The 6 per cent. of cases that ultimately develop signs of general tuberculosis could be accounted for by an infection with the human type of tubercle bacilli.

The common symptoms of acidosis may be explained by the interference with the supply of fats to the liver. The child's metabolism is easily disturbed. Frew showed that the urine of most children suffering from any acute disease contained acetone. The lower ileum and the appendix are great absorbers of fat; appendical concretions are chiefly fat. A calcification and fibrosis of the glands of the ileo-caecal angle must to a great extent interfere with the supply of fat to the liver, and set up acidosis. It seems to me that this acidosis has some relation to the onset of the acute attack of pain in the right iliac region. A dietetic indiscretion, a period of nervous strain, or muscular exertion often starts an attack. Many organisms lie latent till an acid is presented to them. In children first come the symptoms of acidosis, headache, drowsiness, and then pain.

The pain has been attributed to different causes by different observers. Corner thought it was due to the reflex action on the appendix. Carson attributed the pain to the irritation of the mesenteric nerves causing enterospasm. This, he thinks, explains the colicky nature of the pain, and its sudden onset and cessation. He actually saw an intussusception occurring when he was operating on a case of lymphadenitis. Probably Carson's explanation holds good in many cases. It would explain the colicky pain at the umbilicus at the beginning of an attack. The shifting of the pain to the right must be explained by the local inflammatory lesion.

It is easy to understand how a calcified gland in the mesentery with no recent inflammation can, on exercise, cause acute pain. The site of the pain will depend on the part of the mesentery affected. Its irritating presence will also give rise to pylorospasm or enterospasm by reflex nervous action, or its bony hard spicules may irritate a ureter and give rise to renal colic and haematuria. The movements of the intestine after eating will readily cause the calcified gland to act as an irritant, and bring about pain after food, simulating that due to digestive ulcer. The treatment, then, will resolve itself into preventing the condition by a clean milk supply, and in the established cases according to the type.

Group 1.

In the succulent inflamed glands of children operation is not necessary and it is unsatisfactory. Fresh air, sunshine, dietetic treatment, and alkalines are recommended. The diet should consist of large quantities of green vegetables and a liberal amount of protein. Excess of sugars cause fermentations and acid changes in the intestine, and should be forbidden. Highly saturated fats are likely to be incompletely burned and to continue the acid state. I think small quantities of the unsaturated fat in Norwegian cod-liver oil are useful. It is probably absorbed higher up in the intestine than the diseased area. As a medicine small quantities of sodium bicarbonate after meals are useful in preventing the acidosis. When it has occurred large doses of the bicarbonate and glucose are indicated. I have never tried insulin. Fortunately the removal of the appendix does not harm the child if attention is paid to the acidosis.

When a gland abscess is present it may be treated by absolute rest in bed with only glucose and sodium bicarbonate by mouth and by rectum. It will usually subside. If the child appears to be getting worse under this treatment the abscess should be evacuated and wiped out with bipp, with as little disturbance as possible to the surroundings, for the intestines are likely to separate, leaving holes in their lumen. In cases where future obstruction seems to be pretty certain, a side-to-side anastomosis, from above the lesion to below it, will save many a life and hasten convalescence.

In cases of calcified glands I think the evidence is all in favour of their removal. Their close relation to the mesenteric blood vessels should be noted and the blood supply of the adjacent bowel not interfered with. If on account of the close relation of the gland to the blood vessels the surgeon thinks it dangerous to remove the

gland completely a partial removal of the gland will in many cases cause a cessation of symptoms.

Violet rays have proved to be of great use in the treatment of the disease in children and in the fibrosed glands of adults. Deep x-ray therapy is useful, especially in those cases of massed glands simulating tumours. The dosage should be light, as intensive treatment is apt to cause abscess formation.

Summary.

