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Salt Starvation in British India – Consequences of High Salt Taxation in the Bengal Presidency, 1765 to 1878.

Although much attention has been focused on the Salt Tax in 20th century British India, it is in the earlier period of British rule, especially in the Bengal Presidency that the tax was far higher and the consequences far greater. This essay seeks to investigate the level of salt taxation between 1765 and 1878 and its effects on the retail price of salt relative to wages. It also explores the physiological necessity for salt and the peculiar nature of salt hunger, and the particular consequences of a high Salt Tax in times of famine.

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Little seems to have been written by modern historians about the physiological consequences of salt deprivation that might have resulted from the high Salt Tax in British India. Occasionally, there are brief references to salt being “a basic necessity of life” (Brown 1989, 236), but without amplification. Writers on famine in British India seem generally to have ignored salt intake as a nutritional factor. The indexes to Bhatia’s *Famines in India* (Bhatia 1967), and Seavoy’s *Famine in Peasant Societies* (Seavoy 1986), for example, have no references to salt. In recent years there has been much publicity about the evils of excessive salt consumption, and this may have caused some to suppose that salt was unnecessary. Thus, Weber writes of Gandhi: “Generally, however, the thrust of his medical arguments, which should be much applauded by those stressing the link between salt and hypertension, was that a normal diet provided the salt needed for the body without the addition of sea or rock salt which in fact was toxic” (Weber 1997, 80). Probably the best overview of the Salt Tax and the need for salt in India is in Denton’s *The Hunger for Salt* but, understandably given the massive scope of the book, this is restricted to a one-page summary and is mostly concerned with the twentieth century (Denton 1984, 84-5).

Gandhi’s salt march has tended to focus attention on to the Salt Tax in the twentieth century, whereas the Salt Tax was much greater in the earlier period of British rule – especially in the Bengal Presidency. Consequences could be expected to have been greater, and thus easier to observe, when the tax was higher. For this reason, this essay concentrates on the situation in the Bengal Presidency from 1765 to 1878. It seeks to investigate the level of salt taxation over that period and its effect on the retail price of salt relative to wages; the physiological necessity for salt and the peculiar nature of salt hunger; the minimum salt intake necessary to maintain health and to recover from illness; actual salt consumption; and the particular consequences of a high Salt Tax in times of famine.

Salt Taxation and Prices

Salt in Bengal had been taxed relatively lightly prior to British rule, but then became very heavily taxed (Parliamentary Papers 1856, 142-153; Ray 1929-30). Under the Mughals, the retail price of salt varied considerably, according to the degree of local

monopoly and difficulty of supply, but was generally cheaper, relative to wages, than it became under the British (Sarkar 1987, 66-9,95; Marshall 1976, 130-5). The Mughals had levied a tax on salt as it passed up the River Ganges to the interior. This had been at the rate of 2 ½ per cent on Muslim, and 5 per cent on Hindu traders. In addition, local rulers had sometime imposed small tolls. In the early years of East India Company rule, a small “tax” had been levied by imposing transit duties and a high ground rent on some salt works.

Swingeing taxation of salt developed from the establishment of the Exclusive Company by Clive in 1765. This private company, owned by the East India Company’s senior servants, was given a total monopoly on salt. All production by others was declared illegal. This enabled the Exclusive Company to double the wholesale price of salt to Rs 2.47 a maund. [In order to compare like with like, prices have been converted, if necessary, into Company’s rupees with decimal points or fractions, and weights into maunds of approximately 82 lb (Maccauly 1816, 10-14).] In 1768 the Exclusive Company was forced to relinquish its monopoly on salt, and free manufacture resumed. The wholesale price fell to Rs 1.48, which included a Rs 0.3 tax to the East India Company.

