

Contents of the Intestine at the end of two hours.

Before sulphuric acid	104 grm.
After	" "	216 "

Here the water in the beaker contained a product with a reducing power of 76 in relation to 100 as the reducing power of glucose, whilst the intestine contained a body with a reducing power of only 48 to 100.

Experiment.—In a like experiment to the last, with the exception that the exposure to 120° F. (48·8° C.) was for one hour and a half instead of two hours, the subjoined results were obtained:—

Water from Beaker at the end of one hour and a half.

Before sulphuric acid	006 grm.
After	" "	006 "

Contents of Stomach at the end of one hour and a half.

Before sulphuric acid	142 grm.
After	" "	256 "

Relation 55 to 100.

Duplicate observations were made with the intestine.

OBSERVATION 1.

Water from Beaker at the end of one hour and a half.

Before sulphuric acid	054 grm.
After	" "	082 "

Relation 65 to 100.

Contents of Intestine at the end of one hour and a half.

Before sulphuric acid	140 grm.
After	" "	270 "

Relation 51 to 100.

OBSERVATION 2.

Water from Beaker at the end of one hour and a half.

Before sulphuric acid	062 grm.
After	" "	084 "

Relation 73 to 100.

Contents of Intestine at the end of one hour and a half.

Before sulphuric acid	146 grm.
After	" "	270 "

Relation 54 to 100.

Experiment.—Two lengths, each of about 20 in., of thoroughly cleansed rabbit's intestine, were charged with 20 cub. centims. of a solution of grape sugar, placed in beakers containing 100 cub. centims. of water, and exposed for one hour to a temperature of 120° F. At the end of this time the usual analysis was performed.

OBSERVATION 1.

Water from Beaker at the end of one hour.

Before sulphuric acid	020 grm.
After	" "	034 "

Contents of Intestine at the end of one hour.

Before sulphuric acid	118 grm.
After	" "	172 "

OBSERVATION 2.

Water from Beaker at the end of one hour.

Before sulphuric acid	020 grm.
After	" "	035 "

Contents of Intestine at the end of one hour.

Before sulphuric acid	120 grm.
After	" "	178 "

In these duplicate observations the results show that the water from the beaker contained a body with a reducing power in the one case of 58, and in the other of 57, as compared with glucose at 100. The contents of the intestine in each case possessed a reducing power of 68 to 100.

(To be continued.)

A CASE OF SO-CALLED SCURVY RICKETS.

By RICKMAN J. GODLEE, M.S., F.R.C.S.,

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THE following is a typical example of a rare class of cases, which was brought prominently before the notice of the profession in a communication to the Clinical Society last year by Dr. Barlow. The condition has, however, been described by numerous observers both at home and abroad—e.g., by Mr. Thomas Smith,¹ by Dr. Cheadle, Mr. Waren Tay, Mr. Parker, and Mr. Page, and by many German authorities under the name of "acute rickets."

