required innumerable punctures because of the small size of all the cysts, and without inspection of the peritoneal cavity the need for special treatment of the upper part of the kidney could not have been recognized.

Good results seem to have been obtained in reported cases by removing the larger kidney, but it is doubtful whether this is a wise proceeding. Nephrectomy was not practicable in the case now recorded when I saw the patient. Where it is practicable, the effect must be to throw the whole burden of renal excretion upon the second kidney, which is also unhealthy, and which, therefore, will come to an end of its capacity sooner. The disease, after symptoms develop, seems to be inevitably progressive, and relief of tension by an operation which does not destroy more kidney tissue than is necessary would appear to be the ideal treatment if the symptoms indicate surgical interference. The case now recorded shows that diffuse peritonitis is a complication which, though not usually described, is to be feared, and that it may be cured and life may be prolonged by a timely reduction of tension. In this connexion it is interesting to note that the patient's sister is said to have died of the same disease at the same age as the patient when she was operated upon. Another important point shown by this case is the power of healing of a large wound in a congenital cystic kidney.

Medicinal treatment does not come within the scope of this communication, and it is extremely difficult to estimate its influence upon such a rare disease. Iodides seemed to have some beneficial effect, and Dr. Crookshank informs me that thyroid tablets were always useful, but the cystic change made progress in spite of all treatment. Child-bearing would appear to be dangerous whenever renal excretion is deficient, but the symptoms in the case recorded only became marked after the second pregnancy, and there is no evidence that the first and third were harmful. Rest and an invalid life seem beneficial now, but before Christmas, 1914, the patient was very active, playing golf almost daily, and often two rounds, her health being then very good. I am indebted to the above-named gentlemen for permission to publish their names, and especially to Dr. Snell for his management of the case after the operation.

REFERENCES.

¹ Catalogue of Museum, Royal College of Surgeons of England, Pathological Series No. 3558A. ² Ibid. ³ Ibid. ⁴ J. Knowsley Thornton: *Surgery of the Kidney*, pp. 42 and 93.

MEMORANDUM ON THE PREVENTION OF AMOEBIC DYSENTERY.

By J. GORDON THOMSON AND D. THOMSON,
CAPTAINS R.A.M.C.

PRELIMINARY REMARKS.

It has been proved that it is of the greatest importance to give a thorough course of emetine treatment to all cases of amoebic dysentery before discharge from hospital. Efficient treatment prevents the patients from becoming cyst carriers. Small doses of emetine, such as 3 or 4 grains given in 1-grain doses daily and then discontinued, must be avoided. Treatment such as this benefits the patients at the time, but it is actually dangerous, as these cases may relapse or become cyst carriers. They also run the grave risk of subsequently developing abscess of the liver. The dose of emetine required to bring about a complete cure varies with the case to be treated. Acute cases treated early may be cured by the continuous administration of emetine up to 7 grains. One grain must be given daily, and on no account should the dosage be intermittent. The giving of 1 or 2 grains and then stopping for a day or two and then continuing is to be avoided. Other cases require 10 grains and more; chronic cases have required 18 to 20 grains. In all cases of cyst carriers experimental evidence tends to prove that administration of emetine ought to be continued till at least 12 grains and sometimes more have been given. Where a microscopic examination of the faeces is impossible, the clinician must use his own judgement, and in all cases he ought to go on with the treatment even after all the symptoms have ceased. It is of the utmost importance to keep the patient in bed during treatment.

When a patient has become a cyst carrier he can as a

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rule be rendered non-infective by the administration of emetine combined with magnesium sulphate in doses of 2 drachms every four hours. Here if possible the treatment should again be controlled by the microscope. In most cases 10 grains clear out the cysts of the pathogenic entamoebae, but in one case we still found cysts after the administration of 13½ grains. This is sufficient to show that the result of treatment by emetine should be controlled by daily microscopic examination of the faeces, and it is also advisable to make another examination some time after the treatment has ceased.

We have now proved that flies are capable of ingesting cysts of the pathogenic entamoebae from infective material and depositing these in their faeces on food. The cysts of *Entamoeba histolytica* will persist for a month, and much longer under conditions in which the stool is not allowed to dry too much. It has been shown that the pathogenic cysts in faeces well diluted with fresh drinking water persist for weeks, and this has also been proved in the Central Laboratory. In Egypt, where the faeces are deposited in the open on sand by the native, we have a constant danger to the community from flies, water, and even blown sand. Fresh faeces can be quickly trampled up in the sand, and small particles of highly infective material adhering to the sand grains may be blown long distances.