In 1780, Hastings brought salt manufacture under government control again, under a complicated system of farming. The wholesale price was fixed at Rs 2, of which Rs 1.1 to Rs 1.5 went to the government as a “tax.” The farmers used their sub-monopoly to raise the price of salt excessively. In 1788, therefore, a system of direct government auctions was started. This “entirely failed to break down any sub-monopoly” and ‘great fluctuations occurred in the sale price’ until the auction system was changed in 1836, but it did have the effect of increasing the tax collected by the government to Rs 3.25 a maund. It remained at around this extraordinary level until 1878, when it was slightly reduced - to Rs 2.9 in Lower Bengal, and Rs 2.5 elsewhere in the Bengal Presidency (Strachey and Strachey 1882, 225).

The retail price of salt at the beginning of 1878 in Patna, Allahabad, and Lucknow was recorded as Rs 5 a maund (Department of Finance and Commerce 1885, 220). It seems probable that it was at about that level in the interior of the Bengal Presidency, depending on transport costs, in 1794, when the wholesale price averaged 3 ¼ rupees (Parliamentary Papers 1856, 146). In 1836, John Crawford described “a wholesale price of five rupees per maund upon the spot, and without reference to distribution over an immense tract of country, often without roads or bridges, for the most part with indifferent ones, and notoriously deficient in capital” (Parliamentary Papers 1836, Appendix 76: 196). He also referred to the situation in 1823, when “in many parts of the country the price rose to 12 rupees a maund for adulterated salt”.

In general, over those 90 years, wage inflation reduced the relative burden. In his account of rural Bengal written in 1794, Colebrooke describes the basic agricultural wage as ranging from half a rupee to one rupee a month. In addition he estimates the benefit of being allowed to cultivate some of the employer’s land as being worth, at the most, another seven rupees a year (Colebrooke 1806, 97). This gives a maximum monthly wage of Rs 1.6, and a minimum somewhere below Rs 1.1. By 1878, in the much enlarged Bengal Presidency, wages had risen considerably [as had prices], but in many areas, as recorded in *Prices and wages in India*, still only averaged three to four rupees a month (Department of Finance and Commerce 1885, 428-9). This is

probably an over-estimate for, as Datta has pointed out, the figures were often only collected in the towns or nearby (Datta 1914, 1: Appendix G, 244),and “Zemindars in Bengal...get their work done much cheaper”(246).

During those years, however, much effort had been expended in controlling the supply of cheap illicit salt into the Presidency. Among other measures:

A customs line was established, which stretched across the whole of India, which in 1869 extended from the Indus to the Mahanadi in Madras, a distance of 2,300 miles; and it was guarded by nearly 12,000 men and petty officers...it consisted principally of an immense impenetrable hedge of thorny trees and bushes, supplemented by stone wall and ditches, across which no human being or beast of burden or vehicle could pass without being subject to detention or search.

(Strachey and Strachey 1882, 219-20)

By 1878, therefore, it would have been much harder to obtain untaxed salt.

[By 1930, at the time of Gandhi's salt march, inflation had increased the monthly wage of a rural labourer in Bombay Province to about Rs 13.5 (Lal 1989, 28) but the Salt Tax had been reduced to Rs 1 ¼ a maund (Weber 1997, 84).]

The Need for Salt

In recent years there has been much publicity about the need to reduce salt consumption in societies where salt is added to many processed foods (Denton 1984, 584-7). [The health benefits of any general reduction in salt consumption are still being assessed, and contentious (Alderman, Cohen, and Madhavan 1998, 781-5).] It has tended to be forgotten that some salt intake is absolutely necessary; that people need salt, sodium chloride, to survive:

The chemical requirements of the human body demand that the salt concentration in the blood be kept constant. If the body does not get enough salt, a hormonal mechanism compensates by reducing the excretion of salt in the urine and sweat. But it cannot reduce this output to zero. On a completely salt-free diet the body steadily loses small amounts of salt via the kidneys and sweat glands. It then attempts to adjust this by accelerating its secretion of water, so that the blood's salt concentration can be maintained at the vital level. The result is a gradual desiccation of the body and finally death.

(Bloch 1963, 89)

Salt normally comprises about 1/400 of body weight (Marriott 1950, 6). In a 150-lb man this would be six ounces. In hot environments, especially when doing manual labour, people sweat heavily and lose considerable quantities of salt (35). In tropical countries “salt deficiency is perhaps the commonest of all deficiency states” (22).

