing in from the margins. He reported that the scar left was much more healthy than had been the case with previous ulcers in this patient (she had suffered from them before), and that the scar was strong and healthy.

Allantoin in Gastric Ulcer.

The following case suggests that allantoin may have a useful application in gastric and other internal ulcerations:

On February 17th, 1911, a woman aged 47 was admitted into my ward in an extremely debilitated condition in consequence of a very severe attack of haematemesis. For many weeks previously she had suffered from pain after food, and had vomited persistently for a fortnight prior to her admission. Even water caused pain and was immediately rejected. There had been melaena for some time prior to the attack of haematemesis for which she was immediately admitted. For twelve months she had been conscious of pain on pressure over the abdomen, and had noticed a lump in the epigastrium, extending into the hypochondrium. This woman was so feeble that the ward sister said that it was a pity that a patient so ill and advanced in disease should be sent into hospital. I felt disposed to agree with this opinion, because on examining her abdomen I found a tumour just underneath the ribs on the right side. It was rounded, irregular, and intensely painful, and my impression at the time was that she had a carcinoma of the stomach, an opinion which was strengthened by the fact that she had an undoubted cancer of the breast. When the irritability of the stomach subsided, she was given the mucilaginous infusion of comfrey root reinforced with some of the saturated solution of allantoin. In addition to the improvement which took place in her stomach symptoms, in the course of a month the abdominal tumour disappeared, an area remaining, however, which was extremely painful on pressure; but in time this also disappeared, and what I had taken to be a malignant growth had vanished.

I have treated other cases of gastric and duodenal ulcers in the same way, and have reason to think that it is a helpful measure for them. My experiences with allantoin have led me to believe that it may prove to be of considerable practical utility, not only in the types of ulcers to which I have referred, but perhaps also in

tuberculous cases and even in corneal ulcerations, and I would suggest to my surgical brethren the possibility of its being serviceable as a dressing when skin grafting has been performed. It is easy of application and, so far as I have seen, non-irritating. Although allantoin itself is somewhat expensive, the solutions for application only require to contain from 0.3 to 0.4 per cent. of the crystals.

In conclusion I desire to thank all those medical men who have assisted me by sending cases or by making independent observations, and I am especially indebted to Sir William Hartley (who provides funds for this research), and to Dr. Titherley and Professor Harvey Gibson and other scientific friends at the university who have done so much to assist and encourage me in the work which I have undertaken.

REFERENCE.

¹ Schittenhelm and Seisser, *Zeit. Exp. Path. Ther.*, 1909, vii, 116-133. Hirokawa, *Biochem. Zeit.*, 1910, xxvi, 441-457. Wiczkowski, *ibid.*, 1910, xxv, 431-459.

THE NEW CELL PROLIFERANT:

A NOTE ON THE SYMPHYTUM OFFICINALE OR COMMON COMFREY.

BY

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LIVERPOOL.

An interesting question was raised at a recent meeting of the Liverpool Medical Institution, when Dr. Macalister introduced the subject of a long-forgotten remedy—the *Symphytum officinale*, or common comfrey—which once held a prominent place in the medical armament of the older writers. Dr. Macalister has wisely had this singularly efficacious remedy analysed, and Dr. Titherley and Mr. Coppin (of the chemical department of the Liverpool University) have discovered that the root is rich in allantoin, which they found to be a "potent cell proliferant."

I have on more than one occasion cured old ulcers which have resisted other treatment, by the simple extract from the root applied on lint to saturation. After a few hours this dressing, in favourable cases, sets quite hard, and can only be removed by the lengthy application of water, which is often more tedious and painful than the average patient, who has been in the habit of applying some simple dressing, cares to endure. This hard setting acts, in some measure, like strapping, drawing the edges of the ulcer towards one another, but probably much more

evenly and accurately than the most skilful strapping could effect. This looks as though the cure is wrought similarly to healing under a scab.

One patient, an old gentleman of gouty diathesis, who will not diet or take medicine, finds the nightly application of the mucilage of symphytum the only remedy of the many he has tried which gives him any relief for pruritus ani. His sufferings at one time were so intense that he says he could not sleep for weeks together.

I judge the explanation of its efficacy in this case to be very simple. When the mucilage is taken into the mouth there is a sense of dryness, due to some astringent principle, probably tannin; at the same time, if the air be drawn in, there is a sensation of coldness and numbness much like that felt after peppermint, though in a lesser degree, but without the previous burning sensation, and hence it is slightly anaesthetic. In pruritus ani these two principles acting together, the one driving back the acid-laden blood, the other soothing the irritated nerve endings, will, I think, account for the relief which is felt in this troublesome complaint.

Acting on this principle, I have frequently used it internally as a last resource where more elegant preparations have failed—for example, in gastralgia, when I have believed this to be due to an irritated gastric mucosa, and to ease the pain of and to cure gastric ulcer. In these cases its efficacy has been much more wonderful than its effects in external applications in cases like the above; and here, too, its cell-proliferating capabilities, which Dr. Macalister's colleagues have discovered, will be a large factor in promoting the growth of new mucous tissue over the irritated and congested surface of gastric ulcer.

