

ORIGINAL COMMUNICATIONS.

NOTES ON EARLY SANITATION
IN INDIA.

BY SURGEON-GENERAL C. A. GORDON, M. D., C. B.

With the commencement of the sixteenth century European settlements in India began. The Portuguese arrived at Calicut after a tedious voyage, during which the privations and fatigues to which they were subjected culminated in the outbreak among them of the disease afterwards named scurvy. While their dominion on the Malabar coast was at its height, namely, soon after the middle of this century, the condition of their soldiers was somewhat thus:—their pay was only equivalent to nine or ten shillings per month, out of which they had to maintain themselves; detachments of unmarried men came from Portugal yearly to fill vacancies in the ranks; part of the troops were kept on board ship off their settlements; men lived as best they could, ten or twelve in a house, their food boiled rice and salt fish, and wearing the meanest attire. In order to keep up appearances the inmates of each house combined together, and so procured two suits of silk attire which they wore in turns. Their habits were lawless and dissolute; they indulged in theft, debauchery and outrage, making themselves obnoxious to their own people, and especially so to the native population. Before the end of the century the "so-called" population of Goa had become hopelessly degenerated; the men treated their wives and daughters with all the jealousy of orientals; unions had been formed with native women; these were notorious for infidelity and intrigues of all kinds, the latter aided by the household slaves, male and female. And thus in a great measure as a result of neglect of hygiene as of morality their power waned and disappeared with the century that saw its beginning.

During that century, on the Malabar coast, considering that disease among them was an expression of anger on the part of the gods or demons, they in times of epidemics propitiated *Mari* or *Marianma*, a female deity whom they looked upon as the disseminator of the evil. In this, however, they but followed the practice observed in India from the most ancient period of recorded history, and indeed which even still prevails in some villages that have been under British influence for years. What is now called "the social evil," was on the same coast simply a condition of native society, at least among the tribe of *Sudras* then named *Nairs*; they lived together promiscuously, so that it was stated that none knew their own children. In 1565 the "public establishments" in the city of Vijayanagar were famous throughout the country. Towards the latter end of the century however, among the improvements introduced by *Akbar* was a kind of Contagious Diseases Act; that is, he placed restrictions upon what was then the open indulgence of this particular vice.

The following particulars regarding what may be called Public as well as Army Sanitation in India during the very early period of the occupation of that country by the British, are principally gathered from the "Early

Records of British India," by Mr. J. T. Wheeler. The earliest date alluded to is 1674. With regard to the British factory at Surat, we learn that in that year its establishment consisted of twenty persons including "Swally Marine," a minister for divine service, a surgeon, and when the President was there, a guard of English soldiers consisting of a double file led by a sergeant. "At that time, perhaps not altogether unlike their representatives in more recent times, they got drunk with toddy or bhang, the latter described as a pleasant intoxicating seed mixed with milk; then they are monarchs, and it is madness to oppose them; but leave them to themselves, and they will vent that fury by *mathing* (?) a vein or two with their own swords, sometimes slashing themselves most barbarously."

Of Bombay in the same year we learn that in the town lived confusedly the English, Portuguese, Topazes, Moors, Cooly Christians, most fishermen; that the English had a burial ground but neither church or hospital, "both which are mightily to be desired." The water drunk was usually rain water preserved in tanks, which decaying, they were forced to dig wells into which it was strained (filtered) hard, by leaving its brackish taste, so that the better sort have it brought from *Massegoung*, where there is only one fresh spring. The town, as it then existed, was well supplied from abroad with corn and meat at reasonable prices, and there was more meat killed for the English alone here in one month than in Surat for a year for all the Moors in that populous city. The soldiers were under martial law; the President had his physician and surgeons; unfortunately there appears to have been ample scope for their best exertions, for, according to the account of his visit about that time to what is now the Western Presidency town, the English residents walked "but in charnel houses, the climate being extremely unhealthy"; they at first attributed that unhealthiness to the presence of *Bubsho* or rotten fish but "though that he prohibited, yet it continues as mortal." Dr. Fryer rather attributed the unhealthiness of the town to the situation "which causes an infecundity in the earth and a putridness in the air." Among other causes of sickness among the English he enumerates as worst of all *Fool Rack*, "a spirit made of blubber or carvel, by the Portugals." "To support their colony the Company have sent out English women; but they beget a sickly generation;" and, with regard to the great mortality among the British, Dr. Fryer observed, "I believe rather we are here as exotic plants brought home to us, not agreeable to the soil. In five hundred, one hundred survive not; of that one hundred one quarter get not estates; of those that do, it has not been recorded above one in ten years has seen his country."