The desire for salt is presumably in-built to ensure survival (Denton 1984, 604). Salt, up to a certain limit, is pleasurable to eat. Where it is plentiful, people eat more than

they need – and if the body’s mechanism for secreting it is impaired, more than is desirable. Unlike hunger or thirst, however, the desire for salt does not increase when reserves are low (Marriott 1950, 22; Dill 1938, 82). For this reason people receiving too little salt will find food bland, but often not realise why they are feeling listless, or worse. Similarly, those whose salt reserves have been depleted by illness will experience no added desire to consume salt. Even doctors sometimes fail to recognise that patients are suffering from salt depletion. As Dr Marriott has written in *Water and Salt Depletion*: “their deaths are ascribed to ‘toxaemia’ or ‘uraemia’ or ‘circulatory failure’ when they have, in fact, died from simple lack of salt and could easily have been saved” (Marriott 1950, 3-5). Since he was writing of the situation in western hospitals in the middle of the twentieth century, it can be appreciated that deaths caused by salt depletion in eighteenth and nineteenth century Bengal would have been even less likely to be correctly attributed.

Illness is a major cause of salt depletion (Black 1953, 305-11). People who are already low on salt are particularly vulnerable. Large quantities of salt can be lost in fever-sweat, in vomit, and most of all in diarrhoea (Marriott 1950, 32-4). This should be continually replenished. Severe diarrhoeas can drain as much as 1 ¾ ounces of salt from the body in a single day, and thus quickly lead to severe dehydration. Without intravenous infusion of saline solution – not an option in the period being considered – recovery would have been unlikely (Souhami and Moxham 1990, 849). However, milder diarrhoeas, which as any traveller can relate are common in India, can over a few days also lead to severe depletion (Marriott 1950, 33). Rehydration can only be effected with the intake of salt. Without this salt, however much water is drunk, recovery is impossible. Many diarrhoeas are self limiting – that is they terminate of their own accord, without drugs, after a few days. Rotavirus diarrhoea, which “is the commonest cause of diarrhoea in children up to 2 years old in the tropics” (Souhami and Moxham, 257), is an important example. It is essential to keep the body from dehydrating, and salt is necessary for this. The main ingredient of modern oral rehydration solutions is salt (257).

Mild salt depletion, resulting from insufficient salt in the diet, produces “extreme lassitude” (Marriott 1950, 40). This will, of course, reduce economic output. For people already on the edge of starvation, insufficient salt will set up a cycle of economic decline.

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Very small amounts of sodium may be present in unprocessed foodstuffs. These have been quantified by McCance (McCance 1936b, 647) together with the comment: “You will notice how little some of them contain, and appreciate that additional salt may be an absolute necessity when I tell you that I would have to eat more than twice my own weight of potatoes every day to get my physiological intake of sodium”. Meat contains more salt, but on the basis of McCance’s figures a minimum of 8 ¼ lb would have to be eaten daily. Many Indians were, of course, vegetarian. Even those that were not would have gained little from what quantity of meat they did eat, unless they were eating wild game, since domestic herbivores require salt in their feed (Denton 1984, 54). Coastal dwellers may have received some of their requirement from fish, and it can be assumed that although manufacture of salt from seawater was illegal they took advantage of the salt water for cooking.

Minimum Salt Requirement

Exactly how much salt the inhabitants of the Bengal Presidency required to maintain health is difficult to estimate. Need would have depended on such variables as body weight, metabolism, the work environment, and local climate. Some people sweat more than others, and some have a higher concentration of salt in their sweat (Ladell, Waterlow, and Hudson 1944, 491-7, 527-531). Different researchers have come up with different minimum salt requirements (Robinson 1949, 218-31). Under constant conditions, some people seem able to reduce the loss of salt in their sweat to very low levels (Conn 1949, 373-93; Dahl 1958, 1152-7). Acclimatisation may reduce salt need (Collins 1963, 716-20). Some indigenous people in areas where salt has been scarce historically, seem to have a very low salt requirement (Denton 1984, 43-4). In contrast, for many others, living or working in hot environments, high levels of salt consumption seem to be essential (Ladell 1944, 492; McCance 1936a, 245-268; Haldane 1929, 469; Dill 1938, 83-4). As Knut Schmidt-Nielsen has pointed out, “sweat contains a variable amount of sodium chloride, but always enough to cause a considerable salt loss when sweat is produced in quantities. A relatively high intake of sodium chloride is therefore necessary” (Schmidt-Nielsen 1964, 21). It is difficult, he also observes, to collect sweat and other samples without altering the body’s environment, and impossible to give general rules for cutaneous salt loss, “but we can assume that, at high sweating rates, the total loss may easily run to 10 to 30 grammes [0.35 to 1.06 oz] of sodium chloride a day” (5-8).

