

natural shape and form, both ears are considerably thickened, as well as the skin over the eyebrows. There is, therefore, but little reason to doubt that this is a case of true leprosy in the earlier or anæsthetic form.

CASE II.—Denonath Dass, aged 28 years, applied at the dispensary on April 22nd, 1871, suffering from leprosy and scabies.

History.—Says he had a chancre about sixteen years ago, which however was not followed by any secondary symptoms. About the same time, but whether just before or just after, he does not remember, a circular spot appeared in the skin of his loins, which was soon followed by other similar spots in different parts of the body.

Present condition.—There are now many patches scattered over the body, which so exactly resemble those described in the former case, that they need only be referred to here, in order to note their association with "pudding-shaped" toes, which were insensible to pain, but had not yet begun to ulcerate.

CASE III.—Jetoo, coachman, aged 45 years, applied at the dispensary in April 1871, suffering from patches of discolouration, with diminished sensibility, all over his body; he also had permanent contraction of the little and ringfingers of either hand, which had existed for some months.

History.—Had a sore on the penis thirty years ago, but never any secondary symptoms. Five years ago, two somewhat circular spots of more or less discoloured skin appeared over the fifth, sixth, and seventh ribs on the right side; these were followed by other similar patches on the trunk, legs, arms, and feet. Sensibility, though greatly diminished, is not yet entirely lost in any of these parts; and although the skin feels brawny and thick, when pinched up between the finger and thumb, it has not yet advanced to that stage when it conveys the impression of being leathery or parchment-like.

The ulnar nerves, as they pass the elbow joint, may be felt to be much thickened; but neither the eyebrows, ears, or toes, appear much affected in this case.

CASE IV.—Sree Hurry, 40 years of age, applied at the dispensary on the 6th May 1871, having suffered for many years from symptoms of leprosy. There were pale coloured, insensitive, thickened patches of skin all over his body; the skin between these patches being so dry and coarse, that distinct furrows were left when a pencil or the finger nail was drawn across it. His face presented the characteristic leonine expression; his nose and ears were thickened and left nodular; his ulnar and posterior tibial nerves were also thickened; and his fingers and toes had already become "pudding-shaped," the latter being deeply ulcerated.

CASE V.—Asradi, aged 20 years, applied at the dispensary on the 22nd April 1871, with irregular shaped, discoloured, more or less insensitive, and thickened patches of skin, like those above described.

One was situated over the upper half of the left scapula and shoulder-joint; another on the front of the left fore-arm, and back of the wrist; and another involved the whole of the back of the right-arm and fore-arm. There was an entire absence in this patient of the leonine expression; the ears, all of the nose, fingers, and toes, were also quite normal; but he was only twenty (20) years old.

CASE VI.—Rugonath, aged 18 years, applied at the dispensary on the 27th May 1871. He had only one spot, which commenced about a year ago; and this was situated on the right-arm—was about two inches in diameter, and had passed through the several stages, ending in condensation and loss of colour in the skin, with almost complete loss of sensation in the centre of the affected part.

(b) *Herpes.*—Nearly 200 cases are recorded as herpes in the dispensary books; they occurred as shingles (*herpes zoster*), or spray-like clusters of tough vesicles on a hardened base; or oval masses of similar vesicles. It is probable that some of these 200 cases might have been more correctly classed under eczema, but none of them presented any peculiarity or feature of interest deserving of record here.

(c) *Urticaria*, depending sometimes on nerve alteration, and sometimes on blood poisoning, may be also passed over without remark.

(d) *Pruritus.*—Forty-four cases appear in the dispensary records, classed under this head. The itching in most of these cases was strictly confined to the limits of the scrotum (*pruritus scroti*): in many, a slight amount of sub-cuticular uniform thickening could be felt, but the cuticle, however, remaining normal; while in some few remaining cases no structural alteration whatever of any kind could be detected, though the itching was terribly severe. The former class generally occurred amongst natives, and were probably cases of imperfectly developed eczema, or perhaps of the initial stage of scrotal tumour; but the latter, most frequently seen amongst Europeans, were probably due to nerve disorder of some kind.

The form of itching with papules, called *prurigo senilis*, so frequently associated with the presence of body-lice in *Europe*, is not common in Calcutta.

The remaining skin affections, not having yet been satisfactorily associated with any definite diathesis, will be arranged according to their anatomical seat:—

I. AFFECTIONS OF THE EPIDERMIS.—*Sudamina*, *miliaria*, and *corns*, remain to be noticed. Notwithstanding the profuse perspiration caused by the hot climate, the two former affections are not seen more frequently in Calcutta than in London; while the last, or corns, are unknown, except amongst the well-to-do natives, who have unfortunately adopted the barbarous European custom of pinching up their feet in tight shoes, until the natural shape of the foot is replaced by an unsightly deformity.

