AN ETHEREAL EXTRACT OF STRAWBERRIES FOR THE TREATMENT OF SPRUE.

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[A Preliminary Note.]

THE favourable influence of a strawberry diet on sprue has been known for some time. As it is difficult and expensive to get strawberries except in the short season, and, moreover,

strawberries forcibly grown out of season do not seem to have the same beneficial effect, we sought a method by which the active principle or principles could be extracted and stored.

The experiments of Dr. S. S. Zilva (*Biochemical Journal*, 1920, pp. 494-501) and those of Osborne and Mendel (*Biochemical Journal*, 1920) on the extraction of antiscorbutic and antineuritic principles from cabbages and carrots suggested the method which was adopted. Dr. Zilva showed that it was possible to extract, by means of alcohol, the fat-soluble factor from cabbages and carrots, and that the alcoholic extract also contained the antineuritic and, to a smaller extent, the antiscorbutic factors. He also showed that if the alcoholic extract of cabbages and carrots were further extracted with ether, the ether contained a substance which promoted recovery and renewed growth in rats declining in weight on

Continuous extraction apparatus for extracting a solution with a light solvent. A. Condenser is fitted at D. The solvent is in a flask at K. The solution to be extracted is placed in A, which is then closed by a cork. Small Raschig rings can be put in A to help the extraction.

account of a fat-soluble factor deficiency.

After a number of preliminary experiments, the following procedure was adopted:

Fresh strawberries were crushed with about 5 per cent. of their weight of absolute alcohol and filtered in a powerful filter press. The juice was then extracted for days in a continuous ether-extraction apparatus. The ethereal extract was immediately concentrated in a vacuum over phosphorus pentoxide, a small quantity of either starch or lactose being added. The residue was dried as completely as possible in a vacuum over phosphorus pentoxide, as this appears to ensure greater stability.

The apparatus used is illustrated, and is very convenient. To get the most rapid extraction by thoroughly mixing the solvent with the solution being extracted, a number of Raschig rings are placed in A. These consist of rings whose diameter is equal to their length. They can be made of any suitable material—for example, by cutting 5/16 in. aluminium tubing, 22 gauge, or from glasses. Prolonged experience has shown their value in extractions (cf. Bayer and Co., *Journal of Soc. Chem. Ind.*, 1919, 752a).

The extract we have prepared (mixed with a little starch) is of a dark red colour, has a granular-scaly appearance, is somewhat soft, and has a very powerful fragrant smell of fresh strawberries. A minute quantity of it has been kept in an amber tube for the last ten months (since last June), and apparently has not lost any of its characteristics, being of the same colour, and its fragrant smell being just as strong.

The experimental investigation of this extract is difficult, as sprue cannot be reproduced in the lower animals; we have to rely therefore only on clinical observations, but owing to

the question of expense only a very small amount of extract was prepared, and our clinical investigation has been most limited. We may say that we have tried it in two cases of typical sprue in conjunction with the usual milk diet and alkaline treatment. It was given in 5-grain doses three or four times a day and seemed to have a beneficial effect, apparently hastening the improvement in the general condition; but much further work will be necessary before it will be possible to come to any definite conclusion as regards its therapeutic effects. We have thought it advisable, however, to publish this brief note to enable other observers who might be interested in the subject to prepare the extract during the approaching strawberry season, and to experiment further with it.

HYDRONEPHROSIS DUE TO ABERRANT RENAL ARTERY.

BY

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SOME doubt has recently been expressed as to how far abnormal renal vessels are responsible for the hydronephrosis with which they are associated. In the following case the hydronephrosis appeared to be directly due to the aberrant vessel, and the symptoms disappeared after the operation, which consisted simply of division of the abnormal vessel.

E. H., a well-developed, healthy young man of 22, stated that in the summer of 1918 he experienced pain under the right costal margin, and in the mid-axillary line; this pain went through to his back, but never down the flank or into his leg. The attacks of pain were infrequent to begin with and of short duration; later they became more frequent and more severe, generally coming on in the early morning, lasting about two hours, and passing off after he had walked about a little.

At the commencement this pain came on about once a fortnight; these attacks have gradually increased in frequency, and at the present date (January 5th, 1921) they are appearing three times a week.

In the early part of 1920 there was one bad attack which lasted twelve hours and kept him in bed for a few days. When the pain is severe there is biliary vomiting, but blood has never been brought up; there was no frequency of micturition during the attacks, but he states that there was frequency and the passage of an increased quantity of urine after the attacks.