During the Second World War a number of investigations into the heat exhaustion of both British and Indian military personnel were conducted. It so happened that Dr Marriott, a consultant physician at the Middlesex Hospital in London, was posted inside the former Bengal Presidency:

It was my duty in India to do special tours in the hottest weather (June) to observe heat effects in such particularly hot stations as Allahabad, Cawnpore, Lucknow, and Bareilly. The tour of 1942 was particularly instructive, because it happened to be an unusually hot season (maximum shade temperature in the above stations were between 115° and 123° F. (46° and 50.6° C.) and because in that year – the first real war year for India – there was not adequate shade provision for men, nor was there general realisation of the importance of extra salt intake. During this hot season there were 1,959 admissions to hospital for heat effects and 136 deaths. I personally saw 400 cases.

(Marriott 1950, 35)

Similar salt depletion was reported among troops with heat exhaustion in Iraq (Ladell, Waterlow, and Hudson 1944). The daily hot station salt allowance was 21 grams, with another 10 grams estimated to be present in processed food, making a total of 31 grams, or 1.09 oz. Many other troops, it should be noted, found this intake adequate. In Iraq, a group of fit acclimatised men were subject to extensive tests in hot

conditions. The average loss of salt in their sweat was calculated as 17.6 grams a day. There was also a loss of at least 3 grams a day in the urine, giving a total daily loss of 20.6 grams, or 0.73 oz.

Since salt hunger is not related to requirement, it is impossible to adjust consumption to exactly meet loss in sweat and urine. There must always be a surplus available to cover possible need. Moreover, since without sophisticated medical examination it is impossible to tell which people have the more efficient salt metabolism, salt availability needs to be targeted at the level of those with the higher need.

In the Bengal Presidency less salt was necessary during the cool season. However, because of the nature of salt hunger, it is unlikely that consumption would have fully reflected this. Since the body cannot store excess salt for more than a few days (Dill 1938, 81-2), unnecessary salt eaten in cooler weather would have inevitably been excreted and thus wasted. Taking the figures given above as a basis for necessary intake in hot weather, it seems reasonable to assume a minimum average daily requirement over a year of at least half an ounce of salt. This is equivalent to 11.4 lb a year.

Taking this figure of 11.4 lb for an adult, the requirement for a family can be calculated. If it is assumed that an average family contained two adults and three children, with the children consuming half that of the adults, then a family requirement of 39.9 lb of salt a year results. This amount makes no provision for any wastage or illness. [It also makes no provision for the salt needed by cattle and other domestic livestock, which needed salt just as humans did. Salt deprivation reduces milk yields (Denton 1984, 44). The economic and nutritional effect of restricting the salt intake of cattle needs further research, as does the effect on cottage industries that used salt, such as tanning and textile dyeing.] 39.9 lb of salt is just under half a maund, which is a convenient measure to use in calculating cost.

Actual Salt Consumption

How much salt was actually consumed? As has already been seen, the price of salt was often about Rs 5 a maund [and sometimes much higher]. The minimum family requirement of half a maund would have cost Rs 2 ½ . In 1788 this would have represented about two months' income for an agricultural labourer, and by 1878 a month's or more. It is clear that with such high level of tax, the temptation would have been to economise on consumption.

