caused by its being torn away from any other structure. It is always present in fresh specimens. Its function I do not know.

I believe the function of this bulb has not been definitely settled; still its position and structure would lead one to suppose that it was suctorial. In Bermuda I frequently caught specimens that had just fed, and mounting them quickly, found blood corpuscles in the epipharynx, but I never found any in the bulb itself.

This bulb is also present in the head of the male *Culex*, but is perhaps not quite so well developed. In the male the hypopharynx lies on the sheath or labium, and more or less coalesces with it, especially at the pointed distal part between the lateral labellae. The mandibles and maxillae are practically absent. The fine central canal or groove in the hypopharynx terminates, as in the female, in a small sac at its basal end, from which runs a fine-ringed salivary duct. It would therefore, I think, be very interesting to know the minute anatomy of those few male species that are credited with the power of biting and sucking blood, for if the same arrangement of the mouth parts exists in them as in the male specimens (*Culex*) that I have examined, I should not think that they could possibly perform the operation satisfactorily.

NOTES ON LIGHTNING-STROKE IN SOUTH AFRICA.

By CAPTAIN J. G. BERNE, R.A.M.C.,
Eastern Transvaal.

THE frequency with which men and animals have been struck by lightning in South Africa is in my experience remarkable. Thunderstorms are frequent and very violent during the wet or summer months in South Africa—November to April—and it may be taken as a general rule that the more mountainous the country the more frequent and severe the lightning. For instance, the districts of Wepener and Rouxville in the Free State, skirting the borders of Basutoland, are the scenes of very frequent thunderstorms; and in the Transvaal, the Wakkerstroom and Piet Retief districts, which lie close to the Swaziland border, are subject to the same atmospheric disturbances. Natal, a very mountainous colony, is notorious for its thunderstorms.

During General Plumer's operations in the neighbourhood of Wepener in September, 1901, a tent was struck by lightning, and four men out of six were injured. These men were seen by me shortly after the accident. They were sleeping in the tent with their feet towards the centre pole, and it appeared that the lightning struck the tent and passed down the wooden pole. In two cases the current seemed to have passed along the legs of the men, and to have passed out about the buttocks, causing severe burning of the superficial tissues. In the third case, the man described the injury as like a severe blow on the head, and complained of a severe headache. A circular wound was found at the occiput about the size of a florin, with a burnt track half an inch wide leading down towards the neck as far as the termination of the hair. The fourth case was slight, and beyond a feeling of an electric shock, the man was quite well. These three cases presented symptoms of shock, and there was extensive burning of the underclothing. I am unable to give details of the further progress of the men, as they were transferred to the civil hospital at Mafeking, in Basutoland, two days later.

A point which I wish to bring to notice is the peculiar smell which is always present when lightning is at all severe; it was very marked in this instance when I came into the tent, not the smell of burnt clothes or charred flesh, but a smell like dilute sulphuric acid.

The following are the notes of a case which occurred in the Eastern Transvaal:

On the evening of November 17th a patrol of about 500 men were returning to camp after a night march, when between 5 and 6 P.M. the worst thunderstorm which I have seen in South Africa broke over our heads. Fortunately for us, it was accompanied by a tropical downpour of rain, which must have saved a good many of us from being struck. In this storm, one officer and two men were badly hit, and several of

us experienced slight shocks. Lieutenant-Colonel Porter, R.A.M.C., describes his symptoms and experiences during the storm as follows:

I saw the flash of lightning coming towards me rather high up; it then seemed to me to come straight down over my head. The flash was rather circular in shape and pink in colour. I received a blow on the top of the head, just as if I had been struck by a mallet. I was knocked forward on my horse, and at that time my horse gave a jump forward, and he no doubt received the shock. For several days I had pain all over the scalp and down the back of my neck: pains were severe and neuralgic in character.

A number of men were struck quite close to me, one of whom was carrying a log of wood on his right shoulder. The wood was split, and he was knocked from his horse. He was found to be afterwards suffering from paralysis of the right side, almost complete (both sensory and motor); next day he had somewhat recovered, and had slight power of grip in hand.

Sensation was gradually returning when I saw him last, and power of movement—arm and leg—had slightly improved. All the other men who received the shock recovered in a few hours. Prior to the flash there had been heavy rain for about two hours, and at the time we were struck the horses were over their hoofs in water. Had the ground been dry at the time, I think in all probability we would have had some fatal cases amongst those struck.

The slighter cases are of interest in the fact that some of us, including myself, had a distinct sensation of a most peculiar taste in the mouth. In my own case I cannot describe it better than that of the inhalation of burning sulphur.

Probably in the first instance the fact that the men who were struck in the tent were dry, and in the second instance all the men were thoroughly soaked, may help to explain the difference in the individual cases. The potential force of the electric current, of course, varies in different cases, and this may also account for the differences in results observed.

INOCULATION IN THE INCUBATION STAGE OF PLAGUE.