(To be continued.)

REPORT ON CHOLERA IN THE HOSHUNGABAD DISTRICT DURING 1871-1872.

By Surgeon P. CULLEN, *Civil Surgeon, Hoshungabad.*

CHOLERA has been present in this district since December last, and the erratic way in which it has skipped about from village to village, sometimes lying adjacent, at others far apart, and without leaving a trace of its route, has been most interesting to watch.

The first appearance of the disease was on the 26th December 1871, at the large town of Hurda, which, with Kolardha and Byraghur lying together as a large city, contains a population of 8,028 souls, and on the same day it appeared at Bhamungaon, lying in a nearly direct line eastward, 44 miles, and having a population of only 438 souls; and as this last village is some distance off the line of railway, although on the direct country road to Hurda, the simultaneous appearance of the disease at two spots so far apart is difficult to be accounted for, except attributed to local causes.

As the Hurda outbreak was the first reported, it will be best to commence the account with that, premising that cholera had been heard of previously at Delhi, Agra, and even at Lucknow.

On the 26th December 1871, a woman named Sookiya, Aheer by caste, and residing in Kolardha, who had been ailing from fever, but was convalescent, again went into the fields to work, was seized with purging and vomiting, and died within twenty-four hours. This woman was said not to have left her village for a long time previously, and because she had been under treatment for fever, the hospital assistant in charge of the dispensary was unwilling to enter the case as cholera, but attributed

death to bilious derangement; but, as will presently be shown, this was the beginning of the outbreak. The hospital assistant reported the second case, which occurred on the 29th December, in a Brahmin named Sook Nundun, who was one of a party of eight men who had arrived at Hurda on the 26th December from the village Amursat, pergunnah Haraha, zillah Wunnao, in Oude. They had travelled in foot the whole distance, and had passed through Bundlekund to Jabalpur, and through Nursingpur, and had traversed nearly the whole length of this district. By their statement, they had been about a month on the road, and had not seen cholera anywhere on the journey, and they reached Hurda apparently in health. (These men in going to Hurda had most probably passed through Bhamungaon, which is on the direct road).

Five of the eight men obtained employment at Hurda in making tiles, two went on to Nagpur, and one returned to Oude. The five who remained at Hurda encamped on the banks of the Ajun Nuddy, which separates Kolardha and Hurda Proper from Byraghur; their camp being up-stream, and separated from Kolardha by the line of railway; but there were numerous houses in a scattered, filthy state on the same side of the rail as their encampment.

The whole of Kolardha, Byraghur, and Hurda, at this time, were drinking the water of this *nuddy*, and the woman Sookiya had taken water from it, and most likely had defiled the stream before the man Sook Nundun was attacked. This man, Sook Nundun, when attacked, went and lay on the bank and washed himself in the stream, and was there until the morning of the 30th December, when he was conveyed to the dispensary. After this, there is no further doubt as to the water-supply being contaminated.

The third case was in an alieer named Choonee, a relative of the woman Sookiya, who died on the 30th December. He had performed the funeral obsequies of the woman, and on returning home was seized with cholera symptoms. There is no tracing communication between this man and the Brahmin Sook Nundun, but he had touched the corpse of the woman; and I am inclined to believe the case due to contagion, and that the woman died from cholera and not from bilious diarrhœa.

On the same day (30th December) another man, who had lived and worked with Sook Nundun, was attacked; and on the 31st a third case occurred amongst these men. There the disease went down-stream and to the opposite bank, where a man, living in a garden nearly opposite Hurda city, was affected. It also spread amongst the squatters on the same side of the line of rail before mentioned; and on the 1st January 1872, a prisoner who had been working on the banks of the river, and had drunk water from it, was attacked in the lock-up; and then an Afghan and a Mahratta, who lived in what may be called the city of Hurda, were seized; and in this way the disease travelled down stream, until on the 2nd when I reached the place, there had been twelve cases and six deaths.

We must now pause to hunt for a cause for this outbreak. Although cholera had been reported in Lucknow, there is no account to show that the disease had occurred anywhere near where the party of eight men came from, or in any of the districts through which they had travelled, and people who saw and engaged them on arrival at Hurda stated they all appeared in health; besides, it is hardly possible that they could carry the germs of the disease for one month and not become affected by it themselves, or without having communicated it anywhere on a land journey of over 400 miles; hence I do not think the disease was brought here by these men, but developed *de novo*.

