acid after operations on the bladder²), and my chief object in writing this paper has been to secure for it, if possible, a more extended trial.

Sodium acid phosphate has the advantage of being very soluble in water and easily administered. It may be given in doses of from 30 to 60 gr. every three hours, but it is better to give smaller quantities oftener so as to secure continuous elimination. A convenient plan is to dissolve 2 drachms in a pint of water and allow the patient to drink small quantities of this from time to time. The only unpleasant effect which I have ever seen it produce has been diarrhoea, but that can be at once checked by suspending the administration and giving a dose or two of chalk mixture.

I should add that sodium acid phosphate will be found a useful adjuvant to urotropin, for the latter, as is well known, acts best in an acid urine.

REFERENCES.

¹ See also *Virchow's Archiv*, 125, p. 566, 1891. ² *Lancet*, November 11th, 1901

CLINICAL OBSERVATIONS ON THE TREATMENT OF INOPERABLE CANCER BY FORMALIN.*

By A. F. MEREDITH POWELL, M.B. & C.M. EDIN.,
Minster, Thanet.

[ABSTRACT.]

FORMALIN, as commercially known, is a 40 per cent. solution in water of formic aldehyde made by passing a mixture of methyl alcohol vapour and air over heated platinum and conveying it into water. This preparation is a powerful, highly-diffusible, non-toxic antiseptic and deodorant, possessed of escharotic qualities which must be guarded against in using it. It also possesses the property of hardening tissues, and I may here state that I have taken advantage of all its properties except its escharotic quality in attaining the results I propose to describe. I was led to try my present method from my observation, twelve months ago, that formalin 2 per cent. solution had the property of coagulating egg albumen when whole eggs were immersed in it for a few weeks. Thinking over this action of formalin, and knowing its hardening properties on tissues generally, I argued that if I hardened the morbid tissue, if possible without seriously interfering with the healthy tissues, I should convert the growth into a foreign body, and Nature would proceed to dislodge it. My inference has, I venture to say, proved correct.

In from three to seven days after application the cancer mass begins to detach itself in the same way that necrosed tissue separates in gangrene. A line of demarcation is formed at the edge of the malignant mass, and separation takes place in a few days, the time varying with the size and nature of the disease.

Some twenty-four to forty-eight hours after the first application the objectionable foul-smelling discharges cease, thus showing the powerful deodorizing quality of formalin even in 2 per cent. solution. In proportion as the fetid discharges lessen the patient becomes more bright and cheerful. In from twelve to sixteen days I was able to remove the growths in three cases—a sarcoma of the breast, a scirrhus of the breast, and an epithelioma of the lip (recurrent), leaving in its stead healthy granulating tissue, the skin gradually growing and closing the wound up. I have repeatedly reapplied formalin during the healing process without any effect on the granulation tissue left, thus showing that no signs of the original growth remained, for skin will not grow over unhealthy tissue. The process of separating is completed by the aid of a pair of forceps and scissors to snip the fibrous bands that pass into the underlying granulations. It would appear that a fight for supremacy had been going on between the healthy tissue and morbid growth, the former being unable to dislodge its saprophytic enemy until the formalin reduced the greater vitality of the malignant mass, then Nature proved itself superior in the hitherto unequal fight.

The strength of formalin solution should be between $\frac{1}{2}$ per cent. and 2 per cent. If weaker than this the hardening process is not satisfactory, and the application must be continued for a longer period, thus losing time, and the process is extremely painful to the patient. Likewise if 2 per cent. is exceeded the application is painful, the diseased mass becomes surface hardened, separation is difficult, and the risk

of destroying the skin around becomes greater the stronger the solution used, until the escharotic qualities of the formalin manifest themselves.

The method of application is as follows: Absorbent lint soaked in 2 per cent. formalin solution (made by adding 19 parts distilled water to 1 of commercial formalin) and laid on the tumour; this is covered with jaconet and cotton wool and bandaged on. The dressing should be changed six-hourly. After the third or fourth dressing the discharges and fetor ceases; the further process is an aseptic one. In three to seven days the tumour loses its elasticity and becomes darkened, friable, and insensitive—the further use of formalin is painless, and separation takes place as above described. Formalin 2 per cent. solution appears to exert a selective power on morbid tissue, or perhaps it is that the tissue, being more tender by virtue of its younger age and rapid growth, is less resistive to its action than the more mature tissue. It also acts as a powerful stimulant, thus aiding Nature to get rid of its unwelcome parasite. The treatment of the healing surface resolved itself into the ordinary method with alternate boric fomentations or sal alembroth gauze as occasion suggested itself.

Dr. J. D. McFeeley, of Dublin, read a paper at the Surgical Section of the British Medical Association last year on the treatment of rodent ulcers with formalin (published in the *BRITISH MEDICAL JOURNAL* of November 8th). His method and mine are widely different; and I may here state I devised my plan of treatment quite independently, not having seen his published papers till my attention was drawn to it lately. McFeeley avails himself of the escharotic qualities of formalin, which he applies, full strength, under an anaesthetic, either local or general, and keeping his patient under the influence of morphine until the escharotic action is produced; the hardened tissue formed is subsequently allowed to slough off. The disadvantage of his plan of treatment appears to me to be that the whole of the disease may not be attacked (in case of a large sarcoma); the leathery eschar formed takes five or six weeks to slough off, it is therefore not an aseptic process; it is extremely painful to the patient; there is the risk of destroying healthy surrounding skin, in short, the process is similar in all respects to what obtains when chloride of zinc is used.