By ALICE M. CORTHORN, M.B., B.S.,
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In reference to Major Bannerman's article and letter on inoculation in the incubation stage of plague, I think the following 4 cases which came under my notice in the epidemic of 1900 in this city may be of interest.

The first two cases occurred among the police force, which, in the epidemic of 1899 suffered very severely from the disease, having 147 attacks with 109 deaths.

In the epidemic of 1900 the district superintendent determined to have recourse to inoculation, and practically the whole force submitted to the operation. Seven cases with 6 deaths occurred among the non-inoculated before the completion of the operations, and 7 cases with 2 deaths only among the inoculated. Two of these were inoculated, if not with plague upon them, at a very late stage of incubation.

CASE I.—N. T., aged 25, police constable, inoculated October 3rd, 1900, was admitted into hospital October 9th with a history of six days fever and large fluctuating bubo in the right femoral region, which was opened the day after admission. He had slight fever for three days after admission, but was never acutely ill. He was discharged October 25th.

CASE II.—D. B., aged 36, police constable, inoculated October 16th, 1900. At this time dead rats were being found in Shanval Wada. He was admitted into hospital with plague October 20th, with a history of four days fever and a bubo in the right femoral region. He had six days fever after admission and albuminuria to $\frac{1}{4}$ for the same period, but was never delirious. The bubo suppurated with extensive sloughing, and his convalescence was slow. He was discharged cured December 17th, 1900.

CASE III.—M. T., Maratha, aged 30, was the hospital carpenter. He at first refused inoculation, but on October 3rd brought his wife suffering from plague into the hospital, and asked me the following day to inoculate him. This was done on October 5th. On the same day he also brought in his sister from the same address, also suffering from plague. On October 7th he was himself attacked, and had a very mild attack, with no delirium, and only a trace of albumen. He had a right femoral bubo which suppurated, but healed rapidly. He was discharged cured October 23rd. His wife and sister both had very severe attacks, with prolonged fever, delirium, and badly sloughing buboes, but eventually recovered. He said that six people lived in his house, all uninoculated except himself. No. 1, his mother, died; Nos. 2 and 3, his wife and sister, had severe plague and recovered; No. 4, himself, was inoculated in the incubation stage, and had a mild attack; Nos. 5 and 6 escaped. In the house on the right-hand side, 5 uninoculated persons died of plague, and in that on the left-hand side 3 died of plague.

CASE IV.—R. H., aged 30, shoemaker, was one of the most interesting of the series, but I have unfortunately mislaid the notes, and can only give a general account. 1447, Shukrawar Peter, where he resided, includes a number of single-room dwellings opening into a small court, of which the total population was about 60 people. The first case of plague here occurred in a woman who aborted and died on September 7th, 1900, in the room next to R. H.'s, from which it was divided by a canvas partition only. On September 10th, 1900, R. H., with five others, were inoculated. Plague continued to occur among the non-inoculated inhabitants

of the tenement, no fewer than twenty of whom died before the history was closed. R. H. was admitted to hospital on September 14th, with a history of three days fever. He had one day's fever in the hospital with no delirium and no albumen. The bubo, a small one in the right groin, suppurated but healed quickly, and he was ready for discharge on October 2nd, 1900.

CASE V.—One other case, S. M., from the David Sassoon Hospital, was said to have been inoculated there on October 3rd, 1900, plague having appeared among the hospital servants. She was admitted on October 5th with a history of two days fever. She was very ill, with a temperature of 103° to 105° , restless and delirious, with constant vomiting, and died on October 6th, within twenty-four hours of admission.

Thus it will be seen of 5 cases who were living in highly infected centres at the time of inoculation, and who probably had plague on them, in at least 2 cases where inoculated there was one death only, that is, a recovery-rate of 80 per cent.

THE TREATMENT OF DYSENTERY BY RECTAL INJECTIONS.

By CECIL F. LILLIE, M.A., M.D.CANTAB.,
Late Civil Surgeon to H.M. Field Force, S. Africa.

This form of treatment does not appear to be very warmly supported. I have tried it myself in several cases in South Africa and found it most useful.

The method I employed was as follows: I used an apparatus composed of a soft oesophageal catheter, attached by a piece of glass tubing to some soft rubber tubing about 3 feet in length; to this was fixed a large glass funnel. The patient was placed on his left side and the hips drawn over to the edge of the bed. The knees being flexed, the end of the catheter, smeared with vaseline, was introduced into the rectum with the greatest care, the patient being directed to strain meanwhile. Cocaine was used for the anus if required. The catheter was introduced about 4 inches without using any force. The patient then being placed gently on his face, the hips well raised on pillows, and the head and shoulders placed low, the warm lotion was introduced without any difficulty into the bowel. The apparatus was previously filled with lotion, and a clamp applied so as to avoid injecting air into the bowel. By raising or lowering the funnel the rate of injecting the solution was readily regulated. Small quantities only were allowed to run in slowly at a time—an ounce or so every few seconds. The enema was retained if possible for a few minutes. I gave these injections usually two or three times a day. It is an important point to give them often enough. I generally used boracic acid—to grs. to the ounce—sometimes other antiseptics.

