to be distant and no pleural rub was audible. Pain was distinctly relieved, though still present at the end of a very deep inspiration. On October 18th a further quantity of 300 c.cm. of nitrogen was introduced, which had the effect of entirely abolishing the pain, even at the end of deep inspiration. On November 1st a final injection of 400 c.cm. of nitrogen was given, after which the manometric readings of the intrapleural pressures were 0 and -3 cm. of water.

At no time during the periods of injection of nitrogen were there any signs of intrapleural fluid, nor was there any disturbance of the temperature or pulse-rate.

The after-history of the case was uneventful; there was no return of pain, and the patient was able to leave on February 8th, more than three months after the last injection, entirely free from symptoms. The physical signs at this time were those of slightly thickened pleura. The breath sounds were normal. The nitrogen had evidently become absorbed and the pleural surfaces were presumably in apposition again.

NOTES ON TWO CASES OF ANGIO-NEUROTIC OEDEMA.

By F. L. DAVIS, J.P., M.R.C.S., L.R.C.P.LOND.,

BELIZE, BRITISH HONDURAS.

On the morning of August 21st, 1914, I was called to see X., a clergyman, aged 49.

He told me that his throat had given him trouble during the night. The right tonsil and adjacent parts were somewhat swollen and congested. I prescribed a gargle of tannic acid and alum, advising him to rest his voice and to remain indoors. He then drew my attention to his hands and fingers, which, he said, were burning and pricking, and felt stiff and swollen. Some of the fingers certainly appeared a little swollen and reddened, but I suspected that the patient had probably scratched them in the endeavour to allay the itching, and I ordered an ointment of hazeline. Next morning I found the patient in his bedroom not feeling well enough to get up. The throat appearances were quite normal, but he had passed a wretched night owing to intense irritation of the hands and feet. All the fingers and both hands as far as the wrists, and all the toes and both feet as far as the ankles, were considerably swollen, reddened, and oedematous, especially over the dorsal surfaces. The patient could not refrain from rubbing and scratching them. I now recognized the nature of the affection. For local application I ordered a calamine and zinc lotion. Internally I gave an aperient and a mixture of sodium bicarbonate and rhubarb. By the next morning, the swelling and irritation of the hands and feet had very considerably subsided, but the penis and scrotum were enormously swollen and oedematous, the skin and subcutaneous tissue being so pale and translucent as to look like a bladder. The patient said that the swelling had been even greater. I ordered the same lotion and continued the medicine. On the morning of August 24th the hands, feet, penis, and scrotum appeared practically normal, though there still remained a feeling of tightness in the fingers and toes on movement. But the lower lip had now become enormously swollen; it was very tense and hard, and the patient said that it felt as if it were going to burst. I now ordered calcium chloride, gr. xv, t.d.s., and aspirin, gr. v, every four hours. By the evening the lip had returned almost to its normal condition. On August 25th and 26th the patient complained of some slight sensation of irritation about the feet and knees. I detected, however, a distinct puffy swelling on the right side of the neck, about 3 in. long and 2 in. wide, commencing at the lobule of the ear and extending vertically downwards. This swelling was not the seat of any pain or irritation, so that the patient had been unaware of its existence. On the morning of August 27th the upper lip commenced to swell and in a few hours reached a condition exactly similar to that of the lower lip on August 24th, yet by the evening the lip had almost regained its normal appearance. The swelling noticed in the neck the previous day had entirely disappeared. I ordered a diet of milk, farinaceous foods, and white meats, and advised him to avoid tea, coffee, and eggs. At 6.30 a.m. on August 28th I received an urgent message and asked Dr. Harrison, the principal medical officer, and Dr. Cassel, the assistant colonial surgeon, to accompany me. At 8.30 a.m. we found the patient with a general enlargement of the tongue, which could with difficulty be protruded. It had begun about 2 a.m., and there was for a time the greatest difficulty in swallowing, while speech was impossible. Nevertheless, the swelling had subsided considerably, although we noticed that speech was indistinct and heavy. Menthol, gr. ʒ, in pill t.d.s., and sodium sulphate and sodium sulphocarbonate in mixture were prescribed. During the whole illness the temperature varied from 99° F. to 100° F., and the pulse from 90 to 100. The urine was examined several times and always found to be normal. Dr. Cassel very kindly examined a blood slide and found nothing abnormal. There was never any

