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D. G. Crawford.

HUGHLI

MEDICAL GAZETTEER.

BY

LIEUT.-COL. D. G. CRAWFORD, M.B.,

INDIAN MEDICAL SERVICE, CIVIL SURGEON, HUGHLI.

Published by Authority.

Calcutta:

BENGAL SECRETARIAT PRESS.

1903.

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INTRODUCTION.

As the Medical Gazetteer of the Hughli district is the first of a series of such histories in Bengal which it is proposed to publish, the circumstances under which they are being compiled may be described. I prepared a medico-topographical account of Jeypore, in Rajputana, in 1894, and with the approval of the Government of India and of the Director-General of the Indian Medical Service, Medical Officers in that Province were invited (in the case, however, of Native States, with the concurrence of the Chiefs, who would probably publish the works) to prepare similar histories of their own charges, and I was appointed to edit the series. A number of such accounts has now been published, including a general gazetteer of Rajputana by myself, and the Government of Bengal agreed to the voluntary compilation of similar histories for Bengal districts, the most meritorious of which were to be published under my editorship. A circular letter to Civil Surgeons indicating the objects, scope, and general order in which it was suggested that the different subjects should be treated, was issued in September 1899 and is reprinted at the end of this introduction. The Hughli Gazetteer, which shows considerable research on the part of Lieutenant-Colonel Crawford, is highly creditable to him, because he has been little more than a year in the district and has had a very large amount of professional work to perform. Dr. Crawford wrote for this gazetteer such a voluminous and valuable chapter on the history of the district that it has been decided by Government that it should be published separately, on the further ground moreover that it was beyond the scope of a medical account of Hughli. It may, however, be usefully read in connection with most of the special accounts of districts in Lower Bengal.

In some other chapters the author has written on subjects at greater length than was contemplated, but as he is peculiarly qualified to do so and his observations are always of value, they have been retained.

A complete gazetteer of this kind should be of great use in enabling all who are interested in municipal, and especially in sanitary matters, to read in a few pages what has been done in the past so that they may avoid a repetition of costly experiments which

have failed. If this alone should prove to be the result of the publication of the Gazetteers it will save far more than their cost by preventing much waste of time and money. Moreover, it will always be an advantage to have information of this kind in an accessible form, and it is besides desirable, as His Honour the Lieutenant-Governor has observed, in papers relating to the project, to take stock, as it were, of past work from time to time. A perusal of Lieutenant-Colonel Crawford's summary of the very varied opinions held by men of distinction in their own day, on the causation, for example, of the Burdwan fever, and of the views of others on sanitary measures in the Hughli town and district, will show how cautiously our theories should be formed, and, further, how much more deliberate we ought to be in giving practical and, perhaps, expensive, and, even dangerous, as well as, troublesome, effect to our deductions from them.

If about 1840, the instructions of Government on the suggestions of the late Sir J. Ranald Martin that medical histories of all important military charges should be prepared, had been carried out more extensively also in Civil Stations, and if such accounts had been amplified and kept up-to-date by succeeding officers we should have had an immense amount of information at our disposal; many disappointments and failures, would have been avoided; and, I may venture to add, much more progress would have been effected, for example, in sanitation, in the diminution of mortality in Jails, and in the popularization and systematization of all forms of medical and charitable relief.

T. H. HENDLEY, COL., I.M.S.,

Inspector-General of Civil Hospitals, Bengal.

Circular No. 76, dated Darjeeling, the 15th September 1899.

From—COLONEL T. H. HENDLEY, I.M.S., C.I.E., Inspector-General of Civil Hospitals, Bengal,

To—All Civil Surgeons.

I HAVE the honour to forward a note on medico-topographical reports (Note A), and a general outline for guidance in the preparation of them for medical charges in Bengal.

2. With the sanction of Government, I have the honour to request you to be good enough to prepare such a history of your district, and

I shall be glad if you will complete it within a year and send it to me then, or earlier if it is ready, in order that I may edit it for publication.*

3. In my general note I have stated the chief reasons why it is desirable to prepare medical histories, and the following extract from a Resolution of Government, No. 4123S., dated 14th August 1899, on the report of the Sanitary Commissioner, Bengal, for the year 1898, deals still further with the subject. After giving a table showing the mortality from fever and cholera from 1893 to 1898 and the rainfall in each year, the report proceeds thus:—

"A glance at these figures will show how difficult it is to establish an immediate connection between meteorological conditions and the prevalence of these two diseases. In 1894, when the rainfall was almost exactly the same as in the year under report, the mortality from each of them was the highest in the quinquennium, and the decrease in fever in 1897, which was noticed in last year's report as being due to the early cessation of the rains in the previous year, has occurred to a still greater extent in 1898, in spite of the abundant rainfall of 1897. It appears impossible to generalise on this subject with the means at our disposal; but much may be expected from Colonel Hendley's proposal to prepare medical histories of each district, which shall combine information as to the character and peculiarities of the country in each particular instance with observations on the varying local influence of meteorological conditions on the public health."

4. I would regret to impose any further labour on Medical Officers if it were not that I believe that each of the proposed works will, when finished, net only be authoritative, but that it will save time and money—time, because many reports are at present required which will no longer be necessary, and money, because all past experiments will be recorded and need not be again repeated at the expense of the public. Moreover, as I will prepare most of the statistical *data* in my own office (*vide* attached list of tables), the distasteful and trying part of writing such reports will not fall upon Civil Surgeons, to whom will be left only that which is most interesting and which they alone can supply, and which I feel sure they will find pleasure in preparing.

5. A general outline has been drawn up, because it is desirable that there should be some uniformity in the reports, but it is not intended to unduly interfere with the freedom of authors, and, for the same reason, my work as editor will be of a general character only,

*In a subsequent circular it was stated that only such histories as were approved would be published.

and if I have occasion to differ in any points, my observations will usually take the form of foot-notes.

I have given a long list of subjects, but in a particular district some may prove to be of comparatively little or of no importance, while others will require treatment at some length. All this is left to the discretion of writers, but it is requested that the general order may be preserved, and that everything may bear more or less on the health of the people. Speculative matter should be avoided, but this is not intended to exclude the expression of matured opinions on the causation or prevention of disease.

6. I am circulating a copy of my own medical history of Jeypore, in order to show how I have carried out the scheme myself, but the attached outline (Note B) gives my more matured views.

It will not be possible to introduce such elaborate meteorological *data* in your accounts, because Jeypore had a first-class observatory, and I fear it will not be easy to give the medical history of each month, because it has not been the custom in Bengal to prepare monthly dispensary returns; but I hope something will be possible under both heads. I am having general meteorological tables prepared, which you may be able to supplement by local tables, especially as regards rainfall.

7. The ordinary rules for preparation of manuscripts for the press should be adhered to, viz., to write only on one side of the paper, to write clearly, to print unusual proper names, and to leave a margin for additions, etc. Type-written reports would of course be preferred.

8. I now proceed to make a few notes on each chapter of the outline:—

Table of contents.—This serves as an index and repeats all the headings I have given in my outline which have been taken up in your reports.

Chapter I—General description.—This chapter is introductory, and very little elaboration is required of each detail, except perhaps under the heads "Soil" and "Water-supply."

Chapter II—Products.—Very little information is required, and that only as it affects the comfort, the food, and health of the people. A little, however, is desired on each point, because the products of a

country greatly influence the modes of living and powers of resistance of human beings to disease. If there are any special medicinal plants cultivated in the area, something should be written about them, and the average bazar prices of some of the most useful indigenous drugs should be given.

Chapter III—Population.—I will furnish most of the statistics. In this or in Chapter V any special experience as regards the influence of race, religion, and custom on disease should be stated, and the influence of occupation, viz., whether as agriculturists, tradesmen, artisans, hunters, etc., should also be noticed here.

Chapter IV—Communications, &c.—It is particularly valuable for inspection purposes if distances to important centres are given. The materials of houses, whether of stone or mud or whether the roofs are of stone, tiles, or thatch greatly influence the comfort and health of the inhabitants.

Chapter V—History.—The value of this chapter is obvious. The first part need be only very brief; the second bears very much on disease. There are several well-known works, as, for example, Mr. Risley's *Ethnology of Bengal*, which will help much in the study of these questions; Mr. Grierson's *Linguistic Survey of the Languages spoken in Bengal* will be also useful.

Chapter VI—Meteorology and Climate.—I propose to send tables for this chapter showing the meteorology of the principal divisions of Bengal, and will do what I can to furnish figures for districts, especially for rainfall, but something will be possible locally, especially as regards variations in the different *data* in each year for a series of years. In the preparation of all series it is advisable to take decennial periods, viz., 10, 20, 30 years, or more, in order to simplify the calculation of means. Little information unfortunately is available regarding electric phenomena, but in some Bengal stations something of importance can be stated regarding earthquakes.

Chapter VII—Effects of Climate.—This chapter is simply the application to disease of the facts which are recorded in Chapter VI. I will endeavour to supply a map.

Chapter VIII—Towns and large villages, and Chapter IX—Hospitals and Dispensaries, &c.—Sufficiently explain themselves, but great care

should be taken to enter the dates of foundation of the different institutions and the names of donors and other particulars relating to endowments.

Chapter X—Medical aid; Chapter XI—Other institutions, and Chapter XII—General remarks on disease in the district.—In these chapters the Medical Officer will have most scope for showing the results of his own experience.

Chapter XIII—Food, Famine, &c.—Much valuable information can be given here by which time and money can be saved in case of famine or scarcity in the future.

Chapter XIV—Government of the district and town in Health and Sanitary matters.—Careful attention to the different headings may often save in the future both time and trouble.

The last two chapters will be useful to all officers.

As regards bibliography, the list of works in the foot-note of Dr. W. W. Hunter's *Bengal Gazetteer* may be consulted, as well as the libraries of the Collectors. These officers will no doubt be glad to help Civil Surgeons in every possible way in carrying out the present project. I will also endeavour to furnish lists of works relating to Bengal, some of which may be of local use.*

9. I shall be very glad to furnish any information that may assist you in preparing the report.

NOTE A.

Medico-Topographical Reports.

At the time of the Indian Medical Congress and shortly afterwards it was repeatedly stated, both in Europe and in this country, that the officers of the Indian Medical Services had not done as much as might have been expected to advance the knowledge of tropical diseases. Considering the difficulties under which they have laboured and their numerous duties, this is not strictly correct. Much has been done, but it has nowhere been systematically recorded so as to be accessible to every one. It is very desirable, therefore, that this reproach should be removed, and this can be partly effected by the preparation of medico-topographical histories of all stations and districts, which, when complete, would form collectively a medical gazetteer

* A Bibliography has now been printed.

of the country, as they would utilize ephemeral publications and show where more solid works on Indian medical matters could be found. Such a local history was written by the writer at Jeypore, and, with the approval of the Government of India, is being prepared by medical officers in all stations in Rajputana under his editorship; while he is at the same time bringing out a general medical history of the whole of that province so as to complete the gazetteer. Six local histories have already been written by busy Agency Surgeons. As far back as 1835, the Governor-General approved a plan of Sir Ranald Martin's to prepare works which were somewhat similar to those now under consideration, and the "Report on the Climate and Topography of Calcutta," which was written by Sir Ranald himself, is the most important of them. There are very few others in existence, and those are out of date.

The preparation of such histories does not require literary ability nor any great amount of labour in men who know their work, but is a good proof of zeal and of fitness for higher employment. If carefully done, it will save much time and trouble in the future, and not unfrequently needless expenditure and the repetition of costly experiments.

It has been done for all fortified places and cantonments in Germany, and there is no good reason why we should be behindhand in India as regards all our important stations in Bengal.

A lengthy sketch has been drawn up for the guidance of officers, but it is not wished that it should be slavishly followed. It will be convenient if the general order is followed; but additions may be made as well as alterations in accordance with the wishes of the writers, who will also best be able to judge of the relative importance of each head in their own districts. They should bear in mind that the object is to obtain a correct record of the past and present health and disease conditions of the district, of the best modes of preventing and of treating the latter, and that all the information they may give should bear directly on these points. No one should be deterred from writing by want of literary experience.

Accuracy should be the great aim in all cases, and if this is obtained, the results will be sure to be of great value.

The information should be brought up to date, and every new incumbent of a charge should from time to time add fresh notes, so that the work may always serve as a correct and useful account of the district.

It is proposed that the histories shall be printed. When ready they should be forwarded under registered cover to the Inspector-General of Civil Hospitals, Bengal, who will edit the series. They should be completed within a year if possible.

NOTE B.

GENERAL OUTLINE FOR GUIDANCE IN THE PREPARATION OF MEDICO-TOPOGRAPHICAL ACCOUNTS OF MEDICAL CHARGES.

TITLE.

Medico-Topographical Account of

TABLE OF CONTENTS.

CHAPTER I.—GENERAL DESCRIPTION OF THE DISTRICT.

Geographical.—Area, boundaries, latitude and longitude, proportion of mountains, river and lakes, valleys and plains, deserts, cultivated and non-cultivated areas, forests, pasture and arable land.

Geological, including soils and rocks.

Water-supply.—For irrigation, for drinking, for navigable purposes. Drainage, wells and depth of them and of the sub-soil water. Water-logging and its influence on malarial fevers and fecundity, as well as on the development of the inhabitants and domestic animals. Abundance or otherwise of water in the wells. Modes of using well or tank water, and of protecting the former from contamination and of preventing people from falling into them. Cost of making wells and the materials used in making them.

CHAPTER II.—PRODUCTS.

Mineral, including precious stones, useful minerals, and the modes of obtaining them by deep or surface mining, &c. Building materials, their distributions, weight and cost.

Vegetable.—Forest produce, such as timber and minor jungle products; for example, galls, lac, canes, firewood, &c. Garden fruits and vegetables, wild or cultivated.

Animal.—Wild and domestic animals of all kinds, including edible and non-edible; fish, birds, reptiles and insects, snakes (poisonous and non-poisonous), locusts, &c. The benefit derived from them or the injuries they inflict on man and animals (tigers, panthers, &c.), or the damage they (pigs, deer, &c.) do to crops.

Under vegetable products also full details of crops and useful plants, with injury by blight, &c. Relative amount of autumn and spring crops.

CHAPTER III.—POPULATION.

Distribution of population into towns and villages (urban and rural). Races religions, ages, conditions as regards marriage, widowed, single, infirm, insane, blind, deaf, halt. Occupation (domestic, agricultural trades, &c). These particulars should be illustrated by tables, which can be very easily obtained from the last census reports. Education, languages, dress, &c.

Chapter IV.—Communications, &c.

Rail, road, water. Distances from the capital to the principal towns or markets, from the capital to the capitals of the next districts and of the province, and from important centres to other centres (illustrate by polymetric tables). Amount of carriage available (with a view to carriage of grain in famine time). Habitations of the people and effects of material and position on overcrowding, morals, and health.

Chapter V.—History.

Brief general history, especially to illustrate the prosperity, health, and development of the people, and the survival of strong over weak tribes and races.

This chapter would also include anthropology, physiognomy, ethnology, folklore, customs, and superstitions which bear more or less remotely on health and disease.

Chapter VI.—Meteorology and Climate.

Rainfall.—Distribution, amount, variation from the means, the maxima and minima, as well as the means of a series of years.

Temperature and *Barometric* readings, both with similar details.

Wind velocity and direction, including storms and hailstorms. Tables, curves, wind-roses, etc., may be used to illustrate this subject.

Electric Phenomena.—Earthquakes, landslips. Information as a rule will only be available in the capital, and even there will frequently only be very imperfect. The Meteorological Department would perhaps be able to furnish some information. What is wanted everywhere is some attempt to more accurately study the influence of local climates on the spread of disease in men, animals, and even plants. Any observations, however few and apparently trivial, will be of use.

Chapter VII.—Effects of Climate.

The effects of climatic conditions and of variations from the normal standard on health and disease may be shown for each year in a period of, say, ten years, and also month by month. The differences of sickness and mortality, so as to show the effects of season. Suggestions may also be made for reducing excess of disease at particular seasons. A map should be prepared on which may be marked the principal towns and villages, dispensary sites, municipalities, and other important *data* connected with the health and welfare of the people. In all the above particulars their direct bearing on health and sanitation should be clearly brought out.

Chapter VIII.—Towns and large villages.

These should be carefully described under the following heads: Areas, boundaries, Division into wards, Water-supply, Drainage, Tanks, Rivers, Streets, Roads, Lighting, Markets, Public institutions (Schools, Jails, Hospitals, Asylums, Slaughter-houses, Police-posts).

Means of disposal of the dead at burning-ghâts, in cemeteries, isolated graves, towers-of-silence, throwing bodies into streams, etc., burial or burning of certain castes or in certain disease, as, for example, children in small-pox. Income and expenditure of the municipality, particularly as regards medical relief. Distribution and occupation of the inhabitants.

Births, deaths, marriages or any unusual facts regarding them, with the causes. Instruction and recreation—*regular* (such as libraries, clubs, theatres, games); *intermittent* (such as fairs and religious gatherings. Disease is often spread from fairs and places of pilgrimage. It is necessary, therefore, to state what sanitary and other medical arrangements are made regarding them, and a full list of those which are held in the district, with dates and average attendance, should be given).

Education.—(Physical mental, and moral training). Whether sanitation is taught in the schools.

Sanitary arrangements, scavenging staff, sanitary inspecting staff, etc.

Disposal of Refuse.—Sewers, incinerators, latrines, urinals, ashpits. Conservancy generally. Insanitary trades and places in which they are carried on.

Chapter IX.—Hospitals and dispensaries in the town and districts, with particular details as regards the capital, and with plans or full descriptions of all.

Establishment; cost of all items. Endowments; subscriptions by different classes. Distance of the hospitals from prominent parts of the town. Income of the municipality. Percentage spent by it and by the District Board on sick relief. Other medical institutions.

Chapter X.—Medical Aid.

Vaccination, sanitation (including district projects, if not already described). Epidemics (including local history of the principal ones from the earliest times). Mode of dealing with them under each head. Cholera and other camping rounds and contagious hospitals. Shortcomings and desiderata under all these heads.

Medical aid available, official and non-official, with number of practitioners according to European and scientific methods. Indigenous systems—*Medical:* Baids or Kobarajas and Hakims; *Surgical*: Jarrahs, Satyas, or Couchers, Barbers. *Quacks* of all kinds. Indigenous drugs and their cost. Confidence of the people in the different systems. Effects of religion thereon. Treatment of diseases by the common people (actual cautery, charms, etc). Prevention of children's diseases by hyperlactation, or of pregnancy in the same way. Midwives or *dhais* and their management of pregnancy and childbirth, and diseases of women. Female medical aid generally. Superstitions regarding inoculation or vaccination. Prevailing ideas of the causes of local diseases. Prevalence of enlarged spleen,

anæmia, diarrhœa, dysentery, cancer, lupus, tumours, parasitic diseases, stone, goitre, rheumatism, harelip and other deformities, rickets, syphilis, hernia (causes and treatment), acquired immunity in venereal diseases, enteric fever, etc., and resistance of certain tribes, as for example those in the Himalayan Terai, to malarial fevers.

Chapter XI.—Other Institutions.

Jails, including medico-legal work, *post-mortem* rooms, poisoning, infanticide local peculiarities of crime, sale of poisons, influence of the conditions mentioned in previous chapters on the spread or prevalence of certain crimes or injuries. Brief account of interesting medico-legal cases, specially if peculiar to the district.

Chapter XII.—Food, Famine, &c.

Food, labour rates. Famines—their history, medical arrangements for dealing with those of a local nature, and references to other proposals, such as construction of famine camps, irrigation works, etc. Prices of food-grains for a series of years. Use of stimulants. Modes of cooking. Condiments. Ordinary market rates of food. Clothing. Quantities of supplies ordinarily available. Effects of clothing of the people and of prices of salt, fats, etc., on the health of the people.

Chapter XIII.—General remarks on disease in the district.

Medical, surgical, venereal, endemic, epidemic, contagious. Influences of all the conditions previously mentioned on the prevalence or spread of disease (illustrated by dispensary figures), mortality tables, town and country. Emigration and immigration, with their effects in introducing disease and on the welfare of the people.

Recruiting for the army, police, or for the coolies in the same manner.

Effects of differences of religion and customs on health and disease. Effect of trade on the same. Propagation of diseases from animals to men or spread of the same by the use of certain kinds of food, as of worms from badly-cooked and unsound flesh, or of certain forms of paralysis from poisonous *dals* etc. The last part of Chapter VII may be considered more fully at this point if preferred.

Chapter XIV.—Government of the district and Town, as it relates to health and sanitation, by District Boards and Municipalities.

Local and special laws, rules, and regulations on the subject.

Chapter XV.

Lists of former heads of the district and of medical officers with dates of incumbency.

Chapter XVI.

Bibliography, showing the titles and places of publication of all books, memoirs, and printed papers which relate to the town and district, and especially those of medical interest or which have been written by medical men.

Index.

TABLE C.

List of returns to be sent to Civil Surgeons for the preparation of Medico-Topographical Histories.

1. Statement of births and deaths in the district for twenty years (from 1879 to 1898) and of diseases treated in the dispensaries.
2. Mortality from all diseases in the district for each month of the twenty years from 1879 to 1898.
3. Mortality from cholera during 20 years from 1879 to 1898 in the district.
4. Deaths registered according to age in the district during 17 years from 1882 to 1898.
5. Statement showing the strength of the two sexes at each period of life (census 1891) in the district.
6. Occupations of the people in the district (census 1891).
7. Table showing the number of afflicted in the district (census 1891).
8. Health and mortality of the district contrasted with the prices of food-grains and the rainfall.

PREFACE.

THIS report has been drawn up in accordance with the instructions conveyed in Circular No. 76 of 15th September 1899 from the Inspector-General of Civil Hospitals, Bengal. It has no pretence to be an original work, but is simply a compilation from various sources. In writing it I have acted upon Molière's maxim "*Je prends mon bien où je le trouve*," and have freely begged, borrowed, and stolen information from every source where I could find anything of use for my purpose. The parts which make the nearest approach to originality are the descriptions of the present state of the Hughli-Chinsura Municipality, and of some other places in the district, and those of some of the roads. The statistics of roads as regards length, breadth, material, and waterway of bridges are taken from a return published by the District Board.

The works of which I have made most use and on which I have drawn most freely are Wilson's "Early Annals of the English in Bengal;" "Hedges' Diary," edited by Colonel Yule; Toynbee's "Sketch of the Administration of the Hooghly District;" Buckland's "Bengal under the Lieutenant-Governors;" Cooke's Census Report of the district for 1891; and Hunter's "Imperial Gazetteer of India." Hunter's "Statistical Account of Bengal" has also been drawn upon; but as this work treats Hughli and Howrah throughout as one district, it has not been of so much use for this as it would be for other districts. For the purpose of this report I have read over forty books,—at least those parts of them which relate to Hughli,—and have gone through over a hundred annual reports of the Jail, Medical, Sanitary, and Vaccination Departments. Eight

tables of statistics were furnished by the Inspector-General's office.

To introduce into a medico-topographical report of Hughli district the first voyages of discovery of the Portuguese, and the early history of the East India Company, may seem to savour somewhat of the conduct of the writer who "*bellum gemino Trojanum orditur ab ovo.*" But in each case there is a certain appositeness in the subject, for the Portuguese were the first Europeans to settle in Hughli as well as the first to visit India; and Hughli was the head-quarters of the Company's settlements in the Bay for forty years before Calcutta was founded. In both cases, too, this ancient history is very short.

I have endeavoured to follow the Hunterian system of spelling, as a rule, as far as I could, except that I have throughout written the name of the district as *Hughli*, retaining the second *h*, not *Hugli*, as Hunter does. Nor have I carried the system to the extent of writing *Awadh* for Oudh, or *Lakhnau* for Lucknow, any more than I would spell Calcutta *Kalikata*, or Bombay *Mambai*. In quotations the original spelling has been retained.

I regret that I have not had the advantage of a longer personal acquaintance with the district. I joined this station for the first time in the latter half of September 1900. Up to that time no work whatever had been done upon this report. During the cold weather of 1900-1901 I rode over great part of the *Sadr* and Arambagh subdivisions, while inspecting dispensaries and vaccination, and collected materials for the report, the actual writing of which was begun in May and finished in December 1901; being carried on, of course, in addition to the usual duties of a Civil Surgeon. The Serampur subdivision being under a separate medical officer, I have little personal acquaintance with that part of the country; though I have been able, at various

times, to visit Serampur itself, Uttarpara, Bhadreswar, Sheorafuli, Haripal, Dwarhata, and Tarakeswar.

I have to thank a large number of friends for much help given me in the preparation of this report; Mr. R. Carstairs, I.C.S., Commissioner of the Bardwan Division; Mr. H. P. Duval, I.C.S., Subdivisional Officer of Serampur; Assistant Surgeons Kali Prosonno Kumar, of the Hughli Imambarah Hospital, and Guru Nath Sen, of Uttarpara, the latter of whom contributed the long list of indigenous drugs; Mr. E. W. Madge, of the Imperial Library; and, above all, Mr. T. Inglis, I.C.S., Magistrate of Hughli, and Mr. S. C. Hill, Officer in charge of the Imperial Record Office.

D. G. C.

December 1901.

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BENGAL.

DISTRICT

HUGHLI

Scale 1 Inch = 8 Miles

10 5 0 10



NOTE.

Area in Square Miles ... 1,223.

Population in 1891 ... 1,076,710.

REFERENCE.

Chief Town	○ HUGHLI
Sub-Division	□ SERAMPUR
Thana or Police Station	○ Chanditala
Town	• Paunán
Main Road	
District Boundary	
Sub-Division	
Railway	
Dispensary	×
Do. private	(×)

Engraved at the Survey of India Offices, Calcutta 1883.

Corrected up to 1900.

No 484-S. 1900.

Reg. No. 236, Civ. Hosp., Bengal.—Nov. 02.—250.

Litho., S. I. O., Calcutta.

HUGHLI MEDICAL GAZETTEER.

CHAPTER I.

GENERAL DESCRIPTION.

The district of Hughli (or Hooghly) lies on the west bank of the Hughli river, a short distance above Calcutta. It extends from latitude 22° 39″ to 23° 14″, and from longitude 87° 33′ to 88° 33″. Its form is roughly quadrilateral, the northern side being the longest, and the southern side second in length, while the western side is very short. On the east the river Hughli forms the boundary of the district throughout its length, from north to south. The other three boundaries are purely artificial, and are formed by the Bardwan and Bankura districts on the north, the Midnapur district on the west, and the Howrah district on the south. The French small territory of Chandarnagar, with an area of only about four square miles, lies about three miles south of Chinsura on the river Hughli, the Hughli district surrounding it on the other three sides.

The present area of the Hughli district is only 1,189 square miles. It is thus one of the smallest districts in Bengal. It is divided into the following subdivisions and thanas :—

Sadr Subdivision.	Sq. mile.	Serampur Subdivision.	Sq. mile.	Arambagh Subdivision.	Sq. mile.
Hughli thana ...	30	Serampur thana ...	22	Arambagh thana ...	147
Balagarh „ ...	86	Haripal „ ...	115	Goghat „ ...	146
Dhaniakhali „ ...	135	Kristanagar „ ...	63	Khanakul „ ...	111
Pandua „ ...	111	Singur „ ...	71		
Polba „ ...	80	Chanditola „ ...	72		
Total ...	442	Total ...	343	Total ...	404

The district contains eight municipal towns, viz., Hughli-Chinsura, Bansbaria, Serampur, Bhadreswar, Baidyabati, Kotrang, Uttarpara, and Arambagh. The subdivision, thana, and town, of Arambagh all bore the name of Jahanabad until 1900, when the name was changed to Arambagh, to avoid

confusion with the subdivision and town of Jahanabad in Gaya, by Government Notification No. 36J.D., of 19th April 1900, published in the *Calcutta Gazette* of 25th April 1900. The whole district of Hughli originally formed a part of the Bardwan district. It was made a separate magisterial district in 1795, and became a full Collectorate in 1819. In 1843 Howrah district was constituted as a separate Magistracy, though it still forms a part of Hughli Collectorate in all Revenue matters. Many other minor changes in the area of the district have since taken place, an account of which will be given in the History.

Almost the whole area of the district appears a dead level to the eye, although there actually is a small rise from the south and east towards the west and north, while in the extreme west of the district, round Badanganj, a slight undulation is perceptible. There are no mountains, hills, or valleys in the district: the highest elevations to be seen anywhere are the high banks of the large rivers, or the banks thrown up in the excavation of large tanks. East of the Dwarkeswar river, the only visible elevation of the soil, other than the banks of rivers and tanks, is a sandy ridge, about ten or twelve feet higher than the surrounding country, which runs for some distance parallel with and a little to the north of the (Dwarkeswar) Kana *Nadi*, a mile south of Mayapur, in Arambagh thana. This ridge is from fifty to a hundred yards in breadth, and was probably thrown up, long ago, by the river near whose bank it lies.

The district has three large rivers—the Hughli which forms its eastern boundary, and the Damudar and Dwarkeswar, which run through it from north to south. In addition to these, there are a very large number of smaller *khals* and streams, many of which are offshoots from the larger rivers. The chief of these are the Kana *Nadis* (three streams, entirely separate and far apart from each other, have this name), the Kana Damudar, the Saraswati, the Magra, Bali, and Baidyabati *khals*, the Muneswari, the Ghia *Nadi*, the Amudwara, and the Ranaband *khal*. All these rivers and streams are described at length further on.

There is nothing in the district worthy of the name of a lake, the largest body of water being the Dhankani *jhil* or swamp, in Singur *thana*, the area of which was considerably diminished by the Dhankani drainage scheme, completed in 1874, by which the water of the *jhil* was drained off into the Hughli river, *viâ* the Bali *khal*. A long artificial cut carries off the water of the *jhil*, and finally terminates in the Bali *khal*. It has also a communication with the Baidyabati *khal*, farther north. Towards the end of the rains, great part of the district is more or less converted into a swamp, by the cultivation of rice in the saturated ground.

There is nothing in the district which could be called forest. On and near the banks of the Hughli, in Balagarh *thana*, at the north-eastern corner of the district, there is a little jungle, consisting partly of forest trees, but much more of scrub and undergrowth. As a rule, much thicker and denser

jungle will be found in the more rural parts of the riverside towns, than in any of the rural areas of the district, all of which are in a state of high cultivation, with the exception of a long strip a little to the west of the Damudar river. This strip extends across the whole breadth of Arambagh *thana* from north to south, being about fifteen miles in length in that direction (in Hughli district), and five to six miles in breadth. It is heavily flooded by the overflow of the Damudar every year in the rains, and consists of a sandy soil, cut up by numerous spill channels, and covered with a dense growth of coarse grass. It is almost uninhabited, the villages in it, if villages they can be called, being few in number, and consisting usually of only a few poor huts, the inhabitants of which gain a scanty living by cutting the grass which grows so plentifully there, for thatch and forage, eked out by a few patches of *rabi* crops of various kinds in the cold weather. Most of this part, however, is uncultivated. The land immediately on the west of the Damudar is mostly highly cultivated with various *rabi* crops; the jungly strip begins from one to two miles west of the river. There is also a little jungle covering the ruins of Satgaon.

With the exception of the strip mentioned above, almost the whole area of the district is cultivable and is highly cultivated. It is almost entirely arable, *i.e.*, rice land. No measurable area of land is set apart as pasture land; the only pasturage in the district is found on the rice fields in the cold weather, after the crops have been cut.

The soil is alluvial throughout the district, though the extreme west comes very near to the laterite of Midnapur and Bankura. The soil consists of a layer of surface soil, or alluvium, about ten feet in thickness, over a bed of thick clay. Here and there great deposits of sand have been left by rivers, as at Magra by the old Damudar, and in the jungly strip west of the present Damudar.

As regards the area under cultivation, this is well shown by the statistics on the next page regarding the cultivation of rice, taken from the final report of the winter rice crop of 1900.

Cultivated lands are classified under three chief groups—*suna*, *sali*, and *chur*. The first variety, *suna* lands, are generally high lands, situated in close proximity to the villages. They produce two crops a year—one of *aus* rice or of jute, harvested about September; and one of *rabi* or spring crops, reaped in February or March, and consisting of various cereals and pulses. *Sali* lands usually lie further from villages, and are lower. They produce only one crop a year, *aman* or winter rice, which forms the main crop of the district. *Chur* land is the low-lying land along the sides of rivers, where new alluvial land is forming, or in the islands in the rivers, usually called *churs*. It is very fertile, owing to the constant deposition on it of silt by floods, and produces two crops a year, one of *aus* rice or jute, and a

Statistics regarding the cultivation of rice.

Subdivision ...	Sadr.	Serampur.	Arambagh.	Total.
Total area of subdivision, in acres ...	282,880	219,520	258,560	761,000
Total area estimated to be under cultivation in acres.	176,800	160,000	167,700	504,500
Approximate normal area under winter rice in acres.	115,900	85,000	78,900	279,800
Approximate area under winter rice last year (1899) in acres.	116,600	100,500	80,000	297,100
Estimated area under winter rice this year (1900) in acres.	90,000	100,500	50,000	240,500
Taking 100 to represent the normal outturn, how much represented the outturn last year (1899).	120	75	80	The low percentage in 1900 is due partly to scanty rainfall both in early and late part of season, and partly to floods in September.
Taking 100 to represent the normal outturn, how much will represent this year's outturn (1900).	70	65	50	

second of some *rabi* crop; the former, however, is a precarious crop, being liable to be lost by early floods. The best *suna* land is usually more highly rented than the best *sali*, which, however, is more valuable than inferior *suna*.

The name Hughli is supposed to be derived from the word *hogla*, the name of the coarse reeds which once abounded on the banks of the river at the spot. This the Portuguese corrupted into Golin. The time-honoured spelling of the name is Hooghly, now modernised into Hughli. Hunter omits the h, and spells it Hugli. Various old documents, of the seventeenth century, quoted in the notes to Colonel Yule's edition of Hedge's Diary, spell the name Hugly, Hughley, Hughly, Hukely, Hukley, Hewgly, and Hewghly; Hamilton, in the beginning of the eighteenth century, writes Hughly; Ives, in the middle, Houghley; Stavorinus, towards the end, Hougly; Francis, who was a frequent visitor during 1779, writes Hughley and Hughely. In Seton Karr's Selections from the *Calcutta Gazettes*, the *Gazette* of 5th August 1784, in a rhapsody on Bandel, spells the name Houghly. In Long's Selections a quotation from Proceedings of Council of 29th October 1763 makes it Hooghley. The anonymous traveller, quoted by Wilson, who describes the place in 1712, calls it Hughly.

**Rivers.*—The most important river which comes in contact with, for it does not intersect, the district, is of course the Hughli. Strictly speaking,

* The river system of the district has been carefully described, at some length, because the health and prosperity of the people so greatly depend on it. The great epidemic fever was, to a considerable extent at least, due to the silting up of rivers.

the river Hughli extends only from the north of Hughli district, where it is formed by the confluence of the "Nadia rivers," to the sea; but the name is often used for the whole stream, from the Ganges to the sea. Taking it in this larger sense, the river is divided into three distinct and different portions: first, the "Nadiya rivers," from the Ganges to the north of Hughli district; second, the portion from there to the northern limits of the port of Calcutta; and third, its remaining course to the sea. During the first and third portions the river is under stringent supervision; in the second, which almost exactly corresponds to that part which forms the eastern boundary of the Hughli district, it is free from control. The description of the Nadiya rivers appertains to the districts of Murshidabad and Nadiya, rather than Hughli; some account of this part of its course is necessary, however, to understand the second part. The third portion belongs entirely to the districts of Howrah, Midnapur, and the 24-Parganas, and cannot be described here.

The first section, forming the Hughli headwaters or Nadiya rivers, is composed of three streams—the Bhagirathi, the Jalangi and Bhairab, and the Matabhanga. The length of this section measured from the offtake of the Bhagirathi from the Ganges, to its junction with the Jalangi near Nadiya town, is about 164 miles; from thence to Santipur, opposite Guptipara, in the extreme north of the Hughli district, shortly below which the junction with the Matabhanga is effected, is about 15 miles more. The places where these streams take off from the Ganges are constantly shifting up and down that river.

Hunter, in his article on the Hughli river in the "Imperial Gazetteer of India," states that the keeping open and supervising of the Nadiya rivers is one of the great tasks of fluvial engineering in Bengal. A special staff is employed to watch and control their movements, and weekly reports of their condition are published in the *Calcutta Gazette*. All three of these rivers in the dry season dwindle to a series of deep pools, connected by shoals over which the depth of water runs as low as half a foot, if artificial means are not employed to form narrow channels through the shoals. Each of these rivers is frequently closed during the dry weather, while in most years the depth maintained does not exceed two feet in the shallower places. It is, however, partly due to the careful attention thus paid to the headwaters of the Hughli, that Calcutta has not shared the fate of almost every other deltaic capital in India, and been shut off from the sea by the silting up of the river upon which its prosperity depends.

"During these dry months (Hunter writes) the waters of the Hughli are supplied by infiltration. The delta is in fact a mere sieve of silt and mud, through which vast quantities of water percolate into the deep trough which the Hughli has scooped out for itself. There is, as it were, a moving mass of water flowing underneath the surface of the land into the Hughli

drain. This perpetual process of subterraneous infiltration renders the Hughli almost independent of its headwaters, so long as the depth of its main channel or drainage line is maintained. After passing Sukhsagar, it is impossible to tell whether the Nadiya rivers are open or closed, as the proportion of water they supply is a mere nothing. Thus, in 1869, two of the three headwaters were closed, and the third supplied only twenty cubic feet of water per second. Yet within twenty five miles of their junction, the Hughli was a wide, deep stream; a stream which now supplies Calcutta with over eight million gallons of water per diem (besides another four millions taken off lower down), without decreasing to any appreciable extent the water in the navigable channel from Calcutta to the sea.

"But in order that this vast process of infiltration should go on, the Hughli bed must lie at a considerable depth below the surface. This depth is secured by the scouring of the current during the rainy season. The spill streams from the Ganges, which form the headwaters of the Hughli, then pour down enormous masses of water. At some places, a single one of the headwaters when in overflow exceeds a mile in breadth. Their accumulated floods rush down to form the Hughli, scoop out its channel to a great depth, and so maintain its efficiency as a line of drainage for subterraneous infiltration during the rest of the year."

Attempts to form permanent heads for the Nadiya rivers have long been abandoned. But it has been found that training works can be utilized with much success, in addition to the removal of accidental obstructions, such as trees or sunken boats, over which, if they were left alone, a deposit of silt and mud would speedily form a *chur* and obstruct the channel. It has been found that, by guiding the rivers into channels varying, according to the volume of the water, from 50 to 100 feet wide, a velocity of one and-a-half to three feet per second can be maintained during the dry season, with a depth of three feet. The struggle still remains a drawn battle, and the Nadiya rivers maintain a hand-to-mouth existence. Even in the dry season there has been no deterioration of these rivers as a whole since 1820.