Dr John Crawford, formerly of the Bengal Medical Service, in his evidence before the 1836 Parliamentary Select Committee on salt in British India, disputed the Salt Board's assertion that nearly 12 lb of salt per head was supplied to the population. He produced figures that gave a consumption of no more than 7.69 lb a head. With regard to consumption being curtailed because of the cost he said:

The Board of Customs however, will have it, that under no possible circumstances is it likely that a larger quantity of salt than 12 lb would be consumed by the people of Bengal. They insist that, 'the argument which holds good of the superior productiveness of low prices on all articles in general demand in civilised countries at home, is almost wholly inapplicable to the salt

trade in India, where the poorest individual gets what custom and convenience have taught him to eat, and where, such are the simple habits of the bulk of the society, little more would be used, whatever were the extent of the supply and then cheapness of the article.' My own opinion is, that a more unfounded opinion than this could not well be propounded. The people of Bengal, I have no doubt, should they ever get cheap salt, will consume it as largely as any other class of men.

(Parliamentary Papers 1836, 188)

Dr R. Moore, formerly medical officer in charge of Midnapore District, was similarly examined before the Select Committee of 1853:

Chairman: With regard to the salt revenue, have you any observations to make upon that subject?

Dr Moore: In the first place the poorer people cannot get salt. Many people have supposed that diseases arise in consequence of the deficiency.

(Parliamentary Papers 1853, 61)

Furthermore, salt was often adulterated, as an 1852 petition from Calcutta testified:

Many proofs that the duty presses with very great severity might be given, but one must here be sufficient, namely, that out of Calcutta, as far as the North-west Provinces, pure salt, as sold by the Government or imported, is almost unknown to the mass of the people; adulterations of all kinds are resorted to reduce its price to their means of purchasing; a wholesome condiment is thus often rendered unwholesome, and to all purposes for which pure salt is necessary the duty is a prohibition.

(Parliamentary Papers 1856, Appendix 7, 489)

Further compelling evidence comes from an official source, the Commissioner's 1868-69 *Report on the Administration of the Inland Customs Department*:

114. VII That, excluding the salt-sources and their immediate vicinity, the average consumption of adults in the belt of country extending for 100 miles outside our cordon, where untaxed salt is available, is certainly not less than 13 lb per adult and probably materially exceeds this amount.

114. VIII That, both by actual enquiry and by reference to population and supplies, it is proved that the average consumed by adults within Line cannot exceed 8 lbs.

(Inland Customs Department 1869)

If the average was 8 lb, many must have consumed less.

Abhay Charan Das in *The Indian Ryot*, printed in 1881, wrote:

Then again there is a still more wretched creature, who bears the name of labourer, whose income may be fixed at thirty-five rupees per annum. If he, with his wife and three children, consumes twenty-four seers [49 lb] of salt, he must pay a salt duty of two rupees and seven annas, or in other words 7 ½ per cent income tax. Now we leave it to our readers to judge, whether the ryots and the labourers can procure salt in the quantities they require. We can positively state from our own experience, that an ordinary ryot can never procure more than two-thirds of what he requires, and that a labourer not more than half.

(Das 1881, 363-4)

From the above testimonies, it seems clear that salt consumption was severely reduced by the high level of Salt Tax, and at times was perhaps not sufficient to restore even the losses in sweat. This would have led to “a mild breathlessness at first and sense of fatigue” (McCance 1936a, 251), with consequent loss of economic output and resistance to disease. For the very poor, extremely low salt levels would possibly have resulted in “cramps, weakness, lassitude, and severe cardio-respiratory distress on exertion” (267). They would have been particularly at risk from salt-depleting illnesses, such as sweat-inducing fevers, and especially from diarrhoeas. Whatever the minimal salt requirement of the healthy, those with fevers and diarrhoeas would have been adversely affected by any restriction on salt intake needed to replace losses.