PREVENTION.

The following recommendations regarding prevention are based on the foregoing facts.

1. *Thorough and Rapid Disposal of Faeces.*

In an army it is absolutely essential that all faeces should be disposed of in such a way that flies can have no opportunity of alighting and feeding on them for even one second. Hence it is necessary to employ, in the absence of a flush-water system, either fly-proof latrines or metal buckets containing kerosene or some other anti-septic. Kerosene wards off flies, and it is inflammable and assists in the incineration of the faeces later on. No random defaecation must be allowed even some distance from the camp bounds. This is a common occurrence in Alexandria. The sanitary squads should devote their attention not only to their own compounds, but to the neighbouring clear areas used by the native as latrines. This is of great importance, as we have found cysts of the pathogenic entamoebae in samples taken at random from deposits on the seashore. It has been found difficult in many cases, even in our own soldiers' camps, to make men use the latrines. The reason for this is obvious, as often the latrines are very unattractive and in many cases repulsive to men accustomed all their lives to the privacy of a water-closet. In an army such as now exists, in which men of all grades of society are mingled together, more care ought to be taken in the construction of latrines. Partitions of some sort ought to be placed between each bucket and a special man ought to be detached to keep the place absolutely clean. A little expense would obviate these difficulties.

2. *Thorough and Rapid Disposal of Horse Dung and Refuse.*

Since flies breed in faeces, horse dung, and refuse, these should be cleared away daily and preferably burnt in a powerful incinerator.

3. *Separation of Camps from Native Quarters and Horse Lines.*

Camps ought to be pitched at a considerable distance (one mile, if possible) from native villages or dwellings, or else it will be necessary to exercise a thorough sanitary control over the latter. This will be found a very difficult matter, since having no sewage system they are littered with highly infective faeces and dung, and flies abound.

Permanent dwelling camps should also be stationed at a considerable distance from horse lines (if possible, 1,000 yards) since horses always attract flies.

4. *Careful Guard of all Water Supplies.*

Contamination of water supplies by faecal matter and filth must be avoided, since the cysts of the pathogenic amoebae can live in water for a long time.

5. *Fly-screening and Destruction of Flies.*

All more or less permanent messes, canteens, and cook-houses ought without delay to be thoroughly fly-screened

before the hot weather brings the flies. The doors should close automatically by means of powerful springs. The ideal state of affairs is to have a passage 10 ft. long with a spring door at each end. This passage serves both as the entrance and exit. This system is adopted in the American houses and hospitals all over the Panama Canal zone, and a special gang of carpenters was sent round periodically to examine the condition of the screening and make any necessary repairs. The extra expense has well repaid the authorities by practically stamping out dysentery amongst the white population. As a second line of defence, even in a fly-screened building, all food on the tables ought to be covered with gauze. This is easily done. All flies which gain an entrance to the building should be immediately destroyed.

6. Supply of Sterile Sand for Cleaning Mess Tins.

This is necessary, as the sand about a camp is very liable to be contaminated and infective. Sand is easily sterilized by roasting or boiling it with water. The sterilized material should be kept in a covered boiler or other metal receptacle.

7. Eating and Drinking in Native Quarters.

Uncooked food, such as salads, vegetables, and ices, also unboiled water and milk, are dangers in all native eastern villages or in the filthy quarters of the larger towns. The milk should always be boiled. As vegetables are often manured with human faeces, they should be thoroughly washed and plunged for a few seconds into boiling water before they are eaten.

8. Recommendations with regard to Hospitals.

Cases of amoebic dysentery should be isolated as much as possible in special wards. Fouled clothing and bed sheets should be placed immediately in antiseptic lotion, so as to prevent flies from alighting on them. The hands must be washed after handling such clothing or the patients themselves, and also after handling bedpans. When bedpans are sent to the laboratory, the report paper should not be secured between the bedpan and its lid, because in this way it becomes soiled. Orderlies must be instructed in these matters and thereafter punished for lack of attention to details. Dysenteric wards should be thoroughly fly-screened, as well as the hospital cook-houses and mess-rooms. In addition, flies should be destroyed in all hospitals by every available device.

9. Early Thorough Emetine Treatment.

All cases of suspected dysentery should receive at once 1 grain of emetine daily at the advanced dressing station, field ambulance, hospital ship, or base hospital. This treatment must not be stopped during the transit towards the base until at least 7 grains have been given. It is bad practice to omit one single dose. The 7 grains should be received in seven days.