The *Bhagirathi*, the most northern and western of the three Nadiya rivers, takes off from the Ganges near Suti in the Murshidabad district. Its only tributary of importance is the Adjai, which flows through the Birbhum district—a large river when in flood, a small trickle in the hot weather.

The second of the Nadiya rivers is composed of the *Jalangi* and *Bhairab* (literally "The Terrible"). The Bhairab takes off from the Ganges near Akriganj, about 43 miles below the head of the Bhagirathi. Once it was a great river, flowing south to the sea through the districts of Murshidabad, Nadiya, and Jessore, but for many centuries had been a dead river, until in 1874 a great flood on the Ganges forced open its silted-up mouth, and again raised it into a considerable stream, which joined the Jalangi 40 miles further south. The Jalangi was an important river up to 1874, when, on the re-opening of the Bhairab, its mouth closed, and the 36 miles above its junction with the Bhairab are now practically a dead river. The united stream, however, still bears the name of Jalangi in its course of 111 miles from the junction of the two heads to Nadiya, where it joins the Bhagirathi.

The *Matabhanga* takes off the Ganges near Maheshkunda, in the Nadiya district, 40 miles below the Bhairab mouth. During the first 40 miles after leaving the Ganges it is known as the Hauli or Kumar. At about the fortieth mile the true Kumar river, also known as the Pangasi, branches off to the south and east, and flows down to the Sundarbans, *viâ* the Ichamati, in the 24-Parganas, carrying off the greater part of the waters of the river. The remaining portion takes the name of the Churni, and joins the Bhagirathi near Chogdah, or Chagda, about three miles below Balagarh. The total length of the Matabhanga from Maheshkunda to Chagda is about 121 miles.

The second section of the Hughli, where it flows along the eastern border of the Hughli district, is about 64 miles in length. This is the only portion of the river which is not under control by engineering works. In its upper part, from Santipur to Bansbaria, the river bed is about two miles in breadth; but in the cold and dry seasons the greater part of this bed is filled with sandy *churs* and islands, through which two or more deep water channels wind a tortuous course. The chief channel is sometimes close to the Hughli bank, sometimes on the Nadiya side. Many of these islands must have existed for a long time, and have practically become permanent: they bear large crops, considerable villages have been built upon them, and trees may be seen which, to judge from their size, cannot be less than fifty years old. Still, even these large islands maintain a very precarious existence. One large island formed opposite Sindeswartola, below Hughli College, in the seventies: trees grew upon it to a considerable size, but fortunately no inhabitants had permanently settled upon it, before it was swept away in one night in the rainy season of 1898. From Bansbaria to Calcutta the river varies in breadth from about half to three quarters of a mile, and since the island just mentioned was swept away, it contains no island of any size permanently above water, though there are many sandy *churs* which impede navigation in the dry season.

No affluent of any importance joins this section of the Hughli below the Matabhanga or Churni. In the Hughli district the following streams or *khals* join the river, from north to south, but none are of much importance as contributing to its volume, and indeed they are as much effluents as tributaries:—the Kana *Nadi*, Kunti *Nadi*, or Magra *khal;* the Saraswati, the Baidyabati *khal*, the Bali *khal*. On the left bank also no stream of importance enters the river in this section: the Kanchrapara, Bhatpara, Ishapur, Titaghar, and Khardaha *khals*, are all little more than large ditches.

One great tributary formerly flowed into this section of the Hughli, the Damudar having once joined it near Naya-Sarai. The history of the change effected when the Damudar altered its course will be considered under that river.

A considerable bore comes up the Hughli from the sea at full moon in the dry season. Stavorinus, writing in 1769, states that the bore rises six or

eight feet or even higher, and opposite Fulta runs along the west bank, so that ships anchor safely at Fulta. The bore now, at its highest, may be some two feet high when it reaches Chinsura. Stavorinus also says "the river is at its lowest in the months of March and April. At Chinsura, where our Company have their factory, there is but a narrow creek left, at that time, at low water, running along the opposite shore." The river still maintains that course, though to nothing like so great an extent; but still, opposite Kankinara, at low water in the dry weather, people bathing can wade out, without going out of their depth, for fully one hundred yards, and the deep channel runs along the east bank. He states of the bore "that its greatest strength is between Serampore and Hughli," which is certainly not the case now, as it steadily diminishes in force in its passage up the river.

When the English first settled at Hughli in the middle of the seventeenth century, they founded their factory near the middle of the town, which extended along the river bank for two miles, between Chinsura and Bandel. At this place there then existed a small indentation in the river bank, for the space of 300 yards, causing a small whirlpool, which the Bengalis called *Golghat*. In the two and-a-half centuries which have elapsed since that time, the river has probably changed, more or less, dozens of times. Curiously enough, however, such an indentation in the river bank still exists, and still causes a miniature whirlpool. This may be seen a short distance south of the jail, and is probably due to the Jubilee bridge.

This section of the Hughli has silted up to some extent within the last three centuries, and indeed within the last century. Ships that were at that time considered large went up to Satgaon up to the middle of the sixteenth century, when the Saraswati silted up, and the Portuguese settled at Hughli. Admiral Watson in 1757 took his flagship, a line of battle-ship of 64 guns, up to Chandarnagar; with difficulty, it is true, but still he did it. As late as 1821, Danish ships of 700 and 800 tons used to be piloted up to Serampur, and it is said that occasionally ships as large then got up to Chinsura and Chandarnagar. After 1825, the Danish ships unloaded their cargoes into country boats at Cossipur.

There are traditions to the effect that twice, in 1738 and 1770, the Hughli has been fordable. It is stated that persons waded across the river at several points in 1770, and one report mentions that "in 1738, 9th October, Thursday, noon, at ebb-tide, the river retired, leaving its bed dry opposite Calcutta." What truth there was in such statements it is now impossible to say. If any such phenomena occurred, they were probably due to temporary upheaval, and the river soon regained its ordinary depth.

The third section of the river from Calcutta to the sea does not concern the Hughli district. It is only necessary to say that it is about 80 miles in length, and receives two great tributaries on the west bank, the Damudar

and the Rupnarayan. In charts of the seventeenth century the name of Hughli is only applied to the river as far as Hughli Point.

History of the Hughli.—Hindu tradition says that the Bhagirathi* was cut by King Bhagirath to bring the waters of Ganga from the Himalaya to Ganga Sagar. The legend is given at length in Hunter's Imperial Gazetteer, article Bhagirathi, and quoted under the heading of Folklore in historical work. The name of Hughli has been given to the river only since the town of Hughli rose into importance.

It appears probable that at one time the main stream of the Ganges flowed more or less where the Hughli now runs. Dr. Buchanan Hamilton in his survey of Eastern India says on this subject:—

"I think it not unlikely that, on the junction of the Kusi with the Ganges, the united mass of water opened the passage now called the Pudma, and the old channel of the Bhaugiruthee, from Sooty to Nuddea, was then left comparatively dry. In this way we may account for the natives considering that insignificant channel as the proper continuation of their sacred river as they universally do—a manner of thinking that, unless some such extraordinary change had taken place, would have been highly absurd."

Another Hindu legend accounts for the change in the course of the river from the Bhagirathi to the Padma by saying that formerly the Ganges flowed down the Bhagirathi, until a demon, who had his abode near Rampur Beaulea, swallowed it. This demon was a geological one: formerly a band of stiff clay crossed the present course of the Padma from north to south, till it was burst through by some heavy flood, and the main stream of the Ganges took its present course more or less down the Padma. This may probably have occurred when the Kusi, which is said to have once flowed into the Brahmaputra, turned westwards to join the Ganges. Such change, if it really took place, must have occurred many centuries ago. There is now no trace of the bed of a river the size of the Ganges along the course of the Hughli. Such great fluvial changes have undoubtedly occurred several times in Bengal. The Kusi, as mentioned above, is supposed to have once flowed into the Brahmaputra, and well within historical times, in the eighteenth century, it flowed past Purnea town, whereas it now runs some forty miles further west. Little more than a century ago, about 1787, the Tista ran through Dinajpur district, and so southwards to the Ganges; while it is not much more than half a century since the main stream of the Brahmaputra, which formerly flowed past the civil station and town of Maimansinh or Nasirabad, suddenly turned westwards down the Jamuna.

Some ten or twelve years ago, in 1889–91, much alarm was felt lest the Kusi, which had steadily worked westwards for the past two hundred years,

* The Ganges from its source to its entrance into the plains is also usually spoken of as the Bhagirathi.—T. H. H.

should break back to the east. Its main channel, at the north of the Purnea district, had then swerved to the east of the river bed, and had begun to erode the eastern bank. A number of small spill channels from the Kusi during the rains flow south-eastward through the Purnea district, the Panar, &c., probably more or less the remains of old beds of the river. Had the Kusi suddenly broken eastwards, its waters would have torn a new course through a populous part of Purnea district, and probably joined the Mahanadi or Mahananda, which flows southwards from Nipal through Purnea and Malda, to join the Ganges opposite Murshidabad district. It was pointed out at the time that, while the devastation and ruin which in that case would have been worked in Purnea district would have been immense, they would be a mere trifle to what might possibly have followed. Had the enormous mass of the Kusi waters been suddenly added to those of the Mahananda, itself a great river, and their united volume poured into the Ganges opposite the offtakes of the Nadia rivers, there was at least a possibility that the effect might have been to turn the main stream of the Ganges down the Hughli once more. The results of such a change may be left to the imagination. Had such a diversion happened, it would have occurred in the height of the rains, and when the rivers were in full flood, and it would have taken place suddenly. Any one can imagine for himself what the effects would be if the Hughli, say at Calcutta, while maintaining its present depth and rapidity, were suddenly quadrupled in breadth. The Purnea District Board at the time attempted some small training works on the Kusi spill channels, but human power and skill could do little to affect the course of a river the size of the Kusi. Fortunately, however, the eastern trend was merely temporary, and the Kusi resumed its progress westwards.

It is almost beyond doubt that the main stream of the Hughli once flowed down the Saraswati, a few miles west of its present course, as far as Sankrel, a little below the Botanical Gardens at Sibpur. It then ran upwards along Garden Reach, in exactly the opposite direction to that which it now takes, but along the same bed, as far as Kidderpur, where it turned down Tolly's Nulla, and followed that course past Kalighat, as far as Garia, where it again turned to the south, down a small stream which is still known as the Ganga *Nadi*, or Burha Gunga. This *khal* passes Rajpur and Baruipur, and finally loses itself in the low lands further south, through which the Hughli once made its way to the sea. The sacred character of the Ganges to this day attaches to the course down Tolly's Nulla to Garia, and thence down the Ganga *Nadi* stream; and does not pertain to the Hughli below Kidderpur. It is curious that this sanctity does not attach itself to the Saraswati, at least not to nearly the same extent as it does to the present course of the river past Chinsura and Serampur; while Garden Reach, which certainly was a section of the old river, now has no special sanctity at all.

Rennell says of the Saraswati:—

"I suspect that its then course, after passing Satgong, was by way of Adaumpoor, Oompta, and Tamlook, and that the river called the old Ganges, was a part of its course, and received that name, while the circumstance of the change was fresh in the memory of the people. The appearance of the country between Satgong and Tamlook countenances such an opinion."—*Memoir*, page 57.

There is nothing improbable in this supposition, but that the Hughli once joined the Rupnarayan at Tamluk is mere speculation.

Little trace is left of the old bed of the Hughli; along the present course of the Saraswati, Tolly's Nulla, and the Ganga *Nadi*, there is nothing to show that a great river once took this course. At present the Saraswati at Satgaon is ten or twelve feet wide by six inches to a foot in depth, in the hot weather; while there is a distinct bed of about a quarter of a mile in width, and possibly ten or twelve feet in depth, which is more or less filled in the rains in heavy floods. These dimensions, of course, are small compared to the size of the Hughli, but in Bengal, when a river has once become "dead," its bed soon silts up and becomes obliterated.

The *Saraswati* leaves the Hughli at Tribeni Ghat, and flows in a general southward direction to join the Hughli again at Sankrel, as stated above. As far south as Chandarnagar its course is parallel to, and within three miles of the Hughli, it then trends slightly inland, and flows past Chanditola. In the sixties the Saraswati was a completely dead river, represented only by a chain of pools, connected by swamps; but it was re-opened in connection with the Eden canal scheme, a cut being formed to connect it with the Kana *Nadi* near Singur. It is now a tiny stream in the hot weather, but does not absolutely dry up The name used to be spelt Sursuttee or Sarsuti.

The *Damodar* or *Damudar* rises in the Chutia Nagpur watershed, and after a south-easterly course of about 350 miles falls into the Hughli just above the James and Mary shoals, which it has helped to deposit. It has two main sources,—two streams which rise in the Hazaribagh and Lohardaga districts respectively,—which unite in the former district, and flow westwards, receiving the Kunar from the north. After passing through the Manbhum district, it receives its largest tributary, the Barakhar, also from the north. It then forms the boundary between Bardwan and Bankura for some distance, then enters the Bardwan district, passing a few miles to the south of Bardwan town. So far its course has been east, and slightly south, but soon after passing Bardwan it bends abruptly to the south, at Sulalpur, and passes through Hughli district, where it cuts off the Arambagh subdivision from the rest of the district. After leaving Hughli it passes southwards through the Howrah district, and enters the Hughli opposite Fulta.

In its course the Damudar exhibits the two great and opposite features of an Indian river; in the earlier part of its career through the uplands of Chutia Nagpur, it has a rapid flow, and brings down enormous quantities of silt, which it

deposits in the second part of its course, after it has assumed the sluggish deltaic type, giving off distributaries instead of receiving tributaries. The change of type occurs about where it turns to the south soon after passing Bardwan. The Damudar is navigable for large country boats all the year round as high as Ampta, in the Howrah district, and in the rains up to its junction with the Barakhar.

History of the Damudar.—Formerly the Damudar flowed into the Hughli at the village of Naya Sarai, some ten miles above Chinsura, and two above Tribeni. A glance at the map will show that if the easterly course of the Damudar be continued in a straight line east, instead of bending abruptly to the south after passing Bardwan, it would meet the Hughli about Naya Sarai. It therefore appears probable that the river once followed this direct course. The only trace of such a course now to be seen, however, is found in the immense quantities of very fine sand underlying the surface soil near Magra. The southward break probably occurred at least two centuries ago. But for a long time after its first break southwards the Damudar still continued to flow into the Hughli at Naya Sarai, only taking a much more circuitous, instead of the old direct course. Leaving the present bed about Salimabad in Bardwan, it followed the course of the stream now known as the Kana *Nadi*, flowing south and a little east, then almost due east, to Gopalnagar near Singur, then north and a little east. From either Sulalpur at the southward bend, or from Salimabad, to Naya Sarai, is about 27 miles in a straight line; from Salimabad to Naya Sarai by the circuitous course of the Kana *Nadi* is about 45 miles, omitting minor twists and turns, which would probably add another 15 or 20 miles more, This appears to have been the course of the Damudar, up to the middle of the eighteenth century, when it broke southwards from Salimabad into its present course. The date of the change is said to have been 1762. Rennell's atlas of Hindustan, published in 1781, shows the Damudar in its present bed, and the Kana *Nadi* as the "Old Dummoodah." In the seventeenth century the Damudar was often called the Moundelgat [Mandalghat] river.

The Damudar embankments.—The Damudar has always been famed for the devastation caused by its floods, the rainfall on the Chutia Nagpur plateau rushing down the river with great rapidity. In 1787, on the 11th October and following days, such a flood almost entirely destroyed the town of Bardwan. Other great floods are recorded in 1823 (on the 2nd October), 1833, and 1856 (17th August), and of course the greatest of all must have been when, in or about 1762, the river broke southwards into its present course; but of this change I have not been able to obtain any record. Since very early times attempts have been made, usually with no great success, to restrain the river by embankments. Most of the embankments now maintained were in existence before the East India Company succeeded to the *Diwani* of Bengal. The papers on the subject in the Bengal Office go back to 1771, and in the middle of the last century a number of papers on the Damudar embankments were

published among the "Selections from the Records of the Bengal Government," No. 12 in 1853, No. 15 in 1854, No. 29 in 1858, and No. 40 in 1863. Various Acts dealing with these embankments have from time to time been passed among them Regulation No. XXXIII of Code of 1793, Regulation VI of 1806, and Act VI (B.C.) of 1873, passed by the Bengal Government on 2nd December 1873, and sanctioned by the Government of India on the 20th December. Controversy raged for long round the question of the maintenance of the Damudar embankments, and the obvious desirablity of protecting the whole area of country liable to flood had to yield to the equally obvious impossibility of doing so. Interwoven with the question of the protection of the country near the river from flood by embankments was that of flushing out the dead rivers, which took their origin from the Damudar, by sluices in the embankments. It was finally decided that the embankments on the east bank should be completely maintained, those on the west bank abandoned. A minute by H. Ricketts, I.C.S., dated January 1852, suggests that, if the plan of leaving the right bank unprotected be adopted, it may be desirable to have sluices in the left bank. He writes :—

"It is remarkable how entirely the drainage of the country has been lost sight of, though no less necessary than embankments. I learn from Lieutenant Beadle that in many parts the natural channels have in the long course of artificial things silted up, and that the khals remaining are quite insufficient to carry off even the rain that falls, much less floods."

[Lieutenant Beadle was then Secretary to the Military Board, afterwards Superintendent of Embankments.] Mr. A. R. Young, I.C.S., in another minute written in 1852, states that it has been suggested to carry two great embankments, one from Salimabad to Howrah, the other from Sankrel to Ampta, and that the first might be used to carry the East Indian Railway then about to be constructed. Other suggestions were, a straight cut from Sulalpur on the Damudar to Naya Sarai, thus making an attempt to restore the river to its original bed ; the opening of the head of the old Damudar at Salimabad, and connecting it with the Baidyabati *khal* ; and the construction of a canal from Sulalpur to Baidyabati. It was considered that the diversion of the Damudar, if practicable, might endanger the port of Calcutta. Fourteen miles of the right embankment of the Damudar were removed in 1856. This embankment on the west side is still practically continuous from Kistopur southwards. A great breach, called the Begua Mohana breach, occurred in the right bank about twelve years ago, and through this breach passes much of the spill water which floods Arambagh thana. [*Mohana* means great flood.] On the east side there are 107 miles of continuous embankments with sluices carefully kept up.

The *Dwarkeswar* or *Dhalkisor* river rises in the Tilabani Hill in Manbhum district, and flows to the south-east, then forms the boundary between Goghat *thana* of Hughli district and Bardwan. At the north-east corner of

Goghat *thana* it turns abruptly to the south, and for some distance forms the boundary between the *thanas* of Goghat and Arambagh, except that some outlying villages of Arambagh Municipality lie on its west bank. It then flows for a short distance through Khanakul *thana*, and joins the Silai river, which flows past Ghatal, a little above the village of Bandar. By its junction with the Silai it forms the Rupnarayan river. The Dwarkeswar is only navigable during the rains, when large country boats go up to and beyond Arambagh. During eight months of the year it is easily fordable at most places in the Hughli district. In the dry season a bamboo foot-bridge is thrown across the river at Arambagh. It is embanked on both sides for some distance in the district, from Bali on the west bank, for seven miles southwards; and from a little below Mubarakpur, on the east bank, for seven miles southwards. A mile below Bali the Dwarkeswar divides into two branches. The eastern branch is called the Sankra *Nadi*, the western the Jhumjhum *Nadi*. Both branches are embanked. They reunite a few miles lower down.

The *Rupnarayan*, formed, as above stated, by the junction of the Dwarkeswar and the Silai, is the boundary between the Hughli and Midnapur districts for the first eight miles of its course down to Ranichak, nearly opposite to which it receives the (Dwarkeswar) Kana *Nadi*. A small steamer runs from Calcutta to Ranichak, and another *vice versâ* daily, while a smaller one runs from Ranichak to Ghatal. The further course of the river does not concern the Hughli district; but it joins the Hughli at Geonkhali, opposite Hughli point. It was known to the early English settlers in Bengal as the Tomberlie or Tumberleen river. The forms Tumbolee and Tameli are also used; probably these names were corrupted from Tamluk.

The *Dwarkeswar Kana Nadi* is one of the [at least] three rivers in the district, which bear this name, literally "the one-eyed river," a term applied in Bengal to "dead" or silted-up rivers. It leaves the Dwarkeswar at Chandur, about four miles above Arambagh, and flows south-east. I have crossed this river in December, February, and June. It was then dry at the place where it crosses the old Benares road, between one and two miles west of Mayapur. On the Mayapur-Khanakul road, which it crosses a mile south of Mayapur, it was a sluggish, swampy stream, some 20 feet broad and two feet deep. A bamboo foot-bridge is thrown across it here in the dry season It finally joins the Muneswari under the old semaphore tower at Haiathpur, and is there some 20 yards broad.

The *Muneswari* river is shown in the maps as rising in the Bardwan district between the Damudar and Dwarkeswar. From the place where it crosses the Bardwan-Hughli border it has a general south-east direction to Haiathpur, where it joins the Dwarkeswar Kana *Nadi*. At Harinkhola, where it crosses the old Benares road, it is in the cold and hot weather about 20 yards wide, and between two and three feet deep. At Haiathpur it appeared to me to

be between 60 and 70 yards wide, and four to six feet deep. From Haiathpur southwards the stream bears the name of Kana *Nadi*, though the Muneswari contributes fully four-fifths of the water of the combined stream. In fact, after riding through all three in the same day, it seemed to me that, on the level at which the old Benares road crosses these rivers, the Muneswari carried down more water than either the Damudar or Dwarkeswar, in the cold and hot weathers, the stream being certainly deeper, if less broad, and the current fully as swift. In the rains all this part of the country is regularly flooded. After passing Haiathpur the combined stream of the Muneswari and Kana *Nadi* flows nearly due south, on the whole a little west, past Sikandarpur, Kishannagar, and Khanakul, and finally joins the Rupnarayan nearly opposite Ranichak. Large boats get up to Khanakul and higher in the rains; small *dinghis* can get up to Harinkhola all the year round. The river is bridged by a foot-bridge, passable by horses, but not by carts, at Sikandarpur, three miles below Haiathpur. This bridge is four feet wide, and 92 yards long; and of its length, on the 21st December 1900, 65 yards were actually over the water, which appeared to be some five or six feet deep. At this place there must be quite double the amount of water in this river that there is in either the Dwarkeswar or the Damudar, except in the rains. It is fordable in the dry season at several places between Sikandarpur and Khanakul.

The Muneswari is now chiefly supplied by spill channels of the Damudar, through the Begua Mohana breach, I believe, but I have not myself seen the country north of the old Benares road. The maps of the district are quite incorrect, the rivers in Arambagh and Khanakul *thanas* having greatly altered since the country was surveyed. A map dated 1856 among the Damudar embankment papers shows the Moondasuree *khal*, as the Muneswari is there called, as rising in the south of the Bardwan district, half-way between the Damudar and the Dwarkeswar, and joined north of Tintsal by the Sunkuree *nullah*, which receives an offset from the Damudar a few miles south of Salimabad. The Moondasuree is then shown as flowing south, and joining the Dwarkeswar Kana *Nadi* a few miles south-east of Khanakul, at Changrak. The united stream then flows into the Damudar *khal*, a few miles west of where that *khal* again joins the Damudar, a little north of Ampta. The Damudar *khal*, an old bed of the Damudar, leaves the present bed opposite Rajbalhat, and passes southwards parallel with and a few miles west of the present bed, which it rejoins a little north of Ampta.

The present survey map of the district, which has for some time been out of print, is dated "September 1884, with additions up to November 1892." It shows pretty much the same state of affairs as the map of 1856, except that it gives two large offshoots of the Damudar, named the Bansani and the Shankhee-bhangha, as flowing parallel with and a few miles west of the Damudar,

and joining the Muneswari, still called Moondasuree, near Shampur, instead of the connection at Tintsal. Changrak is also printed Chingreeah in the present map.

This state of affairs is now greatly changed. Judging from the size of the Muneswari at Harinkhola, I should suppose that the offsets of the Damudar join it some distance north of that place. No stream flowing in the cold and hot weather now crosses the old Benares road between the Damudar and the Muneswari. Nor does any offset from the Damudar now join that river anywhere north of Khanakul. Instead of offsets from the Damudar running south-westward towards the Muneswari, the tract of country between Khanakul and Pursura is cut up by several, at least three, spill channels of the Muneswari running south-eastward towards the Damudar. I was told that these channels never reach the Damudar, but again bend south-westward and again join the Muneswari, but this I cannot say with certainty. However, certainly the Muneswari and the Kana *Nadi* now unite at Haiathpur, just under the old semaphore tower, and the united stream now joins the Rupnarayan, and not the Damudar. The fact is that this part of the country is so flooded and cut up by water in the rains, that to keep maps up to date the country would have to be surveyed every year, and even if this were done, the maps would probably be obsolete by the time they were published.

The *Amudwara* or *Amudar* river is a small stream which rises in the Bankura district, flows south-east across the western part of Goghat *thana*, and finally joins the Dwarkeswar some distance below Bali. It is easily fordable all the year round, except when in heavy flood. Its only interest consists in the old forts on its banks, Garh Mandaran and the Bhitargarh.

The *Kana Nadi*, the principal of the three rivers in the district which bear this name, is the old bed of the river Damudar, and is described above under the history of the Damudar. It leaves the Damudar at Salimabad in the Bardwan district, flows south and a little east to near Tarakeswar, then turns and flows east to the village of Gopalnagar, then north and a little east to join the Hughli at Naya Sarai. In the third part of its course it is known as the Kunti *Nadi*, and finally as the Magra *khal* and the Naya Sarai *khal*. Near Singur an artificial cut connects it with the Saraswati. Large country boats go up it as far as Magra, two miles from the Hughli. It is bridged wherever an important road crosses it, and is yearly flushed from the Eden canal. There is some flow in the river now all the year round.

The *Kana Damudar* is an offset from the Damudar, a little below Salimabad. It flows south-eastwards. It is a sluggish swampy stream, but is flushed out yearly by the Eden canal system. Finally it reaches the Hughli a little above Ulubaria.

The *Ranaband khal* is an offset from the Damudar, which it leaves some distance above Chapadanga. It is joined by a small *khal* which flows past Tarakeswar. It rejoins the Damudar a little north of Ampta.

The *Baidyabati Khal* comes down from the Dhankuni *jhil*, and joins the Hughli at Baidyabati. It has a connection with the Dhankuni drainage cut.

The *Bali Khal* rises in Chanditola *thana*, and flows into the Hughli at Bali. It receives the Dhankuni drainage channel.

The *Ghia Nadi* enters Hughli district from Bardwan near Gurup and flows past Dhaniakhali. At Hodila, on the Dhaniakhali road, it unites with the *Kantul Nadi*, or *Ilsura Nadi*, which enters the district from Bardwan about five miles south-west of Bainchi, and flows south, a little west of Dwarbasini. The two join the Kana *Nadi* at Bainchipeta.

The *Balia Khal* or *Bahula Nadi* rises in the south-east of Bardwan district and flows southwards through Balagarh *thana*, crossing the Pandua-Kalna road, and coming close up to the Tribeni-Kalna road at Boga, finally falling into the Kana *Nadi* between Magra and the Hughli. Near Boga the mud in this *khal*, is so deep that, though there are only a few inches of water in the cold weather, bamboo bridges are required for foot passengers to cross.

The *Beola Khal* rises in Kalna *thana* in Bardwan, and flows south-eastward into the Hughli at Paigachi, a little north of Balagarh.

The third river in the district which bears the name of the *Kana Nadi* rises near Inchura and flows southward into the Hughli near Dumurda. Near Boga it is separated from the Baolia *Khal* only by the breadth of the Tribeni-Kalna road, and a bridged cut under the road connects the two.

Besides the above, which include almost all the streams in the district of sufficient consequence to have a name, there are a number of completely dead or silted-up rivers. The *Kasai* (Cossye) at Pandua is quite dead, and only represented by some shallow depressions. The *Kedarmati* at Dwarbasini is little more than a large ditch, but water flows through it in the rains. There are also several silted-up rivers in Chanditola and Kristanagar thanas—the Kausaki, the Karpura the Ajudhia *Khal*, the Khajuria *Khal*, and the Matia *Khal*.

The Eden Canals.—The epidemic fever which ravaged the district for twenty years, more or less, from 1857 to 1877, which is fully described in Chapter VI, was by many observers attributed to the silted-up state of the many dead rivers traversing the district. Dr. D. B. Smith, in a report dated 12th May 1870, lays great stress on the condition of these rivers as having had a large share in the causation of the epidemic fever. He states that the Kana *Nadi* was by far the worst, the Saraswati not much better, the Ghia *Nadi* still had some flow through it, and was not so bad as the other two. This silting-up of these rivers had been going on for a very long time, and many suggestions for re-opening them had from time to time been made. In the Damudar embankment papers, the Military Board, Colonels E. Garstin and W. Mactier, state that the head of the Kana *Nadi* had completely silted up in the dry season of 1852, and suggest that it should be re-opened. Apparently a sand bank had formed across the head of the Kana *Nadi* long previous to 1852, but in that year it was completely closed. It was not,

however, until the epidemic fever had been in full swing for many years that anything was actually done. In 1873 arrangements were made for flushing the Kana *Nadi*, by letting water into it from the Damudar, and this was done, with very good effect, in 1874 and 1875. In 1876 and 1877 this flushing was discontinued, and its stoppage was at once followed by an increase of mortality in the villages along the banks of this river. Water was again let into it in 1878 and 1879, and in 1881 the Eden canal system was completed, the works being opened by Sir Ashley Eden in December 1881. The Eden canal takes off the Damudar at Jujuti above Bardwan, and flows past Bardwan, parallel with the river, down to the sluice at Salimabad, where it communicates with the Damudar again, and terminates in the sluices which flush the Kana *Nadi* and Kana Damudar. The Ilsura or Kantul *Nadi* and the Ghia *Nadi* are flushed by sluices higher up. In connection with this project was also made the cut which connects the Kana *Nadi* and Saraswati, running from Gopalnagar on the Kana *Nadi* to the Saraswati, where the Chandarnagar-Bhola road crosses that river. While the works are chiefly in the Bardwan district, the tract of country benefited by them lies mostly in Hughli. These rivers are now under the care of the Public Works Department, Irrigation Branch, and any attempt to obstruct their courses can be and is summarily dealt with under the law.

Water-supply.—The water-supply of the Hooghly district is derived from rivers, wells, and tanks, the last supplying the greater part of the district. The water supplied by the larger rivers may be considered a thoroughly good supply. The Hughli, Damudar, Dwarkeswar, and Muneswari, all pour down a plentiful supply throughout the year. River-water is universally used by those living close to the banks of a river, but of course is not carried to any great distance. I should think that few people carry river water from a distance greater than one mile; and even those who do send that distance for drinking water will use the water of any filthy little tank for cleaning their eating and cooking utensils. In Chinsura town I have seen a woman washing these utensils in an almost dry tank, which contained only some three inches of filthy, green, opaque water, a very short distance from the bank of the river. Even the smaller rivers which maintain some flow throughout the year, such as the Saraswati, the Kana *Nadi*, &c., may be said to offer a fairly pure water to the dwellers on their banks.

Comparatively a small portion of the district, however, lies on the banks of rivers of any description, and the great bulk of the people use tank-water. I do not know of any tank in this district which is noteworthy on account of its great size, like those I have seen in some other districts, *e.g.*, at Madhabpasha near Barisal, and near Sheikhpura, in the Monghyr district. Still this district was once well supplied with good tanks, especially in Pandua *thana*, which abounds in tanks of considerable size. Most of them unfortunately are more or less silted up, but still their water looks fairly clear. It seems that the digging of tanks as a work

of benevolence and public utility is seldom done nowadays; much less does any one ever think of redigging an old tank which has become shallow. The rich *zamindars* will not spend money in this way, and the well-to-do *raiyats* are too divided by party feeling and faction ever to combine for the purpose. Consequently, anything that may be done in this direction is done entirely by public bodies out of public money. The District Board sets aside a considerable sum, Rs. 6,000 to 8,000 yearly, for the improvement of water-supply by digging wells or new tanks, or re-excavating old silted-up tanks, making it a condition that any tank which is thus renovated at the public expense should be handed over by the owners to the Board, in trust for the public, so that private rights may not interfere with the general benefit of all. Fishing rights may be reserved by the owner, but it is a *sine qua non* that the public shall have free access to the water of all tanks, thus handed over, for drinking purposes. Seventeen tanks have been made over to the District Board, and renovated by that body for the purpose of providing drinking water for the public. These tanks are scattered over the district at wide intervals. A fine tank is being excavated in the present year, 1901, at Tarakeswar, I believe by the *Mohant* of the temple there. I have also seen very fine tanks at Harinda, two miles south of Inchura, on the Tribeni-Kalna road; on the old Benares road, a quarter of a mile south of the 43-44 mile, about two miles east of Arambagh; and on the Arambagh-Arandi road, two miles south of Arambagh; this last is called Ranjit Rai's tank.

Wells are not much in favour with the people of this district, or of Bengal generally; they are seldom sunk by private individuals for the public use. Being much cheaper than tanks, the District Board has sunk a number of wells at various villages throughout the district. The cost of sinking a *pakka* masonry well may be put at Rs. 400 to Rs. 600, varying according to the depth and breadth of the well; a *kacha* well, of pottery rings, costs from Rs. 40 to Rs. 100. The Board has sunk twenty-four wells, of which all but two are *pakka*, varying in depth from 16 to 40 feet, and usually four feet in diameter. These wells are all raised some three feet above the ground, and are mostly furnished with *pakka* platforms and lifting apparatus, bucket and chain. This apparatus usually gets out of order, or the bucket is stolen, before long. It is, however, impossible to prevent those who use the well from lowering their own *lotas* and other vessels into it, which they mostly prefer to do even when a lifting apparatus in good order is available.

The influence of water-logging upon health and fecundity has been considered in Chapter VI.—Climate, in the description of the epidemic fever.

CHAPTER II.

PRODUCTS; CROPS; TRADE.

Animals.—The domestic animals of the district consist of cows, bullocks, buffaloes, ponies, goats, sheep, pigs, cats, dogs, fowls, ducks, and pigeons. Oxen are almost universally used in agriculture, to draw both ploughs and carts. Goats, sheep, pigs, ducks, and fowls are reared for food or for sale; in some of the towns also a few geese, turkeys, and guinea-fowls. Great flocks of sheep are fed and fattened for the Calcutta market in parts of the district, especially in Pandua *thana*. On the 25th of February 1901, riding from Mandalai to Inchura, in a distance of six miles I counted fourteen large flocks of sheep, the smallest of which appeared to contain over a hundred, grazing on the bare rice-fields which there stretch for miles on either side of the road.

Of wild animals, leopards are fairly common in the north of the district, from Balagarh to Guptipara, and occur elsewhere. Stavorinus says, writing about 1769-70, that "tigers are very numerous in the woods, and often sally out into the inhabited places," also "there are likewise a vast number of wild buffaloes in the woods." Neither tigers nor wild buffaloes now exist in the district, nor have they done so for many a long day; the last occasion on which a tiger is reported to have been seen was among the ruins of Satgaon in 1830. Monkeys abound all over the district, especially the *Hanuman* or *Langur* (Semnopithecus Entellus). They are particularly common at Guptipara, so much so that their numbers have become proverbial in Bengali, and to ask a man if he comes from Guptipara is equivalent to insinuating that he is a monkey. Deer I do not think exist anywhere in the district. Wild hogs abound in parts, and do a good deal of damage to crops in the *Sadr* subdivision. Jackals are everywhere numerous. Other common mammals are the musk rat, common rat, mouse, small gray-striped squirrel.

Birds.—In the cold weather snipe, many kinds of teal and duck, and other waterfowl, abound in the *jhils* and swamps which are so common in the district. Waders of many kinds are common, paddy birds, snippets, egrets, greenshanks, &c. Vultures get a plentiful living along the banks of the Hughli; several kinds of kites and hawks may be seen; the common crow of course abounds; and many handsome plumaged birds are fairly frequent—jays, kingfishers of several varieties, woodpeckers, flycatchers, &c.

Bats of two kinds are very common—the ordinary small bat, and the flying fox.

The Gangetic porpoise is common in the Hughli. It is known by the name of *Shusuk*. From its flesh is extracted an oil, supposed to have much efficacy in cases of rheumatism.

Of reptiles, both kinds of crocodile occur in the rivers, the *gharial* or long-nosed, and the snub-nosed crocodile, here known as *kumbhir*, but neither is common. The iguana or *guisamp* occurs, also some smaller lizards. Of snakes, a small harmless grass snake is very numerous, and *dhamans* are common; the cobra and karait both are frequently seen.

Hunter gives the following list of fishes which occur in the district:—Of river fish, the *hilsa*, *bhekti*, *chingri* or prawn, *boāl*, *rita*, *tapsi māchh* or mango fish, *khaira*, *ayar*, *payrachanda*, *muji*, *phasa*, *chital*, and *pangas*. Of tank fish, *ruhi*, *mirgal*, *katla*, *bata*, *kalbosh*, *kai*, *magur*, *singi*, *lata*, *saul*, *tengra*, *parsa*. To these I might add that the fresh-water shark is not uncommon in the Hughli; it is reported that it sometimes seizes children bathing, but this is doubtful.

There is no trade in wild beast skins. Snipe, teal, and duck are snared for the Calcutta market. Gaily plumaged birds are to some extent killed for the sake of their feathers, but not much, I think, in this district. Very little is paid as rewards for destruction of wild beasts, and deaths by wild animals, except from snake-bite, are almost unknown. There are fisheries of considerable value, but otherwise animals contribute little to the trade or wealth of the district.

Insects of all kinds, butterflies, moths, bees, ants, beetles, &c., abound. Locusts have not been known to do much damage in the district; but a flight was seen to pass over Hughli in 1901.

Silk was formerly an important manufacture of the Hughli district, though it flourished chiefly in the *thanas* of Chandrakona and Ghatal, transferred to Midnapur in 1872. Silk was a monopoly in the hands of the Company, managed by the Commercial Resident of Haripal, Khirpai, and Radhanagar. When their commercial affairs were wound up and their factories sold, the silk industry fell into the hands of Messrs. Robert Watson and Company. When I was in Midnapur in 1889 at least two silk factories in Ghatal subdivision were still in existence, and now in 1901 there is at least one, the property of the Bengal Silk Company. The East India Company's factory at Khirpai was certainly in existence in 1795, and probably existed prior to 1765, the date when the Company received the Diwani of Bengal. Prior to this Diwanganj, on the west bank of the Dwarkeswar in Goghat *thana*, was the seat of an important silk trade, which was financed from Upper India, to which the silk manufactured was transported on camels. This trade was almost killed by the establishment of the East India Company's silk factories, which exported their silk by water, from Ghatal to Calcutta, and thence to Europe.