Salt and Famine

In times of famine there was no money to buy anything except basic food. As W.W. Hunter, Director-General of Statistics to the Government of India, wrote in 1874 of lower Bengal, where wages were higher than in the northwest:

A household of four persons, say two adults and two children, reduced to one meal a day, consume 1 ½ seers of rice. In order to enable the father to do his daily work, he would require a second meal of half a seer, making 2 seers a day. If the daily consumption dropped below this, severe suffering would have to be endured. Now, at even the point that I take to be the beginning of the famine, namely, Rs 4 a maund, or 10 seers to the rupee, this lower scale of diet would cost Rs 6 a month. When rates rise to 8 seers for the rupee, or Rs 5 per maund, 2 seers a day would cost Rs 7 – 8 [Rs 7 ½] a month. Yet about a fourth of the families in Bengal do not earn more than Rs 5 a month even in prosperous times.

(Hunter 1874, 21-2)

In such circumstances, there would have been no spare money to buy salt.

The Inland Customs Commissioner’s report for 1877-78 records that 10,918 people were arrested, of whom 2600 paid fines averaging Rs 6.52, and 3252 went to prison in default (Inland Customs Department 1878, para 28). [These figures only cover the jurisdiction within the vicinity of the Customs Line, and there would have been other arrests for salt offences in other areas of the Bengal Presidency.] This was a large increase on the previous year. The Commissioner wrote: “This is owing to the distress

arising from the high price of grain having caused some persons to resort to irregular means of livelihood; scarcity and distress causing the Customs Laws to be made frequently offended against in common with the other laws of the land”.

The “high price of grain” is a reference to the famine that had devastated the North-Western Provinces and Oudh. The official figure for famine induced deaths in the 14 months from November 1877 to December 1878 was 1,266,420 (Parliamentary Papers 1881, 203). Later enquiries and research has concluded that this was a considerable under-estimate (Parliamentary Papers 1881, 243-50; Arup). The most detailed investigation into actual cause of death seems to have been by a Mr Roberts, who visited 62 villages in the districts of Agra, Etah, and Mainpuri. His figures (Parliamentary Papers 1881, 245) give totals:

Hunger	278
Bowel-complaints	285
Small-pox	310
Fever	1184
Other causes	240
Total	2297

Thus, he concluded that more people died of bowel complaints than of hunger.

The official “Statement shewing the number of deaths (by different causes) in the North-Western Provinces and Oudh” lists 165,334 deaths from “bowel complaints” excluding cholera, sharply up from 84,615 the previous year (Parliamentary Papers 1881, 232).

As has been seen, diarrhoea leads to a severe drainage of salt. The body cannot be rehydrated without consuming an equal quantity of salt. There was no remission of the Salt Tax despite the famine. The nature of salt hunger leads to it being given a lower priority than food hunger. Taking all these factors into account, it seems likely that many would have died from lack of salt. A similar situation would have occurred in the many other famines that ravaged the Bengal Presidency between 1765 and 1879 (Parliamentary Papers 1881, 1-264).

Conclusion

Absolute proof as to what occurred is unlikely to be forthcoming, and degrees of probability will have to suffice. It seems clear that those who were unable to obtain any salt at all would have died. How many were so poor as to die would have varied from year to year, but in time of famine they would probably have been numerous. Many more would have had their general health and resistance to disease affected by too low a consumption of salt. Some of these would have died from the secondary effects of reduced economic output or susceptibility to disease, or a combination of the two. It also seems clear that many of those with diarrhoeas, even though able to obtain enough salt for normal use, would have perished. Some would have died anyway, but it seems probable that the high Salt Tax would have considerably increased their number.

It will be difficult, if not impossible, to exactly quantify the damage to health caused by salt starvation. As has been seen, the symptoms of salt depletion were at the time usually unrecognisable, and would have been ascribed to other causes. Autopsy is presumably not an option, especially as most people were probably cremated. Moreover, there are probably too many variables to allow the use of the mortality and illness statistics from areas of India that had cheaper salt to draw accurate comparisons. Nevertheless, it is important to know whether the impact on health of the Salt Tax was relatively small or very significant. Using modern medical, statistical and historical knowledge, it may be possible to form a better picture of events; to assess the broad magnitude of any damage to health, and roughly quantify excess mortality. Experiences in modern famines could perhaps assist interpretation; there may be useful parallels in other countries. A fuller analysis will only become possible with contributions from experts in many different fields, and I hope this essay will encourage that process.

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