(Chart 1). Exceptionally, when the pressure fell unusually rapidly, the evening pressure was lower than that

CHART 2.—Systolic pressure, taken twice daily at 10 a.m. and 6 p.m., and recorded in millimetres of mercury.

recorded on the preceding morning (Chart 3); such a chart may be compared to that of a case of pneumonia terminating by crisis.

CHART 3.—Systolic pressure, taken twice daily at 10 a.m. and 6 p.m., and recorded in millimetres of mercury. Termination by crisis.

A frequent type of record is shown on Chart 4. During the early phase of the disease the pressure rises and falls irregularly; a stage is then reached of morning remissions

CHART 4.—Systolic pressure, taken twice daily at 10 a.m. and 6 p.m., and recorded in millimetres of mercury.

and evening rises forming a descending "staircase"; subsequently the pressure becomes subnormal, rising later to the normal.

Association with other Symptoms.

In association with uraemic convulsions (14 cases) the pressure was found to be always raised, but to a variable extent; in some cases it was 200, in others considerably lower; in one severe case the systolic pressure taken a few hours before the fit was 135. Immediately after the

fit the pressure was often over 200, probably owing to the great muscular exertion.

Two symptoms, usually nocturnal in incidence, appear to be specially associated with the great evening rises of pressure—namely, paroxysmal dyspnoea and headache. The connexion between these symptoms and the rise in pressure is undergoing further investigation.

Usually the amount of albumin diminished *pari passu* with the fall in pressure, although residual albuminuria often persisted after the pressure had fallen to the normal. Sometimes, however, the two curves bore no relation to one another. During convalescence transient elevations in the blood pressure occasionally occurred; sometimes they followed an advance of diet, but often they formed a part of a general recrudescence of symptoms for which no cause could be assigned.

The estimation of the blood pressure was found to be of great value both in diagnosis and in judging of the patient's progress. As noticed by Captain W. Langdon Brown,² those patients appear to do well in whom the pressure is at first high and rapidly falls to the normal. Often, however, the morbid process in the kidney appeared to continue after the pressure had fallen to the normal.

Conclusion.

The blood pressure was found to be always raised during some stage of the course of the disease, although not to so great a height as is the case in chronic nephritis. Wide diurnal variations in the pressure were usually present, the pressure being highest in the evenings.

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CONGENITAL CYSTIC KIDNEY WITH LOCAL DIFFUSE PERITONITIS: SURGICAL DESTRUCTION OF PART OF KIDNEY: RECOVERY.

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HYDATIDS may develop in the kidney, and a dermoid cyst containing hair has been found in place of that organ in a healthy sheep.¹ Apart from such rare conditions there are two chief forms of cystic kidney. In one an obstruction in some part of the large urinary ducts causes dilatation of the pelvis or calyces by modified urine, pus, or tuberculous matter. Retention cysts thus formed are by far the commonest cystic kidneys. Congenital cystic kidneys are altogether different. In them there is no evidence of obstruction in the renal pelvis or in any lower portion of the urinary tract. The whole renule is transformed into a mass of small cysts, from about half an inch in diameter downwards, with generally a few larger cavities. The walls between are flattened by pressure, so that an irregular honeycomb appearance is presented on section. The cysts usually contain a clear fluid, but in one specimen various cysts contained a transparent fluid, a dark yellowish or brown and viscid substance, and turbid nearly solid material respectively.² Some cysts are dilated tubules, or Malpighian bodies, with their epithelial lining recognizable under the microscope. In other cysts there is no lining epithelium.

One specimen in the College of Surgeons' museum was associated with a similar cystic formation in the liver, and the condition has been found with multiple cysts in the spleen and thyroid. It also occurs with congenital imperfections such as heart malformations, spina bifida, and in anencephalic monsters. Frequently more than one member of a family is affected. These facts suggest, and it is generally believed, that a congenital cystic kidney is an abnormal development. Another view is that the condition is one of new growth, and, again, it has been attributed to an excess of connective tissue causing obstruction in the urinary tubules. It is possible that the pathology is not always the same, and there are cases of single cysts and of a few cysts in the kidney which are not associated with any obvious obstruction of the large ducts. These are generally unilateral, and whether they are modifications of the congenital cysts, or retention cysts,

or new growths is not clear. Congenital cystic kidneys have been found in a pony and in a kitten.³

This abnormal condition may exist without symptoms and the patient may die of some other disease at any time from infancy to old age, the cystic change being discovered at autopsy. All the effects produced are due to pressure on the kidney substance or on adjacent parts.