The woman Sookiya had been ailing from fever, and was in a weak, debilitated state; she drank water from the *nuddy*, which at the time was series of small pools running in a very small stream indeed, and was contaminated by the filth and dirt of brick-making. This impure water, in her exhausted state, appears

to have been enough (perhaps combined with an improper diet) to bring on purging and vomiting, and induce cholera; and by her, there can be no doubt, the stream was further polluted with the true germs of cholera, and it is instructive to note how the subsequent cases occurred further and further down the water-course.

Although, after the first case, it is easy to trace contamination of water and intercourse as causes of the propagation of the disease, yet for the production of the first case the surrounding circumstances were unfortunately very favorable and predisposing.

The water-supply of this town has been a source of anxiety for years past, as nearly all the wells (of which there are no less than forty in Hurda itself—six in the civil station, two or three in Kolardha, and two in Byraghur,) have all become more or less brackish, and the people have left off using the water and gone to the river for their supply. The flow in the river during the hot months is very small indeed, and it was to increase the supply that in 1867 an anicut was built across it, just below the town, to bund up the stream; but unfortunately in doing this the sluice gates were made too small, so that no scour of the river's bed could be obtained, and gradually the gates became blocked up, and the bed of the river, which here had been moderately deep, was quite silted up with sand and washings from above; so that in 1869, seeing how matters were proceeding from bad to worse, I recommended that the centre of the anicut should be cut through and the stream cleared out, and then larger sluice gates made to ensure a scour on the gates, being taken up, and that the brick-making and other works which were carried on by the G. I. P. Railway should all be removed to below the anicut. These latter were most of them either stopped altogether, or removed down stream; but no attention was paid to the river itself; and on several subsequent occasions I drew attention to the constant defiling of the water, and in September 1871 made another special report on the defective sanitary conditions existing here, as brick-making, &c., had again been commenced up-stream. But without actually clashing with the railway authorities, it was found very difficult to rectify the defects, and things were allowed to take their course; so that when the present epidemic broke out, there was a most deplorable state of affairs—the river silted up to that extent, that instead of the store of water being opposite Hurda, it was a quarter of a mile up-stream, whilst opposite the town was deposited the scum and filth that had floated down from the brick and tile-makers above, and which caused quite a stench.

But, perhaps, this insanitary state of things alone might not have given rise to the disease, had they not been combined with equally favoring atmospheric disturbances. From the 20th December 1871 the wind had been blowing from the westward, which in this valley is a warm wind. But on the night of the 23rd December there was a slight shower of rain with thunder and a fall in the temperature of some five degrees followed by a sudden decided rise in the barometer and the wind veered round to the east and north-east, which are here cold bleak, cutting winds. (These disturbances extended up the valley to Hoshungabad, and may have had something to do with the outbreak at Bhamungaon, to be presently described.) I think it not improbable that this sudden atmospheric change may have had a material predisposing effect on the debilitated old woman Sookiya, which rendered her still more liable to be affected by the impure water, &c., and thus tended to produce a disease that was not known to exist anywhere within a range of some hundreds of miles.

The disease clung to Hurda until the middle of February, during which time the annual fair, which takes place in January, was prohibited, the brick and tile-making up-stream had been stopped; the squatters along the line of rail cleared away, Kolardha cleaned up; the anicut cut across, and the silt all cleared away, and the water allowed to flow away freely, and also several

wells in the town properly cleaned out, after which their water was found to be quite potable. The inhabitants had been cautioned against using the river water, unless thoroughly boiled and filtered, and several small, jeeriya-wells dug by the side of the stream for them to take water from. Under these steps the disease died out, and the place was put into such a good sanitary condition that although the disease was brought there several times by railway travellers, it never spread. The total number of cases which occurred in Hurda and the civil station were fifty-three, of whom thirty-six were treated at the dispensary, with a mortality of eight.

By the rail the disease was subsequently brought to Hurda four different times. On the 30th April a traveller from Mandla was taken out of the train suffering from the disease. On the 20th May a second case was removed from the train; he had travelled from near Poona and became attacked in the train after leaving Bhundwah. On the 8th June a third case in a traveller from Poona was deposited here, and the fourth case on the 10th June in a passenger from Bhundwah. All these cases died, but the disease did not spread from them to a single person.

We now come to the Bhamungaon outbreak, which, in point of time, was simultaneous with that at Hurda, the first case occurring on the 26th December 1871. Bhamungaon is situated on the bank of a large nullah, a tributary of the Hathara river, and lies about four miles north-west of the Etarsi railway station, and two and a half miles west of the Etarsi and Hoshungabad road, but the through-cart road from Babai to Seoni and Hurda passes this village, and hence foot travellers on this road would have to go by it.