1. Mesenteric lymphadenitis is of frequent occurrence in children. The most common period for the complaint is between 7 and 11 years of age.
2. Symptoms date back over a long period.
3. The history of frequent attacks of lassitude, drowsiness, headaches, and loss of appetite for weeks past is very common in these patients.
4. Attacks simulating acute appendicitis, duodenal ulcer, and other abdominal diseases are common.
5. Other enlarged glands will be detected.
6. The site of tenderness in inflammation of the ileo-caecal group of glands is not McBurney's point, but a situation higher up and more medial than this point.
7. Operation is unnecessary in the case of Group 1.
8. A calcareous gland causing symptoms should be removed.
9. The cause of the condition in children is probably infection by the bovine tubercle bacillus, with a superimposed condition such as acidosis causing an acute attack.
10. The acute abdomen of children due to acidosis is really caused by an underlying mesenteric lymphadenitis.

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THE TREATMENT OF CERTAIN MENTAL DISEASES BY RINGER-LOCKE SOLUTION.

BY

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ACTING on the suggestion of Ishida, confirmed by Morowoka (*Journal of Mental Science*, April, 1927), a number of patients in the St. Luke's Mental Hospital, Middlesbrough, have been treated by the subcutaneous injection of massive doses of Ringer-Locke solution. The solution used contained, in a thousand parts of distilled water, sodium chloride 9.0, potassium chloride 0.42, calcium chloride 0.24, sodium bicarbonate 0.1, and glucose 0.1. The patients have been somewhat carefully selected; and the debilitated general paralytic and the toxic case have been considered to be most suitable, but a number of the manic-depressive type have received injections over a considerable period, and latterly we found it advantageous to treat the "debility of senility" in this way.

The aim in all the treatment has been to better the physical condition of the patient, but latterly, in view of the results obtained, we have felt that it is quite reasonable to expect a good deal of mental improvement in certain types of mental conditions. A dose of 1,000 c.cm. has been

injected twice a week; no trouble has been experienced in the introduction of the apparently large amount of fluid, and even the most debilitated patients, male or female, have shown no ill effects.

An ordinary two-way aspiration syringe of 100 c.cm. capacity is used, with a needle of suitable bore. If the bore is large there is considerable leakage from the site of the puncture, and if it is too small the back pressure on the syringe makes the giving of the injection a tedious process both for the patient and the giver. The syringe and needle are sterilized by boiling; where an antiseptic lotion has been used for this purpose one has found difficulty in removing all trace of the antiseptic, and a slight local reaction has occurred. The flank or the back is the most suitable place, and each side is used alternately; the near area of the sciatic nerve should be avoided, and if the temporary swelling is at the level of the iliac spine a little more discomfort is caused to the patient.

The skin of the selected site is well washed with ether soap and then treated with iodine before being frozen with an ethyl chloride spray. It is impossible to give a general statement as to how deep the needle should go. In some cases the needle is passed definitely to the subcutaneous tissues; in others there is less discomfort if the injections are made into the superficial muscles. As a rule the treatment causes transient discomfort and nothing more.

The fluid has been injected at varying temperatures, but one has found that about 105° F. is very suitable, and tends to cause less of a rigor than a temperature lower than that of the body. The fluid should be injected slowly, otherwise the tissues have insufficient time to avail themselves of their natural elasticity, and the patient becomes very restless and complains of a "drawing" pain. When the desired amount has been given the needle should be slowly withdrawn, and the site of the puncture massaged with iodine before being sealed with flexible collodion and covered with a swab. Slight oozing nearly always occurs if the injection has been actually subcutaneous, but this readily stops without interference. If the injection is made into the superficial layers of muscle there is, as a rule, no leakage.

The patient should be carefully propped up in bed by pillows so that the distended area does not take any pressure. Absorption is very rapid, and there is seldom any trace of the fluid after two hours. We have had none of the reported soddenness of the skin even after fifteen or twenty injections have been given.

If it is desirable to give intramuscular medication to the patient this can readily be combined with the Ringer-Locke injection into the superficial muscles. The absorption of, say, karsulphan has, it is thought, been much more rapid, and no after-effect has been observed.