B. J. K—, a girl, aged eleven months, came under my care at the North-Eastern Hospital for Children, on Aug. 14th, 1883, when she presented the following symptoms. She was very pale and anæmic, and lay helplessly upon her mother's lap, crying at any movement of the lower extremities. She had an exceedingly rickety appearance in general, exaggerated beading of the ribs, much thickening of the lower ends of the bones of the forearm, very open fontanelles, and a large abdomen. But when the legs were uncovered it was seen that their condition was not the ordinary one found in rickets. At first sight it was clear that there was considerable irregular lumpyswelling, and that they were much and unsymmetrically distorted; and on feeling them it was found that the deformity was produced partly by this swelling, but chiefly by a separation of both the upper and lower epiphyses of both bones of both legs, and of a similar separation of the lower epiphyses of both femora. It was thus possible to put the lower limbs into almost any position of distortion; but, as was mentioned above, such movements evidently caused the child a great deal of pain. An extensive, hard, but elastic swelling surrounded the lower half of the shaft of the right femur, causing what at first sight suggested a marked antero-posterior curve. A similar, but smaller, swelling was present on the left side; and the same sort of thing was found both at the upper and lower ends of the leg bones. At the lower part of the left leg there was a little purplish discolouration of the skin, as if from bruising, and a little œdema. Most of the swollen parts gave the idea of possibly containing a small amount of fluid between them; but it could not be said that an actual sense of fluctuation was anywhere obtainable. There was no enlargement of liver or spleen, no swelling or sponginess of gums, no purpuric discolouration anywhere; and, in fact, no other symptom to be noticed except a little intertrigo about the labia. The child was at once put to bed, with its legs securely fixed in good position between sand-bags, and its pain was thus immediately relieved. The following were ordered:—Half a drachm of syrup of phosphate of iron, water to one drachm; and half a drachm of cod-liver oil, ten minims of glycerine, water to one drachm, three times a day. It was given plenty of cow's milk, suitably diluted, and the juice of one lemon sweetened with sugar every twenty-four hours. This was the only treatment adopted. Whilst taking it, a very rapid improvement occurred. The child put on flesh and became quite cheerful, the swellings subsided, and by August 29th—i.e., a fortnight after admission, all the separated epiphyses had become firmly united to their respective shafts, and the legs could be manipulated without causing any pain or inconvenience. When last seen, Dec. 17th, no relapse had taken place; the child was fat and strong, having a good colour and showing only the common appearances of rickets. At one period, about the end of October, the intertrigo returned, and there was a slight irritable pustular rash on some other parts of the body, which there was no reason to consider syphilitic, and which has now disappeared. The mother had been married twice; she had had no children by her first husband, but three by the second; of these the first died at birth, the second is now three years old, and the third is the subject of this paper. It had been brought up by hand from the first, having been given condensed milk for six weeks, then cow's milk, and when three months old sago, and when six months old nursery biscuits twice a day. Up till this age there had been no vomiting, but it had had diarrhœa from

AN illuminated address has been presented to Dr. H. G. Myles, recently attached to the Hospital for Incurables, Dublin, on his appointment as resident medical officer to Abbeyshrule Dispensary.

¹ Hæmorrhagic Periostitis, Pathological Transactions, vol. xxvii.

menement of its illness, which began nine weeks before she was brought to the hospital, and at this time a stool had been passed from the bowel, and the motions since the onset of the diarrhoea had been noticed to be watery. This diarrhoea lasted a fortnight, and was followed by pains which were supposed to be rheumatic. The pains were first observed in the knees and hips, then in the arms and feet, and also in the shoulders, though she appeared quite free from the disorder when she came to the hospital notice. During part of the illness she could raise her head but not her back, as has been noticed in other cases of different observers. Three weeks before she was brought to hospital she had subconjunctival and nasal discharges. The mother, of her own accord, said that the swellings sometimes diminished, and then subsided.

thus seen that while it was no sign of syphilis, it was certainly not been the best one that would be expected on the other hand, it is very remarkable that it began immediately on placing the patient in the conditions, and giving it proper food-liver oil and lemon juice. It is interesting in another case to observe which, in the same measures is the essential one in effect. It is, indeed, as has been suggested by some, in all cases, the same course in a certain number of weeks and days, and a special line of treatment that the condition

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that the main nutrient vessel, at least, remained; but even so, it is not a little remarkable that the epiphysis should be able to retain its vitality. The specimen in which the whole bone became firmly compacted again was somewhat startling; but this finds a parallel in the cure of a rather similar condition, which is found in severe cases of epiphysitis of syphilitic children under the influence of mercury. I have seen complete union of a necrotic epiphysis occur in the course of a week during the administration of a grain of grey powder three times

I do not propose to enter into a discussion of the reasons that have been adduced to prove the scorbutic nature of this disease, as these have been fully argued by others: but a reply seems to be needed for similar cases on record, because the condition has not been previously described in our country, and it is a meeting with examples of it that is necessary in arriving at a correct diagnosis.

of the question of forming a diagnosis is
treatment. The temptation is so strong
something heroic, either in the way of the administration
of the incision of the fluctuating swellings, both
which must be useless and probably hurtful, that it is
worthwhile to see how rapidly such a serious state of things
may pass to the simple administration of suitable diet and
a good supply of fresh air.