Silk is of two chief kinds, that made from the cocoons of silkworms artificially bred on mulberry, and that made from the cocoons of the *tassar*,

or wild silk moth. As regards the former, a few native silk filatures still survive in Khanakul *thana*. The thread there manufactured is mostly exported to Ghatal, and other places in that neighbourhood, where it is woven into the fabric. There are said to be about 800 individuals still employed in this manufacture. Diwanganj still carries on a small amount of silk-weaving, the thread for which is not grown on the spot, but imported from Midnapur. The fabric there manufactured goes by the name of *Rangin Kapor* (coloured cloth). The trade is still financed from Upper India, and the fabric is exported thither, to Agra and Delhi. About 200 men, of the Tanti caste, find employment in this industry.

The manufacture of *tassar* silk is still carried on in Bankura and Midnapur; and at Badanganj, Shambazar, and other villages in the extreme west of Goghat *thana*, about 300 to 350 individuals still find employment in this manufacture, both in spinning the silk and weaving the fabric. They belong chiefly to the Tanti caste, and the fabrics mostly made are *saris* and *dhotis*. The spinners are chiefly women. In contrast to the manufacture of mulberry silk, which is a decaying industry, the *tassar* manufacture is in a fairly prosperous condition.

Lac was formerly extensively made at Khirpai. A little may still be manufactured in the extreme west of the district. It figures as one of the exports from Hughli in 1657. Coccus lacca, the lac insect, feeds on a large number of trees, but especially on the *dhak* or *palas* (Butea frondosa), and the *pipal* (Ficus religiosa). Both occur in Hughli district, through the former is decidedly scarce.

Cochineal.—I was for a long time much puzzled by the following advertisement, quoted in Seton Karr's "Selections from the Calcutta Gazettes," Volume II, page 602, and am indebted for the solution of the problem to Dr. George Watt, C.I.E. On 10th November 1796 was advertised for sale "that pleasant and well-known villa of Rissura, about 50 bigas of ground, and 120 bigas of Nepaulry, fully planted and now ready to receive the insect." The word *nepaulry* is a misprint or mistake for *nopalry*, a word formed, on the analogy of vinery, from Nopal, the Mexican name of the *Opuntia* or Cactus, on which the cochineal insect feeds. That insect seems to have been first introduced by the Portuguese from America, along with the cactus, which, common as it now is in some parts of India, is not an indigenous plant, but was unknown prior to the discovery of America. In 1795 Captain Neilson brought from Brazil to India some cactus plants, with the cochineal insect on them. Most of both plants and insects died on the voyage, but the surviving insects were found to flourish on the common Indian cactus (Roxburgh's Cactus Indica) at the Botanical Gardens. On sending some of the insects to Madras they were found to be identical with the wild cochineal insects which had previously been found there, and which must have been

introduced by the Portuguese. There are two varieties of cochineal insect, Grana fina and Grana sylvestris, and unfortunately Captain Neilson had brought the latter, the inferior variety. Various experiments were made, at the close of the eighteenth century, with cochineal, and this Rishra Nopalry must have been one of those experiments. It was found that the dye could not be made to pay in this country. Possibly if the other variety had been introduced the result might have been different, but now the day has passed when either animal or vegetable dyes could be manufactured at a profit. Aniline dyes killed cochineal, as they are rapidly killing indigo.

Minerals.—The only article of trade or export in the Hughli district which may be called a mineral product is Magra sand. This is a very fine sand, which occurs in extensive beds near Magra, having been deposited there in former times by the Damudar river, before it changed its course to its present bed. The sand is used for filters, and also much used in building; it is loaded on large country boats in the Magra *khal*, and boats laden with this sand may be seen passing Hughli by the dozen, on the ebb tide, especially in the rains, on their way to Calcutta.

The universal building material for *pakka* houses is brick. Both bricks and *surkhi* are manufactured in large quantities over the district, especially in the towns. The Calcutta Corporation had its brick-fields in Kotrang for several years; they are now leased to private individuals.

To any one who has had experience of the climate of Lower Bengal it seems absurd, but it is nevertheless true, that *ice* was once one of the products of Hughli. In Seton Karr's "Selections from the Calcutta Gazettes," of which Volume I, in which the note occurs, was published in 1864, quoting an advertisement of a ball held in Calcutta on 15th November 1787, at which ices were supplied, he states "the ice, it is presumed, must have come from the well-known ice-field at Hooghly, the only one known to have existed in the Lower Provinces. This ice-field was worked within the last few years" (of 1864). The importation of Wenham Lake ice, which in its turn has disappeared before local manufacture by machinery, killed the ice industry at Hughli. The site of this ice-field was the low land, now rice-fields, on the south of the road leading from the river to Hughli old railway station.

Salt.—Toynbee gives a good deal of information about salt. Under the Moghul Government, Hughli was a most important mart for salt. The treaty between the East India Company and Najam-al-Daulat executed in 1765 stipulates that the duty of 2½ per cent. on salt was to be calculated at the "*rowana*, or Hughli market, price." In 1826 the management of the salt *chaukis*, or stations, at Baduria, Gobardanga, Habrah, and Mullikbagh, was made over to the Collector of Hughli, who got an allowance of Rs. 200 per month for his trouble. The first two are in the 24-Parganas, Habrah may be

either Howrah or Habra, in the 24-Parganas. In 1835 a European officer, Mr. Macleod, was appointed Superintendent of salt *chaukis*, with head-quarters at Khirpai. In 1836 a Government salt *gola*, or warehouse, to hold about 50,000 maunds of salt, was established at Bhadreswar. In 1862 the Hughli salt agency was united with that at Tamluk.

Vegetable products.—Besides the ordinary crops of cereals, pulses, vegetables, &c., and fruit, which are separately described below, there is little in the way of vegetable product in the Hughli district. The great reeds, from which the place derives its name, are still found in some of the *jhils*, and are cut for thatching purposes, and the construction of native huts. Coarse thatching grass grows on a few uncultivated spots, such as the land annually flooded by the Damudar; it is cut, and used for thatching or for fodder.

Boat-building is carried on to a considerable extent at Balagarh and the neighbouring villages on the river bank; the boats built being country boats of various sizes, some pretty large. The wood chiefly used in their construction is *sal*, which is imported, not indigenous. Early in the nineteenth century, there was a dock at Konnagar, where small ships were built.

Crops.—Rice forms the principal product of the district. It gives three crops during the year—*boro*, or spring rice; *aus*, or *niali*, autumn rice; and *aman* or *haimantik*, winter rice.

Boro rice consists of two varieties, *chaiti boro* and *jondo boro*. The first is sown in a nursery in December or January, afterwards transplanted, and reaped in April or May. The second consists of the plants which spring up from seeds falling when the first is reaped. These are not transplanted, but are harvested in July or August. *Boro* rice is cultivated in low-lying marshy lands, which do not require to be ploughed. The plants thrive in water which reaches within an inch or two of their tops. This crop is not very much grown in the district.

Aus rice is sown as early as possible after the first fall of rain, usually in May. The rice is usually sown broadcast, but is occasionally transplanted. It is cultivated on high land, which gives a second outturn in the spring of some *rabi* crop, pulses or vegetables; and is cut in August or September.

The *aman* or winter rice is the great crop of the year, in Bengal generally as well as in Hughli district. From one-half to three-fifths of the total cultivated area of the district is under this crop. There are two varieties, *kartik sal*, sown on high lands in May or June, afterwards transplanted, and finally reaped in the Bengali month of *Kartik* (October-November), which gives it its name. The other, ordinary *aman*, which forms the immensely greater part of the winter rice crop, is sown in a nursery in May or June, transplanted into carefully prepared low-lying fields, and reaped about December. A large quantity of the finer kinds of rice is grown in Hughli

district for the Calcutta market, while coarse rice for the supply of the local population is imported.

Of *other cereals*, no great quantity is grown in Hughli district. *Wheat* and *barley* occur, and that is all. Only a few acres of each is grown in scattered patches here and there. Both are sown on high lands about October, and reaped about March. *Indian-corn*, or *maize* [*bhuta*], is grown in considerable quantities, chiefly for the Calcutta market. It is sown in June, and cut in August. Various species of *millets* are also grown, being sown and cut about the same time as maize; *bajra* and *juwar* (Sorghum Roxburghii and Sorghum vulgare), the names are used almost indiscriminately, and both are also called *deodhan*. The grain is not enclosed in an ear, but grows on minute twigs, shooting from the top of the plant. It is gathered by hand, the stalks are used for fuel. *Marua* or *ragi* [Eleusina coracane] is also grown to some extent. These millets are used for food only by the very poor.

Pulses or *dals* of several kinds are grown in the district, but none to any great extent. I should say that *masur* was much the most common. Except *arhar*, which is sown about June and cut in January or February, all the pulses are sown about October, and cut in February or March. The following varieties may be seen growing, by any one touring in the district in the cold weather. *Mung* (phaseolus mungo). *Matar* or *peas* (Pisum sativum), which yield the *dal* mostly used as an article of diet. *Maskalai* (phaseolus Roxburgii), little grown. *Masur* (ervum lens), very common. *Khesari* (lathyrus sativus), sown broadcast among the growing rice; after the rice has been cut it grows rapidly. It is eaten only by the very poor; its use in any quantity, that is, as a staple food, and not merely as a relish or condiment, frequently gives rise to the variety of paralysis known as lathyrism; I have not, however, seen any cases in this district. *Arhar* or *Rahar* (cajanus Indicus) grows to a great height; little grown in Hughli. *Gram* or *channa* or *chhola* (cicer arietinum), eaten both raw and as *dal* by natives, by Europeans chiefly used as food for horses, very little grown in this district. Of the above pulses *khesari*, which is sown among the rice, grows on low lands, the other species on high lands.

Vegetables are grown in great quantities, chiefly for the Calcutta market, and in Serampur subdivision. The lands between Tarakeswar and the Damudar, and those inside the Damudar *bund* on the west bank, south of Pursura, are extremely fertile, and great quantities of vegetables may be seen growing in both these parts. The chief varieties are the following. *Alu* or *potato** (solanum tuberosum). *Alua* or *yam*, or sweet potato, several varieties. *Phulgobi* or cauliflower; *gobi*, or cabbage; *shalgam*, or turnips. *Baigun* or *brinjal* or egg-plant, grown in small quantities almost everywhere. Pumpkins, cucumbers, and gourds of many different kinds, *patul* (trichosanthes dioica); *lau* (lagenaria vulgaris); *kumra*

* Potatoes suffered a good deal from blight in 1901.

(benicasa cerifera); *chichinga* (trichosanthes anguinia); *uchche* (momordica charantia); *jhinga* (luffa acutangula). *Beans*, several varieties of *sim*, or kidney beans; and *barbati*, the pods of which are cooked, and the seeds eaten raw. *Radish* or *moli* (raphanus sativus), a very much larger and coarser vegetable than the European radish; it is not eaten raw, but both roots and leaves are cooked. A few other native vegetables are eaten to some extent, the leaves and stems being used for making vegetable curries: *dengo* (amaranthus lividus), *palang* (Beta Bengalensis), and *piring* (Trigonella corniculata). The seeds of the lotus (Nymphaea Lutea) are also eaten.

A number of other vegetable products are grown for use as condiments: *piyaj* or onions; *rasun* or garlic; *halud* or *haldi* or turmeric; *ada* or ginger; *lanka* or chillies; *dhunia* or coriander. Of none of these is any great quantity grown in this district; turmeric and onions are the most common.

Of other crops which may perhaps be considered as food crops, in so far as they are grown for human consumption, the chief are sugar, tobacco, and *pan*.

Sugarcane, *akh* or *ikhsu* is grown in great quantities almost all over the district. In fact, in the cold weather, when the rice fields are dry and bare, and jute has long been cut, sugarcane appears to the eye of any one touring in the district as by far the most important crop on the ground, far more so than any of the *rabi* pulses or cereals. This impression may be partly due to the fact that, owing to its height, and the bright green colour of the leaves, a patch of sugarcane is visible over several miles of dry rice fields, especially when the sun is shining on it. Sugarcane is a crop which requires much care and trouble in its cultivation, and only small patches of a few acres at most in one spot are grown; though in some parts these small patches are very numerous. The land for its reception is ploughed several times, and copiously manured with oilcake and cowdung. Meanwhile cuttings of the plant are carefully tended in a nursery, in a moist spot close to the cultivator's house. After the cuttings have struck, they are transplanted in April or May into the field specially prepared for their reception, which requires continual irrigation. As the plants grow, the leaves are folded round the cane, to keep off insects; and subsequently the heads of several neighbouring plants are tied together. The cane is cut in February or March. There are three principal varieties—Bombay cane, *samsara*, and *puri*. After the cane has been cut, the stumps left in the fields throw out new shoots, and no fresh plants are required for two years; though sometimes new cuttings are planted every year. Jackals and wild pig, attracted by the sweetness of the canes, sometimes do considerable injury to the crop.

Tobacco, or *Tamak* (Nicotiana tabacam), is not much grown in this district, though I have seen some fields of it. It is sown about October, and cut about March; the dried leaves are exported to Calcutta. Toynbee states that in 1836 there was a cigar manufactory at Chinsura in the hands of Messrs. Van Dyk and Company.

Pan, or *Betel* (piper betle), is largely grown in the Serampur subdivision. The best is said to be grown at Begampur, a vilage a few miles west of Serampur. This crop requires much care and attention, and its cultivation is very expensive, though the profits are said to be large. The Barui caste, who have given their name to Baruipur, in the 24-Parganas, where there are many *pan* gardens, are growers of *pan* as a hereditary occupation. The *panbhari*, or garden, is always constructed on a raised site, the required earth being dug up from a neighbouring field, the place dug out forming a tank for irrigating the garden, which is always hedged in and thatched to exclude the sun. The creeper is planted in May or June, just before the rains set in, and trained on sticks; the leaves are fit for picking in about twelve months. The plantation is kept up by the constant substitution of new plants for old and decaying ones; the soil requires to be frequently manured with cowdung and oilcake. *Pan* is largely used by natives of all classes, chewed with lime, areca nut, &c., as a digestive after meals. I have not seen *pan* growing in the *Sadr* subdivision, and have only seen it at one place in Arambagh, at Kamarpukhar, a village three miles west of Goghat.

Coffee.—Toynbee states that Dr. Wallich, of the Botanical Gardens, and a Mr. Gordon, started a coffee plantation in the district, but he was unable to find out where it was or what became of it. Probably the experiment was soon found to be a failure: neither climate nor soil would be suitable for growing coffee as a commercial speculation. It might be grown with success, so far as yielding coffee beans fit for use goes; as I have seen coffee grown at an indigo factory in North Monghyr, and tea at Dakka, but not to pay

Fibre plants of three kinds are grown in the district—jute, hemp, and *dhanicha*. Linseed (flax) is also largely grown, but here, as in other parts of India, it is grown altogether for the oil expressed from the seed, and not for its fibre, though flax figures as one of the exports of Hughli in 1661.

Jute, or *Pat* (corchorus olitorius), is now a very important staple crop in this district, as it is almost all over Lower Bengal. The principal jute mart in the district is Baidyabati. The crop is sown in June, and cut in August or September. After cutting, the crop is steeped for some time in water, till the soft fibre can be easily separated from the tougher portions of the stalk, which are dried and used as fuel. The steeping of jute in water gives rise to a most abominable smell. It is curious, by the way, that all the three great industries of jute, indigo, and silk, necessitate the production of a most insufferable stench during their manufacture. Tea, as far as I know is free from this nuisance. The water in which jute has been steeped, or is steeping, is of course utterly unfit for use of any kind, except perhaps for irrigation. The increase in the cultivation of jute in Lower Bengal in late years has been put forward as a cause of increased sickness and mortality; but I have not personally seen anything to support this theory, either in Hughli

or in the 24-Parganas. Jute-water would of course be alsolutely poisonous as a drink, but I do not think that even the Bengali *raiyat*, indifferent as he is to the quality of the water he drinks, could swallow jute water. A well grown field of jute will reach the height of ten feet; but a difference of a few yards in distance may make a great difference in the quality of the crop; while that in one part of a field may be ten feet high, that a few yards off may be only two or three feet. It is usually grown, like sugarcane, in small patches. The leaves are of a very dark green colour, a great contrast to that of sugarcane, which of course is seen at a different time of year. In addition to being a staple crop, jute now furnishes the district with its chief manufacture, for there are five large jute mills in Serampur subdivision. Ropes of jute and hemp are also twisted by hand at Baidyabati, Konnagar, Kotrang, and Uttarpara.

Hemp, or *san* (crotolaria juncea), is cultivated to a considerable extent throughout the district, though much less so than jute. It also is grown in small patches, like jute, about June, and cut in August or September. It does not reach a height of more than three to four feet, but its bright yellow flowers make a patch of hemp conspicuous. From a little distance, it has a strong resemblance to the common English broom. While the fibres of jute are soft and fine, those of hemp are coarse and tough; it is used for making ropes.

Toynbee quotes some old records which show that the growth of jute and hemp in the district is fully a century old. In March 1796 Mr. Clerk, of Goosery, near Howrah, writes that he has been employed "for the past two years in receiving, packing, and screwing, *paut* and *sunn* for England." In July 1797 the cotton screws at Sulkea, near Howrah, were doing a very large business. And in July 1810 the Resident of the factory, or Commercial Residency, at Golagore (Magra) writes :—

"The *sunn ryots* dependent on this factory have already begun to make surreptitious sales of their *sunn* in the bajars and *hauts* throughout the district. The demand for this article is at present so great for the purpose of making Bengal paper and canvas, and the price so very high, that the *ryots* will be constantly on the watch to sell for their own profit an article which they had already sold by receiving advances for it and by entering into engagements to deliver it on account of His Majesty's Government."

Dhanicha (sesbania aculeata) is a coarse fibre, used for making ropes, extracted from a plant which grows in inferior and sandy lands. It is sown in June, and cut the following March. The stalks are used for thatching *pan* gardens.

Cotton, or *Tulyo*, is mentioned by Hunter as being grown in small quantities in the Hughli district, the plants being put in the soil in March and the cotton gathered from July to September. I have not myself seen cotton growing here. The cotton of the *Simal*, or cotton-wood tree, is used only for filling mattresses, pillows, &c.; it is not manufactured into thread or cloth.

Indigo, or *Nil* (indigofera tinctoria), is not now grown in the district, but must be mentioned here, as having once been widely grown in Hughli, as indeed it

was all over Lower Bengal. The districts of Dakka, Maimansinh, Jessore, Nadiya, the 24-Parganas, and Hughli, are covered with abandoned factories of which little now remains, the floors of the vats being usually the structures which survive longest. Indigo in Dakka, Maimansinh, and the 24-Parganas, was killed by the famous indigo troubles of 1859 to 1861, which came to a head in the district of Barasat, when Mr. (afterwards Sir) Ashley Eden was Magistrate of that district, and Sir John Peter Grant Lieutenant-Governor of Bengal. Indigo cultivation apparently was dead at an earlier date in Hughli, as this district does not appear to have figured at all in the indigo troubles. In Jessore and Nadiya it lingered for more than a quarter of a century longer, but now in 1901 I believe that Shikarpur in Nadiya is the only indigo factory working in Lower Bengal, and now it seems as if the great indigo industry of Bihar was doomed to perish under the stress of the competition of the artificial dye made in Germany.

Indigo was the first industry introduced into the country by non-official Europeans. Toynbee gives some interesting information about indigo in Hughli district, where it was introduced not later than 1780. The Company did not themselves engage in the manufacture of indigo, as they did in the case of silk, cloth, and jute; but their officers, as well as private individuals, went in largely for indigo, until private trading was put a stop to. The cultivation of indigo was introduced first by Mr. Prinsep. Regulation XXIII of 1795, Regulation VI of 1823, and Act X of 1836, regulated the relations between the Government, the planters, and the *raiyats*. Indigo was very unpopular with the latter. In 1810 the factory of Mrs. Stephens was attacked by a large body of armed natives, who severely wounded her and five of her servants, and killed two servants. In 1828 Mr. Charles Bennett, of Baldivie Factory, was attacked by 80 or 90 armed men. and barely escaped with his life. In 1830 two rival factories in the Ghatal *thana*, which was then in Hughli district, fought a regular pitched battle. In 1835 Mr. Cashell, an assistant at Chanditola Factory, was murdered by the factory *raiyats*. In none of these cases were any of the guilty parties brought to justice.

Toynbee further gives the following list of factories which existed in the district at various times, with their owners or managers :—

1822	...	Bansbaria Factory	...	J. B. Birch.
1827	...	Ditto	...	Temple.
1829	...	Hosnabad	...	Shircore.
1829	...	Talda	...	A. Berg.
1830	...	Gopiganj	...	Tiery.
1838	...	Durgapur	...	Maclean.
1839	...	Kalkapur	...	Warner.
1839	...	Melliah	...	James Smith.
1842	...	Paigachi	...	G. Gordon.

Other factories are mentioned at Madutpur, Rajapur, Sitapur, Sibarampati, and Khanyan.

The remains of indigo factories, or at least of vats, may still be seen, in various states of preservation, at Dwarbasini; at Paigachi, north of Balagarh; at Mayapur; and at Kalipur and Parul, near Arambagh. An advertisement in the *Calcutta Gazette* of 17th March 1799 offers for sale an indigo factory belonging to the estate of the late Mr. Blume, at Khoosie Gunge, on the bank of the river, between Chinsura and Chandernagore. Of this factory no traces are now left.

Oilseeds of several varieties are grown. The most largely cultivated is *rape*, or white mustard (Brassica campestris or sinapis glauca). This plant yields the mustard oil which is so largely used in India. The true mustard plant, (Brassica nigra) is little grown in India, and not at all in this district. The next most common oil is *linseed* (linum usitatissimum), grown from the flax plant, here cultivated only for its oil-yielding seeds, and not as a fibre. Third comes *til*, or sesamum oil (sesamum orientale or indicum). *Sarguja* (Guizotia Abyssinica) is grown to a large extent in the extreme west of the district, near Badanganj, as an oilseed crop. The oil is chiefly used to adulterate more expensive oils. *Castor oil* (ricinus communis) is not much grown in this district, but does occur. India is the chief source of the medicinal castor oil of the British Pharmacopeia.

Mulberry (morus Indica) was formerly largely grown in the Arambagh subdivision, and in the epidemic fever report of 1874 it is mentioned as still being cultivated to some extent, chiefly in the west of Goghat *thana*; but the silk spinners and weavers, chiefly *Tantis*, were then in a state of great distress and the industry moribund. Its place has now been taken by the manufacture of *Tassar* (see Silk.) A little mulberry is still grown, for the purpose of breeding silkworms, in Khanakul and Chanditola *thanas*. The ruins of a large European silk filature may still be seen at Dwarhata, four miles south of Haripal.

The following is a list of fruit trees which may be found in this district. For the scientific names, both of the fruit trees and of the other trees, I am indebted to Captain A. T. Gage, I.M.S., Curator of the Herbarium, Botanical Gardens, Sibpur :—

Borassus Glabelliformis		Palm (tālgāch).
Cocus Nucifera	...	Cocoanut palm (narikāl).
Phœnix Sylvestris	...	Date palm (khajūr).
Areca Catechu	...	Betelnut palm (supāri).
Musa Sapientium	...	Plantain (kela).
Carica Papaya	...	Papita.
Anona Squamosa	...	Custard apple (sharifa).
Citrus Decumana	...	Pomelo (batabi nebu).
Aegle Marmelos	...	Bael.
Citrus Acida	...	Lime (nebu).
Artocarpus Integrifolia		Jack (kathal).
Psidium Guajava	...	Guava (piara).
Mangifera Indica	...	Mango (ām).
Punica Granatum	...	Pomegranate (ānār or dālim).
Nephelium Litchi	...	Lichi.
Amygdalis Persica	...	Peach.
Tamarindus Indicus	...	Tamarind (tentul).
Feronia Elephantum	...	Woodapple (nona).
Zizyphus Jujuba	...	Wild plum (shiskhul).

Several of these fruit trees, *e.g.*, the peach, though grown here, are probably not indigenous. Some smaller fruit-bearing plants, which do not grow to be trees, are also grown at Hughli:—

Ananas Sativus ...	... Pineapple (anārās).
Eugenia Jambolana ...	... Blackberry (kālojām).
Ditto Vulgaris ...	... Roseberry (golābjam).
Citrulus Edulus ...	... Watermelon (tarmūz).
Cucumus Utilissimus	... Melon.
Hibiscus Sulfdariffa	... Roselle (patwa).
Physalis Peruviana ...	... Cape gooseberry (tipāri).

The following trees are also found in the district :—

Dillenia Indica (chālta).
Polyalthia Longifolia (debdar).
Anona Reticulata.
Michelia Champaca (champa).
Crataeva Religiosa.
Bixa Orellana.
Flacourtia Cataphracta.
Garcinia Xanthochymus.
Bombax Mahabaricum (cottonwood or simul).
Pterospermum Acerifolium.
Guazuma Tormentosa.
Grewia Asiatica (phalsa).
Averrhoa Carambola.
Melia Azadirachta (nīm).
Cedrela Toona.
Odina Wodier (jiyal).
Spondius Mangifera (āmra).
Moringa Pterygospermum (sajina).
Erythrina Indica.
Dalberzia Sissoo.
Pongamia Glabra (dārkaranja).
Cassia Fistula (barasondāl).
Acacia Arabica (bābul).
Ditto Suma.
Albizzia Lebbek (siris).
Euterolobium Dulee.
Terminalia Catappa (bānglābādām).
Eugenia Jambos.
Ditto Fruticosa.
Barringtonia Acutangula.
Lagerstroemia Regniae.
Anthocephalus Cadamba (kadam).
Mimusops Elengi (bokul).
Diospyros Embryopteris (gāva).
Alstonia Scholaris (chhātim).
Oroxylum Indicum (nāsmā).
Gruelina Arborea.
Vitex Trifolia.
Do. Negundo (nisinda).
Trewia Mediflora.
Sapium Sebeiferum.
Trema Orientalis.
Do. Amboinensis.
Streblus Asper (seora).
Ficus Bengalensis (banyan or bar).
Do. Religiosa (pipal or aswatha).
Do. Infectoria (pākur).
Do. Hispida.
Do. Glomerata (yājnadumur).
Artocarpus Lakoocha.
Casuarina Equisetifolia (jhao).
Poinciana Regia (gold mohur).
Bambuca Arunduacea (bamboo or bāns).
Saraca Indica (āshok).
Butea Frondosa (dhāk or palas).

Manufactures.—The chief manufactures of the Hughli district at the present day are jute and cotton spinning, bone-crushing, and chemicals. Former manufactures, now extinct, but once of much importance, are rum, chintz and cloth of various kinds, and paper; besides indigo, which has already been described.

Rum.—Toynbee gives some notes on the history of this industry. The first rum distillery in the district was built at Bandel in 1810 by a Mr. Nickels. The Prior objected, but his objection was overruled. Rum from this distillery was supplied to the troops, and also exported to Europe and

Australia. In 1820, 5,000 gallons, paying a duty of Rs. 1,300, were shipped to New South Wales in the ship *Triton*. The Commissariat paid ten annas per gallon for the rum, and sold it in the canteen for two rupees per gallon. Many other rival distilleries of rum were started. Toynbee gives the following list:—

Ballabhpur, Serampur	owned by	W. Woollen, late B. C. S.
Ditto, Pagoda distillery	„	W. Graves.
Paddamdanga distillery	„	Elberling.
Dhanguri „	„	Carr, Tagore & Co.
Rishra „	„	G. Macnair.
Konnagar „		
Bankipur „	„	Jerdon.
Chandarnagar „	„	Tressanges.

The rum trade was ruined about 1840 owing to the fall in the price of rum exported to Europe.

Paper used to be manufactured at Pandua and Satgaon. In 1838, Toynbee states, the Magistrate reports that the Pandua paper was both better and cheaper than that from Satgaon. Pandua paper was extensively exported to other districts. In July 1841 the industry was introduced into the jail, but does not appear to have met with any great success, though from the profits the Magistrate was able to purchase four looms in 1844, and thus take up the weaving of cloth as a jail industry. In the four years, 1841 to 1845, Toynbee gives the figures of paper manufacture in the jail as 1,169 reams. The local industry at Pandua lingered on till comparatively recent times, but was finally killed by the setting up of large paper mills worked by steam. Though none of these paper mills are actually within the limits of the Hughli district, there are three on the very borders, the Imperial paper mill at Kankinara and the Titaghar paper mill, both of which are on the east bank of the Hughli river, opposite Hughli district, and the Bali paper mill, on the south bank of the Bali *khal*, which cuts it off from Hughli. This last is the successor of the old paper mill at Serampur, from which its original machinery was transferred. That mill gave its name to the inferior foolscap known as Serampur paper, now often called Bali paper.

Chintz was formerly manufactured in this district. This industry, like indigo, is said to have been introduced by Mr. Prinsep. In 1822 a Mr. J. Nasmyth had a chintz factory at Rishra, and there was another at Champdani. The introduction of cheap Manchester goods ruined the industry about 1840. The factories were for some time afterwards utilized for printing *bandanas*, or silk handkerchiefs, and in 1845 Rishra was owned by Babu Bishambar Sen and Champdani by Mr. W. Storm.

Silk, cotton, and muslin cloths were formerly manufactured in great quantities in Hughli district. The "Minutes of Consultations" of Fort William in the middle of the eighteenth century teem with references to these manufactures, such as the despatch of *gomastas* (managers or agents) to the *aurangs* (weaving factories)

of Hurrypaul, Dooneacolly, Kirpoy, Soonamukhy, and Golagore; or, in modern spelling, Haripal, Dhaniakhali, Khirpai, Sonamukhi, and Golaghar (Magra). In 1755 the "Ballasore *mulmuls*" (muslins) purchased at Haripal were said to be much improved. In 1759 Mr. Watts, Resident at Guttaul (Ghatal) complains that the *gomastas* at Connakool (Khanakul) had detained some silk winders, who were indebted to him. In 1755 a report of money advanced to various *aurangs* shows the following sums, given as advances: Hurrypaul, Rs. 85,443; Dorneacally, Rs. 38,533; Gollagore, Rs. 38,518, and Keerpye, Rs. 1,62,570; showing that business was conducted on a considerable scale. In an official report of an inspection of the *aurangs* in 1767, the inspecting officer reports that he visited the *aurangs* in the Burdwan province, viz., Cuttorah, Hurripaul, Keerpoy, Sonamooky, and Gollagore. At Cuttorah and Gollagore things were going on well. At Doorhatta "the Company's affairs in a distressed situation," nearly Rs. 50,000 outstanding of last year's advances. He left the French and Dutch deputies at Doorhatta, and proceeded to Keerpoy, "where he found the investment in a very backward state." He reports that it will be necessary to increase prices, owing to the immense competition for cloth.

There is still a good deal of weaving done in the district, though the competition of cheap imported goods prevents the industry from flourishing; *dhotis*, *saris*, and *chadars*, being woven in the *Sadr* and Serampur subdivisions, from cotton, as well as the *tassar* silk industry in Badanganj. In the jurisdiction of Dadpur outpost, in *thana* Dhaniakhali, some Musalmans still carry on a brisk trade in *chikan* work (embroidery), which is exported to America and the Colonies.

Excise.—Lord Cornwallis' Regulation of 19th April 1790 prohibited the manufacture of liquor without a license, and a Regulation of 14th January 1791 provided for the granting of such licenses to distillers and vendors. The system adopted was that of outstills, the right to manufacture and sell liquor being sold by auction. Under the treaty of Vienna the French settlement at Chandarnagar had the right to receive 300 chests of opium yearly, a right subsequently commuted to a cash payment. Although Regulation X of 1813 provided for the establishment of *sadr* distilleries, the outstill system remained in force up till 1840, when the farming system was abolished, and *sadr* distilleries established at Tribeni, Bhadreswar, Bali-Diwanganj, Dhaniakhali, Bagnan, and Rajbalhat, the area supplied by each distillery being called an excise division, with a *daroga* in charge of each, and a European Superintendent over the whole. Owing to difficulty of communication, outstills were allowed in Jahanabad subdivision, and the system again gradually crept in all over the district. The Excise Commission of 1883-84 reported that the outstill system had lamentably failed in the districts near Calcutta, and outstills were abolished from 1st April 1889 in the Serampur subdivision, and in the other two subdivisions from 1st April 1890. The *sadr* system is still in use, the *sadr* distillery being at Serampur,

while Arambagh is supplied by a depôt, which is replenished from Bardwan. It is intended, however, to abolish the Serampur distillery, and to keep only a depôt, which will be supplied from the Russa distillery.

Jute and cotton spinning, bone-crushing, and the manufacture of chemicals, are conducted in large mills or factories under European supervision. There are five jute mills in the district, besides one in the French territory of Chandarnagar; one cotton mill, one chemical works, and two bone mills. The following table gives the number of hands employed in each in 1899-1900, and the number of horse-power employed in the steam-engines by which all of them are worked. The figures are taken from the annual factory report for 1899-1900, except those of the Gondalpara jute mill, which have been privately furnished. This mill, being on French territory, does not come under the provisions of the Factory Act:—

Factories in Hughli District.

Number.	Name.	Locality.	Horse-power employed.	Hands employed.				
				Men.	Women.	Boys.	Girls.	Total.
1	Magra Bone Mill* ...	Magra ...	20	40	15	...	...	55
2	India Jute Mill ...	Serampur ...	352	1,853	532	376	2	2,763
3	Wellington „ ...	Rishra ... / Serampur ...	1,200	2,109	325	159	16	2,609
4	Hastings „ ...	Rishra ... / Serampur ...	1,700	5,103	1,006	418	31	6,558
5	Champdani „ ...	Champdani ... / Baidyabati ...	1,800	1,956	719	305	33	3,013
6	Victoria „ ...	Telinipara ... / Bhadreswar ...	2,500	3,807	1,219	523	139	5,688
7	Serampur Cotton Mill	Mohesh ... / Serampur ...	550	670	87	18	12	787
8	Konnagar Chemical Works.	Konnagar ... / Serampur ...	12	89	...	...	...	89
9	Bali Bone Mill ...	Uttarpara ...	4,010	101	14	...	...	115
10	Gondalpara Jute Mill ...	Chandarnagar ...	1,462	1,669	438	338		2,445

A few smaller industries may be mentioned: *mats* of a superior kind are woven at Serampur and Bandipur; *brasswork* at Bainchi, Khanpur, and

* Removed to Bali March 1902.

Shahganj; *basket-making* at Mayapur and Bandipur; *coarse pottery* at Bhadreswar, Bagnan and Serampur.

Trade.—Hughli was the head-quarters of the English in Bengal from its foundation as one of the Company's factories, in 1651, till its supersession by Calcutta, in 1690. As such, it had a lucrative and extensive trade. This trade was, of course, not confined to local articles, produced or manufactured in or near Hughli itself, but the Hughli factory was the general exchange to which the products of Bengal were brought for export to Europe, and the exports of Europe for distribution throughout Bengal. While many of the articles exported were produced locally, such as silk and other like fabrics, many of the exports from Hughli were not local products, for instance, saltpetre, which all the European companies obtained chiefly from Bihar, through Patna. To show how great was the trade of Hughli at various times, I have extracted a number of orders and reports on the subject from different sources.

Trade in 1650-57.—Captain Brookhaven, of the "Lyoness," who was sent from Madras to establish the factory at Hughli, gave instructions that silk and sugar were to be bought there. On 31st December 1657 the Madras Factory issued instructions to the Council in "the Bay" to procure at Hughli cotton yarne, Salt Peeter, Bengala Silke, *Samoes Adatay* (piece-goods), Cynomon, Taffaties, *Bougees* (Cowries, Portuguese *buzias*), Turmerick, and Gumlack (Hedge's Diary, Vol. III, pp. 184-188).

Trade in 1661.—John Kenn, appointed chief of Kasimbazar Factory in 1658, in a report on the trade of Hughli in 1661, writes as follows:—

"Hugly the best time to buy goods in this place is as followeth, vizt.—

In March and April, Wheat, Gunneys, and Sugar.

In May and June, Butter, Ginghams, White Cloths, and several sorts of striped stuffs.

In July and August, Rice, Hemp, Flax.

In December and January, Long Pepper, Oyle, and Rice of the second growth.

In September, October, and November, all things are very dear, being the time of Shipping, and in which we receive in those goods for which money was given out in the months afore written." [Wilson, Early Annals, Vol. I, pp. 377-8].

Trade in 1676.—From Mr. W. Clavell's "Accompt of the Trade of Hugly," sent home by Streynsham Master in 1676, appended to his diary. An account of the trade of Patna, Balasore, Malda, and Metchlepatam (Masulipatam) is also given. [Hedge's Diary, Vol. II, p. 236].

"About Hugly there live many weavers who weave cotton cloth and cotton and *Tesser* or *Herba* of severall sorts, and from the parts thereabout there is brought silk, sugar, opium, rice, wheat, oyle, butter, course hempe, *gunnyes*, and many other commodityes. The way of procuring these is to agree upon musters with the merchants of HUGLY, or to send Bannians who can give Security, to buy them on our accounts in the places where they are made or procurable at cheapest hands, and whether wee use one way or other wee give passes in the ENGLISH name for the bringing those goods free of custome, and all those places have so great a convenience that most of the goods are brought by water, unless from the places near unto HUGLY which lye thwart the countrey.

"The goods we sell in HUGLY by merchants there are upon time, or ready money, but which way soever it is that wee sell them wee give passes and send them out in our names to avoid the merchants paying custome, which otherwise they would not doe, and wee are forced to abate in the price proportionate.

"The Dutch carry home rice, Oyle, Butter, hempe, cordage, saile cloth, raw silk, silk wrought, saltpetre, opium, Turminck, Neelaes,* Ginghams, Tapits, *Brawles* or Slave Cloutes, *achee Beagues*, sugar, long pepper, and Bees wax, as much as they can gett.

"The Portugueez, though numerous in HUGLY, yett are reduced to a very low and meane condition, their trade not worth mentioning, their subsistance being to be entertained in the Mogull's pay as souldiers."

Some of the articles mentioned above as exports from Hughli, I cannot identify. *Tesser* of course is *Tassar* silk, *Tapits* probably means taffaties. *Neelaes* and *atchee Beagues*, I do not understand; *atchee* no doubt means good, *Beagues* may possibly mean *Bij*, seed. *Neelaes* may be *Nil*, indigo.

Soon after the foundation of Calcutta it is noted that "everything had to be made, or got in the way of furniture, from Hughli." The tables are turned now, with a vengeance, when nearly everything used in Hughli is imported from Calcutta.