In 1672 Madras was an important place: White Town contained about fifty houses laid out in twelve streets. In the midst was the house of the Governor, where all the Company's servants took their early dinners. Some of the older servants were married, and lived in separate houses; but all were expected to be present at dinner and to maintain order and decorum. The neighbourhood of Black Town was not conducive to the morals of the Fort. The younger men would climb over the walls at

night and indulge in a round of dissipation. in 1674, there were in the Fort as a garrison, in pay for the Honorable East India Company, of English and Portuguese 700, reckoning the *Moatrosses* and Gunners. At this time Sir William Langhorn was Governor. He laid down the following rules, alike with the view to promote public morals and health. No person was allowed to drink above half a pint of arrack or brandy and one quart of wine at one time under penalty of one pagoda upon the housekeeper that supplied it, and twelve fanams upon every guest that had exceeded that allowance. Drunkenness was to be punished by fine and the stocks. All persons addicted in any way to the social evil were to be imprisoned at the discretion of the Governor, and if not reclaimed, were to be sent back to England. Persons being out of White Town after eight o'clock were to be punished; and any one getting over the walls of White Town was to be kept in irons till the arrival of the ships, and then sent to England to receive further condign punishment on his arrival. For telling a lie or absenting themselves from morning or evening prayers to be fined four fanams for each offence, and a similar fine was inflicted for swearing or *banning*. Persons going out to fight a duel were liable to imprisonment for two months on rice and water. Any soldier giving another the lie, was to be tied to a gun and then receive ten blows with a small rattan well laid on by the man to whom he had given the lie. But, notwithstanding all those regulations, it is recorded that public decorum was often outraged. In 1676, the Reverend Patrick Warner, Chaplain at Fort St. George, addressed the Court of Directors regarding the manner of life led by their servants there. He referred to their horrid swearing and profanation; to the woeful and abominable drunkenness and uncleanness that so much reign and rage among the soldiery, and also reporting the circumstance that one Mr. Mallony, formerly Surgeon's mate in the Presidency, and now Surgeon's mate in this place, and another Barnes, were constant companions of any of the young men in whatever debaucheries they were guilty of, and it gives ground for suspicion that they may be guilty of leading them thereto. In March 1680, the subject of marriages was discussed at one of the *Consultations* of the Governor in Council, and this is the record of the circumstance,—“That it is our interest to allow of marriages with Portuguese half castes, especially our men with their women, to prevent wickedness, and in regard there is not English women enough for the men, and the common soldiers cannot maintain English women and children with their pay as well as they can the women of the country.” Between 1685 and 1689 two churches had been erected in White Town, or Fort St. George; there was a very good hospital in the town, and the Company's horse stables were neat.

In 1707, it is on record, that “the Company has a pretty good hospital at Calcutta, where many go in to undergo the penance of physic, but few come out to give an account of its operation.” The Company had also a pretty good garden that furnishes the Governor's table with *herbage* and fruits; and some fish ponds to serve

his kitchen with good *carp*, *callops* and mullet. All sorts of provisions, both wild and tame, being plentiful, good and cheap, as well as clothing make the country very agreeable. The garrison of Fort William then consisted of two or three hundred soldiers, more for to convey their fleet from Patna with the Company's saltpetre and piece goods, raw silk, and some opium belonging to other merchants than for defence of the port.

In 1739, the officering and marching qualities of the Mahratta troops, and particularly of their cavalry, attracted notice; they were described as more capable of resisting fatigue than any other troops in India; their marches being often fifty miles per day, as “never eating anything that has life, nor even killing the insects which molest them; however, a buffalo sacrificed with many strange ceremonies, atones for the blood of their own species which they have shed in war.”