Obvious enlargement of one or both kidneys or a dragging pain caused by the weight may be the first indication of trouble. The condition is usually bilateral, but more advanced on one side, so that one kidney may distend the abdomen to an enormous size whilst the other, also cystic, is only slightly enlarged. Records show that in these circumstances the small kidney, although cystic, may produce sufficient renal excretion to maintain apparent good health, whilst the larger gives a modified secretion resembling that of a small granular kidney. The specific gravity and urea excretion are reduced, the amount of urine is increased and a small quantity of albumin is found in it.

As the kidney enlarges there is a liability to attacks of pain, sometimes accompanied by fever, during which the mass swells and hardens, shrinking again when the attack ceases. With the pain and fever haemorrhage from the kidney may be associated; this symptom is not obvious in every case, but blood discs in the urine are frequently reported.

Numerous specimens of congenital cystic kidneys are preserved in museums, but it does not appear that individual surgeons have had personal experience of many cases. Two have come under my observation. In the first I acted as assistant to Knowsley Thornton, and the nature of the case, published in 1890,⁴ was not recognized until excision of the kidney was unavoidable. The other kidney was also cystic, but it acted so well that the patient lived five days, although she suffered from intestinal obstruction and underwent a second operation for that condition on the fourth day. It has in recent years been fully proved, by successful nephrectomies, that a small congenital cystic kidney can do all the necessary work. The second patient, whose case is now recorded, gave the following history:

She miscarried, at the age of 31, after two months' gestation, and no renal disease was then detected. Two years later, when eight months pregnant, she suffered from suppression of urine and amblyopia. Labour was induced, and with the first pain the patient had a fit, after which she was unconscious twelve hours. A living child, delivered by forceps, died six hours later. Convalescence was complicated by pain and swelling of the right kidney with fever, but complete recovery took place, except that the kidney remained big, and albuminuria, with increased secretion of urine, was persistent.

At the age of 36 the patient, being then abroad, lost much blood in the urine, and there was again pain and swelling of the right kidney with fever. Operative treatment was recommended but refused on the cabled advice of Dr. F. G. Crookshank, and the symptoms ceased after six weeks. About a year later another pregnancy was terminated at the eighth month by induction of labour, and an apparently healthy child was delivered without trouble in November, 1913, but died after twelve hours. Convalescence was uncomplicated, and good health was enjoyed for another year, although the right kidney was still obviously big, and the secretion of urine copious. During December, 1914, the patient felt ill, and on December 24th, after playing two rounds of golf—a quite usual exertion—she was seized with severe pain in the right kidney, which became big, hard, and tender, and there was blood in the urine. The temperature rose gradually until for three days it was between 102° and 104.8° F.

Dr. Crookshank, who had been in charge of the case, was on war duty, and Dr. S. H. Snell of Christchurch was consulted. He, in association with Dr. Hyla Greaves of Bournemouth, concluded that nothing but surgical treatment could give relief, and I saw the patient, then aged 38, on January 3rd, 1915. The kidney occupied the greater part of the right half of the abdomen, crossing the middle line, and standing out prominently below the ribs. It was so tender that no satisfactory examination could be made, and a slight enlargement of the left kidney was not detected. There was a little albumin in the urine, which had a specific gravity of 1010, but did not contain obvious blood. It was stated that before the attack began the urine was sometimes clear and sometimes thick. A feeble pulse (120), a temperature of 104.8° F., and a drowsy apathetic brain condition combined to suggest that the patient was dying from absorption of poisonous products. Her friends said that she appeared to be much more seriously ill than on any previous occasion, and it was also stated that the patient's sister died at the age of 38 from the same disease.

This history was obtained from the husband and friends up to the beginning of the last attack on December 24th, 1914. The husband stated that a cystic kidney was diagnosed by Dr.