Using injections in this way, I never found them displeasing to the patients; several in fact expressed a wish to have them repeated. The pain often felt at first was soon overcome by allowing only a small quantity of the solution to pass into the bowel slowly at one time. The bulk of the enema was never less than a pint and a-half. Smaller ones are useless.

The value of injections in chronic cases is well known. In mild acute cases I found them uniformly successful. The stools were diminished in frequency and became faeculent and semisolid within three days. Relapses were uncommon. In the malignant cases, occurring generally in epidemics, the use of injections is somewhat doubtful, but it is difficult to get hold of these cases early enough to hope for good results. Unfortunately the process is so rapid that when they come under treatment there is already much destruction of tissue, and a satisfactory cure is impossible. In severe cases, however, injections are not useless; one case showed this very well. The patient was very ill on admission. He was passing horribly offensive stools which contained sloughs and a good deal of blood. He died some nine days after admission from hepatic abscess. Rectal injections of boracic acid had been given regularly, and the stools were reduced in number to two a day; the blood disappeared from them, and they ceased to be offensive. At the necropsy twenty to forty dysenteric ulcers were found; they were all looking healthy, and presented signs of healing. There were no sloughs, their bases were smooth, and the edges were spreading over the raw surfaces. The liver was full of large abscesses. In this case the condition of the ulcers bore striking testimony to the usefulness of the injections.

The objections raised to this form of treatment are that it is dangerous and often impracticable. The danger of causing perforation by giving injections only applies in those cases where the bowel is extensively and deeply ulcerated. However, in such a condition it is too late to expect much good to come from any treatment. Such cases are obviously hopeless, and their clinical appearance is a sufficient safeguard from a rash use of injections. It is before this last stage of the disease is reached that good may be expected from them.

With regard to perforation in dysentery, I found that out of 2,711 cases whose records I examined perforation had only occurred five times. In these, too, the perforations were small and surrounded by dense adhesions which completely shut them off from the peritoneal cavity. In all the cases I examined *post mortem* myself I noticed marked thickening of the bowel generally, and more especially at the seat of ulceration. Injections are said to be impracticable owing to the pain caused by forcing apart the walls of the inflamed gut. By administering the injections with due care I think this can be largely avoided.

The saline treatment of dysentery acts, I believe, on the same principle as this. In both cases the bowel is flushed out and the toxic substances removed, and with them the griping and tenesmus which they induce. Injections possess the advantage of introducing the fluid for this flushing from without instead of draining it from the patient's already weakened system. Another advantage is that antiseptics can be directly applied to the focus of the disease.

In addition to injections the patient must of course be kept absolutely at rest in bed and fluid nourishment given in small quantities at frequent intervals. Milk diluted is best. Chicken broth is often useful. Stimulants are generally required.

MEMORANDA:

MEDICAL, SURGICAL, OBSTETRICAL, THERAPEUTICAL, PATHOLOGICAL, ETC.

OBSERVATIONS DURING A RESIDENCE OF EIGHTEEN MONTHS IN EAST AFRICA AND UGANDA.

SINCE my arrival in Africa on April 27th, 1900, the following methods of treating such tropical diseases as I have come across, having been found very successful by me, may be of use to others.

In malarial fever, with dry brown tongue and constant vomiting, with a temperature of 104° or more, I have not withheld quinine until the pyrexia has abated, as is taught, but, instead of giving it by the mouth to be vomited up again, I find that three or four 5-grain tablets, with two of phenacetin, greased with vaseline, and inserted into the rectum, brings the fever quickly under control. I have noticed in those places where I have been stationed, the *Anopheles* type of mosquito has been conspicuous by its absence, and to bear out the theory that this noxious insect is the vehicle for conveying the malarial parasite to man, I have been unable to discover one case of malarial infection directly traceable to these districts.

Dysentery.—I have so far found that powdered ipecacuanha $\mathfrak{z}$ j, with laudanum $\mathfrak{xx}$ to $\mathfrak{xxv}$, mixed with water $\mathfrak{z}$ ij, and injected into the rectum, works wonders, one to three such injections I have found sufficient, my patients' diet being rice water and albumen water. Native cooking pots are made of copper, tinned over very indifferently. This tin quickly wears off, and dysenteric symptoms may be produced by copper oxide poisoning. Iron pots are the safest and I have banished all native utensils made of copper from my kitchen.

Ulcers from Chiggers.—I saw a vast number of these and on my arrival at Samu was told that iodoform ointment was the treatment. It does not, however, remove the cause. Caustics such as carbolic acid to kill the ova are required. Toes infiltrated with the eggs invariably ulcerated down to the base and then dropped off. The best treatment I found was that which I have used for carbuncle, guinea worm ulcers, etc., namely, hypodermic injections of mercury biniode or perchloride all round the infected zone.

Chiggers in Houses.—Of these pests I have had bitter per-