

importance in connexion with the present outbreak in Calcutta, for here the same assertion has been widely made, and during the early weeks of the outbreak there were many practitioners of high standing and repute who maintained the view that the cases returned as plague were not cases of plague at all, but cases of the endemic fever with buboes. Almost without exception these gentlemen have since admitted that, in view of the clinical character and high mortality of the recent cases, they have rightly been regarded as cases of plague. The occurrence of this endemic disease is, however, of importance, as it must add one more difficulty in the way of fixing an exact date for the first case of an epidemic of plague, to which reference was made earlier in this paper. The evidence for the existence of such a disease is conclusive, although it is a remarkable fact that at one of the largest of the Calcutta hospitals no such cases are ever seen.<sup>9</sup> It is based upon the assertion of many practitioners in Calcutta that a certain number of cases with these characteristics are met with in general practice every year, and upon statistics of a similar disease among English troops in Fort William, where every year an average of between 30 and 40 cases of fever with glandular swellings occurred in the years 1890-6 inclusive.<sup>10</sup> No published description of this disease appears to exist, but, so far as may be gathered, it would seem to differ from plague in its being altogether of a milder character, in its low rate of mortality, in the fact that suppuration of the glands is the exception rather than the rule,<sup>11</sup> and in the absence of any concurrent disease in rats. The bacteriology of the malady has not, it would seem, been studied.

Frequent reference has been made in the course of this paper to the appearance of a disease among rats preceding and coincident with the appearance of plague in man. It must now be accepted as one of the established facts of medicine that in almost all outbreaks of human plague rats are affected by a similar disease both before and during the epidemic. The evidence that the two diseases are the same is of exactly the same character as that which has established the identity of human and bovine tuberculosis, and there seems to be but little more reason for suspension of judgment in the one case than in the other. It may therefore be accepted that plague in man and plague in the rat are, as far as our present knowledge of the two diseases goes, one and the same disease. Evidence has been published<sup>12</sup> that the disease may attack other animals than the rat, such as dogs, pigs, pigeons, and domestic fowls. I have no personal knowledge of such an occurrence (with the exception of a very doubtful case in a dog),<sup>13</sup> and the present notes are therefore confined to the disease in rats.

There is, as already stated, some interesting evidence pointing to the possibility that rats were the means of introducing the plague infection into Calcutta. Before the date of the first recognised case of plague in man intimation was received at the Health Office that a number of dead rats had been found in an office situated near the river; and a little later other dead rats were found in a street close to and parallel with the river and in the warehouses of a shipping company near to the wharfs where ships unload.

<sup>9</sup> I am assured that this is so by the medical officers of the Medical College Hospital.

<sup>10</sup> Parliamentary paper C. 8386: Papers relating to the Outbreak of Bubonic Plague in India. The statistics are furnished in a statement by Surgeon-Lieutenant-Colonel W. Allan May, in charge of the Station Hospital, Calcutta, dated October 22nd, 1896. It had been suggested that the cases suspected to be plague then occurring in Calcutta (*vide supra*), and some cases of glandular fever in men of the Shropshire Regiment (recently transferred to Calcutta from Hong-Kong where they had been on plague duty) might have some connexion. The statistics here referred to rendered this view untenable.

<sup>11</sup> In the Parliamentary paper already quoted from will be found a reprint from the *British Medical Journal* of an article by Fleet-Surgeon Charles C. Godding on "Non-Venereal Bubo," from which it appears that a bubonic disease with fever is common in the navy on certain stations, a yearly average of 733 cases occurring out of a yearly total of 56,180 men. The disease would, however, appear to differ from the one under consideration in the more frequent occurrence of suppuration. May not the habit of sailors of going about barefooted afford an explanation of the occurrence of these buboes, which are "invariably inguinal"?

<sup>12</sup> Dr. Cantlie and Dr. Lowson at the Epidemiological Society of London in December, 1896. THE LANCET, Jan. 2nd and 9th, 1897.

<sup>13</sup> A. B. was attacked with plague on June 30th, 1898. He recalled the fact that two or three weeks before (he could not fix the day) his little dog had brought a dead rat and placed it on his bed. A day or two later the dog had seemed unwell, but it had rapidly recovered; it was not known whether any glandular enlargement had occurred. The patient had touched the rat in removing it from the bed; but in view of the facts that over a fortnight elapsed before he himself sickened, and that he lived in an infected area, there seems no reason to believe that this was the particular source from which he contracted the infection.