The executive engineer of this district had about three hundred coolies located on the south of the village digging *murrum*, and their water-supply was taken from the stagnant pools of this nullah, at which the village cattle were watered daily; but there was one well on the north side, far away from this nullah, from which all the villagers drew their supply. It was stated that on the 26th December 1871 a traveller came from towards Seoni (*i.e.*, on the Hurda side) suffering with cholera, and lay down in the coolies' encampment and died. But no case occurred amongst them until the 30th January 1872, when a cooly named Adjoodiah, was attacked and died the same day, and then the disease spread, and there were eleven cases and eight deaths up to the morning of the 8th, and most likely then would have been more, only that on the 4th the outbreak was reported to the executive engineer, and the overseer went to the place and dispersed the coolies, but did not report the occurrence to the district officer. When I went there on the 8th, there were only about twenty-five men remaining; these I advised to disperse at once, and set fire to the encampment. Where the traveller came from, or where he was first seized with the disease, could not be ascertained.

It is worthy of remark here that although these men had constant communication with the village, yet not a single villager was affected: the coolies drank the nullah water, the villagers the well water.

Of these dispersed coolies some went to the village of Sonasawrie, two and half miles nearer Etarsi, where two of their number died; others took the direct road eastward to Babai and further on, but it was remarkable that at this and the subsequent outbreak, which occurred at Etarsi and extended northward to Hoshungabad, no case occurred on the east side of this Etarsi road; and that notwithstanding some of the Bhamungaon coolies stayed over twenty-five hours at the large village of Russelpur, which lies about one mile on the east of the road, and about four from Bhamungaon, and during the season the disease has been brought eastward to this road, both by road and by rail, but has not passed it, that is, no single case has occurred eastward of it.

The next outbreak, in point of time, was at Etarsi. On the 6th February 1872 a party of pilgrims were proceeding from Poona

to Benares, and travelled by mixed train which had stopped at the previous night at Hurda. One of their number was seized in the train and removed at Etarsi, and found his way to the serai, and died on the 7th. On the 9th a barber, who resided in the serai, was attacked, and died on the 10th. On that day a woman living near the railway station was attacked, and died; and a fakeer, who had been living for some time in the serai, was seized with the disease, and made off to Hoshungabad, and unfortunately got into the town before he was detected; he died at Hoshungabad on the 13th, and on the night of the 12th a man who had just arrived from Hurda was attacked, but recovered. On the 12th another man who had put up at the serai at Etarsi was attacked, and making towards Hoshungabad died at Beova, half way. On the 14th two men went from Adamghur (a small village adjacent to Hoshungabad to Etarsi, and stayed all night at the serai) and were both of them attacked, but hastened back home as fast as they could, got treatment, and recovered. The serai in the meantime had been cleaned out, whitewashed, and partially desinfected; but on the 27th February two more men went from Adamghur to Etarsi, stayed at the serai, were attacked and both died. The serai was then entirely closed for a long time, the floor of the huts dug up, and relaid, and the whole place whitewashed, and on its again being opened to the public, it was found free from taint. The village of Etarsi, containing 1,675 souls, lies about a quarter of a mile to the south-east of the serai, and is in constant communication with the railway station, but not a single case occurred here.

But the disease had in the meantime been skipping about to several villages. One man on 27th January went from Hurda to Apgaon about four miles, and died there. On the 30th January it appeared at the village of Besoneekullan, five miles on the north of the serai and Hurda road, where a marriage festival was taking place, four men were seized with choleraic symptoms, of whom three died, and in this same month it occurred on the 2nd January at Bauspani, about sixteen miles to the south-east of Hurda, where out of twelve attacked nine people died. No direct communication could be traced between Hurda and this last village, and it was difficult to ascertain whether the disease was brought here or was due to the insanitary conditions existing locally. The Besoneekullan cases I attribute solely to a debauch.

After this there was a lull in the disease until June in this district, but it prevailed with some virulence in Khundwah, the adjoining district to the westward.

(To be continued.)

ON THE ETIOLOGY AND HYGIENE OF CHOLERA.—PART II.

By T. OUGHTON, *Staff Assistant Surgeon, Neemuch.*

(Continued from page 150.)

LET it be understood, with reference to the third conclusion, that we do not by any means grant the necessity of there being a numerical parallelism between the admissions from one day to another. That such has been the case in former epidemics, as exemplified in the above tables, only proves the futility of the means which have been taken hitherto, by isolation or otherwise, to prevent susceptible persons coming into contact either with the patients themselves (primary centres) or with healthy and secondary centres; and the fault does not seem to lie so much in the first as in the second particular, wherein there seems to be great scope for future hygienic manipulation. Neither should the ratio of susceptible persons in a community, of necessity, be a constant and invariable quantity, and here it behoves us, by the employment of every useful measure of sanitation, to reduce this ratio to its smallest limit.