Trade in or about 1706.—Hamilton, whose book was published in 1744, though the period he describes was about 1706, writes as follows (p. 19) :—

"Hughly is a town of a large Extent, but ill built. It reaches about two miles along the River's side, from the Chinchura before mentioned, to the Bandel, a Colony formerly settled by the Portuguese, but the Mogul's Fouzdaar governs both at present. This town of Hughly drives a great Trade, because all foreign Goods are brought thither for Import, and all Goods of the Product of Bengal are brought hither for Exportation. And the Mogul's Furza or Custom house is at this place. It affords rich Cargoes for fifty or sixty Ships yearly, besides what is carried to neighbouring countries in small vessels; and there are vessels that bring Salt Petre from Patana, above 50 yards long, and 5 broad, and two and a half deep, and can carry above 200 Tuns. They come down in the month of October, before the stream of the River, but are obliged to track them up again, with Strength of Hand, about 1,000 miles. To mention all the particular Species of Goods that this rich country produces, is far beyond my Skill, but, in our East India Company's Sales, all the Sorts, that are sent hence to Europe, may be found; but ophium, long Pepper, and Ginger, are commodities that the trading shipping in India deals in, besides Tobacco, and many sorts of Piece Goods, that are not merchantable in Europe."

Trade in seventeenth century.—From Wilson, "Early Annals," p. 380.

"Hugly sugars to be bought at Chandracona and Tania. The best time to give out money is in Xber, to merchants that live at Hugly, who will undertake to deliver it you there in August following at Rupees 6 to 7 per bale, the bale being M^ds^. 2 and 13 seers the 40 Pice Seer, it's much better to contract with them than to send or go ourselves, for we have found it come out cheaper than we could ever make it come out ourselves, though we pay no Custome and they do, its usually sold in shipping time from 9 to 10 Rupees per bale.

* The word *Nillaes* appears in a list of various kinds of piece-goods exported from Bengal, in Yule and Burnell's "Hobson-Jobson," or "Glossary of Anglo-Indian Words," p. 536, under *piece-goods*. The list given is quoted from Milburn's "Oriental Commerce" (2 vols., 4to, 1813), Vol. I, pp. 44-46, and Vol. II, pp. 90 and 221. *Taffaties* appears in the same list. *Brawls* appears in a similar list, of piece-goods exported from Madras, on page 535. Possibly *Neelaes* or *Nillaes* may mean piece-goods dyed with indigo-*nil*.—D. G. C.

"Long Pepper to be bought at said time, it grows about 16 course thence, it may be had at 4 to 5 Rupees per maund, and in the shipping it is usually worth 9 to 10 Rupees, but much of it must not be bought because Bulkey, and will not vend.

"Butter to be had what quantities you desire, its to be had in Xber at 4 and 5 Rupees per maund, and is sold from 8 to 10 Rupees per maund. Oyle to be bought in Xber at 1¾ to 2 Rups and sells at 3 to 4 Rupees per maund at Ballasore, since this new King's Government the weights are there as in Pattana formerly somewhat less than £ 70 English the maund now £ 75."

By 16 course is evidently intended 16 kos, or 32 miles. Xber is October. The new king is Aurangzeb. By £70 in the last line apparently 70 lb. is meant. It is interesting to see that then, as now, the native, even when handicapped by a customs duty from which the foreigner was free, could buy much more cheaply than the European. The whole trade seems to have been conducted on a system of advances, as indigo and opium are to this day. Losses of advances must have been great, not only from fraud, but from sheer ill-luck, such as the death or illness of those who got the advances. There are constant complaints of inability to recover advances, especially from the weavers.

In the middle of the eighteenth century the different European Companies appear to have borrowed articles of export, especially saltpetre, freely from each other, as required. There are many references to such mutual obligations in the Minutes of Consultations of Fort William. For instance, on 19th March 1753, a letter was received from the Director and Council at Hughli (*i.e.*, the Dutch), intimating their inability to supply saltpetre, whereon the English Council at Fort William determine to borrow from the French. On 18th July 1757, the Director and Council of Hughli agreed to lend 5,000 bags of saltpetre, if their advices from Patna are favourable.

At the present day the chief articles imported into the Hughli district are common rice, European piece-goods; lime from Sylhet, Bardwan, and Raniganj; timber; and articles of luxury. The chief exports are fine rice, silk, jute, cotton cloth, vegetables, and brass and bell-metal utensils.

The chief mart in the district is Sheorafuli *hat*. Sheorafuli is a station on the East Indian Railway within the limits of Baidyabati Municipality. The other important marts are Baidyabati, Bhadreswar, Chinsura, Hughli, Tribeni, and Balagarh.

The Commercial Residencies were maintained by the East India Company for trading purposes. The charge of such a Residency was an important and also lucrative position. Two such Residencies were maintained in the Hughli district, one being the Residency of Haripal, Khirpai, and Radhanagar, the two latter being now in Ghatal subdivision of Midnapur; the other that of Golagore, the modern Magra. The Haripal Residency was originally established at Rajbalhat, on the east bank of the Damudar, in Kristonagar *thana;* it was moved to Haripal about 1790. I have got a few particulars

about the staff of these Residencies from old East India Registers. In 1820 Haripal, Golagore, and Santipur in Nadiya, figure as one Residency, Khirpai and Radhanagar being no longer mentioned. After 1824 Haripal again is given by itself, up to 1833, after which year the Residencies no longer appear in the Civil List in the East India Register. They were abolished about that time, and the buildings and sites sold off.

In 1765 Thomas Hewit was Resident at Haripal. In May 1795 Roger Gale succeeded Richard Waite Cox as Resident of Golagore, and was in turn succeeded by Pitts Middleton in August 1796.

From 1807 to 1820 Robert Richardson was Commercial Resident at Haripal, with George Richardson, from their respective standing in the service probably his son or nephew, as assistant. In 1824 Charles Carey was the Resident, from 1825 to 1828 Robert Brooke, from 1829 to 1833 Henry S. Lane. After 1820 there does not appear to have been an Assistant Resident.

The post of Surgeon to this Residency was held in 1806 by Andrew Stephens, who died in Calcutta on 26th August of that year; from 1813 to 1816 by William Hogg, who was then appointed Civil Surgeon of Hughli, where he died on 30th September 1820; in 1817 by Charles Pears; in 1820 by John Henderson; after which I have found no record of any medical officer holding the appointment.

There was a Collector of Customs at Hughli up to 1827, the post being filled by an officer of the Civil Service. It was held by J. Rattray from 14th May 1801 to 1807; by Thomas Evans from 2nd April 1807 till his death, which took place at Barrackpore on 31st August 1810; and by Archibald George James Tod from 1810 to 1816; by William Fane in 1817 and 1818; by Robert Saunders from 1819 to 1823, and by William H. Belli from 1824 to 1827, when the post was amalgamated with that of the District Collector, which Mr. Belli continued to hold up to 1841.

CHAPTER III.

POPULATION.

The first definite attempt at the numbering of the people was made in 1872, when the first census was taken. Various rough estimates of the population had been made from time to time, but they were so roughly made, and moreover the boundaries and area of the district have changed so much, previous to 1880, that these early attempts to ascertain the population are now of little value for comparative purposes. The earliest attempt to count the inhabitants, of which I have found any record, was made by the then Magistrate, Mr. E. A. Samuells, in 1837 : the result was that the population of the district was computed at 1,508,843, of whom 70,025 were in "the town." As regards the district, it must be remembered that not only the *thanas* of Chandrakona and Ghatal, now in Midnapur, but also the whole of what is now the Howrah district, were then included in Hughli, and one and-a-half millions seems by no means an improbable estimate of the number of inhabitants in this large tract of country; in fact, I should think it was probably an underestimate. On the other hand, seventy thousand seems an enormous estimate for the population of Hughli town; it is more than double the present population in 1901. I do not, however, know what was considered as the area of the town in those days; possibly it includes the whole riverine strip north of Serampur, which was then still a Danish settlement. Even so it seems very high. Perhaps "the town" means Howrah.

The next estimate which I have seen is contained in the Sanitary Commissioner's report for 1868 (page 28), where two widely different estimates are given on the same page—one of 1,600,000, or 1,100 per square mile ; the other of 1,370,120. Howrah was not then included in the Hughli district, which however, still comprised Chandrakona and Ghatal. Deducting the population of these two *thanas*, as computed in the census of 1872, the population of the area which now forms the Hughli district would be 1,390,780, according to the larger, and 1,161,900 according to the smaller estimate. This latter is only about 4,000 higher than the population according to the census of 1872; but as the population probably fell by much more than four thousand in the four years 1868 to 1872, which were years when epidemic fever was prevalent in the district, it appears most likely that the larger figures were considerably overestimated, the smaller considerably underestimated. I have considered these figures at greater length in my remarks on the epidemic fever, in Chapter VI. I believe that these earlier estimates of population were made by roughly counting the number of houses in the district, and then multiplying the houses by five for the population.

When the census of 1872 was taken the Jahanabad subdivision formed part of the Hughli district, but it was transferred to Bardwan on 1st July 1872, before the figures of the census were ready for publication. In the census tables of 1872, therefore, it appears as part of Bardwan district. I have, however, added the figures for Jahanabad to those of the *Sadr* and Serampur subdivisions, for the sake of comparison with the census of subsequent years. When the second census was taken, in 1881, Jahanabad subdivision had been restored to Hughli district. Between 1881 and 1891, no change had taken place in area or boundaries. But in 1894 the jurisdiction of Singti outpost in Khanakul *thana* was transferred to Howrah, an area of 34 square miles, containing 42 villages, and a population of 42,414. When the census of 1901 was taken, therefore, the area and population of Hughli district had been diminished to this extent. Moreover, at the date of writing, only the preliminary figures of the census of 1901 are available; it is probable, however, that they will not differ much from the final revised figures.

With respect to the division of population between the towns and the *mofussil*, we may take the long and narrow strip of country bounded by the East Indian Railway on the west, and the river Hughli on the east, from Tribeni on the north to the Bali *Khal* on the south, as being entirely urban, and the rest of the district as being entirely rural. The above strip forms the area of seven out of the eight municipalities in the district; the eighth, Arambagh, consisting of a small urban nucleus, around which are grouped a number of rural villages to form the municipality. It may therefore be fairly considered as part of the rural area of the district.

The following small table gives the population of this urban strip along the river bank, as compared to that of the rest of the district, as it stood at the census of 1881, 1891, and 1901. This strip also includes the French settlement of Chandarnagar, with a population of about 26,000. The physical conditions of Chandarnagar are similar to those of the rest of the tract, *i.e.*, it is all more or less urban; but its population of course is not included in that of the Hughli district. Were it included, the proportion of the population of this strip, as compared to that of the whole district, would be raised from 11·97 to 14·09 per cent:—

Census.	Population			Percentage	
	Of urban strip.	Of rest of district.	Total.	Of urban strip.	Of rest of district.
1881	98,539	914,229	1,012,768	9·73	90·27
1891	115,467	961,243	1,076,710	10·72	89·28
1901	125,764	924,601	1,050,365	11·97	88·03

The figures given in the above table show a steady rise in the urban population. This rise is due to the extension of various industries carried on in large mills in the towns of Serampur, Baidyabati, and Bhadreswar. Taking the seven towns in the riparian strip separately, Serampur, which is the chief seat of mill industries, has increased both rapidly and steadily in population; Baidyabati and Uttarpara have also increased; Bhadreswar shows a very large increase, almost entirely within the last ten years; while Kotrang, Hughli-Chinsura, and Bansbaria have diminished in population. The eighth municipality, Jahanabad or Arambagh, shows a considerable diminution; but this is due to the fact that, when the Jahanabad municipal union was converted into a municipality on 1st April 1886, its area was diminished by cutting off seven rural villages. As a matter of fact, since 1881 the population of Arambagh, allowing for the above diminution of area, has slightly increased. The following table gives the population of these eight towns at each successive census:—

Name of town.	1872.	1881.	1891.	1901.	Total difference, 1872-1901.
Hughli-Chinsura ...	34,761	31,177	33,060	29,404	− 5,357
Bansbaria	7,861	7,031	6,783	6,484	− 1,371
Serampur	24,440	25,559	35,932	44,629	+20,189
Bhadreswar	7,417	9,241	9,639	15,161	+ 7,774
Baidyabati	13,332	14,477	18,380	17,192	+ 3,860
Kotrang	6,811	5,747	5,164	5,938	− 873
Uttarpara	4,389	5,307	6,489	6,956	+ 2,567
Jahanabad (Arambagh) ...	13,409	10,507	8,326	8,270	− 5,139

Next to the riparian strip, from Tribeni to Uttarpara, the most populous part of the district is another strip, broader but less thickly peopled, lying along the banks of the Saraswati and the Kana *Nadi*, and containing the important villages of Magra, Nanda, Singur, Burai, and Chanditola. In 1872, after suffering severely for several years from epidemic fever, this strip had a density of population of from one to three thousand per square mile. By 1881 the population of this tract had fallen considerably, as the epidemic fever had ravaged it for another five or six years, while only the last four years might be considered years of recovery after the fever; it has now regained the same density of population which it had in 1872. This density is, however, probably far less than that of ten years earlier, before the epidemic fever appeared. But as we do not know, and never shall know, but at best can only roughly guess, what the population in 1862 was, it is useless to speculate upon it here. This subject is again touched upon in Chapter VI.

The following table, taken from the census report of 1891, gives another view of the urban and rural population of the district, their respective density in each subdivision being contrasted. From this table it appears that the urban population of the *Sadr* subdivision was in 1891 about six times as dense as that of the rural tracts, in Serampur subdivision about five times, in Jahanabad nearly three times. A similar table for 1901 is not yet available. Roughly, the urban population of Serampur subdivision will show a considerable relative increase, that of Jahanabad a small increase (owing to the transfer of Singti outpost, a purely rural tract, to Howrah), that of the *Sadr* subdivision a decrease:—

Subdivision.	Area in square miles.	Number of				Population.				
		Towns.	Villages.	Occupied houses.	Total.	Urban.	Density of urban population per square mile.	Rural.	Density of rural population per square mile.	Total density of population per square mile.
Sadar ...	442	2	974	111,561	309,616	39,843	3,125	269,773	628	700·5
Serampur ...	343	5	801	90,639	399,987	75,624	5,284	324,363	986	1,166·1
Jahanabad ...	438	1	799	82,390	367,107	8,326	2,775	358,781	824	838·1
Total ...	1,223	8	2,574	284,590	1,076,710	123,793	4,126	952,917	800·6	880·3

In the above table Jahanabad is, of course, counted as a town; whereas in the table contrasting the urban and rural populations above, I have included it in the rural area, and counted only the riparian strip as urban. Chandarnagar is not included in the above figures, nor indeed, being foreign territory, in any of the census tables of the Hughli district. Geographically it forms a portion of the riparian strip, it is purely urban, and its inclusion would raise the proportion of urban population in all calculations.

The population of the district of Hughli, at each of the four census takings, 1872, 1881, 1891, 1901 (preliminary figures), is given in the following tables, which show the population of the whole district, *thana* by *thana*, and also separately that of each of the towns in the district. In each table, the population of each town is included in that of the *thana* within which it lies.

The following table, taken from Volume III of Hunter's Statistical Account of Bengal, gives the population of the Hughli district according to the census of 1872. The towns are not shown separately, but their populations, as shown in Annual Form No. VI of the Sanitary Commissioner's report for 1880, were as

follows. These populations are included in the populations of their respective *thanas* in the table:—

Town.	Thana.	Population.
Hughli	Hughli	34,761
Balagarh ...	Balagarh	15,630
Jahanabad ...	Jahanabad (Bardwan)	13,409
Khanakul ...	Khanakul (Howrah)	14,537
Shambazar ...	Goghat (Bardwan)	19,635
Serampur ...	Serampur	24,440
Baidyabati ...	Baidyabati	13,332
Uttarpara ...	Chanditala	4,389

Hughli district, from 1872 to 1880, comprised two subdivisions, with five *thanas* in each. Jahanabad and Goghat *thanas* were then in Bardwan district, Khanakul *thanas* in Howrah district. The populations of these *thanas* are also given for the sake of comparison with the census of later years:—

Population of Hughli District.

[Census of 1872.]

Subdivision.	Thana.	Area in square miles.	Population.	Population per square mile.
Sadr ...	Hughli ...	62	67,538	1,089
	Bansbaria ...	47	41,309	879
	Balagarh ...	91	60,955	670
	Pandua ...	115	77,332	672
	Dhaniakhali ...	121	116,501	963
	Subdivisional Total	*436*	*363,635*	*834*
Serampur ...	Serampur ...	6	38,463	6,411
	Baidyabati ...	63	80,291	1,274
	Haripal ...	138	111,689	809
	Krishnanagar ...	71	69,280	976
	Chanditala ...	71	94,141	1,326
	Subdivisional Total	*349*	*393,864*	*1,129*
	Total of District ...	*785*	*757,499*	*964*
Mahishrakha (Howrah).	Khanakul ...	144	135,192	939
Jahanabad (Bardwan).	Jahanabad ...	143	128,969	902
	Goghat ...	143	136,246	953
	Total ...	*1,215*	*1,157,906*	*953*

When the census of 1881 was taken, considerable changes had been made in the boundaries of Hughli district and in the arrangement of *thanas*. The Jahanabad and Goghat *thanas* had been retransferred from Bardwan to Hughli, and, with the addition of Khanakul *thana*, retransferred from Howrah district, formed the Jahanabad subdivision. Bansbaria *thana* in the Sadr subdivision had disappeared, its place being taken by Polba; Singur *thana* had taken the place of Baidyabati in Serampur subdivision. The population of the district, *thana* by *thana*, including the towns, according to the census of 1881, was as follows:—

Population of Hughli District.

[Census of 1881.]

Subdivision.	Thana.	Area in square miles.	Population.	Population per square mile.
Sadr ...	Hughli ...	27	54,176	2,006·5
	Balagarh ...	86	48,218	560·6
	Pandua ...	111	66,113	595·6
	Dhaniakhali ...	135	93,537	692·8
	Polba ...	83	46,173	556·3
	Subdivisional Total	*442*	*308,217*	*697·3*
Serampur ...	Serampur ...	22	68,344	3,106·5
	Haripal ...	115	84,933	738·5
	Krishnanagar ...	63	55,107	874·7
	Singur ...	71	59,184	833·5
	Chanditala ...	72	84,387	1,172·0
	Subdivisional Total	*343*	*351,955*	*1,026·1*
Jahanabad ...	Jahanabad ...	147	110,412	751·1
	Goghat ...	146	108,884	745·7
	Khanakul ...	145	133,300	919·3
	Subdivisional Total	*438*	*352,596*	*805*
	District Total ...	*1,223*	*1,012,768*	*828*

In 1881 eight municipalities existed in the district, the same number as, including unions, there were in 1872; but Balagarh, Shambazar, and Khanakul unions had dropped out, while Bansbaria, Kotrang, and Bhadreswar had been constituted municipalities. The population of these eight towns, which is

included, in the table above, in the population of their respective *thanas*, was as follows in 1881:—

Town.	Thana.	Population.	Increase or decrease since 1872.
Hughli-Chinsura ...	Hughli ...	31,177	−3,584
Bansbaria	Ditto ...	7,031	− 830
Serampur	Serampur ...	25,559	+1,119
Bhadreswar	Ditto ...	9,241	+1,824
Baidyabati	Ditto ...	14,477	+1,145
Kotrang	Ditto ...	5,747	−1,064
Uttarpara	Ditto ...	5,307	+ 918
Jahanabad	Jahanabad ...	10,507	−2,902

Between 1881 and 1891, no changes took place in the boundaries or area of the Hughli district, while the only change in *thana* boundaries was the transfer of fourteen villages, in an area of three square miles, from Polba to Hughli *thana*. The following table gives the results of the census of 1891:—

Population of Hughli District.

[Census of 1891.]

Subdivision.	Thana.	Area in square miles.	Population.	Population per square mile.
Sadr ...	Hughli ...	30	56,458	1,881·7
	Balagarh ...	86	46,729	543·3
	Pandua ...	111	65,924	593·9
	Dhaniakhali ...	135	95,694	708·8
	Polba	80	44,811	560·1
	Subdivisional Total...	*442*	*309,616*	*700·5*
Serampur ...	Serampur ...	22	79,816	3,628·0
	Haripal ...	115	95,080	826·8
	Krishnanagar ...	63	59,938	951·4
	Singur ...	71	67,584	951·9
	Chanditala ...	72	97,569	1,355·1
	Subdivisional Total...	*343*	*399,987*	*1,166·1*
Jahanabad ...	Jahanabad ...	147	117,904	802·0
	Goghat ...	146	109,416	749·4
	Khanakul ...	145	139,787	964·0
	Subdivisional Total...	*438*	*367,107*	*838·1*
	District Total ...	*1,223*	*1,076,710*	*880·3*

The populations of the eight municipalities in the district stood as follows in 1891. During the ten years which had elapsed since the last census, Kotrang, Bansbaria, and Jahanabad, had all decreased in population; Serampur showed a very large, and Baidyabati a large increase; Hughli, Bhadreswar,

and Uttarpara a small increase. The figures for the town populations are included in the populations of their respective *thanas* above :—

Town.	Thana.	Population.	Increase or Decrease since 1881.
Hughli-Chinsura ...	Hughli ...	33,060	+ 1,983
Bansbaria	Ditto ...	6,783	— 248
Serampur	Serampur ...	35,952	+ 10,393
Bhadreswar	Ditto ...	9,639	+ 398
Baidyabati	Ditto ...	18,380	+ 3,903
Kotrang	Ditto ...	5,164	— 583
Uttarpara	Ditto ...	6,489	+ 1,182
Jahanabad	Jahanabad ...	8,326	— 2,181

Between 1891 and 1901, one change of importance was made in the boundaries of the district. Singti outpost of Khanakul *thana* was transferred to the Howrah district in 1894 (Government notification No. 3838J., of 3rd September 1894). This outpost comprised 34 square miles, including 42 villages, with a population (in 1891) of 42,414.

The following table gives the preliminary results of the census of 1901 :—

Population of Hughli District.

[Census of 1901.]

Subdivision.	Thana.	Area in square miles.	Population.	Increase or Decrease since 1891.	Population per square mile.
Sadr ...	Hughli ...	30	54,856	— 1,602	1,828·5
	Balagarh ...	86	46,245	— 484	537·7
	Pandua ...	111	68,655	+ 2,731	618·5
	Dhaniakhali ...	035	95,630	— 64	708·3
	Polba ...	80	43,588	— 1,223	544·8
	Subdivisional Total	*442*	*308,974*	*— 642*	*699·03*
Serampur ...	Serampur ...	22	94,251	+ 04,435	4,284·1
	Haripal ...	115	96,892	+ 0,812	842·5
	Krishnanagar ...	63	57,729	— 2,209	916·3
	Singur ...	70	65,513	— 2,070	921·8
	Chanditala ...	72	99,130	+ 1,561	1,376·8
	Subdivisional Total	*343*	*413,515*	*+ 13,528*	*1,205·6*
Arambagh (Jahanabad)	Arambagh (Jahanabad).	147	021,282	+ 3,378	825·04
	Goghat ...	146	106,866	— 2,550	731·9
	Khanakul ...	111	99,728	— 40,059	898·4
	Subdivisional Total	*404*	*327,876*	*— 39,231*	*811·5*
	District Total ...	*1,223*	*1,050,365*	*— 26,345*	*883·4*

The considerable decrease in the populations of Khanakul *thana*, of Arambagh subdivision, and of the district as a whole, are due to the transfer of Singti outpost to Howrah. If the population of this area, 42,414, be deducted from the figures for 1891, the district, as its boundaries stand in 1901, would show an increase of 16,069, Arambagh subdivision an increase of 3,183, Khanakul *thana* an increase of 2,355.

The preliminary results of the census of 1901 give the following population for the eight municipalities in the district. During the past ten years, Serampur and Bhadreswar have greatly increased, while Uttarpara and Kotrang show a small increase; Hughli-Chinsura shows a large, Baidyabati a considerable, Bansbaria a small, and Arambagh, formerly Jahanabad, a very small decrease. The figures are included in the *thana* populations given above :—

Town.	Thana.	* Population.	Increase or Decrease since 1891.
Hughli-Chinsura ...	Hughli ...	29,404	— 3,656
Bansbaria	Ditto ...	6,484	— 299
Serampur	Serampur ...	44,629	+ 8,677
Bhadreswar	Ditto ...	15,161	+ 5,522
Baidyabati	Ditto ...	17,192	— 1,188
Kotrang	Ditto ...	5,938	+ 774
Uttarpara	Ditto ...	6,956	+ 567
Arambagh	Arambagh ...	8,270	— 56

* The revised figures, for the eight towns are as follows :—

Town.	Male.	Female.	Total.
Hughli-Chinsura	15,378	14,005	29,383
Bansberia	3,365	3,108	6,473
Serampur	26,921	17,530	44,451
Bhadreswar	9,376	5,774	15,150
Baidyabati	9,859	7,315	17,174
Kotrang	3,500	2,444	5,944
Uttarpara	4,203	2,833	7,036
Arambagh	4,194	4,087	8,281

Race.—The great majority of the inhabitants of Hughli district, whether Hindu or Musalman, are Bengalis. There are also a large number of Biharis, and men from the eastern districts of the North-Western Provinces, who are of much the same race as the Biharis, and a smaller number of Uriyas; but the members of both these classes are mostly immigrants, who have no intention of permanently settling in the district. The most numerous caste in the district are the Bagdis, who are a semi-Hinduized aboriginal tribe. Other similar castes of which numerous members may be found in the district are those of Chamar and Muchi, Chandal, Dom, Hari, and Keora. There are no thoroughly aboriginal tribes indigenous to the district, though one such tribe, that of Sonthal, is represented by numerous temporary immigrants. More under this head will be found in the History under Ethnology.

Language.—The census report of 1891 states that Bengali is the native language of 97·89 per cent. of the population. The balance is made up of individuals who between them represent eighteen different languages; or, if we omit Scotch, which nowadays can hardly be considered a separate language from English, and Nagri, which is the name of a character, not of a language, sixteen. I have no doubt that there are several inaccuracies in this table; for instance, it is certainly not the case that there are in Hughli district 149 individuals whose native language is Arabic, or 413 Persians. The persons who gave these languages as their native language were probably Musalmans with some knowledge of their classical languages. Neither is it probable that there are 25 individuals whose native language is Portuguese. The few persons who have Portuguese surnames probably speak either English or Bengali as their native language, except in the case of one or two priests. Those who have given Nagri, Hindi, and Urdu, as their native language, are probably all much the same in race and country, immigrants from Bihar and the eastern districts of the North-Western Provinces: the comparatively small number who return Urdu being Musalmans, few of whom immigrate into the district, in comparison with the large numbers of Hindus from Bihar and the North-Western Provinces, who come here in search of work and service in the police, the mills, or as servants, *darwans*, peons, &c., to private individuals. Sonthals figure in considerable numbers, and it certainly seems strange that 3,864 should return their native language as Sonthali, while the census returns show only 2,035 Sonthals, not much more than half the number who speak Sonthali. English (388), Scotch (32), French (8), Portuguese (25), and Armenian (14), together number 467, and as the Christians in the district are returned as 633, this would leave a balance of 166 Native Christians. Pushtu is returned as the mother-tongue of 181 persons, who were probably mostly Kabuli hawkers, though certainly the number seems large for one small district. Panjabi, Telegu, Gujarati, and Maghi are represented by a few immigrants, 49 in all. The languages of Nagri, Telegu, English, Scotch, Gujarati, Maghi, Portuguese, and Armenian are not represented at all in the Jahanabad subdivision, which, however, returned one Frenchman; French and Maghi are not shown under Serampur; nor Scotch under the *Sadr* subdivision; the other languages are represented more or less in each subdivision.

The following table shows the total numbers who return themselves as speaking the different languages represented in the district:—

English	338	420	Pushtu ...	181	Nagri	308	15,854
Scotch	32		Gujarati ...	26	Urdu	758	
French ...	8		Maghi ...	3	Hindi	14,788	
Portuguese ...	25		Telegu ...	3	Bengali	1,054,022	
Armenian ...	14		Panjabi ...	17			
Arabic ...	149		Uriya ...	1,711	Total of District	1,076,710	
Persian ...	413		Sonthali ...	3,864			

The Bengali spoken in Hughli, or at least in the riparian strip along the river bank, where so many of the higher castes reside, is said to be the purest form of the language spoken in the province.

Religion.—(See also Hindu deities, under Folklore, in the History.) The following table, showing the numbers in each *thana* who profess the various religions recognized in the census, is taken from the census report of 1891 :—

Thana.	Hindus.	Musalmans.	Christians.	Buddhists.	Jains.	Brahmos.	Santhals.	Other aborigines.	Total.	Proportion of—				
										Hindus.	Musalmans.	Christians.	Santhals.	Others.
Hughli ...	46,600	9,610	200	2	3	11	14	18	56,458	...	...	...	...	...
Balagarh ...	38,443	8,280	6	...	...	...	...	...	46,729	...	...	...	...	...
Pandua ...	43,753	22,050	61	...	...	...	60	...	65,924	...	...	...	...	...
Dhaniakhali	68,825	26,216	...	...	...	3	650	...	95,694	...	...	...	...	...
Polba ...	33,650	11,067	3	...	...	6	85	...	44,811	...	...	...	...	...
Total Sadr subdivision.	*231,271*	*77,223*	*270*	*2*	*3*	*20*	*809*	*18*	*309,616*	*74·69*	*24·94*	*0·08*	*0·26*	*0·01*
Serampur ...	70,138	9,264	345	1	9	19	39	1	79,816	...	...	...	...	...
Haripal ...	77,386	17,052	2	...	...	...	640	...	95,080	...	...	...	...	...
Krishnanagar	47,597	12,278	...	...	...	2	61	...	59,938	...	...	...	...	...
Singur ...	61,623	5,887	1	...	2	3	68	...	67,584	...	...	...	...	...
Chanditola	74,985	22,453	15	...	2	...	114	...	97,569	...	...	...	...	...
Total Serampur subdivision.	*331,729*	*66,934*	*363*	*1*	*13*	*24*	*922*	*1*	*399,987*	*82·93*	*16·73*	*0·09*	*0·23*	*0·02*
Jahanabad ...	98,199	19,612	...	...	...	...	93	...	117,904	...	...	...	...	...
Goghat ...	98,934	10,329	...	...	...	...	153	...	109,416	...	...	...	...	...
Khanakul ...	121,142	18,587	...	...	...	...	58	...	139,787	...	...	...	...	...
Total Jahanabad subdivision.	*318,275*	*48,528*	...	...	...	...	*304*	...	*367,107*	*86·69*	*13·21*	...	*0·08*	...
District Total.	*881,275*	*192,685*	*633*	*3*	*16*	*44*	*2,035*	*19*	*1,076,710*	*81·84*	*17·89*	*0·05*	*0·81*	*0·04*

Hughli is essentially a Hindu district; as the above table shows, over four-fifths of the population are Hindu by religion. Moreover, the proportion of Hindus to the total population has steadily increased at each census. In 1872 the Hindus numbered 592,635, or 78·23 per cent. of the population; in 1881, 822,972, or 81·25 per cent.; while 1891 shows a further increase to 881,275, and 81·84 per cent.

In 1876, Sir William Hunter wrote, in his "Statistical Report of the District of Hughli," that "the religion of Islam has now ceased to make any further progress among the people," and at each census the proportion of Musalmans has slightly declined, though the actual numbers show a slight increase. The census returns of 1872 show the number of Musalmans as 163,764, or 21·61 per cent. of the total population; those of 1881, 188,798, or 18·64 per cent.; those of 1891, 192,685, or only 17·89 per cent. The great increase in actual numbers of both Hindus and Musalmans between 1872 and 1881 is due to Jahanabad subdivision not being included in the district in 1872; while, as the proportion of Musalmans is lower in Jahanabad than in either of the other two subdivisions, this fact also accounts for the considerable relative decrease in the proportion of Musalmans between 1872 and 1881. Of the immigrants, who come in search of work in the mills, or in private service, a much larger proportion are Hindus, chiefly from Bihar and Orissa, than Musalmans; but aborigines form a considerable proportion of the immigrants. A certain number of Hindus also come to settle on the banks of the Hughli, in the riverine towns, on retirement from service or from business. The comparatively larger proportion of Musalmans in the *Sadr* subdivision, especially in Pandua and Dhaniakhali *thanas*, is accounted for by the fact that Pandua was once the head-quarters of a district Government, under the Moguls, and that a number of the inhabitants still resident in these parts are descendants of the soldiers of the Musalman garrison, or of other immigrants at the time of the Musalman conquest. Pandua, moreover, is still a sacred place to Musalmans, who hold a large *mela* there annually, in the month of January, which is attended by large numbers of pilgrims and sight-seers.

Christians form a small and a decreasing fraction of the inhabitants. In 1872 there were 989, but the number had fallen to 655 in 1881, and to 633 in 1891. The decrease has been regular and steady in both the *Sadr* and Serampur subdivisions; there have never been any Christians in Jahanabad, at least since indigo cultivation ceased. It is probably due to removal of Portuguese, Armenian, and Native Christian families to Calcutta, Chandarnagar, &c. The Free Kirk of Scotland Rural Mission has a station at Chinsura, with outstations at Tribeni, Mahnad, and Sonatigri, but the number of converts is few, and the work done is chiefly educational. Serampur is still a large missionary centre of the Baptists, but there, also, there are not many converts.

The number of Sonthals and other aborigines, while a mere fraction of the total population of the district, is much greater than that of any other class except Hindus and Musalmans, being more than treble the number of Christians. In 1881 only 37 Sonthals were shown as resident in the district; probably most of them were counted as Hindus. There is, however, a considerable immigration of Sonthals into the district. They come in search of temporary employment as coolies, and seldom settle permanently.

Brahmos form a very small fraction, only 44 all told in 1891. The Brahmo church does not appear to make any progress: it is more likely to merge again in Hinduism. Jains numbered three in 1881, but in 1891 had risen to 16, probably traders temporarily settled here. Buddhists numbered three in 1891, probably Chinese artisans. Curiously the census of 1881 showed 290 Buddhists, of whom 288 were in Singur *thana*. As there is no Buddhist temple, nor any association with the Buddhist creed, in Singur, probably the return must have been due to some mistake. Lastly, the census of 1891 showed 19 miscellaneous aborigines, other than Sonthals, as resident in the district.

Caste.—During and since the census operations of 1901 considerable discussion, not to say ill-feeling, has been aroused over the question of the precedence of various Hindu castes, especially with regard to the question as to what place in the census tables should be occupied by the numerous caste of Kayasthas. Far be it from me to rush into any such discussion, where naturally a foreigner must fear to tread. I will only state, therefore, that the following table is taken bodily from the census report of 1891, and purports to give the order of precedence in which the various castes stand in local social esteem in the Hughli district:—

Table of Social Precedence.

"I. Clean castes—
- (1) Brahman.
- (2) Kshatriya or Rajput.
- (3) Baidya.
- (4) Khatri.
- (5) Agarwala.
- (6) Satsudra, divided into—
  - (A) Kayastha.
  - (B) Navasakha, again sub-divided into—
    - (*a*) Sadgop.
    - (*b*) Teli.
    - (*c*) Malakar.
    - (*d*) Tambuli.
    - (*e*) Tanti.
    - (*f*) Kansari.
    - (*g*) Sankhari.
    - (*h*) Karmokar.
    - (*i*) Kumhar.
    - (*j*) Barui.
    - (*k*) Maira.
    - (*l*) Gandhabanik.
    - (*m*) Baniya.
    - (*n*) Napit.
- (7) Aguri.

"[NOTE.—The Baidyas, being the offspring of a Brahman father and a Vaisaya mother, are, according to the *anulom* principle*, superior to the Khatri, and some would say to the Rajput.]

"II. Inferior Sudras, from whose hands a Brahman can take water, but whom he cannot serve as a priest without falling—

- (1) Goala.
- (2) Kaibartta.
- (3) Kandu.
- (4) Kurmi.
- (5) Kahar.
- (6) Koiri.
- (7) Baiti.
- (8) Dhanuk.

* *Anulom* is a Sanskrit word, the literal meaning of which is "consecutive." It is especially applied to a union between parents of different castes, the father of a superior and the mother of an inferior caste, when the children of the union will take rank *consecutive* to and next below the caste of their father, and above all lower castes. Its opposite is *prithilom*, applied to a union between a mother of a superior and a father of an inferior caste, when the children have no rank at all.

"III. Inferior Sudras, from whose hands a Brahman cannot receive water without being defiled—

(1) Subarnabanik. | (2) Sarnakar. | (3) Rajwar.

"IV. Sudras whose touch is pollution—

(1) Sutrudhar.	(9) Dhoba.	(17) Sonthal.
(2) Sunri.	(10) Chasa Dhoba.	(18) Dom.
(3) Jugi.	(11) Namasudra.	(19) Hari.
(4) Rajbansi.	(12) Kaora.	(20) Patni.
(5) Tiyar.	(13) Bagdi.	(21) Bediya.
(6) Pod.	(14) Bana.	(22) Chamar.
(7) Jalia.	(15) Kaura.	
(8) Patni.	(16) Bauri.	

"The number of people in each of the other castes recorded at the census is so small that their social status cannot be determined. They are all immigrants from other provinces, and have not yet settled in this district."

No caste, as a rule, belongs to any particular agricultural class. Among the *zamindars* and tenure-holders are found Brahmans, Kshatriyas, Kayasthas, Baidyas, Sadgops, Tambulis, and Kaibarttas; and among the occupancy and non-occupancy raiyats and field labourers, Sadgops, Kaibarttas, Napits, and many of the inferior castes.

The belief in the sacred character of the holy river Bhagirathi has always led to large numbers of Hindus, retiring from service, professions, or trades, settling on its banks, especially the western bank in Hughli district. The higher castes are, therefore, numerous all along the riparian strip, from Guptipara to Bali. Kulinism also has helped in inducing large numbers of these castes to settle in this tract; a rich family of a lower sept generally forming a nucleus of caste groups consisting of representatives of higher septs.

Some of the trading and artisan castes, *e.g.*, Tantis, Subarnabaniks, Kansaris, and Kamars, are very numerous in the urban strip along the bank of the Hughli. Some of them are the descendants of the artisans and traders of Satgaon or Saptagram.

The following table gives the numbers of the most numerous castes at the three censuses of 1872, 1881, and 1891. The figures for 1872 are taken from Hunter (pp. 282-83):—

Caste.	1872.	1881.	1891.
Bagdi	152,618	134,115	157,304
Kaibartta	288,621	142,526	143,780
Brahman	107,534	76,271	74,991
Teli	29,112	47,038	54,603
Sadgop	63,774	61,021	56,288
Goala	65,366	46,134	38,602
Kayastha	38,722	25,484	29,177

The figures for Telis in 1872 include Telis, 29,112, and Kalus, 10,844. In 1891 these two were returned under one head.

The most remarkable feature of the above table is the enormous drop in the numbers of some castes between 1872 and 1881. For instance, the Kaibarttas returned in 1872 are more than double the numbers shown in 1881; while Brahmans, Goalas, Kayasthas, and Bagdis also show a very large decrease. When we remember that the census of 1872 did not include the subdivision of Jahanabad the decrease seems all the more singular. The reason, however, is that Hunter's tables include the district of Howrah; no comparison can therefore be made between 1872 and subsequent years.

Statement showing the relative numbers of the two sexes at each period of life in the Hughli District.

[Census 1891.]