abdominal pain or vomiting, but the patient suffered from attacks of nausea at times, and remained listless and disinclined for physical exertion. The heart and other organs appeared quite healthy. As the sodium sulphate mixture was causing much relaxation of the bowels, I prescribed, after a couple of days, a colchicum mixture and a tonic of iron and quinine with a saline aperient each morning. On September 4th his condition was unaltered. He felt disinclined for exertion, though he slept well and ate fairly well. Temperature 100° F. I advised a return to his usual diet. At about 3 a.m. on September 10th the patient awoke and found his tongue swollen; I saw him at 8.30 a.m., and found the left half of the tongue considerably enlarged, whilst the right half looked almost normal. The swelling, he said, had already subsided very considerably, and by the evening it was gone. On September 14th the patient left Belize for a sea voyage. On October 3rd, 1914, Dr. J. Edward Austin of Porto Cortez, Republic of Honduras, wrote saying that, "On September 18th I was called to attend X. He presented one of the most typical cases of Quincke's disease—angio-neurotic oedema—that has ever come under my observation, the gastric crises being especially severe. I have always found that calcium lactate controlled the manifestations better than any other remedy." This was the first and sole occasion that the typical abdominal pains were experienced. In a later communication Dr. Austin, who had practised for many years in Porto Cortez, stated, "I have seen in practice probably nine or ten cases, most of which were adult men." The patient returned to Belize on October 25th, and I saw him the next day. Dr. Austin administered calcium lactate with some benefit, although the swellings still appeared on the tongue at intervals of a few days. On the day he landed in Belize he had a similar attack affecting the tongue only. When he reached Bluefields, Nicaragua, as there was no calcium lactate in the town, a doctor put up a mixture containing calcium glycylo-phosphate, and as the patient thought that this preparation had more effect in controlling the symptoms I advised him to keep on with it. Two weeks before the present illness, when in Corozal, a small coast town in the north of the colony, he awoke at 4 a.m. to find his tongue so swollen as to make it impossible for him to speak or to swallow. The previous evening he had gone to bed feeling perfectly well. He got some lotion from a chemist and by noon the swelling had subsided. About two months previous to the attack at Corozal the tongue was affected in precisely a similar way. The patient was born in British Guiana. From the age of 18 to 23 he remained in England, and after that, until the present illness, he had lived in the West Indies, but had made periodical visits to England, the time so spent amounting in all to about seven years. There is no history of any illness at all resembling this complaint in any member of his family, either on the maternal or paternal side; neither had the patient himself ever had an attack previous to his arrival in this colony some two years ago. He tells me that he has always been of a nervous and sensitive nature, but in general appearance is strong and healthy. His daughter, aged 23 years, has suffered for many years from very severe asthmatic attacks. The only illness he himself remembers to have had was an attack of dysentery in 1883, which became chronic and continued for about one year. Four years ago, when boarding a steamer in a storm, he received a severe blow on his back, followed by lameness and shrinking of the muscles of the right leg. This condition lasted for about one year, during which period he was not confined to bed. The leg is now strong and well.

The special features in the case were: (1) The rapid onset of the swellings, the speed with which they attained their maximum development, and their rapid subsidence. The duration of these swellings in the case under review was from six to ten hours. (2) The time of appearance of the swellings, almost invariably during the small hours of the morning. (3) The orderly progress of the swellings. The right tonsil and side of the throat were first affected, till the general march of the swellings was from the feet upwards, the last part affected being the tongue. (4) The muscular weakness which the patient experienced, not only during the attack, but after the acute symptoms had passed off. (5) Those parts which had been the seat of swellings were never attacked a second time, with the single exception of the tongue, and it would seem that this organ is peculiarly liable to suffer, in view of the fact that on two previous separate and distinct occasions it was affected and during the present illness it was attacked over and over again.

The above is an almost exact clinical picture of the disease as it affected the writer of this article in September and October, 1913, on his return to Belize after three weeks' camping out in the forest.

I was engaged in entomological research in the extreme south of the Colony on the banks of the Sarstoon River, and experienced, as was to be expected, many discomforts. The weather was very bad, torrents of rain fell every day, making the forest tracts almost impassable; the shelter I occupied leaked badly through roof and sides, and of course mosquitos played their part and bit viciously by day as well as by night. The food consisted of tinned

provisions only, for the Indians in the vicinity had long since killed or driven away all bush game. One night was spent in a hammock in an Indian's hut, and here I was attacked by large numbers of bed-bugs which caused me intolerable distress. The attack of angio-neurotic oedema commenced in the feet and terminated by attacking the tongue; other parts affected were the genitals, hands, upper and lower lips, and throat. It was accompanied by a very severe and abundant pustular eruption, resembling impetigo, most pronounced on the trunk and extremities; this set up a great deal of constitutional disturbance with pyrexia. In contrast to the case of X., there has been no return of the swellings. Dr. Byrom Bramwell, in his *Clinical Studies*, vol. v, p. 375, says:

The characteristic features of the disease are: (1) The occurrence at irregular intervals, usually without any obvious exciting cause, of (a) oedematous swellings in various parts of the body, and (b) of attacks of abdominal pain and vomiting; and (2) the fact that the disease is hereditary.

I know of no evidence of this complaint in any member of my family, neither did I suffer from the severe visceral phenomena said to be so characteristic of this somewhat rare affection.

Dr. Byrom Bramwell also says (p. 396):

The disease is often fatal and usually (? always) kills by implicating the throat (the production of oedema glottidis). So far as I know, no treatment hitherto has been successful.