It is indeed refreshing and gratifying, in these days of serums and vaccines and highly complicated preparations, the administration of which, in some cases, is fraught with the gravest possible danger and soul-harrowing anxiety on the part of the administrator, to find a physician of Dr. Macalister's standing setting on foot the investigation of so simple and natural a remedy as common comfrey.

Kai ta phylla tou xylou eis therapian ton ethnwn.

TREATMENT OF PUERPERAL SEPTICAEMIA BY VACCINES.

By A. HAWKYARD, M.D.DURH.,
LEEDS.

THE history of the following four cases throws some light, I think, on the common cause of puerperal septicaemia. In regard to the first case, it seems to me, judging by the three subsequent cases, that I was right in ascribing the nurse's suppurating finger as the cause of the patient's illness.

I should think the colon bacillus is never found in the pus of a recent abscess; though I have been told it is found sometimes in old chronic abscesses. Streptococcus, colon bacillus, and staphylococcus swarm in faeces, especially colon bacillus, and I think we may take it that if colon bacillus is found inside the uterus, it has been conveyed there on the finger of the examining hand. Even with the greatest possible care it is impossible sometimes to avoid doing this; and conversely, in the absence of the colon bacillus, we must look round for some other cause. I think it would be impossible to infect a patient with *streptococcus only*; if faeces had been introduced into the uterine passages and caused septicaemia, colon bacillus would surely also be found.

These cases illustrate the very great importance of first of all identifying the infecting organism or organisms. It is obvious that one cannot expect recovery, or even improvement, in a case of septicaemia caused by the triple infection of streptococcus, colon bacillus, and staphylococcus if a vaccine prepared from streptococcus only be used. Judging from my experience, we may expect to find the colon bacillus helping to cause puerperal septic

conditions in nearly all these cases. It would be extremely useful, therefore, if there was on the market a vaccine prepared from streptococcus, colon bacillus, and staphylococcus, so that valuable time would not be lost in waiting for the preparation of an autogenous vaccine.

The best mode of obtaining a swab of the uterus is to introduce, through a speculum, the swab into the upper part of the uterus, previously having cleansed with sterile wool the vagina and os uteri.

CASE I.

On January 7th, 1911, I delivered a primipara, aged 21, instrumentally. On January 9th she had a rigor, and a temperature of 106°. I injected a stock vaccine of streptococcus, and had an autogenous vaccine prepared at the Yorkshire Pathological Laboratory, Leeds, from a sterile swab which had been introduced, with proper precautions, into the uterus. The immediate result of the administration of the vaccine was to bring down the temperature.

On January 11th, the temperature again rising, I administered $\frac{1}{2}$ c.cm. (2½ million) of the autogenous vaccine, the result being to bring down the temperature to nearly normal. On account of rising temperature vaccine was administered—on January 16th, 5 million, on January 19th, 10 million, after which the patient made an uninterrupted recovery, and was practically well on January 31st. I am sorry no temperature chart was kept, but I used vaccine when the temperature rose to about 104°. The report from the laboratory was to the effect that the infection was due to a nearly pure streptococcus infection, a very small number of colonies of staphylococcus being present.

This case is important because it resulted in an action for slander being entered against the patient's husband at the assize court by the nurse in attendance. I found her to be suffering from a suppurating finger (it had been bad more than a fortnight), and when I received the pathologist's report I had no hesitation, seeing she had handled the patient's parts, in expressing the opinion, when questioned by the husband, that the suppurating finger was the cause of the illness. Subsequent experience has justified this opinion.

CASE II.

Whilst the above case was under treatment I saw a case of puerperal septicaemia in consultation with another medical man. The patient had been ill for about a fortnight. A swab of the uterus was taken and the infecting organisms were found to be streptococcus, colon bacillus, and staphylococcus. A vaccine was prepared and the patient improved under its administration for a time, but she died about eight weeks after confinement, of pneumonia. Had the vaccine treatment been commenced earlier it is probable the result would have been different.

CASE III.

On April 29th, 1911, I was called in to stitch the perineum of a woman who had been delivered by a trained midwife. On April 30th the patient had a rigor and was obviously commencing with septicaemia. A stock vaccine of streptococcus was at once administered, and a swab of the inside of the uterus was taken. The infecting organisms were found by the pathologist to be streptococcus, colon bacillus, and staphylococcus. Under treatment the patient recovered. I need not enter into details, as the temperature chart is annexed, and sufficiently indicates the course of the illness. It is a twelve-hour chart, but the four-hourly chart which was taken during the whole of the illness indicates more clearly the beneficial effect on the

CHART (Case III).—A, Stock vaccine; B, autogenous vaccine, $\frac{1}{2}$ c.cm.; C, autogenous vaccine, $\frac{1}{2}$ c.cm.; D, autogenous vaccine, 1 c.cm.; E, temperature at noon, autogenous vaccine, 1 c.cm. Rigor occurred on the second and seventh days.

temperature of the vaccine injections. The initial dose of the autogenous vaccine was 2½ million on the fourth day of illness, followed by 5 million on the sixth day, 10 million on the seventh day, and again 10 million on the eleventh day, the temperature being 105°. There was no apparent need for further vaccine treatment after this.

CASE IV.

Early last month (November) I saw a woman recently delivered. For reasons not necessary to mention, I sent her into hospital. She developed puerperal septicaemia, a swab of the uterus disclosing a pure colon bacillus infection. She was treated by autogenous vaccine and recovered.