	Both sexes.	Males.	Females.	Proportion of females to 1,000 males.
Infants	30,093	14,518	15,575	1,072·80
1 year	14,558	7,026	7,532	1,072·01
2 years	29,952	14,487	15,465	1,067·50
3 „	30,020	14,347	15,673	1,092·42
4 „	27,588	14,031	13,557	966·21
5 „ to 9 years ...	132,643	68,359	64,284	940·38
10 „ „ 14 „ ...	106,919	58,968	47,951	813·16
15 „ „ 19 „ ...	86,023	40,356	45,667	1,131·60
20 „ „ 24 „ ...	87,129	39,512	47,617	1,205·12
25 „ „ 29 „ ...	99,657	47,952	51,705	1,078·26
30 „ „ 34 „ ...	95,678	47,268	48,410	1,024·16
35 „ „ 39 „ ...	73,054	38,543	34,511	895·38
40 „ „ 44 „ ...	81,151	40,711	40,440	993·34
45 „ „ 49 „ ...	43,884	22,687	21,197	934·32
50 „ „ 54 „ ...	49,794	22,824	26,970	1,181·66
55 „ „ 59 „ ...	25,505	11,844	13,661	1,153·41
60 and over ...	63,062	25,706	37,356	1,453·20
Total ...	1,076,710	529,139	547,571	1,034·83

Three tables, furnished by the office of the Inspector-General of Civil Hospitals, give, the first the relative numbers of the two sexes at the various periods of life; the second, the numbers suffering from various infirmities; the third, the numbers who follow various occupations. All give figures for the census of 1891 only.

Age.—The most noteworthy feature of the table showing the relative number of males and females at various age-periods is the comparatively small number of children shown in the returns as between one and two years of age. The number shown as infants, under one year of age, is 30,093, while from one to two years only 14,558 are given in the returns. Again, 29,952 are returned as between two and three years, almost as many as under one year; a still higher number, 30,020, between three and four; while the numbers between four and five, 27,588, are not much lower. In all these five age-periods the number of boys and girls vary very little; for both, the numbers between one and two years, are less than half of those under one year, and between two and three years. I am unable to give any reason for this striking difference, and can only suppose that it is due to the haphazard way in which natives give their ages and those of their children, as they seldom have any idea of age, and state ages quite at random.

As regards the relative numbers of each sex at the various age-periods, under four years of age girls considerably predominate; from four to fifteen there is a large majority of boys; from 15 to 35 again women are in the majority; men from 35 to 50, and women at all ages above fifty. No doubt in India, as in England, the number of women who reach advanced or old age is considerably larger than that of men, in spite of the fact that both sexes age much more rapidly in India than in Europe, and women the more rapidly of the two. The Bengali proverb, "*Burhi kuri*," "an old woman at twenty years of age," though of course an exaggeration of the literal truth, is not so absurd as it may sound to those unacquainted with the marriage customs of the East. A woman of twenty, who would in England be called a girl of twenty, may have borne half a dozen or even more children by the time she reaches that age in Bengal, and is certainly no longer in the first flush of fresh youth, as she would be at home. Where girls are married in infancy, and marriage is consummated at the first evidence of puberty, a girl steps straight from childhood to womanhood. The intermediate period of girlhood has no existence, and the *beauté du diable*, the charm of youth just blossoming into maturity, is never seen, but is destroyed before birth by the cares of early maternity and household worries; and this almost as much among the higher as among the lower classes.

The greatest preponderance of males occurs between ten and fifteen, when there are only 813·16 girls to every thousand boys; over the age of 60 there are 1,453·20 women to every thousand men.

Table showing the number of afflicted in Hughli District.

[Census 1891.]

	Males.	Females.	Both sexes.	Per cent.	
				Proportion of males.	Proportion of females.
Blind ...	439	449	888	49·44	50·56
Insane ...	268	141	409	65·52	34·48
Lepers ...	611	139	750	81·47	18·53
Deaf and dumb	426	338	764	56·55	43·45
Total ...	1,744	1,067	2,811	62·04	37·96

Infirmities.—The table of infirmities shows a very large preponderance of afflictions in the male sex. A very small majority of the blind are females (449 to 439); but there is a large majority among males of deaf-mutes (426 to 338), and of lunatics (268 to 141); while the male lepers outnumber the females by considerably more than four to one (611 to 139). As regards insanity, the causes of mental affections do no doubt affect men much more than women; females suffer much less from the excessive use of spirits and of drugs, such as *ganja*, *bhang*, &c., from business worries, and from sexual excesses. I do not know any reason why females should suffer less than males from leprosy or deaf-mutism. In both cases I should think that the great preponderance of males was chiefly due to the fact that, owing to the Indian custom of seclusion of women, the fact of such an affliction would be much more easily concealed among the female sex. In the case of leprosy, moreover, great reluctance to acknowledge the occurrence of this disease naturally exists.

The causes of insanity are chiefly those given above, with the addition of hereditary taint. The cause of leprosy cannot yet be said to be known, beyond that it is caused by a bacillus, but why the bacillus should attack certain persons is not yet ascertained. Heredity and contagion probably both take a share in the causation of this disease. There is no evidence to show that fish-eating has any effect. Hindus generally consider that the occurrence of leprosy is a punishment for sin, either in the present or in a former life, sometimes for sins committed by the parents of the sufferer; the sin of eating beef is supposed to be especially liable to this punishment. Deaf-mutism is of course almost always congenital; a few of the deaf and dumb have first lost their hearing from injury or disease, and afterwards gradually lost the power of speech. Blindness is due, in a very large number of cases, to untreated ophthalmia neonatorum; in many cases to other severe diseases of the eye, especially

ulceration of the cornea, such diseases usually going without treatment until it is too late to do anything for the sufferer; a few cases are caused by small-pox. Probably a good many of the cases returned as leprosy are really suffering from leucoderma, a skin disease which, though harmless enough in itself, usually is much more alarming to the sufferer than the early stages of leprosy.

The census report of 1891 gives tables of the numbers of each caste suffering from the above infirmities. It would serve no good purpose to reproduce these tables here. The only point of interest which they bring out is that Musalmans suffer from leprosy twice as much as Hindus; while the total number of Hindus is considerably more than four times that of the Musalmans, Hindu lepers are to Musalman lepers only about two to one.

Occupations.—The table, which gives the occupations of the people under seven chief heads, includes the whole population, men, women, and children. As in the census papers, the dependent members of a family are shown as following the occupation of the bread-winner, because their living depends upon his profession or trade.

Occupations of the people in the Hughli District.

[Census 1891.]

Occupations.	Both sexes.	Males.	Females.	Proportion per cent. of both sexes to total population.
A.—Government ...	9,075	4,542	4,533	·84
B.—Pasture and agriculture	606,449	302,174	304,275	56·32
C.—Personal service ...	44,868	22,327	22,541	4·17
D.—The preparation and supply of material substances ...	193,806	92,195	101,611	18·00
E.—Commerce and transport of persons, goods and messages ...	30,640	15,869	14,771	2·85
F.—Professions, learned, artistic, and minor ...	45,855	22,584	23,271	4·26
G.—Indefinite occupation and means of subsistence, &c. ...	146,071	69,448	76,569	13·56
Total ...	1,076,710	529,139	547,571	100·00

The following small table shows the number of males only under the same seven chief heads, at the censuses of 1881 and 1891, with the proportion

each bears to the total number of males, and the ratio of increase or decrease of each in the interval between the two census-takings :—

Summarized table of occupations of males.

No.	Occupations (males only).	1881.		1891.		Ratio of 1891 to 1881.
		Number.	Proportion of total.	Number.	Proportion of total.	
1	Government service	4,689	0·95	4,542	0·85	0·96 to 1
2	Agricultural ...	172,613	35·30	302,174	57·10	1·75 to 1
3	Personal service ...	14,871	3·04	22,327	4·21	1·5 to 1
4	Industrial ...	50,870	10·40	92,195	17·42	1·8 to 1
5	Commercial ...	16,182	3·30	15,869	2·99	0·98 to 1
6	Professional ...	12,232	2·50	22,584	4·26	1·84 to 1
7	Indefinite ...	217,495	44·48	69,488	13·12	0·31 to 1
	Total ...	448,952	100	529,139	100	

The chief differences between 1881 and 1891 are a great fall, about two-thirds, in the numbers returned as of indefinite occupations, and a large rise in the numbers employed in agriculture and in the professions. The first is the cause of the second, those formerly returned as of indefinite occupation having been shown in 1891 mostly under the head of agriculture; while a smaller number appear under the definition of various professions. Government service and commercial show a small decrease; industrial and personal service a small increase. At the census of 1881, no less than 167,941 persons were shown as of indefinite occupation; at the census of 1891 only 98 individuals were thus returned. (The difference between these figures and the number given in the table above consists of male dependents. The seventh heading in the table also includes those living on their means).

In the district census report for 1891, Mr. H. G. Cooke, the Magistrate, discusses at considerable length the occupations of the male residents of the district, their callings being divided into nine chief groups, which do not correspond with the seven chief heads in the previous tables. I have extracted his classification below, with some omissions. The nine heads are as follows :—

A.—Agricultural group.
B.—Professional ,, (includes Government service).
C.—Commercial ,,
D.—Industrial ,,
E.—Pastoral ,,
F.—Hunting and fishing group.
G.—Serving group.
H.—Unproductive group.
I.—Indefinite and independent group.

A.—Agricultural Group.

The following estates and tenures are found in the Hughli district:—

(1) *Zamindaris* or estates paying revenue direct to Government.

(2) Intermediate tenures, paying rent to *zamindars*, such as *patnis*, *dar-patnis*, *sepatnis*, *mukarrari* and *maurusi* holdings, *mukarrari ijaras*, *ijaras*, *darijaras* and *lakhiraj* holdings.

The agricultural group is subdivided as follows:—

(*a*)	Land occupants not cultivating		2,645
	Tenants not cultivating		7,491
	Tenants and sharers cultivating		273,688
	Total ...		283,824
(*b*)	Field labourers and crop watchers...		8,926
(*c*)	Growers of fruit, vegetables, &c.		2,190
(*d*)	Agents and managers of landed estates		2,895
(*e*)	Land managers, clerks, and servants		65
	GRAND TOTAL ...		297,900

These figures do not exactly correspond with those given in the summarized table above, where the agricultural males are shown as 302,174. The latter figures include those shown under Group E—Pastoral, viz., 4,274, which, added to 297,900, makes 302,174.

The agricultural males at the census of 1881 were only 157,408, showing an increase of about 89 per cent. in 1891, due to the fact that the bulk of those returned in 1881 as having no specified occupations, were in 1891 shown as agricultural.

B.—Professional Group.

(1)—(*a*)	Government service (officers)	131	
	Office superintendents and clerks ...	505	
	Messengers, constables, &c.	800	
			1,436
(*b*)	Municipal and local service		22
(*c*)	Village service—		
	Accountants	2	
	Watchmen	3,082	
			3,084
	Total		4,542
(2)—*Religion*, including clergymen, ministers, priests, church and temple officers		9,144	
(3)—*Law*—			
	Pleaders	561	
	Mukhtiars	222	
	Stamp vendors	39	
			822

B.—Professional Group.—concluded.

(4)—*Medicine*—			
Medical Practitioners	3,024*		
Vaccinators	67		
Male midwives (evidently male dependents on midwives)	158		
Compounders, &c.	174		
			3,423
(5)—*Literature*, including copyists, clerks, &c.			4,312
(6)—*Education*, including teachers of all kinds			2,829
(7)—*Engineering*, engineers 5, draftsmen 88			93
GRAND TOTAL			25,165

The total in Government service agrees with the total in the summarized table, viz., 4,542. If we deduct 4,542 from the total number of the professional class as here given, viz., 25,165, we get a balance of 20,623. The number of professional males, as given in the summarized table above, is 22,584. If we add to 20,623 the number of 1,862, shown under Group H—Unproductive, we get a total of 22,485, which I think must have been intended to correspond with the 22,584 in the professional group.

The number of village watchmen, or *chaukidars*, given above as 3,082, is very much below the actual numbers of these officials in the district. The majority of *chaukidars* have probably been returned under the head of agriculture.

The following comparative table shows the percentage which the different professions bear to the total number of professional males (including those in Government service), according to the census returns of 1881 and 1891:—

CLASS OF PROFESSION.	1881.		1891.		Proportion in 1891 to 1881.	REMARKS.
	Number.	Percentage.	Number.	Percentage.		
Government service ...	4,689	30·59	4,542	18·04	0·96 to 1	Slight decrease.
Religion ...	7,424	48·43	9,144	36·12	1·2 to 1	Increase.
Law ...	218	1·42	822	3·26	3·7 to 1	Do.
Medicine ...	1,692	11·03	3,423	13·60	2·0 to 1	Do.
Literature ...	314	2·04	4,312	17·13	13·7 to 1	Do.
Education ...	952	6·21	2,829	11·24	3·0 to 1	Do.
Engineering ...	38	0·24	93	0·36	2·4 to 1	Do.
Total ...	15,327	100	25,165	100		

* The majority, no doubt, practitioners of indigenous systems of medicine.

The greatest increase is shown under the head of literature, which of course means, not authors, of whom there are few, but simply clerks. Law and education also show a very large increase, only Government service shows a decrease.

C.—Commercial Group.

(1) Mercantile persons and general dealers ...	5,698
(2) Brokers, contractors, and farmers ...	600
(3) Carriers on railways	147
(4) Do. no roads	4,211
(5) Do. on canals and rivers	1,193
(6) Messengers and porters	1,433
(7) Engaged in storage	2,587
Total ...	15,869

The figures correspond with those given in the summarized table above. The total of this group in 1881 was 16,182, so there has been a slight decrease.

D.—Industrial Group.

This very large group may be subdivided as follows into workers and dealers in—

I.—Mixed materials—
In 1881 ... 4,955
In 1891 ... 8,548

(1) Houses and buildings ...	6,266
(2) Machines and tools ...	535
(3) Boats	494
(4) Books	345
(5) Hukka stems	229
(6) Musical instruments ...	216
(7) Chemicals	186
(8) Carriages, carts, &c. ...	92
(9) Gunpowder and fireworks...	59
(10) Toys, &c.	37
(11) Furniture	31
(12) Carving and figures ...	28
(13) Watches, &c.	27
(14) Prints and pictures ...	12
Total ...	8,548

II.—Textile fabrics and dress—
In 1881 ... 18,730
In 1891 ... 23,531

(15) Dress	13,857
(16) Cotton	6,712
(17) Jute flax	2,340
(18) Silk	505
(19) Wool	117
Total ...	23,531

D.—Industrial Group.—concluded.

III.—Food and drinks—	(20) Animal food	15,162
In 1881 ... 12,550	(21) Vegetable food ...	6,542
In 1891 ... 32,046	(22) Drinks, condiments, narcotics	10,342
	Total ...	32,046
IV.—Animal substances—	(23) Leather, horns, bones, and grease	2,038
In 1881 ... 349		
In 1891 ... 2,038	(24) Timber and wood ...	4,668
V.—Vegetable substances—	(25) Cane, matting, and leaves	3,276
In 1881 ... 5,814	(26) Vegetable oil	2,272
In 1891 ... 13,938	(27) Firewood and forage ...	1,542
	(28) Paper	1,387
	(29) Necklaces, bracelets, beads	811
	Total ...	13,938*
VI.—Mineral substances—	(30) Earthenware	3,997
In 1881 ... 8,472	(31) Gold, silver, and stones ...	3,389
In 1891 ... 12,094	(32) Brass, copper, and bell-metal	2,198
	(33) Iron and steel	1,892
	(34) Kerosine oil	483
	(35) Coal	51
	(36) Glass and Chinaware ...	42
	(37) Tin	38
	(38) Lead and mercury ...	4
	Total ...	12,094

The total number of males engaged in industrial pursuits, 92,195, agrees with the number in the summarized table. In 1881 the number thus employed was only 50,870, so that a great rise has taken place, which is spread over all of the six sub-heads, and can only to a slight extent be accounted for by the extension of the mill industry.

E.—Pastoral Group.

This group is subdivided as follows:—

(1) Herdsmen	3,866
(2) Cattle breeders and dealers	276
(3) Sheep and goat breeders and dealers ...	53
(4) Pig breeders and dealers	7
(5) Veterinary surgeons and cattle doctors ...	7
(6) Farriers and gelders	61
(7) Horse and elephant trainers	4
Total ...	4,274

In the summarized table the pastoral group is included under the head of agriculture.

* A misprint has crept into this table in the original. The numbers of those engaged in the manufacture of vegetable substances adds up to 13,956, not to 13,938, as shown in the table.

F.—Hunting and Fishing Group.

This group contains the following:—

		Male.	Female.	Total.
Fishermen	...	10,777	10,983	21,760
Fish dealers	...	321	375	696
Total	...	11,098	11,358	22,456

The census returns also show 30 *shikaris* and bird-catchers. It is difficult to see where this group comes into the seven chief heads in the summarized table, as the other eight groups account for the whole male population shown in the summarized tables, with the exception of 99. I presume that fishing or fish-dealing must have been returned as a secondary occupation of a large number of persons. As a matter of fact, a very large number, especially of the agricultural class, do add fishing, more or less, to their regular work.

G.—Serving Group.

This group is subdivided as follows:—

(*a*)—(1) Barbers		2,788
(2) Washermen		2,415
(3) Water-carriers		399
(4) Cooks		791
(5) Indoor servants		1,267
(6) Grooms and coachmen		518
(7) Door-keepers		753
(8) Service, unspecified		12,934
Total ...		21,865
(*b*)—(1) Hotel and lodging-house owners and managers		90
(2) Rest-house and *sarai* owners and managers		93
(*c*)—Sweepers and scavengers		279
GRAND TOTAL ...		22,327

This total agrees with the total of the same head in the summarized table. The corresponding total for 1881 was 14,871, showing an increase in the ten years of about fifty per cent.

H.—Unproductive Group.

This group includes the following:—

(1) Astrologers	33
(2) Band masters and players	797
(3) Actors, dancers, singers	811
(4) Exhibitors of trained animals	74
(5) Buffoons	2
(6) Story and ballad reciters	46
(7) Conjurers and fortune-tellers	22
(8) Tumblers, acrobats, and wrestlers	77
Total ...	1,862

Apparently this group is included among the professional classes in the summarized table.

I.—Indefinite and Independent Group.

This group includes the following:—

(1) Unskilled labour—		
Tank diggers and excavators	...	310
Road, railway, and canal labourers	...	3
Rice pounders and huskers	...	5,617
General labour		54,943
Total	...	60,873
(2) Indefinite and unspecified		98
Disreputable		295
(3) Property and allowances		2,275
(4) Mendicancy		5,353
(5) Pensioners		300
(6) Prisoners		254
GRAND TOTAL	...	69,448

The return of three individuals as road, railway, and canal labourers, or an average of one apiece under three important divisions of unskilled labour, is curious. The bulk of such labourers must, of course, have been returned under the head of general labour. The total corresponds with that of the same head in the summarized table. At the census of 1881 more than thrice the number were returned under this head, indefinite and unspecified. Of the 217,495 males shown in this group in 1881, the bulk had been returned under other heads, especially agriculture, in 1891.

In 1881, this group included the following:—

(1) General labourers	39,617
(2) Indefinite occupations	2,715
(3) Persons of rank and property, not returned under any office or occupation	2,896
(4) Vagrants	4,326
(5) Persons of no specified occupation ...	167,941
Total ...	217,495

Females.—In the census of 1881, the column of occupation was, in the case of females, only filled up for those who were actually following some definite occupation. Married women and girls employed in household work were shown as unemployed. There was thus no distinction between those who actually do no work, and those who, in India as in every country under the sun at every period since the creation, do their full share, perhaps more than their full share, of the world's work, viz., housewives, mothers of families, and the hardworked wives of men of the middle and lower classes. In 1881, the great majority of females were therefore shown as unemployed. In 1891, on the other hand, a female's occupation has been returned as that of

her husband, father, or bread-winner. (The same was done in the census of 1901.) Male dependents, children, old men, &c., are similarly shown as following the occupation of the bread-winner. Hence occur such seeming absurdities in the tables as female clergymen, policemen, &c., male midwives, infantile clerks, and pleaders. In one case in Chinsura, the head of a large Hindu joint family, a man of considerable standing and influence in the town, was thus shown in the census of 1901 as a dependent on his younger brothers; the fact being that, when a young man, he worked hard, supported and educated his younger brothers. Now, as an elderly man, retired from business, he did nothing but manage the affairs of the joint family of which he was the head, his younger brothers, by their earnings, furnishing the working capital. Doubtless such cases are numerous. One result, however, is, that it becomes impossible to ascertain to what extent females are actually employed in various occupations.

The following table shows the number of females returned under the seven chief headings of employment shown in the summarized table of males, in 1881 and 1891:—

No.	Occupation.	1881.	1891.
1.	Government service ...	...	4,533
2.	Agricultural	21,056	304,275
3.	Personal service ...	8,738	22,541
4.	Industrial	48,119	101,611
5.	Commercial	2,763	14,771
6.	Professional	1,767	23,271
7.	Indefinite and independent ...	441,373	76,569
	Total ...	523,816	547,571

The following table gives a list of occupations in which the females actually take part to a considerable extent, with the number of females returned under each :—

(1)	Rice pounders and huskers	22,871	
(2)	Service unspecified ...	13,025	
(3)	Fisherwomen	10,983	
(4)	Priestess	10,066	
(5)	Agricultural labour ...	9,564	
(6)	Greengrocer, &c. ...	8,297	
(7)	Cotton-weaver ...	8,067	
(8)	Mendicancy	4,757	
(9)	Grain-dealer	4,534	
(10)	Potter, &c.	4,245	
(11)	Confectioners	3,076	
(12)	Basket-makers	2,838	
(13)	Oil-presser and sellers ...	2,815	
(14)	Masons	2,447	
(15)	Indoor servants ...	2,439	
(16)	Washerwomen	2,437	
(17)	Female barber ...	2,364	
(18)	Cowdung fuel dealer ...	2,188	
(19)	Cattleherd	1,477	
(20)	Mat-maker	1,409	
(21)	Grain-parcher ...	1,279	
(22)	Cotton spinner and sizer ...	1,126	
(23)	Pan-seller	777	
(24)	Firewood-seller ...	641	
(25)	Cook	567	
(26)	Midwife	545	
(27)	Shopkeeper	491	
(28)	Vegetable and fruit seller	472	
(29)	Fish-dealer	375	
(30)	Pulse and flour seller ...	342	
(31)	Water-carrier ...	315	
(32)	Flax spinner and weaver ...	109	
(33)	Bamboo-worker	85	

Some of these are employments which are the special province of women, others those in which they share the work with the men of their families. In others it is impossible to say how far the women work themselves, and how far they are merely the wives of workers. It is impossible, for instance, to estimate how many of those returned under the heads of cultivation or shopkeeping actually take part in the work of the field or of the shop. The women returned as general labourers probably are actually so employed, also those returned as engaged in service of different kinds. General labour is not one of the heads shown in the above table, but every one who has ever seen coolies engaged in such work as digging a tank, making a road or railway embankment, &c., must have noticed how large a share of the work is done by women, and even by children ; the men doing the hardest work, such as the actual digging and the carrying of the heaviest loads, the women doing most of the work of carrying the earth in baskets, and even the children carrying small baskets full of earth. In such cases a gang composed of men, women and children, under a recognised head called mate or *sardar*, usually carry out the job by piece-work. In other occupations women often help their husbands : thus women sell the fish their husbands catch, the vegetables their husbands cultivate. Women do not usually engage in actual field-work in this district, but after the crops have been reaped, they assist in threshing, and do most of the winnowing. Women of the lower castes work with the men at basket-making, cloth-weaving, bamboo-work, and mat-making. The special occupations followed mainly, or wholly, by women, are the husking, grinding, and parching of grain, the spinning of thread, the collection and sale of cowdung for fuel, and the practice of midwifery.

Education.—Hughli is what is called an advanced district, *i.e.*, one where English education has long been sought after, and where the number of English schools and scholars is large. Over half the male population of school-going age attend some school or other; the number of boys at school on 31st March 1901 being 41,119, or 53·9 per cent. of the boys of school-going age in the district; while only 3·2 per cent. of the girls of the same age, or 2,519 girls in all, attend school.

There are three colleges in the district, including one at Chandarnagar, besides the once-famous college at Serampur, which has now sunk into a school; and thirty Higher English schools, of which eight are aided, and twelve unaided. These thirty schools had on their rolls, on 31st March 1901, 5,433 scholars. Their total cost during the year 1900-01 was Rs. 1,09,802, of which Rs. 17,792 was borne by Government. A list of them is given further on.

I shall begin by giving a few notes on the colleges, the earliest of which was the Serampur College, founded by the famous Serampur missionaries, Marshman, Ward, and Carey. Ward arrived at Serampur on 13th October 1799. Marshman also arrived in a Danish ship in October

1799. Carey had landed at Calcutta on 11th November 1793, and settled at Maniktola. In February 1794 he removed to Hosainabad, in the Sundarbans of the 24-Parganas, but subsequently removed to Malda, where he took up the management of an indigo factory belonging to a Mr. Udny. He joined Marshman and Ward at Serampur on 10th January 1800. Carey devoted himself to the translation of the Scriptures into the vernaculars. He translated the Bible into Sanskrit, Persian, Bengali, Urdu, Mahrathi, Uriya, Telegu, Pushtu, Panjabi, Gujarati, Hindi, and many other languages and dialects; of these translations, those in Sanskrit, Bengali, Uriya, and Mahrathi, are said to be excellent, while all are intelligible. Marshman preached, opened a school for European boys in 1800, and also the first vernacular school opened in Bengal, while Mrs. Marshman opened a girls' school; Ward preached and superintended the Press. They opened Serampur College in 1820, with the hope of creating a European University. Ward died in 1823, Carey in 1824, and Marshman in 1837. Their College, which belongs to the Baptist Church, has long since abandoned secular education of the college standard, and now is simply a Higher English school, with 312 boys on the rolls. Combined with this school is a training school for native pastors of the Baptist Church. These schools still retain the magnificent buildings of Carey's College. They possess also a fine library, well stocked with books, in which are hung several old paintings, one of which is said to be a picture of Mademoiselle Werlée, afterwards Princesse de Talleyrand, but there is some doubt as to whether this is really the picture of Mademoiselle Werlée, by Zoffany, which formerly hung in Mr. J. C. Marshman's house at Serampur.*

Hughli College was founded in 1836, with the accumulated funds of the Mohammed Mohsin Fund. As early as 1832 it was determined to devote a part of the large accumulated surplus of these funds to the establishment of a college, and a local committee was formed, of which Dr. T. A. Wise, the Civil Surgeon, was the Secretary and the moving spirit, to select a site and make other necessary arrangements. Among other suggestions, it

* Article VI of the treaty of 22nd February 1845, by which Denmark sold her Indian possession to England, runs as follows:—

"The Church Missionary Board at Copenhagen for the Propagation of the Gospel shall be at liberty to continue their exertions in India for the conversion of the heathens to the Christian religion, and shall be afforded the same protection by the Government of India as similar English societies under the general law of the land; the rights and immunities granted to the Serampore College by Royal charter, of date 23rd of February 1827, shall not be interfered with, but continue in force in the same manner as if they had been obtained by a Charter from the British Government, subject to the general law of British India."

In article III, the various churches at Serampore, the Serampore College, and the Serampore Native Hospital, are specified as the property of various private societies and associations, not of the Danish Government, and therefore not included in the Government property sold by the Danish to the British Government.

was proposed to build the college on the site now occupied by the Imambarah, or to utilize the barracks, or part of them. Eventually, however, Perron's house was purchased for Rs. 20,000, together with about three bighas of ground, from Babu Jagu Mohan Seal.

As Perron is one of the most celebrated men who have ever resided in the Hughli district, it will not be out of place to devote a few lines to his career. His real name was Pierre Cuillier. He was born in 1755 at Chateau de Loire, Sarthe, in France. In 1774 he enlisted in a regiment under orders for the Isle of France, or Mauritius, and arrived there the same year. In 1780 he came to India as a sailor on board the French frigate *Sardine*, under the famous Admiral Suffrein. Deserting his ship, in 1781, on the Malabar coast, he made his way up-country, and entered the service of the Rana of Gohad, taking the name of Perron, a diminutive of his Christian name. He soon after entered the service of the Raja of Bhartpur, and subsequently that of Madhoji Sindhia, in which he received the command of the Barhanpur battalion in De Boigne's brigade of troops, drilled in the European manner. This was about 1790. On the creation of a second brigade, he received its command, De Boigne remaining Commandant of the whole force. This was about 1793. Next year Madhoji Sindhia died, and was succeeded by his nephew, Daulat Rao Sindhia. De Boigne left India in December 1795, and Perron succeeded him in the command of the whole force. As Commandant of the finest force of troops, certainly the finest outside the Company's territories, in India, Perron by 1801 raised himself practically to the position of an independent sovereign, governing, nominally as Sindhia's lieutenant, the districts of Saharanpur, Panipat, Delhi, Narnot, Agra, and Ajmir, receiving tribute from all Rajputana, and having the custody of the person of Shah Alam, the nominal Mogul Emperor of Delhi. He fixed his capital at Aligarh, where he built a fort, planned in accordance with the best military science of the day. But his power did not last for long. Aligarh was stormed by Lord Lake on the 4th September 1803, and taken after a severe struggle. The English loss was 223 officers and men killed and wounded; the defenders lost 2,000 killed, the rest of the garrison, including Colonel Pedron, the Commandant, being taken prisoners. Perron, who was not present at Aligarh, surrendered to Lord Lake on the 7th September. He was treated with all the honours due to his rank and position, and was sent first to Lucknow, and on the 8th October he left Lucknow for Calcutta.

Compton, in his work "European Military Adventurers of Hindustan," from which I have taken the above particulars, states that Perron, after leaving Calcutta, settled for a time at Chandarnagar. It may well have been Chinsura at which he settled, the two places being only three miles apart; but in any case

he did not remain much longer in India, not much more than a year, for he sailed for Europe early in 1805, and landed at Hamburg in September 1805. He purchased an estate at Fresnes, in the Department of Loire et Cher, and died there in 1834. He took an immense fortune home with him : it is said that he had no less than £280,000 invested in the East India Company's funds, besides much other property. Local tradition asserts that he built the house which is now occupied by the Hughli College. In the *Calcutta Gazette* of 10th October 1805 is advertised for sale the house at Chinsura, now nearly finished, built by order of General Perron, leaving for Europe.

From Perron's possession the house passed into that of Pran Kishan Haldar, one of the leading *zamindars* of the Hughli district, who was subsequently convicted of forging Government securities and sentenced to a long term of imprisonment. The Seal family of Chinsura had lent him money on a mortgage on the house, and in 1834 had it sold by a decree of the Civil Court, themselves purchasing it. In 1836 they sold the house to the Hughli College Committee. A tablet in the Hall of the College bears the inscription :—

"COLLEGE OF MOHAMAD MOHSIN.

"This College was established through the munificence of the late Mohamad Mohsin, and was opened on the 1st of August 1836."

The staff of the College consists of a Principal, who is also Professor of English Literature; seven other Professors, of English Literature, Chemistry and Physics, Sanskrit, English and History, Philosophy and Logic, and two of Mathematics ; and three Lecturers, on English and History, on Arabic and Persian, and on Law. All the staff, except the Principal, are natives of India.

The College consists of three departments—English, Arabic, and Law. The English department is open to all students who have passed the University Entrance Examination ; the fees being Rs. 3 per month for Musalmans and Rs. 6 for all others. In the Law department the fee is Rs. 7.

There are both Hindu and Musalman hostels in connection with the College : the cost of boarding in the former is Rs. 5-8, in the latter Rs. 3-8 per month. The Musalman Hostel is accommodated in a fine large two-story *pakka* building, in the form of a quadrangle round a central courtyard, and with extensive grounds, on the river side, immediately south of the College. The Hindu hostel is at present in a hired house near the College gate, but it is intended to construct for it a house which will be, like the Musalman hostel, the property of the Mohsin Fund.

The first Principal was Dr. T. A. Wise. The well-known oriental scholar Captain Richardson, was afterwards Principal for two years. The Revd. Lal Bihari De, author of "Folk Tales of Bengal," &c., was Professor of English Literature and History in Hughli College for sixteen years, from 1st January 1872 to 31st December 1888, when he retired from Government service.

The following is a list of Principals of Hughli College:—

1836. Thomas Alexander Wise, M.D.
1839. James Sutherland, M.A.
1839. James Esdaile, M.D.
1842. James Sutherland, M.A.
1844. L. Clint, B.A.
1846. Captain D. L. Richardson.
1848. James Kerr, M.A.
1856. Robert Thwaytes, M.A.
1859. James Graves, M.A.
1859. E. Lodge, B.A.
1859. Robert Thwaytes, M.A.
1867. S. Lobb, M.A.
1868. Robert Thwaytes, M.A.
1876. William Griffiths, M.A.
1883. William Booth, B.A.
1883. William Griffiths, M.A.
1885. M. Mowat, M.A.
1888. William Griffiths, M.A.
1892. William Booth, M.A.
1895. Robert W. F. Shaw, M.A.
1895. William Both, M.A.
1897. William Billing, M.A.
1901. Robert W. F. Shaw, M.A.
1901. William Billing, M.A.

Hughli College teaches up to the B.A., and in some subjects up to the M.A. standard of the Calcutta University. There are about 150 students in the College Department, and 200 boys in the Collegiate School. The Muhammadan hostel usually has over 100 boarders, the Hindu hostel from 15 to 20.

Uttarpara College was opened in 1889, having developed out of the Uttarpara School. The late Babu Jaikishan Mukerji and his brother Rajkrishna endowed the school with two *patni mahals*, Bainchi and Ramnagar, the Government as trustee becoming *patnidar* of these estates, and handing them back to the donors on a *darpatni* lease, which left in the hands of Government a profit of Rs. 1,200 per annum, with which the school was endowed. So long ago as 1853 Jaikishan Mukerji proposed to raise the school, which had been founded in 1846, into a first class College. Permission was finally granted in 1887, on condition that he took the school off the hands of Government. He died in 1888, but the College was kept on by his son, Raja Piari Mohan Mukerji, C.S.I., and has since been managed and maintained by him. The school was resumed by Government on 1st April 1897. The staff consists of a Principal, who is also Lecturer in English History, and Logic, and two other Lecturers, one in Mathematics and Science, and one in Sanskrit. The fees are Rs. 4 per month. There is a boarding-house attached to the College, where the students may live rent-free.

The College Dupleix, formerly called St. Mary's Institution, at Chandarnagar, was founded in 1862, and is under the direct control of the French administration. It consists of two departments, in both of which boys learn French, English, Sanskrit, and Bengali. The French Department teaches up to the "Brevet Élementaire," the English Department up to the First Arts Standard of the Calcutta University. The staff consists of a Principal, who is also Professor of French, an Assistant Principal, and four Professors, of English Literature and Logic, of Physics, Chemistry, and History, of Mathematics, and of Sanskrit; besides thirteen junior teachers for the School Department.

Toynbee (pp. 117—22) gives some notes upon the early history of education in the district. He says that the first reference to education in the old records is a letter from the Accountant-General, dated 25th March 1824, authorizing the Collector "to continue to pay to the Rev. Mr. Mundy Rs. 800 per mensem on account of the native schools supported by Government at Chinsura and its vicinity." In the following year he was authorized to pay from 7th May 1825, the date of the transfer of Chinsura to the English, Rs. 50 per month to Messrs. Overbeck and others, members of the Chinsura School Society, on behalf of Chinsura Free School, which was established by the Dutch. The other schools alluded to above, fourteen in number, were at "Nyehatty, Bhatpara, Gaurapara (Gauripur?) Beebeehat, Mankoonda, Haldarparah, Hajinagar, Hooghly, Khasbati, Bansberia, Halishahar, Kanchraparah, Kulopokheree, and Kankshali." At least five of these places are on the east of the Hughli, in the 24-Parganas. From 1st November 1832 Government withdrew the grant of Rs. 800 per month to these fourteen schools, offering to make them over to any persons willing to carry them on as private schools, Government undertaking to keep them in repair, as well as giving the furniture. No one appears to have accepted these terms, and presumably the schools were closed. In 1834 Mr. D. C. Smyth, the Judge, founded the Hughli Branch School, which still exists. Government gave the site, part of the old Fort Land, measuring two bighas and seven cottahs, and the funds for the building and other expenses were raised by subscription. The *madrasa* attached to the Imambara was subsequently associated with this school. Another *madrasa* exists at Sitapur, in Serampur subdivision, which was founded under a grant of Rs. 4-8 per diem made by Governor Cartier on 26th January 1772, for the purpose of keeping up a *musjid* and *madrasa*. After some interruption, the grant was renewed by Warren Hastings in 1781.

Female education.—There are 78 girls schools in the district, of which 72, with 1,824 pupils, are aided; and six, with 93 pupils, are unaided. Deducting 18 boys learning in girls' schools, and adding 619 girls learning in boys' schools, there were, on 31st March 1901, 2,518 girls at school, being 3·2 per cent. of the female population of the district of school-going age.

European schools.—A century ago, Serampur and Chinsura, then both under foreign powers, were noted for their European schools, to which the residents of Calcutta sent their children in large numbers. Advertisements of these schools frequently appear in the *Calcutta Gazette;* for instance, the Mission School at Serampur, under Mr. Carey, is advertised on 1st May 1800, Mr. Charles Lewis Vogel's School at Chinsura on 6th January 1803, and the "Chinsura Standing Commercial Academy School, kept by B. Rodriguez, with a competent European usher," on 25th August 1803. There are now no Europeans or Eurasians attending schools in Hughli district; but a few attend the College Dupleix at Chandarnagar, where there is also a large convent at which some thirty to forty European and Eurasian girls are educated. Improved means of communication

and access to hill stations rendered easy by railways, killed the European schools at Chinsura and Serampur, though a European school existed at Hughli certainly up to 1816, if not later.

There is a training school for masters at Hughli, with 85 pupils in 1900-1901; and 15 Sanskrit schools or *tols*, with 140 pupils, exist in the district. Of these 15 *tols*, nine are aided by Government or by municipalities, viz., those at Chinsura (2), Gramgopal, Uttarpara, Bhadreswar (2), Baidyabati (2), and one at Tarakeswar, while six are unaided, at Hughli, Digsui, Bhasthora, Bhandarhati, Dasghara, and one at Tarakeswar.

Various special schools have been in existence from time to time at Hughli. Sir George Campbell established a Native Civil Service College at Hughli, and Sir Richard Temple instituted a Survey School there, but neither institution appears to have lasted long. When the Police Training School was first started in February 1895, it was held at Hughli, but was soon afterwards, in May 1895, removed to Bhagalpur.

Hostels for boarders are attached to the Hughli Training School and Hughli *Madrasa*, as well as to the Hughli College and Collegiate School.