Between the attacks he feels quite well, his appetite is good, and he has lost no weight, and no history of jaundice could be obtained. He had suffered from malaria while on foreign service in 1916 and 1917.

I have given this history in detail as the patient was very clear as to the nature of the attacks, their increasing frequency and severity, the relief obtained by moving about, and his perfect health in between the attacks.

The right kidney was palpable, not unduly mobile, and at the time did not appear to be enlarged, but was distinctly tender. The left kidney was not palpable, and nothing else of an abnormal nature could be detected in his abdomen. A radiograph of both kidneys was taken, but was negative. His urine was normal, and cystoscopic examination showed both ureteric orifices to be normal and acting well.

Operation.

On January 10th, 1921, the right kidney was exposed by the usual oblique lumbar incision; it was found to be enlarged, and some difficulty was experienced in delivering the lower pole; when the kidney was eventually brought up to the surface, this difficulty was found to be due to an aberrant renal vessel which was passing directly outwards and behind the ureter to the extreme lower pole of the kidney. This was divided and ligatured; the pelvis was found to be dilated to a considerable extent above the level of the divided artery; the ureter below was traced downwards for some distance, and appeared to be of normal calibre. The pelvis of the kidney was opened and a catheter passed down into the ureter without difficulty; there was no evidence of valve or constriction at the junction of the ureter with the pelvis of the kidney. The opening in the pelvis was sutured, the kidney dropped back, and the wound closed with a small drainage tube in the upper angle. There was no leakage of urine. The patient made a good recovery, and has been quite free from his symptoms since.

I first saw this patient in August, 1920, and was unable to come to a diagnosis. He had consulted several medical men from time to time, and was referred to me again in January, 1921, by a pensions board for an explanation of his symptoms, as the question had arisen as to whether his condition could be attributed to military service.

I never saw the patient during an attack of pain, which is perhaps the reason why no enlargement of the kidney was made out on examination; I was induced to explore the kidney because it was obvious that the patient

was suffering very severe discomfort, which rendered him unfit to follow an occupation, and because from time to time one comes across cases of unilateral renal pain in which no very obvious explanation can be found for the patient's symptoms. An operation in such case may, as here, reveal the cause of the pain. In another similar case I found at operation a cyst of the left renal cortex (the size of a pigeon's egg); it was not palpable before operation, and its removal cured the patient's symptoms. In other cases where no cause for the pain can be found at the operation, simple decapsulation of the kidneys will often effect a cure; so that exploration of the kidney concerned is always justifiable in cases of continued renal pain without obvious cause. That the artery was the cause of the hydronephrosis in this case seems a reasonable assumption, as the dilatation extended to the point where the vessel crossed behind the ureter, and ceased below that point, and as the patient's symptoms have disappeared after division of the vessel.

Memoranda :

MEDICAL, SURGICAL, OBSTETRICAL.

CONGENITAL ABSENCE OF DELTOID MUSCLE.

WHILST examining a man, aged 23, for life assurance I discovered the fact that he had no right deltoid muscle; he was otherwise of normal muscular development. He knew of no muscular peculiarity in either of his parents or his brothers. He had served four years in the army during the late war, and was well able to carry out his duties. It was interesting to note how he managed to raise his arm in the absence of the deltoid muscle. He could abduct his arm quite normally until it reached the height of his shoulder; it then became tremulous. He gave a slight jerk, which dislocated the head of the humerus backwards until it rested apparently against the muscles attached to the spine of the scapula. With this firm support the pectoral muscles seemed to be able to raise the arm to its full extent upwards.

When standing at ease the head of the humerus showed up well under a very thin covering of skin and subcutaneous tissues, the capsule of the joint was thin and loose, and the head of the bone could be moved freely to and fro in its socket. The arm hung down by the side with the elbow slightly bent and pointing outwards; the hand was rotated inwards with the radial side resting against the leg.

The biceps muscle was specially well developed, and he asserted that his right arm was stronger than his left. He had never felt inconvenience from the absence of the deltoid.

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A CASE OF HEAD INJURY.

THE following case may be of interest to record as showing the great degree to which the brain may be damaged with little sign of external injury:

On Sunday, April 2nd, about 9.40 p.m., a girl, apparently about 20 years of age, was brought unconscious to my house, with the history that from a bus travelling at a moderate speed she had jumped off facing the wrong way and fallen on her back.