In conclusion, I would like to draw attention to the fact that in this country the months of August and September are always particularly hot and trying. I wish very much to thank Dr. Harrison and Dr. Cassel for the assistance they have so kindly given me, and also Dr. Austin for the use of his valuable notes.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

INFECTION FROM CLOTHES IN ENTERIC FEVER AND OTHER COMMUNICABLE DISEASES.

FORTUNATELY inoculation is so successful against enteric fever that there is not the same fear of the spread of the disease as formerly; but there are other contagious and infectious diseases against which at present we have no means of rendering men immune. It is to call attention to a possible cause of the spreading of infectious diseases, a cause forgotten or not thought of in the hurry of preparations for war, that I write to remind medical officers with troops of a practice which prevailed in the early part of the Boer war, and, perhaps, occasionally now—that is, the returning to men leaving hospital of their clothes from the pack store unsterilized. On the occasion of an outbreak of enteric fever in a rest camp I found the clothes, great-coats, etc., of men who had returned from hospital convalescent after suffering from enteric fever on shelves in the hut alongside the remains of food, hidden away, such as bread, butter, jam, etc. I found that these clothes had been worn by the men whilst they were being taken to the hospital. On arrival at the hospital the clothes were rolled up and placed in the pack store. On the men leaving the hospital convalescent, the clothes were given back to them just as they had been placed in the pack store. The result of my report was that an order was issued for the sterilization of all clothes before being returned to the men from the pack store. Some time after I investigated another epidemic of enteric arising in a rest camp. In this case I found that a man had come from an out-of-the-way hospital, where there was no means of sterilizing clothes. He had suffered from enteric; his clothes had been taken from him on arrival at the hospital and returned to him without sterilization. He came to the rest camp; the result was several cases of enteric in the rest camp.

At the time I reported these cases the spread of enteric by any means except water and milk was doubted, but the experiments of Majors Firth and Horrocks, made later, as well as the fact that epidemics of enteric fever have arisen from infected clothes and blankets, have removed all doubts, and it is now admitted that enteric fever may be

spread by infected clothes and flies as well as by water and milk.

J. AUGUSTUS LEA, M.B., F.R.C.S.E.,
Grahamstown, South Africa   Honorary Major.

NOTE ON THE AGGLUTINATION OF THE MENINGOCOCCUS.

(From Mobile Laboratory No. 1, G.H.Q.)

It is the experience of all bacteriologists who have worked with the meningococcus that it exhibits very variable agglutination reactions, even to the extent of refusing to agglutinate with an anti-serum prepared from the same strain. Our experience with a rabbit that was immunized with known strains isolated direct from the cerebro-spinal fluid is that the strains that were used to inoculate a rabbit sometimes fail to be agglutinated by the serum of the same rabbit. The ability to use the direct agglutination method when searching for the organism on serum agar plates grown from the throats of contacts is so valuable, and saves so much time and labour, that it is of the first importance to be able to place reliance on the constancy of the reaction.

The explanation of the inconstancy of the agglutination reaction that we offer is as follows: The meningococcus is an organism that very quickly shows involution forms in culture. Indeed, the presence of these forms, shown by irregularity of staining, is of the greatest aid in the identification of the organism. It is probable that these involution forms are due to autolysis by an intracellular proteolytic enzyme. Whatever the origin of these forms, their presence in a culture has been found by us largely to upset the agglutination process.

The following experiment is given in support of the statement that irregularities in agglutinating are very prone to occur in old cultures, and that these irregularities disappear when a young culture of the same organism is employed:

Agglutination in Serum Diluted 1 in 50.

Strain.	Read after 2½ Hours.	Read after 6 Hours.
	14 Hours' Growth.	48 Hours' Growth.
Price. ...	Good	Negative.
Coll. ...	Slight	Negative.
Hien. ...	Fair	Slight.
Bak. ...	Complete	Very little.
Jahn. ...	Slight	Slight.
Harr. ...	Good	Negative.
Buch. ...	Good	Negative.
Hep. ...	Complete	Negative.
Pay. ...	Complete	Negative.
Gar. ...	Good	Negative.

The cultures had been in subculture for very nearly the same period, all having been isolated about ten days.

Controls with normal rabbit serum diluted 1 in 10 were uniformly negative.

SYDNEY ROWLAND,
ADRIAN STOKES.

MULTIPLE LIPOMATA AND ELEPHANTIASIS IN A COUNTRY SCHOOLGIRL.

L. W., aged 12, was healthy at birth, and was breast-fed. When she was about four months old the mother noticed a swelling in the right mammary region. A swelling immediately below this, and another above and to the right of the umbilicus, appeared soon after. The child talked before she was a year old, but did not walk until she was two years old. The mother then noticed that the left leg was thin. She does not know when the swelling of the right leg and thigh appeared, as she considered the left the bad leg. The general health has been good. The father, a miner, and the mother were healthy; of their four children the two brothers and one sister were healthy, but the youngest girl, aged 10, was feeble-minded.

The child was anaemic and thin, and presented large