The information about colleges is chiefly taken from the Calcutta University Calendar. For that about schools, both here, and under the head of municipalities, in Chapter VII, I am indebted to Babu Promatha Nath Chatterji, late Deputy Inspector of Schools, Hughli district.

The following table summarizes the schools existing in the district on 31st March 1901:—

	Schools.	Pupils.	Average number of pupils.
Public Institutions.			
Secondary ... High English	30	5,433	181
Secondary ... Middle „	46	2,780	60
Secondary ... Middle Vernacular ...	18	1,274	70·8
Primary ... Upper Primary ...	111	4,609	41·5
Primary ... Lower „ ...	949	26,819	28·2
Special (including Madrasa)	18	1,348	19·3
Female	78	1,917	24·6
Total ...	1,250	43,180	34·5
Private Institutions.			
Advanced, teaching ... Arabic or Persian ...	5	56	11·2
Advanced, teaching ... Sanskrit	50	221	4·4
Elementary, teaching vernacular. ... Over 10 pupils	.....	.....	.....
Elementary, teaching vernacular. ... Under 10 „	7	56	8
Boys' schools, not conforming to departmental standards	7	205	29·3
Total ...	69	538	7·8
GRAND TOTAL ...	1,319	43,718	33·1

The percentage of boys and girls at school is as follows:—

	Total population.	Population at school-going age.	Number at school.	Percentage at school.
Male	509,185	76,377	41,119	53·9
Female	525,111	78,766	2,518	3·2

The following table shows the thirty Higher English schools, with their attendance and expenditure:—

Class.	No.	Name of School.	Number on rolls on 31st March 1901.	Expenditure.	
				Government.	Total.
				Rs.	Rs.
Under public management.		Hughli Collegiate ...	210	6,820	15,169
	2	Hughli Branch ...	163	4,223	8,971
	3	Uttarpara Government ...	296	709	8,331
Aided ...	4	Bagati	112	356	2,174
	5	Balagarh	115	407	2,239
	6	Bhasthora	127	338	1,805
	7	Chinsura Free Church ...	452	559	7,941
	8	Dasghara	111	419	2,281
	9	Ilsoba-Mandalai ...	118	416	2,217
	10	Janai	217	358	3,217
	11	Kaikala	103	530	2,274
	12	Serampur Mission ...	312	370	5,172
	13	Chatra	208	355	4,593
	14	Arambagh	149	512	2,861
	15	Bansbaria	76	166	1,438
	16	Konnagar	223	349	5,290
	17	Bhadreswar ...	219	545	2,944
	18	Baidyabati	127	360	3,207
Unaided ...	19	Bhandarhati ...	146	.....	1,900
	20	Bainchi	208	.....	3,515
	21	Chandarnagar, Garbati ...	120	.....	1,000

Class.	No.	Name of school.	Number on rolls on 31st March 1901.	Expenditure.	
				Government.	Total.
				Rs.	Rs.
Unaided—*concld.*	22	Chinsura Training Academy.	393	.....	3,807
	23	Garelgacha ...	190	.....	2,196
	24	Guptipara	95	.....	1,502
	25	Mahnad Free Church Mission.	124	.....	2,859
	26	Sheokhala	202	.....	2,696
	27	Sikandarpur ...	161	.....	2,784
	28	Haripal	138	.....	1,834
	29	Singur	177	.....	1,912
	30	Khanakul	151	.....	1,673
		Total ...	5,433	17,792	1,09,802

CHAPTER IV.

COMMUNICATIONS, HABITATIONS, &c.

COMMUNICATIONS fall under three chief heads—Rail, River, and road, which require separate consideration, and will be dealt with in that order—

I. *Rail.*—The district is well provided with railway lines, as the main line of the East Indian Railway runs through its entire length, from south to north; the whole length of the Tarakeswar branch of the East Indian Railway and of the Bengal Provincial Railway run through the district; and also the greater part of the Howrah-Sheokhala Steam Tramway, and the Naihati branch of the East Indian Railway. One engineering work of the first magnitude belongs partly to this district, the Jubilee Bridge over the Hughli; there are also smaller bridges on the main line of the East Indian Railway over the Bali, Baidyabati, and Magra *khals*, and the Saraswati river.

The idea of the East Indian Railway was first conceived by Sir Macdonald Stephenson, who was for some years afterwards the Managing Director of the East Indian Railway in Calcutta. The project was first discussed in India in 1841, and the scheme officially recognized in 1844. The agreement between the Directors of the Honourable East India Company and those of the East Indian Railway was signed on 17th August 1849. The first Chief Engineer of the line was Mr. George Turnbull, who reached India in May 1850. The first postion of the line, as far as Serampur, was surveyed during that year, and the land made over to the Railway Company by the Valuation Commissioners in January 1851. In the same month, January 1851, construction was begun; at first a single line only was laid on a track built for a double line; the gauge fixed on was 5 feet 6 inches. The bridge over the Magra *khal* was the first iron bridge erected by a Railway Company in India. The line was opened as far as Pandua in September 1854, to Raniganj in February 1855, to Rajmahal in October 1860, to Bhagalpur in November 1861, to Monghyr in February 1862, and to Benares in February 1863.

The following is a list of the stations from Howrah up to Bainchi, which is the last station in Hughli district. The first two, Lilua and Bali, are in the

Howrah district; the line entering Hughli by the bridge over the Bali *khal*, just north of Bali station:—

No.	Name of station.	Distance in miles from Howrah.	No.	Name of station.	Distance in miles from Howrah.
1	Lilua	3	10	Chandarnagar ...	21
2	Bali	6	11	Hughli ...	24
3	Konnagar ...	8	12	Trishbigha ...	27
4	Rishra	10	13	Magra ...	29
5	Serampur ...	12	14	Bharathpur ...	32
6	Sheorafuli ...	14	15	Khanyan ...	35
7	Baidyabati ...	15	16	Pandua ...	38
8	Bhadreswar ...	18	17	Simlagarh ...	41
9	Mankundu ...	20	18	Bainchi ...	44

After leaving *Bali* station, the line crosses a large iron bridge of three spans over the Bali *khal*, and enters Hughli district. *Serampur* is a stopping station for every train, except the Bombay and Panjab mails, which stop at Hughli only. *Sheorafuli* is the junction for the Tarakeswar branch; the railway approaches close to the bank of the river Hooghly at this place; the down loop mail, to Calcutta, stops here, but not the up loop mail from Calcutta. Between Sheorafuli and *Baidyabati* the line crosses the Baidyabati *khal* by a small iron bridge. *Mankundu* and *Chandarnagar* stations are both just outside the French territory of Chandarnagar. Just south of *Hughli* the line crosses some very low ground by a viaduct. All trains stop at Hughli station. There is a small refreshment room here. The station is about a mile and a half from Hughli Chauk Bazar and over two miles from the cutcherries at Chinsura. Half a mile north of Hughli station the Naihati branch line leaves the main line. A project is under consideration to move the main station of Hughli a mile higher up the line (north), and to open a small station, to be called Chinsura, between Hughli and Chandarnagar, where the Dhaniakhali road intersects the railway. At present (1901) the Railway authorities are building a large number of officers' quarters a mile north of Hughli station, where the line crosses the Polba road, with the intention, I believe, of making Hughli a changing station for drivers and guards on goods trains.* After passing *Trishbigha* the line runs through the ruins of Satgaon, which lie mostly on the west, and then crosses the Saraswati river by a large three-span

* These changes in Hughli station will probably be carried out by July 1902. The old Hughli station will then be used for goods traffic only. The new Hughli station, at Naldanga, will be one with an "island platform," on the opposite sides of which trains will come in. A new station called Belur has also been opened, in 1902, between Lilua and Bali.

iron bridge. *Magra* is the junction for the Bengal Provincial Railway; the loop mail and all slower trains stop here. Immediately after leaving Magra the line crosses the Magra *khal* by a large three-span iron bridge, and then crosses the Bengal Provincial Railway. Between Magra and *Bharathpur* there are two long viaducts, and a third shorter. *Pandua* is a stopping place for all trains, except the Bombay and Panjab mails. The Pandua minaret is well seen from the line, on the east, a little south of Pandua station. The railway crosses the Grand Trunk Road three times, between Hughli and Trishbigha, between Trishbigha and Magra, and again just north of Simlagarh.

The Tarakeswar branch is a short branch, only 22 miles long, built chiefly to accommodate the pilgrim traffic to the famous temple of Tarakeswar. It was opened in 1885. There are no bridges of any size on the branch, and the only thing of interest near the line is the Great Trigonometrical Survey tower at Bhola, which is within a few yards of the line on the north side, half-way between Singur and Nalikul stations. The following are the stations on this branch :—

No.	Names of Station.	Distance in miles from Howrah.	No.	Names of Station.	Distance in miles from Howrah.
1	Sheorafuli ...	14	5	Haripal ...	29
2	Gobindpur ...	18	6	Bahirkhand ...	32
3	Singur ...	21	7	Tarakeswar ...	36
4	Nalikul ...	25			

The Naihati branch of the East Indian Railway is still shorter, being only three miles long, but contains the great Jubilee Bridge over the Hughli, opened in 1887. This branch was constructed in order to connect the East Indian and the Eastern Bengal Railway systems. All the coal traffic from the coal-fields on the East Indian Railway to the Kidderpur Docks at Calcutta crosses this bridge, and goes *viâ* Naihati, Sealda, and the Budge-Budge branch of the Eastern Bengal State Railway to the Docks. There is only one station, Hughli *Ghat*, on the west bank of the river. The line is carried from the main line on a very high bank for about a mile, and thence for about half a mile on arches to the river-side where the bridge begins. On the eastern side also there is about a quarter of a mile of flood waterway after the termination of the bridge, after which the line runs on a high bank to Naihati.

The Jubilee Bridge is a very large work; it is the only permanent bridge across the Hughli river, the road bridge between Calcutta and Howrah being a floating bridge, on pontoons. The estimated cost of the Jubilee Bridge was

nine *lakhs* of rupees. The following account of it is taken from Hunter's Imperial Gazetteer of India, Volume V, article "Hughli River :—"

"The bridge is constructed on iron caissons, sunk to a great depth below the bed of the river, and filled in with brick and mortar. It is built on the cantilever system. It consists of three spans, the central cantilever span resting on two piers of great strength in the middle of the river; the second and third spans projecting from either bank, and resting upon the opposite ends of the middle cantilever span, instead of on separate piers of their own. The two extremities of the bridge are thus supported on solid masonry works on either bank; while the two massive middle piers under the central cantilever span supply the rest of the support to the structure. The two central piers are each sunk to a depth of 100 feet below mean sea-level, or 73 feet below the river bed. They have been forced down through 64 feet of sand and silt, followed by one foot of wave gravel, and eight feet of hard yellow clay. The height of the bridge above highest water mark is 36½ feet, so as to allow ample space beneath for the passage of river steamers and native cargo boats. The rail level is 58½ feet above mean sea-level. The length of the bridge is 1,200 feet, consisting of two spans of 420 feet each projecting from the banks, and one central span of 360 feet."

The Bengal Provincial Railway is a light railway with a gauge of 2 feet. The bank is very small, in some places there is none at all, and the line is unfenced. There are four bridges of a considerable size, over the Magra *khal* at Magra, over another small *khal* in the first mile after leaving Magra, and over the Kana Damudar between Gopinagar and Dasghara, and the Kana *Nadi* between Dasghara and Dhaniakhali. The Bengal Provincial Railway leaves the East Indian Railway at Magra; it first runs due east for about a quarter of a mile, then turns northward and crosses the Magra *khal* by a large iron bridge, then turns westward, passing under the East Indian Railway main line a quarter of a mile or so from where it started, then runs in a general direction westwards to beyond Dhaniakhali, where it turns southwards and continues in that direction to Tarakeswar. The capital and management are almost entirely in native hands. It was opened from Tarakeswar to Basua on 1st January 1895, from Basua to Magra on 6th March 1895.

The following are the stations on this line :—

No.	Name of station.	Distance in miles from Tarakeswar.	No.	Name of station.	Distance in miles from Tarakeswar.
1	Tarakeswar ...	...	8	Bhasthora ...	16
2	Gopinagar ...	3	9	Milki ...	18
3	Dasghara ...	5	10	Dwarbasini ...	21
4	Kana Nadi ...	8	11	Mahanad ...	24
5	Dhaniakhali thana (Ala).	9	12	Halusai ...	26
6	Dhaniakhli ...	10	13	Sultangachia ...	28
7	Basua ...	12	14	Magra Ganj ...	30½
			15	Magra ...	31

The Howrah-Sheokhala Steam Tramway is also constructed on a 2-foot gauge. There are eleven stations in all, of which the first four are in Howrah district, and the other eight in Hughli. The general direction of the line is north-westwards from Howrah. The line was opened from Howrah to Chanditola on 2nd August 1897, to Kristorampur on 18th September, and to Sheokhala on 7th November 1897. There is one small branch, running northwards from Chanditola to Janai, three miles. The Hughli District Board guarantee 4 per cent. on the capital, and receive half the nett profits above 4 per cent.

The following are the stations on this line:—

No.	Name of station.	Distance in miles from Howrah.	No.	Name of station.	Distance in miles from Howrah.
1	Howrah Ghat ...	2	7	Janai (branch) ...	13
2	Kadamtola Junction.	3	8	Kalachara ...	12
3	Uttar Bantra ...	4	9	Kristorampur ...	15
4	Baluhati ...	8	10	Moshat ...	17
5	Kalipur ...	10	11	Sheokhala ...	19
6	Chanditola Junction.	10			

Two new railways through the Hughli district are at present more or less under consideration. The first is the Bardwan-Howrah chord line of the East Indian Railway, which would probably follow a line falling near Dhaniakhali, Nalikul, and Chanditola, and is estimated to cost £600,000. The second is the Bishenpur-Howrah chord line of the Bengal-Nagpur Railway, from Bishenpur (Vishnupur) in the Bankura district to Howrah, passing Tarakeswar on the way; and perhaps sending off a branch from Tarakeswar direct to Hughli. The estimated cost of this line is £1,000,000. As it would cross the area on the west bank of the Damudar flooded by that river, at right angles to the direction of the stream, a very large amount of water-way would be required for five or six miles west of the Damudar, as well as large bridges over the Damudar and Dwarkeswar rivers. A branch of the East Indian Railway from Magra to Kalna and Katwa has also been suggested, but appears to be no longer under consideration at present, at any rate for construction in the near future. Surveys for the Bishenpur-Howrah line were in progress during the cold weather of 1901-1902.

II. *River.*—The great bulk of the water-borne traffic of Hughli district is carried by the Bhagirathi or Hughli river, which, before the railway was constructed, was the main artery, and in fact almost the only means of transit for bulky goods. Running, at it does, along the whole east side of the

district, the Hughli provides an easy means of communication by water with Calcutta for all the large towns and villages along its banks, by which the heaviest and bulkiest goods can be conveyed cheaply, if not very rapidly.

The Calcutta Steam Navigation Company, Limited, run a daily service of steamers from Hatkola *Ghat*, Calcutta, to Kalna in the Bardwan district. The steamers leave Calcutta and Kalna every day, except Sundays, at 7-30 A.M. and reach their destination in the evening. The time taken on the journey depends a good deal on the tides: the steamers going up the river usually pass Chinsura between 10 and 11 A.M., those going down between 2 and 4 P.M. The steamers employed are mostly stern-wheelers, of very small draught, and carry a large number of passengers, and light goods, but not much heavy goods. As far as Magra, which is only 2½ miles from Tribeni, the East Indian Railway and the river are nearly parallel, but above Magra and Tribeni they rapidly diverge. This line of steamers, therefore, forms a very useful means of communication with the north-eastern corner of Hughli district and the south-eastern corner of Bardwan, Balagarh, Guptipara, and Kalna, being all about fifteen miles off the rail. The following are the stations at which the steamers call, with their distance from Hatkola *Ghat*. Calcutta, in miles. Those on the east bank are distinguished by an asterisk, All those on the west bank, except Kalna, are in the Hughli district; Chandarnagar, of course, being French territory:—

No.	Name of station.	Distance in miles from Calcutta.	No.	Name of station.	Distance in miles from Calcutta.
1	Calcutta (Hatkola Ghat).	...	12	Tribeni ...	33
2	Uttarpara ...	6	13	Sijai ...	36
3	Serampur ...	14	14	Kaliganj* ...	39
4	Sheorafuli ...	15	15	Jirat ...	41
5	Nawabganj* ...	16	16	Gaurnagar* ...	42
6	Bhadreswar ...	18	17	Sripur (Balagarh)	44
7	Chandarnagar ...	19	18	Somra ...	48
8	Bhatpara* ...	20	19	Baira ...	54
9	Chinsura ...	23	20	Santipur* ...	58
10	Hughli ...	26	21	Guptipara ...	60
11	Bansbaria ...	31	22	Kalna ...	64

The same Company run a service of river steamers from Armenian *Ghat*, Calcutta, every day except Sundays, to Ranichak, on the Rupnarayan, whence a smaller steamer goes on to Ghatal. Leaving Calcutta at 7-30 A.M., the steamer

reaches Ranichak about 6 or 7 P.M., and Ghatal about 10 or 11 P.M. Coming back, the small steamer leaves Ghatal about 3-30 A.M., and the larger one leaves Ranichak at 5-30 A.M., daily, except on Sundays, and reaches Calcutta about 4 or 5 P.M. This line runs round two sides of the Howrah district, going down the Hughli to Geankhali, where it turns up the Rupnarayan river. Ranichak is 88½ miles from Armenian *Ghat*; it is in the Midnapur district, almost opposite where the Hughli and Howrah districts meet. From Ranichak for five or six miles north-westwards the Rupnarayan divides the Hughli from the Midnapur district. The steamer calls at one place in the Hughli district, Bandar, about four miles above Ranichak. This roundabout way is the only way of reaching Khanakul, the southern *thana* of Arambagh subdivision, in the rains, and is at all times the most convenient way of sending to Khanakul any goods too heavy to be carried easily by a pack-bullock. Khanakul is about six miles from Bandar, but there is no road, or rather the road which once existed has been so breached and washed away by floods that it can hardly be traced now; but large boats can reach Khanakul by the Maneswari or (Dwarkeswar) Kana *Nadi* river, the distance by river from Ranichak being about eight miles.

The Hughli can carry country boats and river steamers of any size up as high as Hughli all the year round, and in the rains right up to its origin from the Ganges. The other rivers of the district are navigable only in the rainy season. The Damudar will float large country boats of ten to twenty tons burthen all the year round as high as Ampta in the Howrah district, some ten miles south of the border of the Hughli district. In the rainy season the same boats can go up the river beyond Burdwan. The Dwarkeswar will float large country boats of about five tons burthen up to the northern border of Hughli district in the rainy season; but in both the Dwarkeswar and the Damudar a boat of any size up the river late in the season runs a fair chance of having to wait till the next year before it can get away again, unless a late flood comes down the river. In the dry season both rivers will float nothing larger than a small dinghi. The Magra *khal*, or Nayasarai *khal*, which is the Hughli outfall of the Kana *Nadi*, will float large country boats at high tide all the year round up to Magra village, some 2½ miles from the river Hughli. The Bali *khal* will carry similar boats for about half a mile. The Kana *Nadi* and Saraswati will carry a fair-sized *dinghi* in the rains, but no boat of any sort in the dry season. The Bali *khal* in the rains carries boat traffic for a considerable distance. The Maneswari will float a large *dinghi* at all seasons for some fifteen miles up from Ranichak, at least as far as Harinkola, where it crosses the old Benares Road, and large country boats as far as Khanakul.

Toynbee mentions (p. 113) that as early as 1828 a line of steamers ran daily between Hughli and Calcutta, calling at Chinsura, Chandarnagar, &c., and carrying the mails.

The following boats are in use on the Hughli, and the other rivers and water-channels of the district. The *budgerow* or *green-boat*, a large boat with a mast and

two cabins, flat-bottomed, drawing very little water; manned by a *sarang* and 8 to 16 men. Before the introduction of steam-launches, and the multiplication of railways, these boats were the usual means of conveyance used by Europeans where travelling by water was possible. They are still much used for touring in the river districts of Eastern Bengal, but on the Hughli are now little used, and that chiefly by natives at festivals, such as marriages. The *bholio* is a rowing boat, with one cabin, and four to six oars; it is still much used as a passenger boat; as also is the *panse*, a somewhat similar small boat. The large country boats which carry cargo are generally known by that name, *country boat*; some are called *balam* boats. They are usually built with very broad bows, "applebows," with very light draught, and are generally very broad in proportion to their length and depth. A large cabin of bamboos and mats, with thatched roof, occupies the stern, and sometimes extends two-thirds of the way to the bows. In the larger boats the cabin is more solidly built, of wood. They have one mast, situated not far from the bows, on which is hoisted one large square sail. They vary greatly in size; but the largest country boats, such as those which bring wood from the Sundarbans to Calcutta, are seldom seen on the Hughli. The *dinghi*, used for fishing and as a passenger boat, is about 30 to 40 feet long by 4 broad; the middle third is covered by an arched roof of matting; the crew usually consists of two men, one at the bow and one at the stern; they carry a bamboo mast, with a single sail, which can be rapidly stepped and taken down by one man. On inland rivers *dungas* or *dug-outs* are used, made out of a single tree; the largest are about 30 feet long by 2½ broad, and will carry 15 to 20 natives at a pinch; these large *dungas* usually have an arched roof of matting over the centre. Smaller ones are also much used, which will barely support the weight of one man, who balances himself on the stern, where he propels the boat by a paddle. Large rafts of bamboos sometimes come down the Hughli. A favourite means of conveyance for natives in flooded country consists of three plantain stems tied together to form a small raft. Steam-launches are now greatly used on the Hughli, and tow large flats laden with jute to the mills along the bank of the river. Stern-wheel steamers ply up and down the river.

III *Roads*.—Toynbee (pp. 105-116) gives some notes on the history of roads in the Hughli district. In 1765, when the Company assumed the Diwani of Bengal, there were no roads worthy the name in the district. Indeed, in the then state of civilization of the country, they were hardly necessary; all inland traffic was carried by coolies or by pack-bullocks, while there was excellent water communication. In 1796 the Court of Circuit called the attention of the Government to the want of roads, and the wretched state of those which did exist, almost useless for want of repairs and through encroachments. In 1815 the Superintendent of Police, Lower Provinces, made a similar representation. In 1830 the Magistrate of Hughli, Mr. (afterwards Sir) Frederick Halliday, reports that there were practically only three roads in

the district—the Grand Trunk Road, the Old Benares Road, and the Ulubaria to Midnapur Road. The last named is now in Howrah district.

Toynbee gives the following list of roads existing in 1830 :—

(1) From Bali *viâ* Inchura to Kalna, and thence to Murshidabad.
(2) The Grand Trunk Road.
(3) „ Old Benares Road.
(4) Ulubaria to Midnapur, and thence to Cuttack.
(5) From Ghireti Ghat to Dwarhata *viâ* Haripal.
(6) „ Bardwan to Midnapur *viâ* Koerganj.
(7) „ Ghatal to Khirpai.
(8) „ Singur to Hughli.
(9) „ Hughli to Bhasthara *viâ* Polba.

Of these nine roads, No. 4 is now in the Howrah, and No. 7 in the Midnapur district. These roads were all originally constructed by Government for military and commercial purposes—the first five being those chiefly used by troops. So late as 1845 there were so few bullock carts in the district that, when required by troops, they had to be obtained from Calcutta. What repairs were done to the roads were effected chiefly by convict labour; but so little was done that in 1837 the Magistrate reports that "there is not a single road in the district, which a European vehicle could traverse, while the number passable for hackeries in the rains are lamentably few." Convict labour was employed on the roads up to about 1845.

Besides the Grand Trunk Road, which is maintained from Provincial funds, there are 64 roads in the district maintained by the District Board, with a total mileage of 492 miles.

These roads are classified as follows :—

Class I.—Metalled roads ... (A) Bridged and drained throughout.
(B) Partially bridged and drained.
„ II.—Unmetalled roads ... (A) Bridged and drained throughout.
(B) Partially bridged and drained.
„ III.—Roads, banked and surfaced, but not drained.
„ IV.—Roads banked, but not surfaced, partially bridged and drained.
„ V.—Roads cleared, partially bridged and drained.
„ VI.—Roads cleared only.

I shall now proceed to enumerate the various roads, with notes on the more important ones, and a few of the others :—

(1) *The Grand Trunk Road* runs from Calcutta through Chitpur, Cossipur, and Barrackpur, and crosses the Hughli from Palta *Ghat* to Ghireti, where it enters Hughli district, about its 14th mile. The miles are measured from Government House, Calcutta. A branch, which is also known as the Grand Trunk Road, runs from Salkhia, a suburb of Howrah, through Uttarpara, Bali, and Serampur, to join the main road at Ghireti. This branch enters Hughli district by a bridge over the Bali *khal*, between Bali and Uttarpara. A suspension bridge was built over the Bali *khal* for the use of this road,

being commenced in 1838 and completed in 1845, but fell just as it was finished. There is now a three-span iron bridge across the Bali *khal*. The road runs northwards parallel with the river, between it and the railway, as far as Serampur, crosses the railway from east to west at Serampur, from west to east at Baidyabati. Where it passes through Chandarnagar, it is known as the "route de Benares." Opposite Chinsura it is over a mile inland from the river, but after passing Hughli railway station makes a turn eastwards, and comes down almost to the river bank where it passes close to Bandel Church. After less than a half a mile, it gradually trends westwards again from the river bank, and in the last furlong of the 30th mile crosses the East Indian Railway from east to west, a quarter of a mile south of Trishbigha station. After the 31st milestone the road runs through the ruins of Satgaon, and crosses the Saraswati by a single-span iron bridge; the ruins of an older bridge may be seen a little to the east. In the 33rd mile the road again crosses the East Indian Railway from west to east, half a mile south of Magra station. After the 33rd milestone the road runs through Magra village, where there is a rest-house, and crosses the Magra *khal* by a large single-span iron bridge. In the 42nd mile, the road passes the Pandua minaret, which stands a short distance to the east, and then passes through Pandua village, where there is a rest-house. At the 46th milestone the road again crosses the railway from east to west, half a mile beyond Simlagarh station; it passes Bainchi station in the 49th mile, and leaves the district in the 51st mile.

The history of the Grand Trunk Road begins in 1804, when the construction of the present road was begun in the place of an older road which had been greatly eroded by the Hughli. In 1820 the Judge of the *Nizamat Adalut* on circuit calls attention to the state of the road, which he says is "very indifferent, and in some places next to impassable, especially west of Pandua." In 1829 the Raja of Burdwan gave Rs. 36,000 for the construction of a bridge over the Magra *khal* at Magra, and a Captain Vetch was deputed to put the road in a condition to admit of wheeled carriages and *ekkas* passing over it, and of the *dâks* being conveyed in that manner. In consideration of his liberality, the Raja was allowed to have badges for his peons. In 1830 the road from Ghireti to Hughli was metalled by funds raised by public subscription. In 1829 the road was first used by troops in preference to the Old Benares Road. In 1830 it was metalled from Hughli to Magra. In 1836 it had been carried beyond Bardwan, and in 1843 had come into full use, as 282 carts are recorded as passing over the Satgaon bridge every week. The Danish Governor of Serampur rendered much assistance, from time to time, in repairing that part of the road which ran through his territory. At the present time, however, that part of the road which runs through the French territory of Chandarnagar

is in very bad condition. From Chinsura to Magra, on the contrary, the road is usually in first-class order; after Magra it becomes rougher. The Grand Trunk Road has always been maintained out of Provincial funds; but in 1901 it was handed over to the management of the Hughli District Board.

(2) *Chinsura to Dhaniakhali and Khanpur.*—Length 24 miles, 6 furlongs, 80 yards, of which 11 miles, 7 furlongs is Class IA, the rest Class IIA. This road is usually known as the Dhaniakhali road. It was mainly constructed by funds raised by public subscription, and administered by a committee of native gentlemen, in the years 1837 to 1840. About a mile and-a-half from Chinsura it passes under the East Indian Railway. Here the new railway station, Chinsura, is being built. Average width 18 feet; iron mile-posts. There are three bridges of considerable size—in the 2nd mile a timber-topped masonry bridge across the Saraswati, consisting of five spans of 14½ feet each, with a waterway of 800 square feet; in the 4th mile an iron-topped masonry bridge over the Kunti *Nadi*, 115 feet long, with five spans, and 1,100 square feet of waterway; in the 14th mile a timber-topped masonry bridge over the Ghia *Nadi* at Hasnan, with six spans of 20 feet each, and 1,700 square feet of waterway. No acquired land.

(3) *Hughli to Majnan.*—Length 18 miles, 5 furlongs, 123 yards, of which the first 6 furlongs are Class IA, the rest Class IIA. The first half mile is within, and is maintained by the Hughli Municipality. This road is generally known as the Polba road. It leaves the Grand Trunk Road in Bali Kalitola, Hughli, and runs westward to the East Indian Railway, under which it passes. The rails are only about eight feet above the road, so that one has to dismount, when riding or driving, to pass underneath. Here the new Hughli railway station is being constructed. Average width 16 feet. Three fair-sized bridges—in the 3rd mile, just after passing the 2nd milestone, over the Saraswati, a three-arched masonry bridge, with three spans of 20½ feet each, giving 501 square feet of waterway; in the 4th mile a timber-topped masonry bridge across the Kunti *Nadi* at Rajhat, with seven spans of 19½ feet each, and 2,030 square feet of waterway; in the 16th mile a light iron bridge, of two spans of 16 feet each, over the Kantul *khal*. No acquired land; iron mileposts.

(4) *Trishbigha to Bansbaria.*—Length 1 mile, 3 furlongs, 140 yards; Class IB. Average width 20 feet, of which 7 feet are metalled. No acquired land; timber mileposts.

(5) *Magra to Khanpur.*—Length 21 miles, 2 furlongs, 76 yards, of which 1 mile and 1 furlong are Class IA, 15 miles, 7 furlongs Class II A, and 4 miles, 2 furlongs Class III. Average width 20 feet up to 17th mile, further on 12 feet. No acquired land; iron mileposts. Three fair-sized bridges—in the first mile, over the Magra *khal*, a timber bridge, with masonry abutments and timber piers, 160 feet long, in seven spans, with 2,154 square feet of waterway; in the 14th mile a small arched bridge over the Kantul *khal*, with 385 square feet of

waterway; in the 20th mile a plank-topped light iron bridge across the Ghia *Nadi*, three spans of 15 feet each, with 360 square feet of waterway.

(6) *Magra to Tribeni.*—Length 6 furlongs, 140 yards; Class IB. Average width 16 feet; metalling 8 feet wide; no acquired land; iron mileposts.

(7) *Pandua station to Kalna.*—Length 12 miles, 6 furlongs, 180 yards, to the boundary of Hughli district, the whole being Class IA. Kalna is about four miles further on. Average width 20 feet; metalling 7 feet in width; land when acquired not known; iron mileposts. There is an inspection bungalow at Inchura in the 10th mile. There are two large bridges—an iron-topped masonry bridge of four spans, total length 85 feet, on the Behula *khal* in the 7th mile, and a suspension bridge of 92 feet span, with buttresses 25 feet long at each end, over the Bagul or Beola *khal* in the 12th mile. There is also a three-arched brick bridge a little west of Inchura bungalow. From Pandua station to Inchura the road runs north-eastwards; it crosses the Grand Trunk Road exactly at the 42nd milestone, and passes through Ilsoba-Mandalai village, in the 3rd to 4th mile, the dispensary being a little west of the 4th milestone. At Inchura the road bends at a right angle, and runs north-westwards.

(8) *Bainchi station to Baidyapur.*—Length 3 miles, 1 furlong, 163 yards; Class IA. Average width 16 feet; metalling 6½ feet wide; land acquired; iron mileposts. In the second mile an arched masonry bridge of three spans of 10½ feet each, with 204 square feet of waterway, over a small nameless *nulla*. Bainchi is the nearest railway station to Kalna, which is distant about 14 miles, but the road beyond Baidyapur is *kacha*.

(9) *Bainchi station to Dasghara, viâ Dhaniakhali.*—Length 18 miles, 4 furlongs, 212 yards, of which the first 2 miles are Class IB, the next 13 miles, up to Dhaniakhali, Class IIB, and the rest Class IV. Average width up to Dhaniakhali 16 feet. No acquired land; iron mileposts; an inspection bungalow at Dhaniakhali. Two fair-sized bridges—a timber bridge, 94 feet long, consisting of three spans of 20 and three of 10 feet, giving 1,072 square feet of waterway, over the Ghia *Nadi*, in the 11th mile; and a plank-topped light iron bridge of two spans of 15 feet each, leaving 978 square feet of waterway, over the Kana *Nadi*, in the 16th mile.

(10) *Haripal station to Dhaniakhali.*—Length 9 miles, 6 furlongs, 133 yards, of which the first 7 miles are Class IA, the rest Class IIB. Average width up to Bhanderhati, six miles, is 16 feet, with 6½ feet of metalling; the rest of the road is 12 feet wide and unmetalled. Land acquired up to 7th mile; iron mileposts; an inspection bungalow at Haripal. One large bridge—an iron-topped masonry bridge of 25 feet span, over the Kana *Nadi* in the third mile; waterway 398 square feet. This road was constructed in 1894—96, at a cost of Rs. 35,000, out of which Srimati Bidhumukhi Dasi, wife of Babu Gopal Chander Addy, gave Rs. 15,000. This gift is commemorated by an inscribed pillar on the road-side at Haripal.

(11) *Chandarnagar to Bhola.*—Length 11 miles, 6 furlongs, 193 yards, of which the first two miles are Class IA, the rest Class IIB. Average width 16 feet with metalling 6½ feet wide for the first two miles; iron mileposts. One fair-sized bridge in 7th mile, over the Saraswati—a plank-topped masonry bridge of two spans of 14½ feet each, giving 174 square feet of waterway. At 10th mile a regulator, on Kana *Nadi*, belonging to the Irrigation Branch of the Public Works Department, at Gopalnagar, where the river is also bridged (*vide* No. 65).

(12) *Baidyabati to Tarakeswar.*—Length 21 miles, 4 furlongs, 120 yards, of which 10 miles are Class IA, the rest Class IIA. Average width 22 feet; metalling 8 feet wide for one mile, and 6½ feet wide for nine miles. Land when acquired not known; iron mileposts. An inspection bungalow at Tarakeswar. One large bridge, over Kana Damudar, in 20th mile; waterway 360 square feet. Four smaller bridges, masonry, one arched and three plank-topped; giving a total waterway of 639 square feet.

(13) *Nalikul to Haripal.*—Length 4 miles, 1 furlong, 124 yards, of which 1 mile and 1 furlong Class IA, the rest Class IIA. Average width 22 feet; no acquired land; iron mileposts.

(14) *Nabagram to Charpur* (*the Serampur-Sheokhala road*).—Length 13 miles, 4 furlongs, 102 yards, of which 3 miles 1 furlong Class IA, the rest Class IIA. Average width 16 feet for the first 12 miles, and 10 feet for the rest, with 7 feet wide metalling for the first three miles. Land when acquired not known; iron mileposts. Five bridges—two small timber-topped masonry bridges, in the 2nd and 3rd miles, with 384 square feet of waterway; two small timber-topped bridges in the 6th and 13th miles, with 223 square feet of waterway; and a plank-topped masonry bridge, of two spans of 20 feet each, in the 9th mile, giving 345 square feet of waterway.

(15) *Konnagar to Kristorampur.*—Length 9 miles, 1 furlong, 16 yards, of which 2 miles, 6 furlongs are Class IA, the rest Class IIA. Average width 14 feet; the first 6 furlongs of the 6th and the 7th mile have metalling 7 feet wide. Land not acquired; iron mileposts. In the 5th mile a timber-topped masonry bridge, of two spans of 23 feet each, with 368 square feet of waterway.

(16) *Uttarpara to Kalipur.*—Length 4 miles, 3 furlongs, 49 yards; all Class IA. Average width 15 feet; metalling 8 feet wide. Land not acquired; iron mileposts. Two fair-sized bridges—a timber-topped brick bridge in the second mile, with 20 feet span, 70 square feet waterway; and a bridge with sluices, belonging to the Irrigation Branch, Public Works Department, over the Dhankuni drainage channel in the 3rd mile.

(17) *The Old Benares Road, Devipara to Khatul.*—Length in Hughli district, 49 miles, 7 furlongs, 106 yards, of which 4 miles and 1 furlong, at the beginning, are Class IA; 39 miles, 4 furlongs, 106 yards, Class IIB;

and 6 miles, 2 furlongs, between the 32nd and 40th mile, Class V. This is an old historic road, and is worthy of description at some length. Until the Grand Trunk Road was constructed, it was the most important road in Bengal, and the chief, in fact the only means of land communication between Calcutta and Benares and the districts beyond. It is also known as Ahalya Bai's Road to Benares, and in the early part of last century was called the New Military Road. It was the first Provincial road taken in hand by the Government. Toynbee states that in 1816 it was under the charge of Lieutenant Playfair, who put up milestones. In 1828 this officer, who in the meantime had become a Major, handed it over to the Magistrate. Sir Frederick Halliday, when Magistrate in 1830, reported to Government how the road was yearly destroyed by the floods of the Damudar; and that the large sums spent yearly in throwing up earthwork, only to be washed away next rains, were utterly wasted. He wrote:—

"Where well secured and strongly piled bunds cannot be resorted to, the best road is that which does *not* rise above the level of the surrounding country."

Sir Frederick stopped all work on the road, except that of convicts, as the new Grand Trunk Road, *viâ* Burdwan, had now come into general use and was a much better road, and much preferred. At the same time Colonel Ouseley, who was then Agent to the Governor-General for the South-West Frontier, called attention to the importance of this line of communication with the territories under his charge. He says:—

"The now opening trade with Chota Nagpur and the whole of the South-West Frontier Agency in indigo, oilseeds, skins, and other jungle productions is all brought along this line."

In 1837 the road is described as being a melancholy picture of the effects of neglect, but still crowded with incessant streams of foot-passengers and pack-bullocks. Out of 58 bridges, some of which must have cost from twenty-five to thirty thousand rupees, only 32 were still standing in 1837, and the arches of these were fast being worn away. The dâk bungalows were falling into ruins, and the furniture was being stolen. By 1840 the troops had ceased to use the road, and the flooded parts had sunk to the condition of an ordinary fair-weather track:—

"It is truly lamentable (says Toynbee) to think of the immense sums of money that must have been wasted on this road before it was discovered that to make a raised road across the flood-spill of a country sufficient waterway must be allowed. The same experience was bought at the same cost in many other parts of the country, notably on the Grand Trunk Road between Midnapur and Cuttack."

It may be of interest to give a description of what is the exact state, at the present time, of this road, once the principal road of the country, on which *lakhs* and *lakhs* have been spent. On the 20th December 1900, I rode from Chapadanga, on the Damudar, to Arambagh, *after* the road had been put in order after the floods of the rainy season; that is to say, after the breaches had been turned by diversions, and steep slopes smoothed off, which is

as much as is ever done to this part of the road. It has now been recognised that it is useless trying to keep up a good road crossing the spill-channels of the Damudar at a right angle.

