bear in mind the fact that any source of irritation having its origin in the lower end of the rectum is liable to cause functional derangement of the bladder. If this fact be borne in mind the practitioner will seldom go astray.

Before concluding I should like to say a few words on that very common class of case where backache and leucorrhœa are associated together as prominent symptoms, a good example of which is the following.

CASE 6.—A young unmarried woman, aged 28 years, consulted me for backache associated with leucorrhœa of some six months' duration. On making a vaginal examination I noticed two external piles at the margin of the anus, and finding the uterus normal I forthwith directed my attention to the rectum, an examination of which revealed internal as well as external piles. When informed of the true state of affairs the patient vouchsafed the information that she had suffered from constipation and pain on defecation for some time past—a valuable piece of evidence which she evidently intended in the first instance to keep to herself. The upshot of the case was that the piles were removed with a speedy cessation of the symptoms.

In connexion with this case I would like to point out that in any case of leucorrhœa it is always well to bear in mind the fact that reflex irritation having its origin in the rectum may be, and often is, a determining factor and that the source of this irritation will frequently be found to be a crop of piles. I have repeatedly met with such cases and it is abundantly clear that no amount of tonics and astringent injections will cure them so long as the main cause remains untouched.

To sum up, the chief points which I have endeavoured to substantiate this evening are the following: (1) that backache is not only a common but also a very important symptom; (2) that whether it be practically the only symptom present or whether it be associated with other more or less definite symptoms it is well worthy of a careful and searching investigation; and (3) that no investigation should be considered complete until the condition of the rectum has been ascertained.

In conclusion, I have to thank you for your kind attention and to express the hope that I have not wearied you by what of necessity has been a somewhat fragmentary discourse. If so my excuse must be that when one has paid special attention to any particular subject one is apt to think that others also will take an equal interest therein.

Beaumont-street, W.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

NOTE ON THE INFLUENCE OF THE TEMPERATURE OF LIQUID AIR ON BACTERIA.¹

BY ALLAN MACFADYEN, M.D. EDIN.,

AND

S. ROWLAND, M.A.

IN a previous communication to the Royal Society² it was shown that no appreciable influence was exerted upon the vital properties of bacteria when exposed for 20 hours to the temperature of liquid air (-183°C. to -192°C.). Further experiments have since been made in which the organisms were again exposed to the temperature of liquid air for a much longer period—viz., seven days.

The organisms employed were *bacillus typhosus*, *bacillus coli communis*, *bacillus diphtheriæ*, *bacillus proteus vulgaris*, *bacillus acidi lactici*, *bacillus anthracis* (sporing culture), *spirillum cholerae Asiaticæ*, *staphylococcus pyogenes aureus*, *bacillus phosphorescens*, a sarcina, a *saccharomyces*, and unsterilised milk. Instead of being exposed as formerly on the actual media in which they were growing the organisms were submitted to the cooling process in the form of a broth emulsion in hermetically sealed fine quill

tubing. This allows of complete immersion and effects a considerable economy in the amount of liquid air used, besides greatly facilitating manipulation. The liquid air was kindly furnished by Professor Dewar and the experiment was conducted in his laboratory. In the course of the experiment the loss by evaporation of the liquid air was made up by adding fresh portions from time to time. In this way the temperature of about -190°C. was maintained uninterruptedly through the whole period of the experiment. At the same time considerable care had to be taken in conducting the first cooling in order to avoid fracture of the quill tubes. A preliminary cooling was therefore effected by means of solid CO_2 . After the expiration of a week the tubes were removed with cork-tipped forceps and placed in a strong glass vessel till thawing was complete. The tubes were then opened and the contents transferred to suitable culture media. In each case a direct microscopical examination was made to detect any possible structural changes.

It is a remarkable fact that, notwithstanding the enormous mechanical strain to which the organisms must have been exposed, a strain far exceeding in amount any capable of being produced hitherto by direct mechanical means, not the slightest structural alteration could be detected. The subcultures made at the conclusion of the experiment grew well and in no instance could any impairment in the vitality of the organisms be detected. In one or two instances only growth was slightly delayed, an effect which might have been due to other causes. The photogenic bacteria grew and emitted light, and the samples of milk became curdled.

The above experiments show that bacteria can be cooled down to -190°C. for a period of seven days without any appreciable impairment of their vitality. It has not yet been possible to undertake the experiments with liquid hydrogen.

A NEW METHOD OF TREATING FEMORAL FRACTURES IN THE INFANT.

BY JOHN D. RICE, M.B., B.CH. R.U.I.

ON August 24th, 1899, I saw a newly-born infant with a fracture in the upper third of the right femur, all the classical symptoms being present. As the mother did not intend to nurse the child—and under the circumstances this would have been well-nigh impossible—I had the child removed to the Eltham Cottage Hospital, where I proceeded to deal with the injury. For several days I persisted with the ordinary methods for placing the fragments at rest, but found none of them gave the desired result. It then occurred to me that if a child could live in utero with its thighs flexed on the abdomen it might equally well do so ex utero; accordingly I flexed the injured limb on the abdomen, turning the foot over the shoulder of the same side (having previously placed boric acid and wool between the opposed surfaces). I then bandaged the limb with a washed flannelette bandage firmly to the abdomen and thorax, extension being kept on the foot. I raised the head of the cot six inches, and carried, as counter-extension, a loop of soft bandage round the ankle and fastened the end to the rail of the cot; a sandbag wrapped in flannel placed on each side of the child prevented lateral motion. The progress of the case was uneventful. The child ceased crying, fed and slept well, and was discharged in three weeks with perfect movement in the limb and no shortening, nor is there any now (April 6th).

In a child a little older it might be advisable to aid the body-weight extension by using a small weight attached to the sides of the buttocks by a large loop of adhesive plaster and a stirrup sufficiently large to avoid being soiled by the evacuations.

New Eltham, S.E.

DISLOCATION OF THE EPIPHYSIS OF A METACARPAL BONE.

BY E. KEN HERRING, M.R.C.S. ENG., L.R.C.P. LOND.,
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SURGEON, BALLARAT DISTRICT HOSPITAL.

THE skiagram which I send with this, showing the extremely rare condition of dislocation of the epiphysis of a

¹ A paper read before the Royal Society on April 5th, 1900. Communicated by Lord Lister, P.R.S.

² THE LANCET, March 24th, 1900, p. 849.