In 1740, we read that Chunda Sahib in storing Trichinopoly with “a great quantity of grain” looked upon his so doing “as the best security amongst a people who were very little skilled in the use of canuon, or other engines of battery.”

In 1743, a Register of all marriages, baptisms and funerals performed in the Presidency was for the first time instituted at Madras.

In 1745, the garrison of Fort St. George numbered 300 Europeans of all classes; but of that number only about 200 were soldiers; when in 1746 the fleet consisting of nine ships of sizes, under command of M. De la Bourdonnais, arrived off Fort St. David, the proportion of sick on board was between three and four hundred out of a force of three thousand, who had come direct from the island of Mauritius; and when in September of the same year the fort of Madras surrendered after a siege of five days, the number of killed out of the above numbers amounted to five men; of the besiegers, not one. In the month of December the system then in operation in the French army, as indeed it was up till very recently, of allowing the troops to forage for themselves on service was the occasion of the surprise and defeat of a body of them near Cuddalore; “every man was straggling; some were cutting wood to dress their meals, some were cooking” when they were surprised by large bodies of native horse and foot. Thus early did the neglect of auxiliary arrangements for a force induce disaster.

In January 1747, a ship from England arriving in the Madras Roads while the French still held Fort St. George, she was boarded and immediately captured by them, as a result, it was said, of a great part of the crew being prostrate by scurvy. Thus was the vessel, a rich cargo, and £60,000 in bullion lost, it may be said in consequence of neglect of sanitation.

On the 6th of October, the forces of Admiral Boscawen, that had early in the previous August been landed for the attack, were withdrawn, they having suffered so severely in consequence of exposure during the rainy season that out of 6,000 who had landed only two months previously, the casualties by sickness thus induced added to casualties in battle, 1,065 perished in that short

time; the sailors of the fleet were accordingly re-embarked, the soldiers marched to Fort St. David. And now we meet in the Proceedings of Government, which meantime had become re-established in Fort St. George, with a record of measures directly bearing upon army sanitation: It was ordered that "the military and others that were in the late engagement with the French at Pondicherry having suffered extremely for want of tents, the Storekeeper do make a sufficient number as fast as possible." Orders were issued at Fort St. David, that "the Steward provide 300 head of live cattle, the best that can be got, besides 100 more to be salted up; also 350 hogs and a sufficiency of all sorts of provisions fit for the garrison, particularly a large quantity of salt fish and a very large supply of good firewood; that the Storekeeper do provide 50 leagers of good Columbo or Batavia arrack, and that the warehouse keeper do lay up in store six months rice for 1,000 men, and that none be expended out of that store till he receives orders." These particulars, accordingly, indicate what in those days were looked upon as requirements of troops in relation to their food and the spirits allowed them.

Fines were levied upon soldiers for certain offences, notably neglect to attend divine service or indecent or irreverent behaviour while present. The money so forfeited was ordered to be applied to the relief of the sick among them.

A detachment of troops being landed at Madras from Bombay, it was "agreed that they be stationed at the Company's Garden, and that the steward have orders for dieting them; and that a table be kept for the officers at the Company's expense, the same being usual in such cases."

It having been agreed to discharge such *peons* as were thought unfit for service, a review was accordingly had on 17th July, when eight hundred and sixty were rejected and dismissed the service." The *peons* were the "progenitors" of the *sepoys* of later times.

William Belsches or Belcher is the name of the first medical officer of the Company's service on the Madras Establishment. On 18th July 1747 he wrote thus,—“The number of irregularities that of late have been committed in the hospital, such as absenting themselves from it without license, getting drunk &c., there appears to me, as I hope it will to your worship, &c., an absolute necessity of having a timely stop put to it, as many of the people by it render ineffectual all means that are made use of for their recovery, and always greatly protract their cases. What I would propose is to have a guard under the direction of a proper officer appointed to prevent their straggling about, which is the only means I can think of to put a stop to this growing evil, as the *peons* that are appointed for that service in no shape answer the intention of their being there.” This gentleman accompanied Colonel Clive's expedition to Bengal in 1756. He became Colonel Clive's Private Secretary, and was killed in the attack on the Nabob's Camp 4th February 1757.

