and the interposition of muscle as described by Nélaton, my results are on the whole more reliable.

There are, however, a large class of cases in which it is inexpedient to disarticulate the head even when a certain amount of disease is present there or in the acetabulum. For many years I have been in the habit of excising the head of the femur in the type of osteo-arthritis which we sometimes name *malum coxae senilis*. For present purposes it will not be necessary to describe this affection beyond stating that it is characterized by considerable pain and by flexion deformity. It is a progressive trouble ultimately completely depriving its victim of any comfort. Taken early, I have noticed that by rigid confinement in bed and in a splint not only is deformity corrected and pain removed, but that many patients make a good recovery with a stiff joint. From this one learns that the disease is only progressive because of friction induced by motion and body weight. The misfortune is that many patients cannot stand the strain inseparable from the endeavour to correct flexion. In some it induces persistent vomiting if the deformity is great; in others, collapse following abdominal pain. Such are the cases in which I have several times removed the head of the femur, and have recognized the great shock that accompanies the act of disarticulation, and I finally determined in the future to bring about a movable joint, leaving the head of the femur *in situ*. I was justified in this conclusion from my clinical knowledge that if the head of the bone escaped body weight and friction it would cease to trouble.

In spite of the suggestive paper by Murphy, I also apply this procedure in many cases of bony ankylosis following tubercle or sepsis.

DESCRIPTION OF OPERATION.

The operation consists in removing a slice of the great trochanter, chiselling through the neck and screwing the separated portion of the trochanter to the proximal end of the neck in order to avoid union of the fragments (Figs. 5 and 6). The neck may be chiselled close to the head or at a little distance, or the neck may be completely removed (Figs. 1 and 3), or where there has been destruction from disease, additional bone may be removed (Figs. 2 and 4).

Fig. 1.

Fig. 3.

Fig. 2.

Fig. 4.

The operation, which is not admissible in the case of children, is performed as follows:

A longitudinal incision is made about 6 in. in length with the upper border of the trochanter in its centre.

An incision is made across the base of the trochanter just below the insertion of the gluteal muscles.

A slice of the trochanter from this point to its junction with the neck above is sawn or separated by a very wide osteotome and retracted upwards. The capsule is now

opened and the head separated from the neck with an osteotome (Fig. 1).

Extension is next put on the femur, and the trochanter with its muscles attached is screwed on to the head of the femur, which remains in the acetabulum (Figs. 3 and 6).

Deep and superficial sutures complete the operation.

Fig. 5.

Fig. 6.

In the case of a tender joint, to avoid impinging, it may be necessary to remove a portion of the neck (Fig. 1). In the case of an ankylosed sound joint following sepsis, it may be advisable, instead of dividing the neck near the acetabulum, to divide it near the trochanter (Fig. 5).

I commend this operation as very suitable to those advancing in years. It saves the shock of disarticulation, an all-important consideration.

In bony ankylosis, where disarticulation has to be made with a chisel, the time saved is great, and the result is more reliable than where a flap of tissue intervenes, unless the piece of bone removed is considerable, while the removal of much bone involves the sacrifice of muscle and some control of movement. The femur remaining is well supplied with muscles for useful movement, and no stitching of capsule is needed for the prevention of displacement upwards.

SCARLATINA ASSOCIATED WITH PYREXIA IN APPARENTLY HEALTHY CONTACT CASES.

By BERTRAM THORNTON,

SENIOR SURGEON, ROYAL SEA-BATHING HOSPITAL, AND MEDICAL OFFICER OF HEALTH, MARGATE.

In the BRITISH MEDICAL JOURNAL of June 18th, 1904, a paper of mine appeared recording some observations on an epidemic of scarlatina in a school under my charge. The outbreak occurred in 1902 in a boarding school of about 300 children, and was chiefly characterized by the mildness or absence of the usual symptoms. Out of 96 cases, only 31 showed typical symptoms of rash, sore throat, and pyrexia; 19 had no observable rash, very slight sore throat, and pyrexia of one or two degrees; 46 cases, although they had been carefully examined every day, showed no signs of any rash or indispotion, but these and all the others peeled more or less freely. The epidemic smouldered on for about seven months, and was a source of much trouble and expense.