About two to six hours after the injection most patients have some rise in temperature, attended in the majority of instances by a mild rigor. Morowoka states that general paralytics seldom have a rigor, but this has not been borne out here. Practically every patient of this type has a definite elevation of temperature after one or more of the injections; in one patient the temperature rose to above 102° F. twice in the first twelve injections; in another 101.6° F. was the highest figure recorded; whilst a third had a temperature of 103° F. after the second and fourth injections, and no rise above 100° F. subsequently.

The senile type of case, as a rule, shows little reaction of temperature, but in the toxic case there is a definite tendency to rigor. One such patient had a temperature of 103° F. four times in the first fifteen injections; in another the temperature rose to 102° F. after each treatment; whilst a third rose to 104° F. after the first three injections and then settled down to an almost regular normal figure. Usually the temperature subsides within twelve hours and is unaccompanied by any disturbance of the pulse or respiration rate. Sleep is usually much more tranquil, and the patient feels decidedly better.

There seem to be no contraindications. In only one case has the treatment by Ringer-Locke solution been abandoned, and then because a coexistent and spreading attack of herpes made it a matter of difficulty to find a suitable site. Trophic sores in the general paralytic are by no means a contraindication; indeed, we have found that in

the very rare cases where such existed they tended to heal more quickly when ordinary treatment was combined with the injection of Ringer-Locke solution. Certainly, the tendency to secondary septic infection is much lessened.

Except for rise of temperature no complications have been observed. Morowoka states that in dementia praecox a rash is sometimes seen; this has not been the experience here with other classes of cases; only once has a slight rash been observed, and that in a patient of plethoric mien.

Results.

Treatment by the Ringer-Locke solution has been carried on here with great regularity and comparatively extensively, but the results obtained with the treatment will not bear comparison with those of either Morowoka or Ishida in point of time, numbers, or actual benefit to the patient. Nevertheless very definite improvement has been observed which may be summarized as follows:

In toxic insanities, after the third or fourth injection it is quite usual to see a clearing of the complexion, and to find a returning power of free natural elimination, a return of tranquil sleep, with an accompanying mental improvement. In debilitated general paralytics, where the stage of acute restlessness has been reached, it has been noticed that after the third or fourth injection the patient becomes much more tranquil.

Daily catheterization was needed in one such case which was admitted in an extremely low condition; enemata and hypnotics were a routine. After the third injection the catheter was used chiefly as a precaution, and after the sixth its use was discontinued altogether; after the seventh injection the daily enema was discontinued, as a dose of liquid paraffin was sufficient to ensure free elimination. Hypnotics are now practically never necessary, as the patient sleeps most of the night.

Another patient, having frequent and heavy seizures which resulted in a partial left-sided paresis, was treated by injection of Ringer-Locke solution. Marked improvement was noticed in both the number and severity of the seizures after the second injection, and the paresis cleared up after the third. No further seizures have been noted. Restlessness is diminished, urine is being passed in full quantities, and a fair measure of sleep is being obtained.

Repeated treatment with Ringer-Locke solution in debility of senility has been followed by really good results; restlessness diminished, elimination increased, there was less danger of the onset of stupor, and appetite tended to revert to the normal.

Conclusions.

Regular and repeated injections of the Ringer-Locke solution have been of definite benefit in cases in which there was a toxic element, and the mental condition seemed to improve more rapidly under this treatment than when "forced" elimination alone was employed. In the debilitated toxic patient the time which must necessarily elapse before the toxic focus can be attacked is materially shortened.

The general paralytic in poor bodily health seems to benefit to a very considerable degree; in fact, the treatment is used here with a view to bringing the patient into a suitable condition for tryparsamide medication. In addition, with the bodily improvement there is an increase in the eliminatory powers. So far but little difference in habits has been observed.

In the "psychological" insanities little improvement has been noticed from the mental side, but even in this difficult class of patient the increased length of sleep and diminution of restlessness is of considerable advantage both to the patient and to the hospital.

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CONGENITAL WORD-BLINDNESS.

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In congenital word-blindness the visual memory for letters and words is defective; that is to say, great difficulty is experienced in learning to recognize printed letters and words, so that spelling and reading are exceedingly troublesome, or even impossible. No other defects may be found