Restrictions were placed upon the sale of arrack within military bounds.

As the troops employed at Cuddalore were falling sick

extremely fast, and the monsoon near at hand, Admiral Boscawen, who commanded there, and had also the rank of General, proposed to break up the siege. He accordingly ordered proper barracks for the men and "lodgings" for subaltern officers to be got ready, adding, "But as we have no barracks for so great a number, such of the black people's houses as stand most convenient to be made use of for the purpose."

Towards the end of July 1748, a representation was made to Mr. Belsches or Belcher, surgeon, by the mates of the hospital, of the great hardship the sick and wounded laboured under for want of the common necessaries of life in consequence of the absence of the steward, who was sick and had not furnished his *conicopy* with money. Mr. Belcher on this advanced money for the purpose. The Government approved, and directed him to see that the sick and wounded were taken care of. He made several further advances, but experienced much delay and difficulty in obtaining repayment. At this time there was comparatively a lull in operations between the French and English in Southern India; both powers accordingly sent their troops, or a portion of them, to different native chiefs. No information is now available as to the sanitary arrangements, if any, that were made for those so lent; but it is evident that the men were little thought of by those who levied them, they being on all sides described, irrespective of their nationality, as "drunken Europeans."

In 1749, two widows, it is assumed of officers, having petitioned the Government of Madras, were severally granted a pension at the rate of 8 pagodas per month each.

Three soldiers who had been at the siege of Cuddalore, having become unfit for duty, "and must have been put upon the list of Invalids where they would have been an expense to your Honors, which might have continued many years, they being all young, and two of them were cripples when they first entered the service, they were accordingly sent home as charter party passengers by the ship *True Briton*."

The troops were in the habit of purchasing meat privately. Beef and pork were sold to the troops at the rate of one and a half small fanams a pound. Rice was ordered only to be exposed for sale in small quantities as it is a perishable article.

Pensions were granted in 1750 to the families of *sepoys* killed in action.

In 1751, Mr. Robins delivered in his estimate of the charge of building an hospital amounting to 8,492 pagodas, "which is deemed so necessary a work, is ordered to be set about as soon as possible and the said estimate to be entered hereafter."

The officers' tents being very large and inconvenient for carriage, ordered that they be all, except six, altered to the size of the officers' tents in the King's service.

It was deemed advisable to add to the strength of the local force by enlisting 200 Abyssinians, as they are esteemed to be men of more valor than the *peons* commonly to be procured in Madras. As also several "European stragglers" were known to be about the country, authori-

ty was granted to enlist such of them as were desirous to engage.

The expenses of keeping a table and conveying inland the necessary stores having become burdensome to the Company, the system was discontinued, a money allowance being made to officers in place of it; to the officer commanding Rs. 15 per day, Captain Rs. 6, Lieutenant and Surgeon each Rs. 3, Ensign Rs. 2.

In 1752, the Court of Directors wrote thus to the Government of Fort St. George: "Complaints having been made to us that the surgeons of our hospital do not give due attendance on our sick and wounded military, and that it is the custom for the surgeons to take their pay during the time they are (not?) in hospital.

"We direct that for the future the surgeons give a due and regular attendance on the sick in the hospital, and not take the management thereof monthly as has been the practice.

"That nothing be stopt from the sick or wounded military in the hospitals but the charge of their provisions, that is to say, so much only as they usually give for their diet when in health.

"We also direct that one of the Council by turns do visit the hospital at least once in a week or oftener if you shall think it necessary, and report to the Board whether the surgeons are regular in their attendance and give all the relief in their power to the sick, that they be kept clean and have the proper provisions.

"That the Major do also inspect the hospital in like manner and make his report to the Governor; and that you annually send us an account of the military who have been sent into hospital, inserting the disorder of each man, when he was received, and when he was discharged.