I append a somewhat suggestive quotation from Lind's "Clinical Treatise on the Scurvy," second edition, p. 259:—"15: In some we heard a small grating of the bones upon opening these bodies the epiphyses were found entirely separated from the bones, which by rubbing against each other occasioned this noise. In some we perceived a small low noise when they breathed. In those the cartilages of the sternum were found separated from the bony parts of the ribs.—16: All those in whose breast water or serum was found had their ribs separated from the cartilages, and the bony part of the rib next the sternum carious for four fingers' breadth.—19: All the persons under eighteen had in some degree the ribs separated from the body of the bone, this water penetrated into the very substance of it" The word "water" is previously referred to as a "greenish liquor filling the ribs" and does not therefore appear to have been blood.

CASE OF
SUCCESSFUL PARTIAL AMPUTATION OF
BOTH FEET FOR SENILE GANGRENE.

BY W. P. KEALL, L.R.C.P. ED., M.R.C.S.,
SURGEON TO THE KRISTALL GENERAL HOSPITAL; LECTURER ON
OPERATIVE SURGERY, BRISTOL MEDICAL SCHOOL.

IN the following case the second operation was performed
 rather more than a year subsequent to the first.

The subject, John, was a tall, spare man, living on
way in Bedford. His father died at the age of
and he thought he was still older. His
for many years a fixed engine-driver
while on duty in the very severe
say "frost-bitten," but
the age of the man with snow-
was that he had cold
feet. He wore warm socks

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 arteries
 fairly con-
 76, weak;
 most gener-
 ordinary diet of
 milk, beef-tea,
 He was kept in
 Being in great
 bromide of pot-
 chloral. — May

red and edema.

The surface of the ulcer was dressed with a 10-grain ounce solution of chloride of zinc. This operation, as well as the second one, was performed under the carbolic spray, after the foot had been carefully washed in a 1 in 20 solution of carbolic acid; the instruments and hands of all who touched the foot were also thoroughly purified, and, in fact, every precaution was taken to destroy any putrefactive germs which might have found an entrance into the wound, which was afterwards dressed with the usual protective and carbolic gauze. Chloroform was the anæsthetic used. After the operation, there being considerable burning pain, he was given half a drachm of the liquor morphie, B.P. Pulse 86; morning temperature 97.4°, evening 98.2°. 25th: Slept well; not so much pain; felt altogether better; wound, which was dressed under the spray, looked well. Pulse 84; morning temperature 97.8°, evening 99.1°, the highest point reached after this operation. 26th: Wound dressed; inflammatory redness and œdema less. Pulse 82; morning temperature 97.8°, evening 98.6°. 28th: Wound dressed; looked very

the commencement of its illness, which began nine weeks before it was brought to the hospital, and at this time a little blood had been passed from the bowel, and the motions before the onset of the diarrhoea had been noticed to be offensive. This diarrhoea lasted a fortnight, and was followed by pains which were supposed to be rheumatic. The pains were first observed in the knees and hips, then in the ankles and feet, and also in the shoulders, though the arms appeared quite free from the disorder when she came under my notice. During part of the illness she could raise her head but not her back, as has been noticed in other cases by different observers. Three weeks before she came to the hospital she had subconjunctival and orbital hæmorrhage. The mother, of her own accord, said that the swellings sometimes diminished and then suddenly increased.

It is thus seen that while the child was markedly rickety there was no sign of syphilitic taint; and though the diet had certainly not been the best imaginable, still it was hardly one that would be expected to give rise to scurvy. On the other hand, it is very remarkable that the improvement began immediately on placing the patient in good hygienic conditions, and giving it proper food, with the addition of cod-liver oil and lemon juice. It would be very interesting in another case to observe which, if any, of these therapeutic measures is the essential one in effecting a cure, or whether, indeed, as has been suggested by some of the reported cases, the disease runs its course in a certain number of weeks and disappears, even if no special line of treatment be adopted. There can be no doubt that the condition here was one which has been shown to exist post mortem in some instances, and has been demonstrated during life in a case under the care of Mr. Page, in which an incision was made into the swelling—viz., that an effusion of blood had taken place beneath the periosteum, and between the epiphyses and shafts of the bones. In some cases certainly, and possibly in this child, the shaft has not only been completely separated from both the upper and lower epiphyses, but also from the whole of the periosteum. We must suppose that the main nutrient vessel, at least, remains uninjured; but even so, it is not a little remarkable that the diaphysis should be able to retain its vitality. The speed with which the whole bone became firmly compacted again is also somewhat startling; but this finds a parallel in the rapid cure of a rather similar condition, which is found in the severer cases of epiphysitis of syphilitic children under the influence of mercury. I have seen complete union of a separated epiphysis occur in the course of a week during the administration of a grain of grey powder three times a day.