The occurrence seems to have been so unusual as to have at once attracted attention and the premises were cleansed and disinfected. Some of these animals were examined at the municipal laboratory and cultures of the plague bacillus were obtained from them. Ever since the beginning of the outbreak dead rats in large numbers have been found in various parts of Calcutta but more particularly in and near houses where cases of human plague have occurred. In a large city like Calcutta a certain number of dead rats will always be found, but during the past three months the number has been unusually large and there can be no question that this has been due to the occurrence of a plague epizootic among these rodents. Several specimens examined at the municipal laboratory were found to present pathological changes characteristic of plague, and moreover pure cultures of plague bacilli were obtained from the enlarged glands and other organs. The following incident came under my own immediate observation. A death from plague occurred on certain premises in British Indian-street. Previously a number of dead rats had, it was ascertained, been found on these and on adjoining premises, and several cases of plague had occurred in the immediate neighbourhood. The patient had died at 3 A.M. on June 15th, and at 7 A.M. I saw the body, which was still lying in the outhouse or *godown* where death had occurred. The post-mortem examination revealed all the pathological changes characteristic of plague, and I was moreover able to obtain pure cultures of the plague bacillus from both the bubo and the liver. There was therefore no doubt as to the cause of death. At the time of inspecting the body I had observed that the big toe of one foot had been half eaten away by rats. During the following week or two there was a marked increase in the number of dead rats found on the premises where the man had died and on the adjoining premises. Some dazed and sickly-looking rats, which showed evident signs of severe illness, were also seen in an adjoining house. Unfortunately these facts did not come to my knowledge until later, and it was therefore impossible to obtain any of the bodies for examination, but the facts left little doubt in my mind that the rats had died from plague, and that in some at least this result was brought about by their fatal feast off the tissues of the dead man's toe.

A few words may be added as to the mortality of the plague as it has shown itself in Calcutta. Among male Hindoos the proportion of reported deaths to reported cases has been 86.2 per cent.; among female Hindoos, 72; among Hindoos of both sexes, 84; among male Mohammedans, 85; among female Mohammedans, 88; among Mohammedans of both sexes, 86; among male Eurasians, 54; among female Eurasians, 73; among Eurasians of both sexes, 63; among males of all classes, 83; among females of all classes, 76; and finally among persons of all classes and both sexes, 82 per cent. The figures upon which these percentages are based are in many instances, particularly in the female groups, too small to permit of any sweeping conclusions as to racial or sexual susceptibility to the plague poison, but attention may be called to the remarkably low mortality among Eurasians. A similar observation was, it will be remembered, made in the epidemic in Hong-Kong. The mortality among the natives, both Hindoo and Mohammedan, as expressed by the above figures, may possibly be above the truth, as cases which recovered are more likely to have been concealed than cases which died. The only European (a male) who contracted the disease recovered. Of other nationalities, two Chinese, one Burmese, and one Jewess caught the disease, and in each case it proved fatal.

Calcutta.

## NOTE ON A CASE OF SATURNINE AMBLYOPIA.

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A WOMAN, aged twenty years, single, consulted me on account of failing sight in May of the present year. There was no evidence on superficial examination of inflammatory affection or organic change, but the ophthalmoscope revealed white atrophy of the left optic disc and I found on testing vision marked central scotoma in both eyes, notwithstanding that the right papilla was apparently normal (amblyopia

without tissue change). I diagnosed drug amaurosis and detected in the urine traces of lead which I then ascertained she had been taking in ten-grain doses nightly in the form of emplastrum plumbi for upwards of three weeks. Under treatment the right eye recovered perfectly, but the left, although it has improved considerably, is still very defective and likely to remain so.

The power of certain drugs to produce definite tissue change in the optic nerves (axial neuritis) is a curious property possessed by a variety of substances—alcohol, tobacco, lead, and other metals for instance, as well as quinine, salicylic acid, santolin, bisulphide of carbon, and various coal-tar products. Of these, according to my experience tobacco is the most frequent cause of impaired sight, not only on account of the nicotine which it contains and which in its natural form blinds the horses which graze upon pastures where tobacco is grown, as in some parts of New South Wales, but also on account of the pyridine, viridine, carbolic acid, and marsh gas which are set free when it is smoked. Alcohol probably comes next, while saturnine amblyopia among the workers in lead factories has been known for centuries. The lead may enter the system either with articles of food or drink, the workmen in the former case neglecting to wash their hands, or through the skin by means of hair dyes and cosmetics, or by silk threads which are weighted with sugar of lead and bitten instead of cut by those who use them. In my case the patient, finding herself pregnant, took diachylon in order to procure abortion, with no other effect than to cause blindness in one eye. That this should result in four weeks' time without other symptoms of plumbism, colic, leadline on the gums, palsy, or wrist-drop is indeed singular if not unprecedented.

With regard to treatment in such cases iodide of potassium should be given in large doses, the patient should use baths of sulphuret of potassium, take sulphate of magnesia, mercury, and pilocarpine, while the affected nerve should be galvanised with the continuous current, about 2 milliampères to each temple daily.

Nottingham.