Forded the Damudar, banks sloping on east, steep on west, about two feet of water under western bank. The 33rd milestone is on the east bank of the Damudar. First mile, 33-34, road *bunded* and fairly good. Second mile, 34-35, road still bunded, but four large breaches and ruins of two *pakka* bridges—one large and one small. From 35th to 40th mile road very sandy, the whole one large area of spill-water. Third mile, 35-36, crossed two large, sandy river-beds, both dry now. The 37th milepost is a little east of the Muneswari river. About 38th mile crossed river Muneswari, 20 yards wide, girth-deep, a small boat for foot-passengers. On its west bank a village, Harinkola, surrounded by a *bund*. The next half mile is almost all spill-channel; crossed one small river-bed and four larger ones, a foot of water in one. About 39th mile a large spill-channel with a few inches of water in it; a large broken *pakka* bridge here. In 39-40 mile two *pakka* bridges standing, but road broken away on each side. At 40th mile reached Mayapur village.

I rode over this road again on 11th February and 5th June 1901. It was in much the same condition. For about six months of the year, December to June, this portion of the road, from the Damudar to Mayapur, is barely passable for a bullock-cart or a horse, with great difficulty for the former. A dog-cart might perhaps be dragged across it very slowly. A horse has to do great part of the distance at a walk. All traffic is carried on by pack-bullocks. For six months of the year, June to December, this road is closed by floods, the time when it closes depending on the amount of rainfall.

The old Benares road starts from Howrah. It enters the Hughli district at Devipara. Up to the 16th mile the Howrah-Sheakhala Steam Tramway runs along the side of the road. In the 25th mile the roads from Haripal to Kristonagar (roads Nos. 41, 42, 43) cross it. In the 8½ miles from this junction to the Damudar at Chapadanga there are three fair-sized bridges. The first, three wooden spans on brick piers, crosses a small *khal*. The second, a wooden bridge, of five spans of eleven feet each, with 385 square feet of waterway, crosses the Kana Damudar in the 26th mile. The third, a timber-topped brick bridge, of two spans of 19 feet each, with 400 square feet of waterway, crosses the Ranaband *khal* in the 31st mile. At the 32nd milepost is Chapadanga police outpost. The 33rd mile is a mere track through deep sand; the 33rd milepost is on the east bank of the Damudar river. Close by is Chapadanga inspection bungalow, a very good *pakka* bungalow belonging to the Public Works Department. The next seven miles are the portion described above, from the Damudar to Mayapur, where there is a small inspection bungalow. For the next six miles, from Mayapur to Arambagh (Jahanabad),

the road is a good *kacha* road. In the 42nd mile there is a light iron bridge of two spans of 16 feet each, over the (Dwarkeswar) Kana *Nadi*; the bridge is intact, but the road on the west has been carried away, so that the bridge is useless. The *Nadi*, however is usually dry in the cold and hot seasons, where the road crosses it. In the 43-44 mile a very fine tank exists, a quarter of a mile south of the road. At the 46th mile the Dwarkeswar river is reached at Arambagh, which stands on the east side of the river. Arambagh is the head-quarters of a subdivision; there is a good inspection bungalow here. The Dwarkeswar river has a broad, sandy bed; in the cold weather it is usually not over two feet deep, and is easily fordable. In the rains a ferry-boat is kept here, as well as at the Damudar crossing. A bamboo foot-bridge is put over the river in the dry season. From the Dwarkeswar the road trends to the north-west, and passes out of the Hughli into the Bankura district at Khatul, 11 miles from Arambagh. The average width of the road is 25 feet. It is not known when the land was acquired. There are iron mileposts.

(18) *Chanditola to Jonai.*—Length 1 mile, 2 furlongs, 180 yards; all class IA. Average width 30 feet; no large bridges.

(19) *Sheya to Alasin, viâ Malipara.*—In Polba, Dhaniakhali, and Pandua *thanas*. Length 8 miles, 17 yards, of which 3 miles, 4 furlongs Class IIA, the rest Class IV. Average width 12 feet. No large bridges; no acquired land; wooden mileposts.

(20) *Hughli to Satgaon, viâ Kazidanga.*—Length 3 miles, 6 furlongs, 150 yards; Class IIA. Average width 15 feet; no large bridges; no acquired land; wooden mile-posts.

(21) *Balor to Merea.*—Length two miles; Class IIA. Average width 14 feet; land acquired; no large bridges; wooden mileposts.

(22) *Magra Ganj to Sultangachia.*—Length 1¾ miles; Class IIA. Average width 20 feet. One timber-topped brick culvert, of 20 feet span, with 120 square feet waterway, in 2nd mile. No acquired land; wooden mileposts.

(23) *Pandua to Kalyanpur.*—Length 7 miles, 7 furlongs, of which 5 miles 3 furlongs are Class IIB, the rest Class IV. Average width 14 feet; no acquired land; wooden mileposts. Two plank-topped small brick bridges in 3rd and 6th miles, giving 278 square feet of waterway.

(24) *Ramnathpur to Haral.*—Length 9 miles, 2 furlongs, 125 yards; Class IIA. Average width 14 feet; no acquired land; wooden mileposts. One plank-topped light iron bridge, of two spans of 16 feet each, in first mile, with 165 square feet of waterway.

(25) *Pandua to Kulti.*—Length 4 miles, 3 furlongs, 73 yards; Class IIA. Average width 12 feet; no acquired land; wooden mileposts.

(26) *Mandalai to Jamgram.*—Length 2 miles, 3 furlongs, 173 yards; Class IIA. Average width 12 feet; no acquired land; wooden mile-posts. This road forms

part of a short-cut from Pandua to Kalna, and is passable on horseback in the cold and hot seasons; it is about 4 miles shorter than the road *viâ* Inchura.

(27) *Khanyan station to Grand Trunk Road.*—Length 2 furlongs, 76 yards; Class IIA. Average width 16 feet; land acquired; timber mileposts.

(28) *Khanyan to Sikra.*—Length $3\frac{3}{4}$ miles; Class IIA. Average width 12 feet; no acquired land; wooden mileposts.

(29) *Somra to Digra.*—Length 2 miles, 7 furlongs, 48 yards; Class IIA. Average width 12 feet; no acquired land; wooden mileposts.

(30) *Inchura to Balagarh.*—Length 6 miles; Class IIA. Average width 15 feet; no acquired land; wooden mileposts.

(31) *Damurda to Balagarh.*—Length 7 miles; Class IIA. Average width 15 feet; no acquired land; iron mileposts.

(32) *Tribeni to Guptipara.*—Length 16 miles, 4 furlongs, 150 yards. Average width 16 feet; no acquired land; wooden mileposts. This road is a continuation of the road from Hughli to Tribeni, or it may be considered a part of the Hughli-Kalna road. Taking the whole length of the road as one, it starts from the Grand Trunk Road, in its 28th mile, and from the place, a little north of Bandel Church, where the Grand Trunk Road bends inland, the Hughli-Kalna road runs straight on, parallel with and usually close to the Hughli river, through Shahganj, as the northern end of Hughli Municipality is called, and Bansbaria, to the Tribeni *ghat*. A little north of Tribeni Bansbaria Municipality ends, and the Tribeni-Guptipara road begins. For the six miles from Bandel to Tribeni the road lies entirely within the municipalities of Hughli and Bansbaria, and hence is not counted as a District Board road. This first six miles is all *pakka*. It contains one large engineering work, a suspension bridge over the Saraswati, at Tribeni, consisting of three spans, the central span of 92 feet, and the two side spans of 42 feet each allowing 1,862 square feet of waterway. This bridge, though not this part of the road, is the property of the District Board. From the northern end of Bansbaria Muncipality are measured the miles on the road to Guptipara. In the 3rd mile an iron suspension bridge crosses the Magra *khal*. This is much the largest of the three suspension bridges in the district. It crosses the khal by one long span of 210 feet, with a buttress 28 yards long at each end. Between the Magra *khal* and Guptipara there are three other bridges of some size. The first is at Dhakchara in the sixth mile, where a fair-sized single-arch brick bridge crosses a small *khal*, which connects two larger *khals*, the Behula or Baolia *khal* on the west of the road, and a *khal* called Kana *Nadi* on the east. The Baolia *khal* is the same which the Pandua-Inchura-Kalna road (No. 7) crosses in its 7th mile; while this Kana *Nadi* is quite separate and distinct from the streams of the same name which are offshoots of the Damudar and the Dwarkeswar. This bridge is cracked and in need of repair. In the 7th mile is a two-span brick bridge, crossing this same Kana *Nadi*. In the

15th mile a large four-span masonry bridge crosses the Beola *Nadi*, the same stream which is spanned by the suspension bridge of road No. 7. From Guptipara the road goes on to Kalna, about three miles.

This road, according to Toynbee, formed the old through route from Calcutta to Nadiya, Murshidabad, Rangpur, and Darjiling, and was much used by troops going to Murshidabad and Monghyr, crossing the Hughli at Ghireti. In 1828 Pran Kissen Haldar, *zamindar* of Jagdispur, gave Rs. 13,000 for a pakka bridge over the Saraswati at "Tirpunny" (Tribeni), in return for which he was allowed to keep six sepoys as sentries at the gate of his house in Chinsura, now the Hughli College. About the same time a suspension bridge was built at Naya Sarai over the Magra *khal*, with funds collected by subscription. Both these bridges were washed away in the floods of 1833; their ruins may still be seen, a little nearer the Hughli river than the present bridges, which were constructed with the balance at credit of the ferry fund, in 1840 or soon after.

A curious feature of this road is that, for the first five miles north of the Magra *khal*, each mile is marked by a circular group of casuarina trees. These trees occur at regular intervals of one mile, and appear to have been planted to mark the miles. In its 11th mile this road passes within a quarter of a mile of Inchura rest-house.

(33) *Magra to Naya Sarai.*—Length 4 miles, 1 furlong, 47 yards; Class IIA. Average width 10 feet; no acquired land; wooden mileposts.

(34) *Naksha to Digsui.*—Length 3 miles; Class IIA. Average width 12 feet; no acquired land; wooden mileposts.

(35) *Bainchi station to Bainchi Bazar.*—Length 1 mile, 5 furlongs; Class IIA. Average width 14 feet; no acquired land; wooden mileposts.

(36) *Bhadreswar to Nasibpur.*—Length 5 miles, 7 furlongs, 196 yards; Class IIB. Average width 15 feet; no acquired land; wooden mileposts.

(37) *Nasibpur to Janai.*—Length 7 miles, 1 furlong, 53 yards; Class IIA. Average width 12 feet; no acquired land; wooden mileposts.

(38) *Dirganga to Singur.*—Length 6 miles, 5 furlongs, 20 yards; Class IIA. Average width 15 feet; no acquired land; wooden mileposts. A plank-topped light iron bridge, 35 feet long, of three spans, over the Dhankuni drainage channel in the 1st mile; and a small arched bridge of three spans, of 6 feet each, over the Saraswati in the 4th mile; combined waterway 424 square feet.

(39) *Gangadharpur to Nawabpur.*—Length 8 miles, 3 furlongs, 73 yards, of which the first 6½ miles Class IIA, the last 2 miles Class IV. Average width 10 feet; no acquired land; wooden mileposts.

(40) *Singur station to Masat.*—Length 6 miles, 6 furlongs, 123 yards, of which the first 3 miles Class III, the rest Class IV. Average width 12 feet; land not acquired; wooden mileposts. A wooden bridge, 40 feet long, in three spans, with a waterway of 200 square feet, over Rasghara *khal* in 4th mile.

(41) *Bandipur to Gaja.*—Length 3 miles; Class IIA. Average width 14 feet; land when acquired not known; wooden mileposts. A light iron bridge, of two spans of 16 feet each, in 1st mile, over Kana *Nadi*; and a small timber-topped bridge of 21 feet span in the 3rd mile; combined waterway 350 square feet.

(42) *Haripal station to Jagjibanpur* [*i.e.*, to the old Benares Road]—Length 3 miles, 2 furlongs, 160 yards; Class IIA. Average width 14 feet; no acquired land; wooden mileposts.

(43) *Gaja to Rajbalhat* [*i.e.*, from the old Benares Road]—Length 7 miles, 4 furlongs, 120 yards; Class IIB. Average width 14 feet; land not acquired; wooden mileposts. An inspection bungalow at Dwarhata in 1st mile. Three important bridges—a timber bridge of six spans of 10 feet each, over Kana Damudar in 5th mile, waterway 420 square feet; an arched bridge, 34 feet long in five spans, in 5th mile, waterway 231 square feet; an iron bridge, on brick abutments and piers, in three spans of 20, 24, and 20 feet, over Ranaband *khal* in 7th mile, waterway 576 square feet.

(44) *Athpur to Sitapur.*—Length 7 miles, 4 furlongs, 150 yards; Class IIA Average width 12 feet; no acquired land; wooden mileposts. A light iron bridge, of five spans of 15 feet each, over Khurigachi *khal*, with 375 square feet of waterway.

(45) *Dipa to Balgori.*—Length 6 miles, 1 furlong, 46 yards; Class IV. Average width 12 feet; no acquired land; wooden mileposts.

(46) *Gobarhara to Adangachi.*—Length 2 miles, 7 furlongs, 60 yards; Class IIB. Average width 12 feet; no acquired land; wooden mileposts.

(47) *Chanditola to Ekloki.*—Length 3 miles, 57 yards. Average width 10 feet; no acquired land; wooden mileposts.

(48) *Kalipur to Kristapur.*—Length 7 furlongs, 113 yards; Class III. Average width 9 feet; wooden mileposts.

(49) *Serampur to Dhankuni.*—Length 4 miles, 5 furlongs, 85 yards; Class IIB. Average width 16 feet; wooden mileposts.

(50) *Masahat to Dhitpur.*—Length six miles; Class IIA. Average width 14 feet; no acquired land; wooden mileposts. This is the road to Jagatballabhpur, a large village in Howrah district, about two miles beyond Dhitpur, which is on the boundary of the Hughli district.

(51) *Gobra to Chanditola.*—Length 7 furlongs, 112 yards; Class IIA. Average width 16 feet; wooden mileposts.

(52) *Arambagh to Nayasarai.*—The Arambagh-Burdwan road, and the only means of communication between Arambagh and the outer world, when the old Benares road is closed by the rising of the rivers. Length 6 miles, Class IA. Nayasarai is on the border of the Hughli district; from there to Bardwan is another 22 miles, and the Damudar has to be crossed, close to Bardwan. Average width 16 feet, of which 8 metalled. Two arched bridges in

the 22nd and 24th miles (from Bardwan), allowing a combined waterway of 655 square feet. Land acquired; wooden mileposts. The first ¾ mile is maintained by Arambagh municipality.

(53) *Arambagh to Udrajpur.*—Length 7 miles, 3 furlongs; Class IIB. Average width 14 feet; no acquired land; wooden mileposts. This is the road from Arambagh to Ghatal (16 miles), and is usually passable all the year round. From Digra, a little above Bali, to the end of the district, the road runs along a high *bund* on the west bank of the Dwarkeswar river.

(54) *Arambagh to Titalmari.*—Length 17 miles; Class IIB. Land acquired in 1822; wooden mileposts. In the 6th mile a plank-topped masonry bridge of 20 feet span, with 210 square feet of waterway. The Amudwara river in the 9th mile and the Tarajuli in the 12th mile are unbridged. They are small streams, usually easily fordable. An inspection bungalów at Kamarpukhar, eight miles from Arambagh, where the Bardwan-Midnapur road (No. 55) intersects this road. This road is the old Nagpur road; it was constructed by Lieutenant Symes and a company of hill *beldars* in 1822, land one hundred feet wide being acquired for it. It is a continuation in a straight line of the old Benares road from Arambagh westwards, and leaves that road, which trends to the north-west, about a quarter of a mile after crossing the Dwarkeswar river.

(55) *Uchalan and Midnapur Road.*—Length 15 miles, 1 furlong; class IIB. Average width 20 feet; land when acquired not known; wooden mileposts. The Asathkhali *nadi* in the 6th mile, and the Amudwara river in the 15th mile (from Uchalan) are not bridged, but are usually easily fordable. This is a section of the road from Bardwan to Midnapur. Uchalan is a large village in Bardwan, about five miles north of the Hughli border. This road passes close by two old ruined forts, Garh Mandaran and the Bhitargarh. It joins the road from Arambagh to Bardwan (No. 52) at Uchalan.

(56) *Hajipur to Ramjibanpur.*—Length 1 mile 1 furlong; Class IIB. Average width 12 feet; land when acquired not known; wooden mileposts. This is an offshoot from road No. 55. Ramjibanpur is a large village in Midnapur district, about a mile from the Hughli border.

(57) *Arambagh to Tirol.*—Length 5 miles, 2 furlongs; Class III. Average width 9 feet; no acquired land; wooden mileposts. This road branches off road No. 52, about a mile north of Arambagh.

(58) *Arambagh to Ramnagar.*—Length 3 miles, 2 furlongs; Class III. Average width 12 feet; no acquired land; wooden mileposts. The first ¾ mile is maintained by Arambagh Municipality. This road leaves the old Benares road about a mile east of the Dwarkeswar, and comes out on the east bank of the Dwarkeswar, down which it runs to a point opposite Bali. About two miles from its beginning it passes under the old semaphore tower at Mubarakpur, since used as a Great Trigonometrical Survey station.

(59) *Arambagh to Arandi.*—Length 6 miles, 5 furlongs; Class III. Average width 9 feet; no acquired land; wooden mileposts. The first half mile is maintained by Arambagh Municipality. This road leaves road No. 58 about half a mile south of the old Benares road, and runs to Arandi, two miles south of Mayapur, on the following road, No. 60. This road passes, in its 2nd mile, Ranjit Rai's tank, on south-west of road; a very fine tank, a quarter of a mile square, with banks ten feet high, and beautifully clear water, but rather weedy. The legend of the tank is given in the History.

(60) *Mayapur to Jagotpur viâ Khanakul.*—Length 16 miles, 2 furlongs; Class IV. Average width 10 feet; no acquired land; wooden mileposts. Great part of this road is flooded in the rains. An inspection hut at Gopalnagar, about two miles north of Khanakul. This road leaves the old Benares road at the east end of Mayapur village. After the first milestone it crosses a low range of sand hills, ten or twelve feet high, and about a hundred yards broad. Immediately after it crosses the (Dwarkeswar) Kana *Nadi*, a sluggish, swampy stream, about two feet deep in the cold weather. A bamboo foot-bridge is put over this river in the dry season, a little west off the road. Just before the 7th milestone is a long iron and wooden bridge, of six spans; but the road at each end is washed away, and the bridge stands useless and "in the air." Half a mile further on, at Kishannagar village, the road reaches the (Dwarkeswar) Kana *Nadi*, now, after its junction with the Muneswari, a broad stream, 60 or 70 yards broad, and six feet deep. The road then runs for three miles along a high *bund* on the west bank of this stream to Khanakul. Beyond Khanakul it dwindles to a mere track, and for the last three or four miles before reaching Jagatpur, which is on the border of the district, and on the east bank of the Rupnarayan, it hardly exists. The country here is low and flooded in the rains. A solid embanked road once existed, but has been washed away for the most part. This road was accused, in Raja Digumbar Mitter's articles in the *Hindu Patriot*, of having given rise to the epidemic fever in Khanakul *thana*, by the obstruction it caused to drainage (see Chapter VI—Climate).

(61) *Goghat to Kumarganj.*—Length 7 miles, 2 furlongs; Class IV. Average width ten feet; no acquired land; wooden mileposts. An inspection bungalow at Kumarganj.

(62) *Kamarpukhar to old Benares Road, near Bhagwat Khan's tank.*—Length 5 miles, 3 furlongs; Class III. Average width ten feet; no acquired land; wooden mileposts. The Bhuti Nadi in the 2nd mile is unbridged.

(63) *Bhigdas to Bali.*—Length 6 miles, 2 furlongs; class III. Average width 10 feet; no acquired land; wooden mileposts. Leaves the Nagpur road (No. 54) a mile east of Goghat *thana*.

(64) *Subirchak to Badanganj.*—Length 7 miles; Class III. No acquired land; wooden mileposts. The Tarajuli *Nadi* in 4th mile is unbridged; usually easily fordable. An inspection bungalow at Shambazar in 5th mile.

(65) *Kristaganj to Badanganj.*—Length 1 mile, 1 furlong. Average width 10 feet; no acquired land; wooden mileposts. Leaves the Nagpur road (No. 54) at Kristaganj, near the eastern border of Hughli district.

(66) *Gopalnagar bridge* is not on, but close to, road No. 11, Chandarnagar to Bhola, which runs alongside the Kana *Nadi* for some distance. It is a light iron bridge over the Kana *Nadi*, of four spans of 15 feet each, allowing 637 square feet of waterway.

Inspection bungalows.—There are at present 17 in the district, of which 12 belong to and are maintained by the District Board, and five to the Public Works Department, viz., Chapadanga, Bali, Pandua, Puspur, and Magra. They are described below:—

(1) *Chapadanga.*—A very fine bungalow, *pakka*, with three rooms, and two bath-rooms, cook-house, and stable. It stands on the east bank of the Damudar, and on the south side of the old Benares road.

(2) *Bali.*—On the road from Arambagh to Ghatal, six miles south of Arambagh, on the west bank of the Dwarkeswar.

(3) *Pandua.*—On the east side of the Grand Trunk Road; *pakka*, with two small rooms, and two bath-rooms, with kitchen and stables. It is nearly a mile from Pandua station.

(4) *Magra.*—On east side of Grand Trunk Road, and on south bank of Magra *khal;* one room, a small side room, and a bath-room, with cook-room and stables; half a mile from Magra station.

(5) *Inchura.*—On south-east side of Pandua-Kalna road, where it bends a a right angle; and within a quarter of a mile of 11th mile of Tribeni-Kalna road. A thatched house, with *kacha-pakka* walls, one room and one bath-room with cook-house and stables. A *pakka* well in compound.

(6) *Dhaniakhali.—Kacha-pakka* walls and tiled roof, one room and bath-room, with kitchen and stables. About a mile from Dhaniakhali station, 200 yards from Ala station, on Bengal Provincial Railway.

(7) *Haripal.*—Close to the railway station, on north of line; *pakka*, one small room and bath-room, with cook-room and stable. A *pakka* well in compound.

(8) *Arambagh.*—A thatched house with *kacha-pakka* walls; two rooms and two bath-rooms, with kitchen and stables. Stands on east bank of Dwarkeswar, a little north of the Dispensary, Jail, and Court-houses.

(9) *Dwarhata.*—A thatched house with *kacha-pakka* walls; one room and one bath-room, with cook-house and stables. A *pakka* well in the compound.

(10) *Kamarpukhar.*—On north side of Nagpur road; a mud-walled thatched hut; one room, two bath-rooms, cook-house and stables.

(11) *Khanakul.*—At Gopalnagar, about two miles north of Khanakul. On west bank of Muneswari, or (Dwarkeswar) Kana *Nadi.* A mud-walled thatched hut, with one room and one bath-room, cook-house and stables.

(12) *Mayapur.*—On north-side of old Benares road, a little east of 40th milepost. A mud-walled thatched hut, with one room and bath-room, cookroom and stables.

(13) *Parsura.*—On west bank of Damudar, opposite Chapadanga, and on south side of old Benares road. A mud-walled thatched hut, with one room, one side-room, cook-room and stable.

(14) *Shambazar.*—A mud-walled thatched house, with one room, one bath-room, and a cook-room.

(15) *Tarakeswar.*—A quarter of a mile from station, on south of line. A thatched house with *kacha-pakka* walls, three rooms, a bath-room, and kitchen and stables.

(16) *Kumarganj.*—Near south bank of Dwarkeswar, at end of Goghat-Kumarganj road, not far from Bardwan-Midnapur road. A thatched house, with *kacha-pakka* walls, one room and one bath-room.

(17) *Puspur.*—On left bank of Damudar, in south-west corner of Kristo-nagar thana. A *kacha-pakka* building with thatched roof, three rooms, two bath-rooms, stable, and out-house.

Ferries.—The following ferries cross the river Hughli, from places in Hughli district to *ghats* on the opposite side of the river, of which the first six are in the Nadiya district, and the others in the 24-Parganas. They are given in order, from north to south:—

No.	From (west bank)	To (east bank)	Proprietor.	Remarks.
1	Guptipara	Santipur ...	Zemindari.	
2	Somra	Gosai *chur* ...	Ditto.	
3	Balagarh	Chogda ...	Ditto.	
4	Jirat	Kaliganj (Sukhsagar)	Ditto.	
5	Damurda	Durgapur ...	Ditto.	
6	Tribeni	Gusti ...	Ditto.	
7	Bansbaria	Kanchrapara ...	Ditto.	
8	Kamarpara (Bansbaria) ...	Halishahr ...	Ditto.	
9	Hughli bazar ...	Naihati ...	Three-fifths Hughli. Two-fifths Naihati.	

No.	From (west bank)	To (east bank)	Proprietor.	Remarks.
10	Babuganj (Hughli) ...	Naihati ...	Three-fifths Hughli. Two-fifths Naihati.	
11	Machua Bazar (Chinsura)	Naihati ...	Ditto.	
12	Sindeswartola (Chinsura)	Kankinara ...	Ditto.	
13	Chandarnagar ...	Jagadal ...	Zemindari.	
14	Telinipara (Bhadreswar)	Shamnagar ...	District Board ...	Two country boats and one green boat.
15	Bhadreswar	Garulia ...	Zemindari.	
16	Ghireti (French) ...	Ishapur ...	Ditto.	
17	Champdani (Ghireti) ...	Palta ...	District Board ...	Two strongly-built, wooden cattle boats, and four country boats for passengers. The Grand Trunk Road ferry.
18	Nimaitola (Baidyabati) ...	Nawabganj ...	Half Baidyabati. Half Government.	
19	Kanhaidiwanitola (Chatra)	North Barrackpur ...	Half Serampur. Half Government.	
20	Serampur Courts ...	Hospital Ghat, Barrackpur.	Ditto.	
21	Ballabhpur (Serampur) ...	Titaghar ...	Government.	
22	Jaganath Ghat (Mohesh)	Ditto ...	Half Serampur. Half Government.	
23	Rishra	Khardaha ...	Ditto.	
24	Konnagar	Panihati ...	Ditto.	
25	Uttarpara	Ariadaha ...	Half Uttarpara. Half Government.	

Besides these ferries across the Hughli, the following ferries also exist, and are the property of the District Board:—

(1) From Chapadanga to Pursura, on the old Benares road, crossing the Damudar; only required and used in the rains.

(2) At Balarampur, crossing the Damudar, on the straight track from Tarakeswar to Arambagh; only required and used in the rains. There is no road in this direction, only a foot-path, which saves some two miles on the route *viâ* Chapadanga, and joins the old Benares road near Mayapur.

(3) At Harinkhola on the old Benares road, crossing the Muneswari; plies all the year round if there is water enough to float the boat, but really hardly required from December to June.

(4) At Haraditya, crossing the Haraditya *khal*, on the old Benares road, a little west of the Muneswari; only required and used in the rains.

(5) Across the Asathkhali *khal*, on the Bardwan-Midnapur road; only required and used in the rains (if then), the *khal* being almost always fordable.

(6) There is also a ferry in the rains across the Dwarkeswar at Arambagh, which does not belong to the District Board.

Distance in miles from Chinsura, head-quarters of Hughli District, to head-quarters of all other districts in Bengal.

District.	Distance by—		District.	Distance by—	
	Rail.	Road, river or canal.		Rail.	Road, river or canal.
Backerganj ...	108	82	Malda	100	142
Balasore ...	168	2	Manbhum ...	156	3
Bankura ...	97	32	Midnapur ...	102	5
Bhagalpur ...	241	3½	Monghyr ...	273	2
Birbhum ...	95	13	Murshidabad ...	157	16
Bogra	188	2	Muzafarpur ...	351	2
Bardwan ...	43	3	Maimansinh ...	216	107
Calcutta ...	24	3	Nadiya	45	2
Champaran ...	400	2	Noakhali ...	108	178
Chittagong ...	243	81	Pabna	93	17
Cuttack	277	5	Palamau ...	372	87
Dakka	141	107	Patna	314	4
Darbhanga ...	342	2	Puri	334	3
Darjiling ...	359	2	Purnea ...	244	5
Dinajpur ...	243	2	Rajshahi ...	100	55
Faridpur ...	145	2	Ranchi ...	156	79
Gaya	372	4	Rangpur ...	246	5
Hazaribagh ...	183	74	Saran	374	3
Howrah ...	24	3	Shahabad ...	344	3
Jalpaiguri ...	285	3	Sinhbhum ...	228	19
Jessore	73	3	Sonthal Parganas ...	113	40
Khulna	108	3	Tippera ...	171	82
			24-Parganas ...	24	5

Polymetrical Table for Hughli District.

Thanas.		Balagarh.	Chanditola.	Dhaniakhali.	Goghat.	Haripal.	Hughli.	Jahanabad (Arambagh).	Khanakul.	Kristonagar.	Polba.	Pandua.	Serampur.	Singur.
Balagarh ...	Rail ...	...	49	32	39	39	15	39	39	39	18	...	26	31
	Road ...	...	16	15	46	15½	17½	39	43½	25½	18	15	15½	15½
Chanditola ...	Rail ...	49	...	56	10	39	34	10	10	10	34	49	22	31
	Road ...	16	...	1	34	1	3	26	28½	13½	10½	1	1	1
Dhaniakhali ...	Rail ...	32	56	...	18	18	28	18	18	18	14	31	35	26
	Road ...	15	1	...	31	1	3	24	28½	10½	3	1	1	1
Goghat	Rail ...	39	10	18	...	...	25	...	...	...	25	39	17	8
	Road ...	46	34	31	...	31	33½	7	23½	33	40½	31½	31½	31½
Haripal	Rail ...	39	39	18	...	...	25	...	...	...	25	39	17	8
	Road ...	15½	1	1	31	...	3	24	28½	10½	10½	1	1	1
Hughli	Rail ...	15	34	28	25	25	...	25	25	25	...	15	12	17
	Road ...	17½	3	3	33½	3	...	26½	31	13	9½	3	3	3
Jahanabad (Arambagh)	Rail ...	39	10	18	...	...	25	...	...	...	25	39	17	8
	Road ...	39	26	24	7	24	26½	...	16½	26	33½	25	24½	24½
Khanakul ...	Rail ...	39	10	18	...	...	25	...	...	...	25	39	17	8
	Road ...	43½	28½	28½	23½	28½	31	16½	...	31	37½	29½	29	29
Kristonagar ...	Rail ...	39	10	18	...	...	25	...	...	...	25	39	17	8
	Road ...	25½	13½	10½	33	10½	13	26	31	...	20	11	11	11
Polba	Rail ...	18	34	14	25	25	...	25	25	25	...	18	12	17
	Road ...	18	10½	3	40½	10½	9½	33½	37½	20	...	4	9½	9½
Pandua	Rail ...	...	49	31	39	39	15	39	39	39	18	...	26	31
	Road ...	15	1	1	31½	1	3	25	29½	11	4	...	1	1
Serampur ...	Rail ...	26	22	35	17	17	12	17	17	17	12	26	...	9
	Road ...	15½	1	1	31½	1	3	24½	29	11	9½	1	...	1
Singur	Rail ...	31	31	26	8	8	17	8	8	8	17	31	9	...
	Road ...	15½	1	1	31½	1	3	24½	29	11	19½	1	1	...

The above tables are taken from the "Official Manual of Distances in Bengal," published by the Accountant-General in 1901, and give the distances for which travelling allowance may be drawn, when travelling by road or rail.

Carriage.—That part of Hughli district which lies east of the Damudar river is well supplied with carriage by rail and water; no part of the Sadr or

Serampur subdivisions being more than ten miles from a railway station, except a small tract in Balagarh *thana*, in the north-east of the district, which lies on the bank of the Hughli. There is, however, very little road carriage available; the number of bullock-carts or hackeries not being large, and the bullocks which draw them as a rule being of poor physique, and not equal to a heavy load. For four months in the year, moreover, most of the district roads are passable only with great difficulty, being usually a foot deep in mud during the rains; which of course adds greatly to the labour of drawing a cart, and lessens the weight of the load which the bullocks can draw.

West of the Damudar the question of carriage presents still greater difficulty. During the rains country boats of considerable size can go up the Damudar and Dwarkeswar rivers, and thus goods can be carried up to the small towns of Arambagh and Bali on the Dwarkeswar; but the roads in Arambagh subdivision are mostly only fair-weather tracks, and hardly passable for bullock-carts in the rains. In fact, there are very few bullock-carts kept in the subdivision; even in the dry seasons all traffic in this part is carried on by pack-bullocks, and the load each bullock can carry is very small.

For passenger traffic, *tikka garis* can be hired at all the larger stations along the East Indian Railway; but these can only proceed along the few *pakka* roads, or with much difficulty for a short distance along *kacha* roads in the dry season. *Palkis* and bearers can usually be got at all the chief stations. And over most of the district, the only means of travelling available are, either to ride, or to be carried in a *palki*, or to walk. The *kacha* roads east of the Damudar are usually passable for a strong dog-cart, after they have been put in order after the rains, until the next rainy season. West of the Damudar the roads are usually not passable for a dog-cart at any pace faster than a walk. At Tarakeswar large numbers of *palkis* are always available for hire, that being the nearest railway station to Arambagh (eighteen miles), and the usual starting place for travellers going to the subdivisional head-quarters.

Habitations of the people.—The rich man's house is usually a two-story brick house, built in the form of a quadrangle round a central courtyard. The lower story has few windows opening outward, those there are are guarded by iron bars. Somewhere in the square is a broad gateway, often large enough for a carriage to drive through, closed by heavy gates. The upper story in towns, and sometimes in the country, has a veranda round it, on to which open numerous doors or windows. On entering through the large gate one comes into a square courtyard with a covered veranda all round, the roof of this veranda forming another veranda, to the upper floor. At one or more angles of the lower veranda a stair leads up to the upper story. The inner quadrangle is sometimes subdivided into two portions by a two-story block crossing it, parallel to two of the outer walls. The rooms are numerous,

small, and to European ideas incommodious. Of furniture there is usually not much—a number of large cots, a few chests, an iron safe or two, a few chairs and stools; and if the owner adopts European ways to any extent, usually a writing-table.

The *bhari* or homestead of a well-to-do cultivator usually consists of four or five one-storied rooms, arranged in the form of a hollow square, the entrance to which may be either through one of the rooms or between two of them. Often these rooms will be raised on a mud plinth, one or two feet high. The material used in the construction of the walls is simply mud, which consolidates into a fairly solid wall, with wooden posts at the four corners. One of the rooms or huts opens outwards, and forms a place for the reception of visitors; or a broad veranda for this purpose may be attached to the back of one of the rooms which open inwards. The other rooms all open into the square court in the interior. One is used as the family kitchen, a second provides shelter for the cows and bullocks of the owner, the rest form the sleeping and living rooms of the family. In the square there is usually a *gola*, or store-house for paddy, much the same shape as a corn-stack in an English farmyard, circular, with conical roof, and raised off the ground on a platform of crossed bamboos; it is constructed of mud with thatched roof. The homestead is usually surrounded with thick vegetation, bamboos, plantains, and other trees, such as jack and sometimes mango. The poorer cultivators, of course, have to be contented with much inferior accommodation. The number of separate huts is smaller, coming down to perhaps only two, or even one; and the material inferior, mud, straw, and bamboos; frequently the walls are composed of strips of bamboo, set upright, and almost touching each other, the whole being liberally plastered, inside and out, with mud; in fact, the construction known in England as "wattle and dab." In all cases the material used for the roof is thatch, varying in thickness according to the means and the tastes of the owner and builder, who are one and the same person. The immigrants from other districts who come after the rains for work on the fields and roads are often content with simply a rude shelter constructed of bamboo and straw in the form of a tent; which affords some slight protection from cold and from the casual rain of the dry season. On the other hand, no one can travel through the district of Hughli without being struck with the very large number of *pakka* houses, built of burnt brick, in the villages. Every village seems to have at least one, and often half a dozen may be seen in one village; usually of two stories, sometimes with even three. These large *pakka* houses belong not only to zemindars, but very often they are houses erected in his native village by some man who has made money in trade, or in a profession, elsewhere, usually in Calcutta; and has signalized his success by erecting a large and comfortable house in his native place, to form a shelter for his declining days, after his retirement from the

active practice of his profession or trade. Sometimes the houses thus put up by successful business men have almost a European appearance. I saw one such, looking almost like a large two-story villa, on the Hughli, at Guptipara, which, I was told, had been lately put up by a Calcutta *Kobiraj;* which looks as if there was still money to be made in some forms at least of medical practice. Often, however, these fine *pakka* houses are buried in jungle, for the sake of the owner's privacy. In such cases they cannot be healthy. It sometimes happens, too, that, owing to division of property among a number of co-sharers after the builder's death, or owing to the next heir being unable to keep them up, or other reasons, a fine new house is abandoned while still perfectly good and in every way fit for habitation, and gradually decays and goes to ruin, jungle spreading over the crumbling ruins, which form a refuge for snakes, jackals, and other vermin. I saw a large two-story house on the left bank of the (Dwarkeswar) Kana *Nadi*, at Gobindopur, which I was told had been abandoned some years ago, but which still appeared to be fairly habitable and in good order.

I may quote two descriptions of a Bengali hut and of a Bengali village; the first from the "Statistical and Geographical Report of the 24-Parganas," written by Major Ralph Smyth, of the Bengal Artillery, Revenue Surveyor, in 1857; and the second from the "Annual Sanitary Report of 1866," the author being Dr. Bhola Nath Bose, Civil Medical Officer of Faridpur, himself a Bengali, but an educated medical man of distinguished service.

Major Smyth writes:—

"This dense mass, in which all Bengalis delight to shroud themselves, and which encircles the zemindar's palace as well as the ryot's hut, is everywhere more or less productive. It is composed of the materials for food or for building, the cocoanut, the bamboo, the jack tree, and the mangoe. There may be seen the slender stalks of the suparee or betel tree, and the towering stems of the cocoanut above them, their long arms waving in the breeze; on the other side probably a thick garden of plantains, that curious link between the vegetable and the timber; in the background, an underwood of wild cane, twining itself round everything of firmer bulk; and a little further on an undistinguishable mass of thorn, creepers, and underwood of every shape, length, and denomination. The ryot must have his fruit tree and his bamboo, which yield him a return with no amount of labour, but that required for gathering or cutting, his protection for the womankind, and his shade against the fierce sun of April and May. If he attains these primary objects, he is content, no matter how much miasma may be exhaled from the decaying vegetation, how much disease may lurk in that fair but deceitful mass of green foliage, how many reptiles and venomous snakes may be concealed in the unwholesome shades which surround his paternal inheritance. The sun and the gaze of the passing neighbour must alike be excluded. Grant him this, and he will endure, with stoical fortitude, the periodical fever, the steamy heat of the rains, and the fœtid water which stagnates in the pools whence he has dug the materials for his *bita*, only because it cannot feel the influence of the breeze and the light."