I could find no external sign of injury except a very slight degree of bogginess above the occiput. There was no bleeding from mouth, nose, or ears. The pupils were equal, neither contracted nor dilated, and the corneal reflex was present, though not brisk. She could not be roused by shouting.

During the first ten to fifteen minutes Cheyne-Stokes breathing was marked, and towards the end of that time she began to vomit and move her head and limbs in a restless manner; just before the vomiting her pupils became nearly fully dilated. After this her breathing became quiet and regular except when interrupted by vomiting or retching. Later on movements became more purposeful—for example, she tried to remove her gloves by biting the tips of the fingers and pulling out her hands. At 10.30 p.m., when she left the house, her pupils were, as at first, neither contracted nor dilated. She could still not be roused to answer questions, nor did she make any sound herself.

As the identity of the girl could not be discovered she was sent in an ambulance to the local cottage hospital. The matron reported afterwards that the girl was restless and retched several times without the unconsciousness becoming any less deep. Her condition remained the same until

1.50 a.m., when she suddenly stopped breathing and died about two minutes later, without becoming cyanosed.

Post-mortem examination showed a small abrasion above the right elbow as the only external sign of injury. The scalp above the occiput, over an area about two inches square, and the right temporal muscle were infiltrated with blood clot. There was subpial haemorrhage over the whole upper surface of the left cerebral hemisphere, and disintegration and haemorrhage at both frontal poles, particularly the left. There was, lastly, an extradural haemorrhage of about three drachms in the right middle fossa. No sign of fracture could be found. No examination of the rest of the body was made.

The diametrical transmission of the injuring force was most marked, as the infiltration of the scalp was greater on the right side than on the left. The mechanics of the meningeal haemorrhage is more difficult to understand. I can only suggest that, since a considerable degree of deformation of the skull is possible in a young subject (the girl's age was 17), the meningeal artery might be damaged by momentary stretching. It is true that an elastic artery might be expected to recover from stress better than the more rigid skull, but it is hard to suggest any more plausible theory. In any case the disparity between the clinical symptoms and the internal damage must remain the most interesting feature of the case.

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PAIN IN THIGH: CEREBRAL AND PULMONARY HAEMORRHAGE: DEATH.

In the BRITISH MEDICAL JOURNAL of April 22nd, 1922 (p. 635), Dr. Wilfred Harris states that intraspinal haemorrhage in the region of the cauda equina may, after clotting, cause obscure pain in the lower extremities which may lead the medical attendant astray.

A man, aged 30, of previous good health, suffered from intense pain in his left thigh. I could find nothing locally to account for his pain, and prescribed a liniment, which he said gave him relief. After a few days' suffering he returned to work.

A little later he complained of severe pain under the right mamma. His temperature was raised; as I heard a rub I strapped his chest, with good results. I saw no reason to doubt my diagnosis of pleurisy, but was puzzled by oozing of blood from his gums. Scurvy and a tropical disease were discounted. A few days later his pleurisy had cleared up, but his gums were now bleeding freely. Suddenly he passed into a state of unconsciousness and died in two hours.

Post mortem I found a recent haemorrhage in the internal capsule and a haemorrhage into the right lower lobe of the lung anteriorly. The cause of the haemorrhages I could not decide on.

The pain in his thigh was a mystery till I read Dr. Wilfred Harris's article. Possibly he had had an intraspinal haemorrhage.

Had I examined his nervous system carefully when I first saw him I might have detected some signs and symptoms, but pains in the legs are fairly common, and when a pain is relieved by a simple liniment one does not think of rare diseases.

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SIMPLE TEST FOR SUGAR.

A drop of urine containing sugar evaporated on a microscope slide over the flame of a spirit lamp leaves a "tacky" glistening film of syrup. Further heating turns this film a rich golden colour. Full heating converts the deposit into burnt sugar or caramel. Urine containing 14 grains to the ounce, according to fermentation test, gave the reaction after dilution with five times its volume of water. The test was demonstrated at a meeting of the North Lancashire and South Westmorland Branch at Kendal last October.

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THE Graduate School of Medicine of the University of Pennsylvania, in association with the Medical Society of the State of Pennsylvania, is undertaking the establishment, at a number of points throughout the state, of post-graduate medical extension groups, whereby medical practitioners situated far from the hospitals of the larger cities will be able to keep in touch with recent developments in clinical work and discoveries in medical science.