My method is practically painless to the patient: with it no narcotics are required, and no anaesthetics local or general being necessary. The formalin has time to select other foci should such exist. The whole of the malignant mass is permeated and hardened throughout, and after separation only healthy tissue is left. No sepsis occurs, and the fetid smell is entirely destroyed after a few hours' treatment. The malignant mass is completely removed in sixteen to twenty-four days.

[Several cases were shown illustrating the results obtained by this formalin method.]

GUAIACOL IN THE TREATMENT OF SMALL-POX.

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Enfield.

THE continued prevalence of small-pox in some parts of England prompts me to report the results and treatment of a small number of cases which came under my care last year as medical superintendent of the temporary small-pox hospital erected by the Enfield Urban District Council.

The results may be presented briefly in a tabular form, giving those treated at Enfield and a nearly similar number sent to South Mimms Small-pox Hospital.

Enfield.				South Mimms.			
	Recovered.	Died.	Total.		Recovered.	Died.	Total.
Adults ...	34, 1 unvac.	1, vac.	35	Adults ...	47, 4 unvac.	3, vac.	50
Children	9, 4 unvac.	4, unvac.	13	Children	3, 2 unvac.	1, unvac.	4

The ages of the children treated at Enfield were five under 1 year; one between 1 and 2; three, 3 years; one, 4; one, 7; one, 8; and one, 9. Those that died were 10 months, 4 months, 4 months, and 2 weeks.

* Read before a meeting of the South-Eastern Branch of the British Medical Association.

The ages of the children treated at South Mimms were 4, 4, 5, and 8; three were unvaccinated, and one of these died.

It will be seen that no young infants were sent to South Mimms, while there were no less than five at Enfield, all unvaccinated, and that four of these died. If these almost hopeless cases are put on one side, it will be noted that there was but one death in 44 cases. That case was one of confluent small-pox in a man aged 47, of intemperate habits and not vaccinated since infancy.

This favourable mortality seems to me to lend some ground to the belief that the special treatment adopted had some beneficial influence. This is further suggested by the fact that among the 35 adults under treatment there were no less than seven of a very severe confluent type, or with some special cause of danger.

CASE I.—C. C., female, aged 37, vaccinated in infancy, was confined on third day of illness at term; admitted next day, second of rash, which was completely confluent on face, head, and extremities, and very thick on the trunk. Temperature on admission 102.6°, but fell next day to 100.2°, and on the third morning to 99°. It rose on the tenth day to 101.6°, but fell next day to 100°, and she made a good recovery without delirium or any special symptom. The way in which the pustules withered and dried up, apparently after maturing, was remarkable.

CASE II.—A. L., female, aged 13, vaccinated in infancy. Rash very thick, and semi-confluent on face, legs, and arms; had had severe hæmorrhage from the mouth before admission, and slight on next day. Evening temperature 103.4°, next day 100°, and continued from 98° to 100° for a week; after that subnormal. Good recovery.

CASE III.—A. L., female, aged 25, vaccinated in infancy. Pregnant five months; did not abort. Confluent on face and hands, thick elsewhere. Temperature only once above 100°, namely, on tenth day (100.6°), next day 99.6°: afterwards subnormal.

CASE IV.—E. C., female, aged 27, vaccinated in infancy. In third pregnancy; confined on fifth day of eruption, at eight months; normal labour. Eruption thick all over, but discrete. Temperature 100.6° on evening of admission, after that never above 100°, and after third day of confinement only 99° on three days. Recovered. The infant was vaccinated on day of birth, and three days later, but both failed to take. Later, he had a few modified spots, but was never really ill.

CASE V.—E. J., female, aged 57; vaccinated in infancy. Confluent on face, arms, and legs, thick elsewhere. No special symptoms except slight rigors on the ninth, eleventh, and twelfth day of disease, and slight delirium on the twelfth day. Good recovery. Temperature on tenth, eleventh, and twelfth days 101°, and on fourteenth 101.6°, then fluctuated for three days under 100°, and after that was normal.

CASE VI.—T. R. S., male, aged 43, navy; vaccinated in infancy. Confluent on face, arms, and legs in great blisters. On the ninth day of disease most of the pustules on the legs, arms, and trunk were hæmorrhagic, but no delirium. On the fifteenth day the note is, "Scabs have formed on face, but are already coming away, leaving no ulcers; skin of arms likewise coming away in large flakes, leaving raised, flat, red, glazed patches without pus." Temperature, which had been from 101° to 102.6°, began to fall on the twelfth day, and by the fifteenth was normal, and so continued. Good recovery.