Crookshank after the first full time pregnancy five years before, and it appeared later that double congenital cystic kidneys were recognized at that time, but nothing that was said suggested the true nature of the disease. A diagnosis of suppurating cystic kidney was made with blocking of the escape of pus. Nephrectomy was considered desirable, but if, as seemed likely, removal of the kidney was impossible, it was thought that relief could be obtained with certainty and safety by draining the kidney.

On January 4th, 1915, the abdomen was opened, and it was then seen that the anterior part of a very long gall bladder was pushed forward well in front of the liver edge and was tightly nipped and indented about its middle, between that edge and the kidney, which was very hard and appeared to be solid. An area extending 4 to 5 inches around the gall bladder showed peritonitis, with adhesions so recent that they were easily separated by a sweep of the finger.

The diagnosis was clearly mistaken, and it appeared that the relief of pressure which seemed necessary could be effected only by removing the whole mass—an obviously dangerous, if not impossible, task. The left kidney was slightly enlarged. To decide whether enucleation could be accomplished the right kidney was exposed by incising the peritoneum covering it, and its whole surface was then seen to be cystic, the cavities being so small that the condition was hardly perceptible to touch. A second examination of the left kidney showed that it was similarly affected.

The nature of the condition was now obvious and an attempt to remove the kidney was considered unjustifiable. But the need for relief was imperative. The kidney was therefore opened through a second incision behind the peritoneum and its structure freely broken up by means of scissors and forceps. The finger alone could not be thrust into the kidney substance, which felt quite solid. No large cavities were opened, and only a small quantity of clear fluid escaped, but the size of the mass was considerably reduced. With the hand in the peritoneal sac as a guide, the region of the renal pelvis was avoided. The upper pole of the kidney, over which the evidence of recent diffuse peritonitis existed, was especially broken up and rendered flaccid. Two large drainage tubes were inserted towards the upper and lower ends of the kidney, and the anterior wound was closed.

The patient was very ill for a few days, and had much trouble from intestinal distension and incontinence of urine. Little discharge escaped and no urine from the drainage tubes, which were kept in nearly three weeks to relieve tension, and after they were quite short to facilitate deep healing. When they were removed the wound soon closed, the kidney being then much smaller than before the operation. The patient's condition gradually improved, and after six weeks she could walk a little, but there was a drag in the right side which prevented her standing upright. Since the operation there has been blood in the urine a few days before, during, and a few days after many menstrual periods, accompanied by pain in the kidney. In July, during a period, the patient lurched heavily from a sudden movement of a train, and then felt a severe stabbing pain in the left kidney for the first time. The left kidney became very big and tender. This attack passed off like the others, and after a time the patient was able to play golf on a putting green.

In November, 1915, after an injudicious attempt to take more exercise, she had a severe attack which did not begin with a period. To the usual symptoms were added vomiting and a rise of temperature. The right kidney was considerably enlarged and very tender, and the patient became so weak and pale that it appeared as if death might occur at any time. After a fortnight the symptoms ceased abruptly, and the conditions rapidly improved. The patient was kept in one room for a time, and became as well as she had ever been since Christmas, 1914. She was able to stand quite erect.

June 6th. Dr. T. Croft Neville informs me that the patient's condition is now very much better than it was six months ago. The right kidney extends below the pelvic brim, but the left is almost of normal size. The patient walks out daily when the weather is warm, but when it is cold she must stay in, and she cannot exert herself much.

This patient was first seen by those responsible for the operation in an acute condition, and the nature of the case was not recognized, but the need for surgical interference was correctly estimated. The failure to recognize the primary disease was due partly to the rareness of the condition, partly to the masking of the indications by the acute symptoms and partly to the diagnosis of cystic kidney, passed on by the husband and accepted in its ordinary meaning. The mistake was a fortunate one for the patient, because with a diagnosis of congenital cystic kidneys the chances of recovery would probably have been considered greater without surgical interference. But the diffuse peritonitis around the gall bladder could not have been recognized without exposure of the parts, and it is practically certain that this inflammation would have spread and proved rapidly fatal. The only useful procedure that might have been advised, if a diagnosis of congenital cystic kidneys had been made, was to reduce tension by emptying some of the cysts with a trocar and cannula from behind the peritoneum. This would have

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.

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MEMORANDUM ON THE PREVENTION OF AMOEBIC DYSENTERY.

By J. GORDON THOMSON AND D. THOMSON,
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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