10. Microscopic Examination of Faeces before Discharge.

The faeces of every case of amoebic dysentery should be examined microscopically after a full course of emetine in order to determine that they are free from cysts. Patients should not be discharged from a field ambulance for duty, or from any hospital, until they are pronounced free. It should be remembered that the mildest cases may become dangerous cyst carriers.

11. Isolation and Thorough Treatment of Cyst Carriers.

All cyst carriers must be sent to hospital to receive a thorough course of emetine combined with salines. They must not be discharged or allowed to join their unit until quite free from cysts.

12. Examination of all Cooks and Mess-room Orderlies.

No soldier should be employed as a cook or mess-room orderly in a camp or hospital until it has been proved by microscopic examination that he is not a cyst carrier. Particular attention should be paid to this matter where those so employed happen to be natives.

13. Larger Sanitary Staff and Equipment.

There can be no doubt that these sanitary measures are necessary in a country like Egypt. If larger sanitary

squads and equipment could be provided, the measures could be thoroughly carried out, and this disease, with others, would rapidly disappear from our army. The extra expense necessary would be repaid almost immediately, and ultimately save an enormous amount of money and life to the State.

THE CAUSATION AND CURE OF CERTAIN FORMS OF LUNACY.

By RUPERT FARRANT, F.R.C.S., CAPTAIN R.A.M.C.,
LATE HUNTERIAN PROFESSOR, ROYAL COLLEGE OF SURGEONS.

BEFORE going on foreign service for a second year, I wish to publish the following preliminary conclusions and summary of work directed to the causation and cure of lunacy carried on during the last seven years. The work is a continuation of that previously published on the thyroid gland in the elucidation of goitre and exophthalmic goitre.

The work consists of the microscopical examination of sections taken from the pineal, pituitary, thyroid and sexual glands—first, at different ages and periods of life such as puberty, menopause, and childbirth; secondly, the effect induced in these glands by the acute and chronic toxæmias; and thirdly, the changes found in cases of lunacy.

Clinical examinations were carried out of cases exhibiting signs of enlargement and atrophy of these glands and symptoms of excess or diminution of secretion. Similar examinations have been made on all classes of lunacy for the presence of signs and symptoms. Photographs and x-ray examinations have been made to illustrate their occurrence. Mental cases and others have been examined for the presence of toxæmias inducing the alteration in the glands and the consequent induction of symptoms of excess and deficiency. Bacteriological examinations have been made of the faeces of lunatics and the colons examined *post mortem*.

From some 3,000 sections it is found that these glands vary at different ages and periods of life; with advance of life they tend to atrophy.

It is found that the pineal reacts to certain toxæmias, the ultimate result of which is fibrosis. The pituitary reacts in a similar manner, the terminal result of which is fibrosis; intermediate stages of hyperactivity are seen, and the formation of cysts and adenomata. The reaction of the thyroid to certain toxæmias with the induction of hypertrophy, cysts, and adenomata, I have already described in my lectures as Hunterian Professor in 1915. A comparison was made of such specimens with those obtained from cases of lunacy, apart from those in which a definite pathology has already been proved, such as general paralysis of the insane (other syphilis cases), meningitis, head injuries, etc. The effect of age and of the lethal toxæmias was discounted and the state of the glands in cases of lunacy determined.

In primary and secondary amentia atrophy of the pineal, pituitary, and thyroid were found in three main groups of cases. In dementia praecox an alteration was found in the glands which varied with the duration of the case. Alteration and degeneration was also found in other cases of dementia. In some cases of acute confusional mania, melancholia, manic-depressive and other forms of insanity, changes were found in the thyroid, pituitary, and sexual glands. The changes varied from hypertrophy to atrophy.

Clinical examinations were made of some 1,000 cases of insanity, analogous to those from which the pathological sections had been prepared, for signs of enlargement or atrophy, and the presence of excess or deficiency of secretion from these glands.

The thyroid gland was frequently found to be abnormal in children, adolescent and adult lunatics; its size varied from considerable enlargement to complete atrophy, and the general condition from one of hyperthyroidism and exophthalmic goitre to myxoedema and cretinism.

The pituitary gland was found sometimes to have given rise to symptoms of hyperpituitarism to apituitarism, in idiocy, dementia praecox, and other forms of insanity. Enlargement and atrophy of the pituitary were deduced