The experience of this outbreak caused me to be doubly anxious when, on August 23rd, 1906, nine days after the children returned to school after the summer holiday, two girls were shown to me who presented typical symptoms of scarlatina, and were immediately sent to the Isle of Thanet Isolation Hospital. Judging from the time they had been at school, and the fact that they had not been exposed to any outside source of infection, it seemed probable that these two children had contracted the disease from some child in the institution who was suffering from a mild form of scarlatina, or was a simple carrier of the germs. I might here mention that, for precautionary purposes and to promote oral asepais, the whole of the children had had their throats sprayed daily since they returned to school with a 1 in 2,000 solution of mercury perchloride.

On the discovery of these two cases the whole of the children were stripped and examined, with the result that with the exception of two or three children all appeared to be in perfect health, and these two or three children

did not then or subsequently present any scarlatinal symptoms.

To make assurance doubly sure, I thought it would be interesting to take the temperatures of the remaining 299 children. On August 23rd and on each of the two or three following days this was carefully done, and much to my surprise, although these children appeared to be in their usual health, no less than 131 had temperatures of 99° and upwards, and 29 of this number had temperatures between 100° and 101°. In all cases this slight pyrexia had disappeared within two or three days, and in no single instance was there subsequently any symptom of scarlatina or peeling, though the children were kept under special observation. It was ascertained that out of the 131 children, 23 had a history of a previous attack of scarlatina. No further cases occurred during this or the following year.

On September 19th, twenty-seven days after the first taking of temperatures, as a control experiment I had the temperatures of all the children taken again, and they were all then found to be normal with the exception of three, the probable cause of the slight pyrexia in these cases being respectively tuberculous glands, an ordinary cold, and a bilious attack. It cannot be often that opportunities present themselves for taking temperatures on such a large scale when a community is exposed to the infection of a zymotic disease; if any similar observations have been recorded they have escaped my notice. This pyrexial condition of a large group of children coincident with the possibility, if not the probability, of their inhaling the micrococci of scarlatina may be interesting enough to place on record. It may be fairly assumed that it was more than a coincidence that 131 out of 299 children should all be suffering from a slight elevation of temperature, though it is, of course, possible that in some instances the small excitement of having the temperatures taken may have sent up the thermometer to a moderate extent, although this did not occur in a single instance in the subsequent control experiment. On neither occasion was there any catarrhal or other ailment running through the school. It is difficult to resist the inference that most of these children had received a dose of the scarlatinal poison, but that their powers of resistance were sufficiently great to prevent the occurrence of any of the usual symptoms except the moderate amount of pyrexia. Whether the daily disinfection of the mouth and fauces with the perchloride solution modified or inhibited the action of the scarlatinal virus is a matter of opinion. My own experience on this and on other occasions leads me to believe that an active disinfectant such as 1 in 2,000 perchloride solution has an undoubtedly useful effect, and with ordinary care it can be safely used as a prophylactic in a disease like scarlatina where it is probable that the micrococci find their entrance to the system from the faucal mucous membrane. It is, of course, a common experience to limit an outbreak of scarlatina in a school to one or two cases without any other precaution than prompt isolation.

The experiences above related tend to suggest that in a community infected with scarlatina, in addition to those who show definite symptoms of the disease, there are others who are affected by the poison to a minor extent as shown simply by an elevation of temperature; and it may be a useful precaution to take the temperature of contacts, with the view of keeping under special observation those who though apparently quite well are suffering from a moderate degree of pyrexia.

NOTE ON THE TREATMENT OF EXPERIMENTAL TRYPANOSOMIASIS.

By ALDO CASTELLANI, M.D.,

DIRECTOR OF THE CLINIC FOR TROPICAL DISEASES, COLOMBO, CEYLON.