"And we further direct that in case our surgeons are remiss in their duty, or unequal to their employment, you are, without regard, to dismiss any such person our service."

(To be continued.)

BENGAL NOTES.

ARRANGED BY SURGEON-MAJOR F. R. HOGG, A.M.D.

(Continued from page 250).

CAMPBELLPORE.

A military post on the Indus 54 miles south of Peshawur, 14 from Attock, and through a hot, dusty, dull, out-of-the-way, isolated, little sandy oasis,—a very healthy station occupied by a Cavalry regiment or a battery of Artillery. No civilians, no metalled roads, scanty rainfall, tantalizing clouds: plenty of wild sheep, and in the luxuriant corn abundance of quail. Ice and other necessaries procured by country cart from Rawul Pindee; and at Campbellpore people can save money.

DERA ISMAEL KHAN.

On the right bank of the Indus: sea elevation 600 feet with very slight slope for drainage; the country a flat, hard surface of stiff impervious clay without a blade of grass excepting where well irrigation supports trees, gardens and crops. Distant 1,521 miles from Calcutta No metalled roads. Rainfall 8 inches, ranging from 3 to 12. The

station, occupied by an infantry detachment, 2 regiments of Punjab Cavalry and 3 of Infantry, is very hot from June to August; the mean temperature January 50, June 92, September 85, November 61. Resembling other isolated almost rainless districts, enjoys comparative immunity from cholera. Wells from 20 to 30 feet deep, with 3 to 9 of water containing frequently ammonia, nitric acid, chloride of sodium, alkaline sulphates in abundance: have been blamed for causing characteristic sores personally treated at Mooitan. People who for all purposes use Indus river water, entirely escape. In old dirty wells the water, of a somewhat flat earthy taste, becomes offensive after standing, according to Dr. DeRenzy. But for the boils a very healthy station, and the types of fevers, dysentery and hepatic affections not severe.

DINAPORE.

In the Benares district, on the right bank of the Ganges, a few miles higher up than Patna, the route one continuous city hemmed in between the river and the railway. Sea-elevation 212 feet. Soil alluvial clay with a subsoil of sand over occasional patches of kunkur; the freely irrigated country extensively cultivated; and, without forests, jungles, or marshes, is generally flat. Floods or droughts, scanty rainfall, mildew, blight, insects, locusts, may account for sickness and distress. At times certain localities have been under water, and when the river subsides large mud banks are exposed. Rainfall 34 inches. Prevailing winds from east to west,—the latter when unseasonable injurious to palms, wheat, barley and opium. In the hot weather, from middle of March to that of June, tatties in suitable positions are serviceable. The cold weather runs from November to March, and the climate may be described as a compromise between the damp of Bengal and the dryness of the North-West Provinces. Well water, (6 to 30 feet) oft impregnated with salts of lime, is not so good for drinking purposes as that of the river. What with nullahs, flat country, peculiar soil, native villages or muggy air, the conservancy arrangements in certain months are by no means easily managed in this old cantonment. In Dr. Hunter's exhaustive account Patna is described as a dirty city,—the dust and mud alternating. The fruits include mango, mahwa, apple, pomegranate, loquats, figs; and amongst vegetables are cucumbers, melons, carrots, cabbages, turnips, pumpkin, beans, sweet potatoes. Cows cost 10 rupees each; oxen 30 the pair; sheep 20 and pigs 100 the score. Besides porpoises and long-nosed crocodiles in the river there are edible tortoises and a species of lobsters, prawns, shrimps. In the district are hares, duck, quail, ortolans, also bears, jackals and striped squirrels. In one year 229 deaths were attributed to wolf bites and 248 to snakes. The mean temperature of Patna is,—January 61. February 66, April 86, June 88, September 83, November 70, according to Blanford. The troops consist of a battery of Artillery, a line regiment of Native Infantry. Some pensioners settle at Dinapore. The Patna civilians include those connected with opium, the railway, public works, irrigation, and educational departments. In the large city cholera, an endemic disease, appeared in the gaol in November 1871 at Patna, and simultaneously in the cantonment of Dinapore during the prevalence of easterly winds, veering to