I do not propose to enter into a discussion of the reasons which have been adduced to prove the scorbutic nature of this disease, as these have been fully argued by others; but no apology seems to be needed for simply putting the case on record, because the condition has been comparatively recently described in our country, and as it is a rare one, surgeons meeting with examples of it may well be in difficulty in arriving at a correct diagnosis. But independently of the question of forming a diagnosis is the important one of treatment. The temptation is so strong to resort to something heroic, either in the way of the administration of mercury or the incision of the fluctuating swellings, both of which must be useless and probably hurtful, that it is instructive to see how rapidly such a serious state of things may yield to the simple administration of suitable diet and a good supply of fresh air.

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Wimpole-street, W.

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IN the following case the second operation was performed rather more than a year subsequent to the first.

The subject, John S—, is a tall, spare man, living on parish pay in Bedminster. His father died at the age of ninety, and he thinks his mother was still older. His occupation was for many years that of a fixed engine-driver and fireman. While on duty at a fire in the very severe winter of 1880–81, he says his feet were "frost-bitten," but that he "got them right again by rubbing them with snow-water," &c. However, since that time he has constantly had cold feet, "even while sitting before a good fire with warm socks on," and suffered from cramps, tingling, and itching in both feet. He was always temperate. For some time before admission into the Bristol General Hospital, May 20th, 1882, he had not been able to obtain good food, and had occasionally been even almost in want. About April 20th, 1882, he noticed "the fourth and fifth toes of the right foot getting dusky and black, then a blister formed, which burst, leaving a wound," and these toes had been getting worse up to the time of his admission; during the whole of that time there had been a severe burning pain in the affected limb.

On admission, although he looked pretty healthy, there was a restless, anxious expression about his face; he expressed very little hope, and was exceedingly distressed by the condition of his foot. The fourth and fifth toes of the right foot were gangrenous, black, and slightly shrivelled. There was also an ulcer on the outer side of the third toe. This toe had, however, retained its vitality and the ulcer seemed to have been produced by the contact with the dead tissue upon which it pressed. There were œdema and inflammatory redness extending more than halfway up the dorsum of the foot. The anterior and posterior tibial arteries appeared somewhat hard and tortuous, but were fairly compressible and could be felt to pulsate. Pulse 76, weak; temperature 96°. The patient was put on the most generous diet he could digest, consisting of the ordinary diet of the hospital, with from time to time extra milk, beef-tea, and eggs, with four ounces of brandy daily. He was kept in bed and the foot wrapped in cotton-wool. Being in great pain he was given fifteen grains of bromide of potassium and fifteen grains of hydrate of chloral.—May 21st: Although he slept well the pain returned very severely in the morning. Temperature 98°.—24th: The patient, being very restless and anxious, the pain continuing to be very severe, and the gangrene slowly spreading without any sign of a "line of demarcation," the two gangrenous toes, with the heads of their respective metatarsal bones, were removed, each by a separate ordinary oval incision, leaving some skin between them. The heads of the metatarsal bones were cut off by bone forceps. These oval incisions passed through the inflamed red and œdematous integuments of the dorsum of the foot. The surface of the ulcer on the third toe was scraped with a Volkener's spoon, well swabbed with a 40-grain to the ounce solution of chloride of zinc. This operation, as well as the second one, was performed under the carbolic spray after the foot had been carefully washed in a 1 in 20 solution of carbolic acid; the instruments and hands of all who touched the foot were also thoroughly purified, and, in fact, every precaution was taken to destroy any putrefactive germs which might have found an entrance into the wound, which was afterwards dressed with the usual protective and carbolic gauze. Chloroform was the anæsthetic used. After the operation, there being considerable burning pain, he was given half a drachm of the liquor morphine, B.P. Pulse 86; morning temperature 97.4°, evening 98.2°.—25th: Slept well; not so much pain; felt altogether better; wound, which was dressed under the spray, looked well. Pulse 84; morning temperature 97.8°, evening 99.4°, the highest point reached after this operation.—26th: Wound dressed; inflammatory redness and œdema less. Pulse 82; morning temperature 97.8°, evening 98.6°.—28th: Wound dressed; looked very