Mercury Perchloride.

In 1903 Low and myself while in Uganda treated four cases of sleeping sickness with intravenous injections of mercury perchloride solution, applying in this way to sleeping sickness the method of treatment devised by Baccelli for various forms of septicaemia. In our report¹ we

stated that the intravenous injection of perchloride caused constantly a fall in the temperature, and this condition persisted for several days. The improvement was not lasting in any of the four patients, and the disease ran its fatal course.

The remarkable fall in the temperature after the sublimate injections has, however, always remained impressed on my mind, and at various times I have in Ceylon made experiments with the object of seeing whether mercury had any influence in experimental trypanosomiasis; as the results were not very striking I did not publish them. In Ceylon sleeping sickness does not occur, and having been unable to import animals experimentally inoculated with *Trypanosoma gambiense* I have made my experiments on monkeys, which I have inoculated with a trypanosome derived from a bullock of Indian breed. The trypanosome is probably a strain of *T. evansi*, though it is much less virulent than the typical *T. evansi*. All the inoculated monkeys develop a fever of remittent type and polyadenitis; death takes place after several months. The monkeys I have used for my experiments are of the genus *Macacus* and *Cercopithecus*. The solution of perchloride used is according to Baccelli's formula:

Mercury perchloride	...	...	0.10 gram.
Sodium chloride	...	...	0.80 "
Sterile water	...	...	100 c.cm.

Half c.cm. or 1 c.cm. of this solution was injected daily intravenously. It is to be noted that in the monkeys I have used the superficial veins are not clearly visible, and it is necessary in most cases to make a small cut in the skin and partly dissect the vein chosen for inoculation.

Without entering into the particulars of the investigation I may say that mercury perchloride given intravenously caused, almost constantly, the temperature to fall to normal for a certain period of time; in some cases the enlarged glands became smaller; the trypanosome, however, never disappeared completely from the general circulation and the improvement was not maintained.

Quinine Cacodylate.

In 1906 it occurred to me to try the action of quinine cacodylate in experimental trypanosomiasis. I had at that time under observation an obscure case of low intermittent fever of six months' duration; the patient, apart from the fever and a very slight enlargement of a few superficial lymphatic glands, did not show anything abnormal on physical examination; the liver and spleen were not enlarged. The case had been variously diagnosed as malaria, paratyphoid, Malta fever, syphilitic fever, beginning pseudo-leukaemia, trypanosomiasis, kala-azar, latent tuberculosis. The microscopical and bacteriological examination of the blood, urine, and faeces never gave any clue by which to form a definite diagnosis. The patient had been drenched with quinine, mercury, and liquor arsenicalls. Although I was unable to make a definite diagnosis, I tried empirically injections of quinine cacodylate. Thirty such injections (0.20 gram each injection) were sufficient to bring the temperature to normal, and the patient is at the present time enjoying perfect health. I then tried the same treatment in a typical case of kala-azar I had in the clinic; the improvement after forty injections was remarkable; the patient, however, feeling so much better, left the clinic to go to his distant village, and I cannot therefore say whether the improvement was maintained. It is worth noting that the drug gave me fairly good results also in yaws.

Experiments have been carried out on monkeys inoculated with the same strain of trypanosome as those on which the mercury treatment was tried. The drug was given by subcutaneous injections (0.10 gram per injection) once or twice daily. The monkeys stood the drug well. I may say briefly that the drug shows a well-marked trypanocidal action for this particular strain of trypanosome. After 15 to 25 injections the trypanosomes are no longer present in the peripheral circulation nor in the enlarged lymphatic glands; the fever disappears. In a certain percentage of cases, however, about 30 per cent., recurrences take place; when this happens, quinine cacodylate given in large doses seems to have much weaker action than in the first attack.

Combined Treatment.

Ehrlich demonstrated that trypanosomes may become partially or totally immune to a given drug, and he

¹ Reports of the Royal Society Sleeping Sickness Commission, No. 5, p. 36.