## STRANGE SUCCESSION OF FRACTURES IN A COLLIER, WITH REMARKABLE COINCIDENCE IN TIME OF OCCURRENCE.

By D. T. RICHARDS, M.D. GLASG.,  
SURGEON TO RISCA COLLIERIES.

As might naturally be expected from his hazardous occupation the collier is frequently injured by accidents underground. But the following particulars deserve, I think, a space in THE LANCET because of the strange series of fractures sustained by the man himself and his near relatives, as well as the remarkable coincidence in the date of their occurrence as far as the patient himself is concerned.

A man, aged forty-four years, short and well built, was first attended by me on August 26th, 1890, for a compound fracture of the left leg, resulting from a portion of the roof or top falling and striking him while following his employment in Risca Collieries. After being brought out and conveyed on a stretcher to his home on the hill-top, a distance of about three miles, a journey by no means easy to bear by a man with a fractured leg, I found on examination a crescentic wound nearly 3 in. long on the outer aspect of the middle of the left leg, and well peppered over with coal-dust. In spite of the temporary splints and scarf tourniquet applied by his fellow workmen considerable hæmorrhage had occurred, no doubt aggravated by the long, rough journey over an uneven road and up the hill. An anæsthetic was given and the tibia and fibula were found to be fractured near the same level, about half-way between the knee and ankle, and detachable sequestra were removed. After free ablation and cleansing with carbolised water and the limb being brought to a good position iodoform gauze was applied and the leg put up in a modified box-splint. For some hours, the patient felt easy, but during the night he was sick and the leg was painful, which kept him from sleeping. When seen next morning his temperature was 102° F., the pulse was

112, and the tongue was covered with dry white fur. After a grain each of calomel and opium he felt easier and slept. Suffice it to say the patient made an uninterrupted recovery and was able in about six months to resume his work as a collier underground.

The patient's previous history, told by himself and corroborated by others, is very remarkable. With the exception of an attack of typhoid fever, which he had when eighteen years of age, and two or three attacks of quinsy subsequently, he had not suffered bodily in any way. He was always very temperate and for about eighteen years a total abstainer. But his misfortunes in the mine were many and are remarkable from the fact that they all happened on the 26th day of August. Here is his record. At the age of ten years he fractured his right index finger. It happened on August 26th. When thirteen years old he fractured his left leg below the knee through falling from horseback, also on August 26th. When fourteen years of age he fractured both bones of the left forearm by stumbling, his arm striking the edge of a brick (August 26th). In another year, on August 26th, when fifteen years of age, he had compound fracture of the left leg above the ankle by his foot being caught under an iron rod and his body falling forwards. Next year, again on the same date, August 26th, he had compound fracture of both legs, the right being so severely crushed that it had to be amputated at the lower third of the thigh. This was caused by a horse, hitched to a tram of coal, which, running wild underground, caught him in a narrow passage, crushing both legs severely. After this he did not work on August 26th for 28 years, and little wonder, but in the year 1890 he forgot his fateful day and went to work, with the result that he sustained the compound fracture which I have mentioned in the beginning. After this he has studiously avoided working on August 26th, though never missing work at other times.

The patient's father is living, aged seventy-nine years, and has never had a severe injury. His mother died at the age of seventy-nine years. When aged sixty years she had compound fracture of the leg below the knee through being run over by a truck. Recovering, she enjoyed good health for fourteen years, when the old wound reopened and discharged small pieces of bone. The wound remained open for about a year, when under treatment it healed. From this time her health failed and her death, which occurred soon after, was attributed to the healing of the wound. The patient had no brothers, but his only sister, when ten years of age, fractured both bones of the forearm, refracturing the same in about three weeks by falling with her arm under her. One cousin had an arm amputated at the shoulder for injury and another cousin had a severe compound fracture of the leg, while a third had fracture of the leg from which he died. Of three paternal uncles one had his leg amputated for injury underground.

Risca, Mon.

## SARCOMATOUS DEGENERATION IN AN UNDESCENDED TESTICLE; CAS- TRATION; RECOVERY.

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AN Anglo-Indian, aged twenty-five years, short, thick-set, and of good constitution, was born a cryptorchid, his left testicle having remained undescended from birth. There was always, as long as the patient could remember, a "lump" in the left groin. It had remained absolutely painless till about four months previously to his consultation with me, when he observed occasional acute pains in the swelling and a frequent sense of nausea. In a few weeks the pain became worse, the swelling more enlarged, and there was persistent vomiting, which confined him to his bed for a few days. The symptoms subsided, but with the resumption of his duties there was a recurrence of suffering. When I first saw him, on March 22nd, 1898, the lump in the groin was hard, tender, and non-fluctuant. The slightest pressure upon it induced nausea. Sulphate of magnesia with tartar emetic in small doses internally, the application of belladonna and glycerine to the swelling, with rest in the bed, gave complete relief