CASE VII.—A. J. W., male, aged 47, a free drinker; vaccinated in infancy. Admitted on fifth day. Confluent on head and limbs, semi-confluent on trunk. Delirious after seventh day, and died on eleventh.

In all the cases that recovered the secondary fever was either entirely absent or very slight indeed. I was much struck with the remarkable way in which, in most cases the vesicles, even in the confluent cases, either dried up without maturing, or, if they matured, produced comparatively little discharge. Although I had had a large experience of small-pox in the epidemic of 1870, I had never seen confluent cases behave in this way. The hæmorrhagic case—No. 6—was most surprising.

I attribute the favourable course of these cases chiefly to the use of guaiacol dissolved in olive oil—1 part to 80. The whole surface was anointed with this with a swab of cotton wool at least every four hours. The patients were most eager for it as it allayed the irritation, and after a few applications almost abolished it. It seemed also to reduce the temperature and prevent consequent delirium. It appeared to check the maturation, and cause the pustules to dry up, and I send these notes in the hope that some others may be able to give it an extended trial. The medicine given was a hydrochloric acid mixture. The diet was a simple milk and broth diet till convalescence set in, and no alcohol was given in any form or during residence; this, no doubt, contributed to the favourable result. I may add that a collateral advantage of the guaiacol treatment was the almost entire abolition of the loathsome odour from the eruption, so that the wards were as sweet as those for the treatment of general disease.

MEDICAL MAGISTRATE.—Dr. Clement Palmer, of Barton-under-Needwood, has been appointed a Justice of the Peace for the county of Staffordshire.

A MERCURIAL INJECTION FOR USE IN THE INTRAMUSCULAR TREATMENT OF SYPHILIS.

By LIEUTENANT-COLONEL F. J. LAMBKIN, R.A.M.C., [1]
Hong Kong.

FOURTEEN years' experience of dealing with syphilis by the above method, during which time I have given all forms of mercury—namely, perchloride, sal alembroth, sozoiodol, and metallic mercury, extended trials convince me that the metal itself is far the most efficacious. I have retried the soluble salts, but have had to revert to the metal in the form of a cream consisting of mercury, lanolin, and ol. carbol.

The advantages which this cream possessed over all other forms of mercurial injections are two very important ones:

1. It is much less painful.
2. Its effects on the symptoms and the ultimate cure of syphilis are far more marked than those following the use of other forms of mercurial injections.

That it possesses these two important advantages is strongly my opinion, the reason for No. 2 being, perhaps, that it is more slowly absorbed. At the same time the cream had some disadvantages, one being that in cold weather it became semi-solid, rendering it impossible of injection, and to obviate this and to bring it back to a proper consistence for injection heat and manipulation were required. These took time and trouble and brought the cream into disrepute.

For years I have been on the look-out for some means to correct this, and at last have succeeded. I now use the following prescription: B Hydrarg. 3ij; lanolin anhydrosis 3ij (by weight). Both these to be well rubbed up until the mercury disappears, and then add: Paroleine (Burroughs and Wellcome) 3iv; carbol 2 per cent. (by measure); 5 to 10 minims once a week as an intramuscular injection.

From this it will be seen that I substitute carbolized paroleine for the carbolic oil as hitherto. The latter becomes semi-solid in fairly low temperature, whereas paroleine does not change its consistence in cold. I have kept it for two hours in an ice chest, and was able to draw it into my syringe immediately on taking it out.

A great difficulty, then, has been removed, and the above prescription suits admirably, and ought to prove a great boon, especially in the United Kingdom and other cool climates in carrying out the intramuscular treatment of syphilis.

MEMORANDA:

MEDICAL, SURGICAL, OBSTETRICAL, THERAPEUTICAL, PATHOLOGICAL, Etc.

CASE OF APPENDICITIS IN A WOMAN AGED 78: OPERATION: RECOVERY.

Miss S., aged 78, has suffered from constipation for many years. She is of rheumatic habit, and has had sciatica. The heart's action is feeble and somewhat irregular, and from time to time there is oedema of the legs and feet, but not to any marked extent. There is a slight trace of albumen in the urine.

On March 12th she was seen by Dr. J. Walters, and found to be suffering from pain in the abdomen and constipation. She had not been feeling well for a fortnight, but previously she had no special symptoms. A mild aperient was prescribed.

On March 13th the temperature was 102°, and the pulse 120. There was vomiting, and she was still constipated, with pain and swelling and tenderness in the right iliac fossa. On March 14th the pain and swelling had increased. She was still sick, and there had only been slight action of the bowels. The temperature was 100.3° and the pulse 104. In the afternoon there was marked increase of the swelling in the right iliac fossa and general tympanites, with a great deal of pain.

Operation was decided on after consultation with Dr. Holman, and performed by Mr. A. R. Walters assisted by Dr. Holman and Dr. J. Walters. The usual incision having been made and the peritoneum opened, there was a gush of turbid serum; the caecum was found to be covered with lymph. The appendix was adherent to the wall of the pelvis; it was swollen, bent on itself, and filled with muco-pus; there was considerable difficulty in separating and removing it. The stump was invaginated into the caecum, and secured by a