Dr. Bose's description is as follows:—

"In the interior what at first sight most strikes the observer, is the universal lowness of the village sites, unless the foundations are taken into account on which the houses are built, which are, however, only artificially raised by cutting and delving the nearest ground at random, and thus, as it were, further lowering the general level. In not a few instances even these foundations or

bhittas as they are called, not being uniformly or sufficiently elevated, are scarcely secure in times of heavy floods, which will sometimes mount up to their very tops, when the affrighted inhabitants must either shift elsewhere, or perhaps, as is often the case, seek shelter on a *machan* or temporary stage, hastily constructed for the purpose, somewhere aloft under the still standing but tottering roof, to save themselves from immediate drowning, or being altogether washed away. There are no roads properly so called, unless the numerous devious cattle-tracks usually wending through thicket and copse, or the muddy or slushy beds of the principal ditches into which they converge, may be so denominated. Generally the oldest, the deepest, and the widest ditch thus makes the best roadway or thoroughfare. The same may be said of the drains, or in one sense the whole village may be said to be only too full of them; or they may not inaptly be compared to a vast interminable reticulation of ditches, trenches, nullahs, *et hoc genus*, of divers shapes, sizes and levels, frequently overgrown with weeds, dry or puddly, or stagnant and choked with dead and decaying matter of every sort. The water-supply is chiefly confined to tanks, or any pit or hole so named; their name, in short, is legion; and they are scarcely less noisome with filth and stagnation. In the midst of this semi-aquatic life, of course, the only communication possible in the rains is by either wading, or by frail subterfuges, which are, by the bye, most universally resorted to, such as floats or a sort of catamarang of bamboo or plantain stem. But spreading and superimposed over all this, there is yet to be seen that huge confused pile of tropical wood, jungle, and weed, so characteristic of the village vegetation of the eastern districts of Bengal, impenetrable alike to light and air; and in which it is difficult to say which has the most ascendancy, the ever-recurring protean forms which inhabit and at the same time so beautifully variegate the surface of the waters, the high grass and thick brushwood which fill and block up the region immediately above, or the truly giant growths that encumber the space higher up still, with solitary heads of some stately member peeping out here and there, or gracefully towering further aloft in the now freed sunshine. The ventilation may be described as simply *nil*, while the most unpleasant smells of all kinds abound. If to the above we were to add the proverbial apathy, indolence, a sort of childish helplessness, and also the innate selfishness of the native character, their ill-constructed, badly arranged, and insufficiently commodious dwellings, their general poor fare, their meagre and imperfect clothing, their peculiarly uncleanly habits, their oddities, absurdities, and curious tastes, and their notorious improvidence in everything connected with the well-being of the morrow, some faint idea may then be formed of the general conformation of a Bengali village in the mofussil in this part of the country, and at the same time just a glimpse of its inner life. How human beings, the amphibious denizens of these densely wood-begirt habitations almost buried in perpetual darkness and immersed in a perennial bath of mist, stench, malaria, and abomination of every kind, live, breathe, grow, and rear a sufficiently vigorous progeny to keep up the race, is a mystery; but that they are lank, puny, inert, so largely sickly and diseased, too early aged, and generally short lived, can hardly be wondered at."*

In this district the whole strip along the west bank of the Hughli, from Tribeni to Uttarpara, may be considered as urban, more or less, and indeed this tract forms the area of seven out of the eight municipalities in the district. The difference between the habitations of the people in rural and in urban areas consists chiefly in the great preponderance of *pakka* buildings in the latter. In towns the rich, and even those who may be called fairly well off, live in two-story *pakka* houses almost without exception. And even those much

* These extracts are of great interest to all who study the health of the people, and show what a Herculean task is before the sanitarian. The author of this work shows that some improvement has been made in recent years in the towns, but the condition of Bengal villages are still very much now as they were described by Major Smyth and Dr. Bose.—T. H. H.

lower in the social scale are usually able to provide themselves with accommodation in *pakka*-built houses, often with a second story. The class of small shopkeepers in these towns usually occupy small *pakka* houses, and the number of *small* two-story *pakka* houses is one of the most remarkable features of this urban tract. Indeed, it is only the lowest classes, of day-labourers of sorts and menial servants, who occupy the mud, straw, and bamboo built huts which, of course, are common enough in the towns. Even these huts differ from those in the country in being usually roofed with tiles instead of with grass or straw thatch.

In some of these municipalities a noticeable proportion of the population is contributed by the hands who find employment in the large mills, situated on the river bank. Most of these mill hands are immigrants from up-country, and a large poportion of them are single men. Most mills provide quarters for some, at least, of their workers, but when the number of hands employed runs into thousands, questions of space available, value of land, &c., come into play; and the mills being built and worked as commercial speculations, and not as philanthropic institutions, it is practically an impossibility for any mill to provide quarters for all of its workers. The hands usually herd together in special *bastis*, built as near to the mill as possible, where six or eight will occupy a room which is perhaps some ten or twelve feet cube. These private *bastis* are seldom provided with any suitable conservancy arrangements; they have little ventilation, and most imperfect drainage. On the other hand, they are often provided with a good water-supply, pumped from the river into the mill, there filtered, and laid on through pipes. And as the hands spend long hours under sanitary conditions in the mill, get good water, and earn high wages, they do not suffer so much as might be expected from the insanitary conditions under which they live. The quarters provided by the mills are usually also overcrowded. One family, or six single men, occupy a room of some twelve feet cube. Ventilation, however, is usually good, and for several months the residents sleep either in the verandas or in the open air. The other sanitary conditions of life—water-supply, drainage, latrine accommodation, &c.—are usually also excellent; and the mill hand who gets accommodation in quarters provided by the Company is, as a rule, much better off than men of the same class living elsewhere. One mill provides accommodation for nearly 2,000 hands, and is still extending the grounds allotted for this purpose, and building new quarters.

The effect of insanitary habitations, especially as regards overcrowding, have been considered at length in the remarks on the epidemic fever of Bengal in Chapter VI—Effects of climate; and the sanitary condition of the towns is described under Chapter VII—Towns.

Dress.—The one indispensable article of dress, which forms the foundation of every male Hindu's dress, is the *dhoti*, or waist-band, wrapped round the

waist, and falling as far as the knees. A well-to-do shopkeeper wears with his *dhoti* a *chadar*, or cotton sheet or shawl, wrapped round the upper part of his body, a cap or turban on the head, and sometimes a *piran*, or short coat. The *raiyat* wears a smaller and coarser *dhoti*, with a *gamcha*, small sheet or large towel, which covers his shoulders, and when he is at work in the fields, is wrapped like a turban round the head. Musalmans in towns, above the lowest class, usually wear a white cotton coat and trousers. The more educated class in towns, who earn their living as pleaders, clerks, medical practitioners, &c., usually wear a sort of semi-European dress—a long coat or *chapkan* of black cloth or white cotton, above a pair of trousers, with shoes, often of patent leather, on the feet. The shopkeeping classes and servants, *chuprasis*, &c., usually wear coarse country-made shoes, while the poorer classes wear no shoes at all. The almost universal dress of the women is the *sari*, a sort of shawl, which is wrapped round the waist, falling in folds to the ankles, while one end is brought over the shoulders, and covers the upper part of the body. In material it may vary from the finest silk, as a gala dress among the well-to-do, to the coarsest cotton among the very poor. Many women also wear a small tight jacket or bodice over the upper part of their bodies. When this is worn, the end of the *sari* is not brought over the shoulder, and a gap is often left bare round the waist between the jacket and the *sari*.

Food.—The shopkeeping class live chiefly on rice, *dal* or pulse, *ghi* or clarified butter, curry made of vegetables, with such condiments as tamarind, pepper, chilis, onions, salt, &c., and sometimes fish; to which are added milk and sweetmeats, the latter made chiefly of *ghi*. This *ghi* and the articles made with it form the fattening element in the native's food, which usually makes well-to-do men of sedentary habits so obese when they reach middle life, or even earlier. The ordinary *raiyat's* food is coarser and less plentiful; it consists chiefly of rice, with a curry made of vegetables and condiments, and sometimes a little fish. Up-country natives usually eat *chupatis*, or coarse cakes or scones baked from wheat-flour, at one meal at least, if they can afford to do so. Meals are usually two a day—one about noon, or a little earlier; the other in the evening, after the day's work is done. The very poor may be able to afford only one meal a day, in which case they take the evening one only; but such poverty is very rare among the inhabitants of this district. Tobacco is consumed at intervals throughout the day, the Indian workman, indeed the native of any rank, is, like the British workman, always ready to knock off work for a "smoke-oh."

The furniture, if so it can be called, of the ordinary *raiyat* or cultivator, consists of a few earthenware vessels, a *lota* or vessel for carrying and drinking water, of brass, possibly one or two other brass vessels, one or two stools, and a few mats for sleeping on. If a little better off, he adds to the above a large wooden cot, perhaps six feet square and six inches high, for himself and his family to

sleep on, and a heavy wooden chest, to keep his few valuables, spare clothing, his wife's ornaments, &c. Any further money available is usually invested in bangles and anklets for his wife and children, silver being used for this purpose by those who can afford it, brass being the next best material, while those who cannot afford metal wear lac bangles. The class a little higher in the social scale, the well-to-do shopkeeper, or substantial farmer, have little more in the way of furniture than the poor. They have more cots to sleep on, their chests are heavier and more substantial, probably they possess a chair or two which is always offered to a visitor, but that is about all. Even the rich require, and keep, what seems to European notions hardly any furniture, a few more chairs, a table or two, and possibly an office or writing table, supplying all they want, unless they keep a room furnished in quasi-European fashion, for the reception of visitors, when a miscellaneous stock of sofas, arm-chairs, &c., is laid in, with a profusion of glass and China ornaments, chandeliers, &c., and pictures of the gaudy oleograph type

Agricultural implements.—Those chiefly in use are the *nangal*, or plough; the *kodali*, or hoe, which over the greater part of India is used for digging and takes the place of the English spade, and is the most commonly used of all implements; the *mai*, or harrow, like a small ladder; the *bida*, a large bamboo rake; the *phor*, a reaping hook; the *kaste*, a sickle for reaping; and the *siuni*, or irrigating basket, used for lifting water from a tank or water-course on to a higher level; it requires two men to work it.

CHAPTER V.

METEOROLOGY.*

THERE is not, and there never has been, any meteorological observatory at Hughli, therefore the only subject which can be discussed under this head is the rainfall. Statistics of rainfall are in existence for 31 years, 1870 to 1900 and are shown in the table attached, from which it will be seen that the average rainfall of the civil station of Hughli is about 53 to 54 inches. Rain is at present registered at the Hughli Jail, which is a central point for the whole municipality; whether the rain-gauge has always been kept there or not I cannot say; but I believe that at one time it was kept at the Hughli College, about two miles further south. Both Jail and College are close to the river. From the table it will be seen that about four-fifths of the annual rainfall falls in the four months from June to September, the average fall of July being the highest, with August close behind:—

July	...	11·07	May	...	3·87	February	... 1·07
August	...	11·03	October	...	3·87	November	... 0·65
June	...	9·91	April	...	1·99	January	... 0·31
September	...	8·12	March	...	1·24	December	... 0·23

In only two years out of the 31, in 1877 and 1878, has rain fallen in every month of the year. The five months from May to September have never been rainless; of the other seven months, April and October have twice had no rain, March six times, February ten, January twelve, and November fourteen times, while in December no rain has fallen on twenty-one occasions, that is, more than two-thirds of the total of twenty-one years.

The highest and the lowest falls of each month have been as follows:—

Month.	Highest.		Lowest.	
January	... 1877	... 1·30	12 years	... Nil
February	... 1893	... 5·84	10 „	... „
March	... 1897	... 5·40	6 „	... „
April†	... 1883	... 4·62	1879 & 1886	... „
May	... 1898	... 12·41	1894	... 1·67
June	... 1897	... 20·73	1874	... 3·69
July	... 1883	... 20·56	1898	... 4·13
August	... 1885	... 26·33	1874	... 4·08
September	... 1900	... 31·97	1883	... 3·34
October	... 1882	... 9·05	1891 & 1896	... Nil
November	... 1894	... 7·23	14 years	... „
December	... 1883	... 1·85	21 „	... „

* The meteorology of Hughli is practically the same as that of Calcutta, which is only 25 miles south.
† April 1902 has beaten this record, the rainfall of the month being 8·26 inches.

The highest annual falls registered have been in the following years: 1878, 89·30; 1871, 76·79; 1885, 72·75; 1888, 72·47; and 1900 72·31; while the lowest have been in two successive years, 1874, 39·37; and 1873, 39·63.

Rainfall Statistics, Hughli District.

Year.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
1870 ...	1·00	...	0·30	3·71	2·92	7·18	16·90	12·60	9·25	2·76	1·40	...	58·02
1871 ...	...	...	3·13	3·10	9·54	15·68	13·82	19·22	7·70	4·60	...	...	76·79
1872 ...	0·50	3·70	...	2·18	2·40	7·99	9·08	7·62	8·38	8·16	...	1·00	51·00
1873 ...	...	...	0·90	2·39	4·56	4·48	15·36	6·72	3·77	0·60	0·10	0·75	39·63
1874 ...	0·84	3·06	0·60	0·36	5·22	3·69	6·37	4·08	6·43	8·34	0·38	...	39·37
1875 ...	0·86	...	...	3·39	6·20	12·12	8·50	15·53	4·78	1·61	...	...	52·99
1876 ...	...	...	2·23	2·14	3·20	7·97	7·61	9·42	4·35	3·62	0·18	...	40·72
1877 ...	1·30	2·23	2·10	1·19	4·99	9·59	10·54	14·36	4·68	3·97	0·02	1·40	56·37
1878 ...	0·09	0·47	0·65	3·84	15·53	9·65	14·92	17·88	18·12	6·75	1·03	0·37	89·30
1879 ...	...	0·36	0·45	...	4·04	7·00	9·39	10·58	7·40	2·12	...	0·19	41·53
1880 ...	0·24	3·37	0·67	0·49	6·86	9·58	10·39	11·11	8·02	4·14	...	...	54·87
1881 ...	...	0·04	4·30	1·60	4·67	12·67	15·17	14·67	5·86	3·63	...	0·16	62·77
1882 ...	...	2·06	0·37	0·71	6·49	10·70	6·97	5·61	8·64	9·05	0·30	...	56·90
1883 ...	...	0·73	0·92	4·62	3·70	8·68	20·56	9·00	3·34	2·83	0·03	1·85	56·26
1884 ...	...	1·31	0·51	1·69	4·54	8·41	10·02	11·09	7·19	1·76	...	...	46·52
1885 ...	0·04	4·12	...	2·19	5·81	7·45	14·39	26·33	5·62	5·41	0·10	0·83	72·79
1886 ...	0·35	...	2·92	...	8·88	8·37	15·42	10·53	11·35	1·77	0·30	...	59·89
1887 ,,	0·86	...	3·85	1·84	4·28	13·75	11·84	5·95	3·89	2·34	...	...	48·60
1888 ...	1·03	1·29	0·68	2·58	2·89	12·09	16·34	23·95	6·19	3·51	1·92	...	72·47
1889 ...	0·18	1·00	...	1·70	1·79	8·21	8·03	7·30	6·77	2·61	2·61	...	40·27
1890 ...	0·61	...	0·58	0·35	4·33	15·47	6·38	7·32	12·52	6·17	...	0·14	54·07
1891 ...	...	0·95	2·36	0·25	7·76	5·32	10·62	10·10	8·16	...	0·33	...	45·85
1892 ...	...	0·50	...	3·73	5·18	4·74	7·61	4·75	7·44	3·76	4·05	...	41·31
1893 ...	0·56	5·84	3·25	1·74	8·26	17·36	7·99	9·14	7·55	7·72	0·06	...	69·47
1894 ...	...	0·30	0·13	1·71	1·67	7·22	13·79	4·27	5·31	2·18	7·23	...	43·82
1895 ...	0·10	...	0·30	1·74	5·39	6·98	7·14	10·04	7·79	3·70	...	...	43·18
1896 ...	0·30	...	1·31	1·30	6·20	13·74	10·37	6·99	3·70	...	...	...	43·61
1897 ...	...	0·37	5·40	3·21	5·76	20·73	7·15	10·49	8·53	6·95	0·23	...	68·82
1898 ...	0·37	0·54	...	0·50	12·41	8·21	4·13	14·00	6·34	6·37	...	...	52·87
1899 ...	0·44	0·39	0·11	4·37	11·95	12·49	23·61	5·26	10·65	3·04	...	...	72·31
1900 ...	0·08	0·55	0·47	3·00	4·43	9·64	4·67	16·14	31·97	0·46	...	0·46	71·87
Total, 31 years.	9·75	33·18	38·49	61·62	181·85	307·16	345·08	342·05	251·69	119·93	20·27	7·15	1,654·25
Average	0·31	1·07	1·24	1·99	3·87	9·91	11·07	11·03	8·12	3·87	0·65	0·23	53·12

Adding up the totals of each year for 31 years—Total 1,654·25 inches; average 54·01.
Adding up the average monthly fall for 31 years—Total 1,646·81 inches; average 53·12.

The highest monthly falls of rain have been as follows: September 1900, 31·97; August 1885, 26·33; August 1888, 23·95; July 1899, 23·61; June 1897, 20·73; and July 1883, 20·56. The heaviest fall recorded on one day is that registered on 21st September 1900, 9·70 inches; on the 20th, 5·85, and on the 22nd, 2·85 inches were registered, a total of 18·40 inches in three days, a very heavy fall, but still far short of the thirty odd inches registered in the same three days in Calcutta, only twenty-five miles south. The next most heavy falls have been 9·40 inches on 10th June 1869, 9·15 inches on 19th July 1883, 8·40 on 22nd September 1878, 7·90 on 16th August 1871, and 7·83 on 6th September 1901. On the last occasion 2·41 inches were also registered on the 5th, and 3·66 on the 6th, making a total of 13·90 inches in three days.

From records older than 1869 I have only been able to glean a few scattered facts. In 1854, 55·18 inches were registered, and in 1855, 54·60, These falls were recorded at Hughli College. From 1863 to 1866 rainfall was being recorded at the Imambarah Hospital, which was then situated in a building a little north of where the Hughli *thana* now stands. The rainfall registered in these four years was as follows: 1863, 76·8; 1864, 71·1; 1865, 63·00; 1866, 64·70. All four were much higher than the average rainfall of the last thirty years. Two heavy monthly falls were recorded, both in July, 20·50 inches in 1864, and 20·20 in 1866. In all four years November and December were rainless.

Rainfall is now, and for many years past has been, recorded at the Jail, in Hughli. Here, as I suppose everywhere, rainfall is sometimes singularly local. I have seen heavy rain recorded at the Jail, with only a slight shower at Chinsura, a mile and a half south; and *vice versâ*.

Apart from rainfall, the only other meteorological phenomena of which I have been able to find records are earthquakes, cyclones, or great storms; in connection with which may also be enumerated some of the chief floods which have affected the district.

Of earthquakes, the earliest of which I have found any record occurred on the 8th September 1803; the river is said to have been considerably agitated. The next occurred on the last Saturday of 1811, about 7 P. M., three distinct shocks were noticed, following each other in quick succession, and lasting about twenty seconds. Other shocks are recorded as having occurred on the 11th October 1842, the 24th August 1858, and the 10th January 1869. The last mentioned is described as a severe shock, direction apparently from north-east to south-west, felt at about 4-45 P. M.; it lasted about a minute, and caused great oscillation of the buildings in the station, but did little or no damage. The earthquake of 14th July 1885 threw down the tower at Niala, about three miles from Banichi, belonging to the Great Trigonometrical Survey. Lastly comes the earthquake of 12th June 1897, which those

who felt it will probably always remember as the great earthquake. No great harm was done by it at Hughli, a number of more or less dilapidated native houses fell, but none of the important public buildings here were seriously damaged.

The earliest flood recorded took place in 1684, and is mentioned as follows in Hedges' Diary:—

"September 3rd 1684. The River of Ganges is risen so high as it has not been known in y^e^ memory of man—the water being 3 or 4 foot high in y^e^ Bazaar. It is reported more than 1,000 houses are fallen down in y^e^ Dutch quarters, and boats may row round their factory in Hougly."

The fallen houses would probably be mud huts.

The earliest storm of which I have seen any record is that of 1737, which is described as follows by a writer in the *Gentleman's Magazine* for 1738-39, quoted in an article "The Gangetic Delta" in the *Calcutta Review* for 1859. On the night between the 11th and 12th October 1737 occurred a furious hurricane at the mouth of the Hughli, which reached sixty leagues up the river. In Golgotha (Calcutta) alone, 200 houses were thrown down, "and the high and magnificent steeple of the English Church sank into the ground without breaking." It is said that 20,000 boats were lost. Of nine English ships in the river, eight were lost, with most of their crews; of four Dutch ships, three were lost with crews and cargo. The water rose forty feet higher than usual, and 300,000 people were said to have perished.

In 1762 or thereabouts the Damudar is said to have changed its course from that now known by the name of the Old Damudar or Kana *Nadi* to its present channel, a movement which must probably have been attended by high floods. The *Calcutta Gazette* of 11th October 1787 describes how, on the 16th *Assin* (about 1st October) at noon, a great flood from the Damudar devastated the districts of Bardwan and Hughli. The whole country round Bardwan was two or three feet under water. The same paper, in its issue of 8th November 1787, describes another great storm:—

"The violence of the storm on Friday last exceeded any that has been experienced in Calcutta these twenty years past. It lasted twelve hours, from midnight on Thursday to noon on Friday; 5,000 boats were lost between Calcutta and Barhampur; a Mr. Bolts was lost on his way to Kedgeree, the *budgerows* of several other Europeans were sunk, their occupants having narrow escapes."

On 30th May 1799 a great storm sank a brig lying off the quay at Serampur. On the night between the 13th and 14th June 1822 a great storm occurred on the Hughli; much more damage, however, was done further east, at Jessore and Barisal. On 27th May 1823 a gale and storm-wave occurred in the Hughli. Four Indiamen were lost, Hijli district was flooded, and the Sagar Island settlement destroyed. On 2nd October 1823, owing to the Damudar *bunds* giving way, great floods occurred in the Bardwan, Hughli, and How[illegible] districts; Chinsura and Chandarnagar were under water,

and boats were plying in the streets of Serampur. On 21st May 1833 another great flood from the Damudar crossed the district, and washed away the bridges over the Saraswati at Tribeni, and the Magra *khal* at Naya Sarai. Great storms are reported as having occurred in June 1842, and in May 1852; great floods from the Damudar in August 1844, in September 1845, and in August 1856.

On the 5th of October 1864 occurred the great cyclone of that year; it struck the coast of Bengal at Hijli on the evening on the 4th, but the hurricane was most violent in Calcutta between 10 A.M. and 4 P.M. on the 5th. The storm-wave spread over the country on both banks of the Hughli as high as Achipur; at Diamond Harbour the wave was eleven feet high; a mark on the wall of the Subdivisional Office keeps a record of the fact. A coolie emigrant ship, the *Ally*, *en route* for Mauritius, sank below Diamond Harbour; and in all, in the 1,500 square miles of country innundated, 47,800 lives were lost. The Port of Calcutta was wrecked. At Hughli the tower of the Church was blown down. The occurrence of this cyclone was by some put forward as one of the causes of the epidemic fever in Hughli and Bardwan; but, as a matter of fact, the mortality from fever, which had been epidemic seven years before the cyclone, was considerably diminished in 1865.

On the night between the 1st and 2nd November 1867 another great storm took place, which caused the loss of over 1,000 lives in Calcutta, and did great damage at Port Canning, and all over the 24-Parganas. On 9th June 1869 a hurricane occurred; it began about 9 A.M. at Hughli, and lasted nearly 24 hours, being accompanied by a fall of 9·40 inches of rain. In 1871 both the Damudar and the Hughli were again in flood, the damage done by the latter was chiefly on the east bank. The cyclone of the 15th to 16th October 1874 crossed the country from Balasore to Burdwan; it blew over a passenger train near Khana Junction. At Jahanabad, which lay right in its track, nine lives were lost. The storm-wave of 31st October 1876, which caused a loss of over 200,000 lives in Backerganj and Noakhali, did not do any damage on the Hughli. The floods of 1885 were chiefly on the east of the Hughli. On the 22nd September 1885 occurred a great storm-wave on the Orissa coast, which wrecked False Point. On 20th May 1887 took place the storm in which the *Retriever*, the *Sir John Lawrence*, and the *Coleroon* pilot brig, were lost. In April 1888 three tornados occurred in Bengal; the worst was on the 7th, at Dakka, where 150 people were killed; at 8 P.M. on the 23rd April a tornado crossed Bhadreswar, killing twelve human beings; the third was in the Pabna district. Lastly, Hughli district was extensively flooded after the excessive rainfall of September 1900 and 1901.

CHAPTER VI.

CLIMATE AND ITS EFFECTS. THE ENDEMIC FEVER OF BENGAL.

The climate of Hughli district has always been damp and moist. There are three chief seasons—the cold, for four months from the beginning of November to the end of February; the hot of about three and-a-half months, from the beginning of March to the middle of June; and the rainy, of four and-a-half months, from the middle of June to the end of October. During the cold season, the prevailing winds are north and west; in the hot season, south; in the rainy season, south and east. These seasons are not clearly marked off from each other, but each merges imperceptibly into the following one. For instance, the cold weather may begin in the middle of October, or last up to the middle of March. And there is no clearly marked hot season like that of Upper India; often a great deal of rain falls in the latter part of the hot weather, from the middle of April to the middle of June. Seldom does the really hot rainless weather last for more than a month or so in the earlier part of the season.

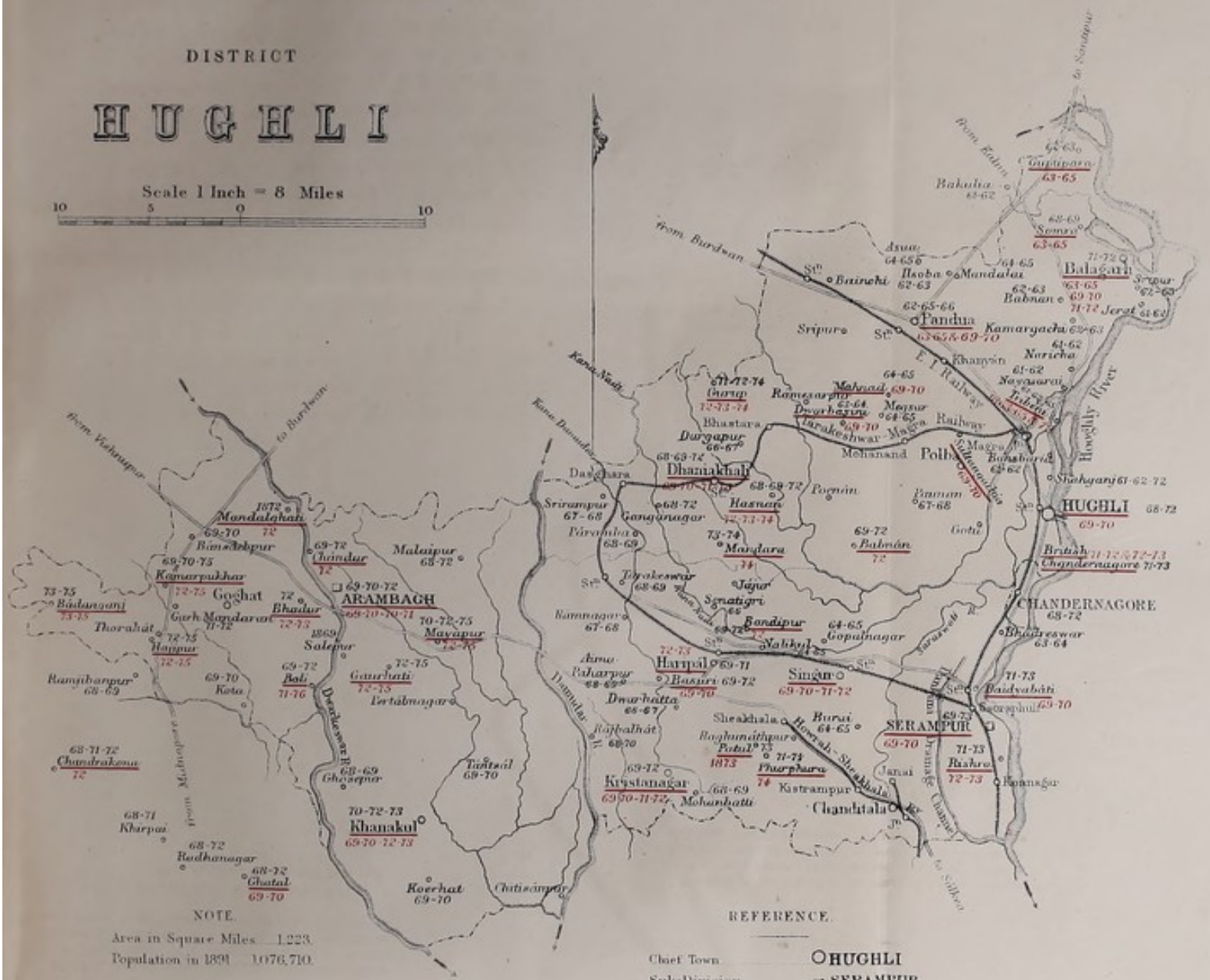
Closely connected with, and dependent on, the subject of climate, is that of the chief disease of the country, malarial fever. No doubt fever due to malaria has always been the prevailing disease of the district, and the cause of a large proportion of the mortality. But in the sixties and seventies many districts in Lower Bengal were scourged by an epidemic of very severe and terribly fatal fever, which caused an amount of sickness and a ratio of mortality altogether surpassing anything previously known; and which has never since been approached. What the mortality was, is not and never will be known. Registration of vital statistics had not yet begun when this epidemic of fever first attracted notice; it was still in its infancy when the epidemic wave subsided. No doubt the numbers of deaths reported are now much higher than they were at any time during the prevalence of this epidemic. But it is a matter of experience that the present mortality is much less than that of 25 to 40 years ago; nowadays we do not hear of villages being depopulated, nor of land going out of cultivation for want of hands to till it. The districts which were most heavily hit by the fever were Nadiya, Bardwan, and Hughli; in a lesser degree Jessore, the 24-Parganas, Birbhum, Howrah, Bankura, and Midnapur. Hughli suffered as much as either Bardwan or Nadiya, though it did not bestow a name on the disease, which was commonly known as the "Bardwan fever," or the "Nadiya fever." Bardwan

DISTRICT

HUGHLI

Scale 1 Inch = 8 Miles

10 5 0 10



NOTE.

Area in Square Miles ... 1,223.

Population in 1891 ... 1,076,710.

REFERENCE.

Chief Town	○ HUGHLI
Sub-Division	▫ SERAMPUR
Thana or Police Station	○ Chanditala
Town	○ Bansan
Main Road	
District Boundary	
Sub-Division	
Railway	

Adapted, with additions, from a map by Surgeon Major R. F. Thompson, Civil Surgeon, Hughli, in Annual Dispensary Report for 1872. [Ghatal and Chandrakona were part of Hughli District up to 1st July 1872].

D. G. CRAWFORD, *M.B., Major, I.M.S.,*
Civil Surgeon, Hughli, 16th May 1901.

'The figures in black show the years of chief prevalence of Epidemic Fever; those in red the years in which Epidemic special dispensaries were open. Places in which special dispensaries were opened are underlined in red.

Engraved at the Survey of India Offices, Calcutta, 1889.

Corrected up to 1900.

N° 484-S. 1900.

Reg. No. 236, Civ. Hosp., Bengal.—Nov. (2.—250.

Litho., S. I. O., Calcutta.

was attacked much later than Hughli, at a time when the disease was attracting more attention than it had formerly done, and accordingly more information is available.

The ravages of this fever naturally greatly impressed the district officials, the *zamindars* and other inhabitants, and the Government. Several times officers were deputed to enquire into and report upon the epidemic; a special commission was appointed for the same purpose, and many reports upon the subject were published. A list of the chief reports is given near the end of this chapter.

Different accounts by different writers vary considerably as regards the dates at which the epidemic attacked various districts and towns. This is probably due to the fact that the fever was seldom very fatal in the first year in which it attacked any particular locality; it was not till the second or even the third year of its presence that the mortality was great. The following is a short sketch of its progress. The fever broke out at Muhamadpur in the Jessore district in 1824-25, attacked Nadiya district first in 1832 or 1833, causing great mortality at Ula in 1856, reached Chogda in 1857, and affected the villages on the east bank of the Hughli, in the 24-Parganas, from 1859 to 1861. It crossed the river from Chogda to Tribeni, Bansbaria, and the villages north of Bandel, in 1857-59 (both dates are given by different reporters), reached Pandua in 1862, and Dwarbasini in 1863, spread along the Kana Nadi and Saraswati in 1864, and reached the Kana Damudar in 1866, and the east bank of the Damudar in 1867, having taken about ten years to cross the area lying between the Hughli and the Damudar. It spread across the Jahanabad (now Arambagh) thana in 1868, reaching Jahanabad town, on the east bank of the Dwarkeswar, in that year, and traversed Goghat thana in the years 1869 to 1871. The west bank of the Hughli, in Serampur subdivision, was badly affected in 1871-73. Altogether the fever was present in Hughli district for about twenty years, 1857-77, though no individual village suffered for that length of time, the usual duration in any one place being three to seven years, while a few villages, Dwarbasini for instance, suffered longer. It lingered longest among the villages on the banks of the Kana Nadi and the Kana Damudar. Bardwan district was first attacked in 1866, the epidemic spreading from Pandua to the village of Ghose, near Maimari, and remained affected for about ten years. Ghatal, now in Midnapur, but then in Hughli, was attacked in 1868, and what was then the boundary of the Midnapur district was crossed in 1870.

In my endeavour to compile a short history of the fever, chiefly as it affected the Hughli district, I propose first to summarize and quote from those of the special reports on the fever to which I have had access; then to take notes and extracts referring to the fever from the printed annual reports of the Sanitary Commissioner and the Inspector-General of Civil Hospitals, and

finally to add a few remarks of my own. As the fever undoubtedly was the same disease in Hughli as in Bardwan, and as more information about Bardwan is available, I have drawn to a considerable extent upon the Bardwan reports, as well as those which relate specially to Hughli.

In the beginning of January 1863, Dr. J. Elliot, Civil Assistant Surgeon of Hughli, was placed on special duty to enquire into the epidemic fever prevailing in the Nadiya and Bardwan divisions; and on the 18th March 1863 he submitted his report, from which the following paragraphs are summarized.

As regards the history of the epidemic, he states that it first broke out at Muhamadpur, in the Jessore district, in 1824 or 1825, in the form of a peculiar fever, called by the natives *Jor bikar* (জ্বর বিকার) fever without sense, *i.e.*, fever attended with delirium. A large village named Gudghat, twelve miles north of Jessore station, suffered very severely in 1855 or 1856. Nadiya district was first affected in 1832 or 1833, the large and populous village of Gudkhali being the first to suffer in that district; the same village was again very severely attacked in 1840. In 1845-46 this fever was the cause of great mortality at Srinagar, between Bongaon and Chogda. In the beginning of the rains of 1856 Birnagar or Ula, a very large and populous village about three miles north of Ranaghat, was attacked. It is stated that, out of 18,000 inhabitants of this village, 10,000 died during the next six years. During the three following years, 1857—60, the epidemic spread generally over the southern parts of Nadiya, the north-east of Hughli, and the whole of the Baraset district, now a sub-division of the 24-Parganas. Chogda was reached in July 1857, Kanchrapara during the rains of 1859, Naihati a little later in the same year, Bhatpara in 1860, Jagadal and Garulia in 1861. The villages south of Garulia, Ishapur, Chanak (Barrackpore), Titagarh and Khardaha suffered more than usual from fever in 1862, but up to the date of the report, had not suffered from an epidemic. Baraset civil station and the surrounding villages were attacked in July 1860, the epidemic spread to the south-east as far as Rajarhat, and Majergram (Duttopokhar).

Intermittent fever of an unusually severe type had been present in Keota, Shahganj, and other villages in the north of Hughli town for five years, 1858—62, but first appeared in epidemic form at the beginning of the rains of 1860, when it broke out at Bansbaria and Tribeni, extending westwards on both sides of the Saraswati, to Magra, Satgaon, and Hosainabad, southwards through Keota and Shahganj, past Hughli and Chinsura, which escaped, to Chandarnagar and Baidyabati, but in the two last was by no means severe. In 1861 the epidemic extended northwards from Tribeni through Naya Sarai to Damurda, Jirat, and Balagarh; and after the rains of 1861 spread further north through Sripur and Somra to Guptipara, where it broke out early in the rains of 1862; and westwards to Pandua, which was attacked in July

1862, and suffered more severely than any of the villages in Hughli district previously attacked, upwards of 1,200 people dying during the next six months.

Dr. Elliot then states that while he has mentioned the names of some of the villages most severely affected, there are hundreds of others in much the same condition; and that those in Nadiya and Baraset present a more ruinous and desolate appearance than those in Hughli, only because they have suffered longer, the fever having broken out earlier in them. He gives the following description of the fever-stricken villages :—

"*The rich and poor of all ages and castes have suffered alike,* consequently dwelling-houses of all descriptions in equal proportions are to be seen in various stages of decay and ruin. Many of them have fallen to the ground, and jungle and rank vegetation have sprung up in their places. Tanks, from long neglect, have gradually filled up with weed and long grass till just enough water has been left in them to favour vegetation during the rains, and assist in the process of decomposition during the dry season. The largest and best of them are now stagnant morasses, which, in some instances, have served as receptacles for the dead, when no other means could be found for disposing of them. From the natural fertility of the soil favoured by damp, want of drainage, and of cultivation, useless vegetation of every description has sprung up, unchecked and unheeded, to such an extent that roads and pathways have disappeared. In same places even light and ventilation have been so much interfered with by the spreading of boughs, clumps of bamboos, tangled creepers overhead, and by dense masses of matted brushwood underneath, that such thickets are no longer fitted as habitations for human beings; and wild animals and beasts of prey have found shelter under the recesses that have been formed. Many large *baris,* in which there were formerly 30 and 40 residents, have now been left with perhaps one solitary occupant; while *muhalas* and streets have been deserted; and large villages which formerly told their residents by thousands can now almost number them by hundreds. In this manner many of the largest and most populous places in the three districts have been decimated by a disease which has numbered its victims by thousands, and which has left three-fourths of those who who have escaped from immediate death to linger on for a few months, or perhaps years, in a state of misery and despair, at last to fall victims to one of the numerous sequences, which are perhaps productive of as great an amount of mortality as the disease itself."

The report divides the causes of the fever into predisposing and exciting. The former are given under nine heads:—(1) *Site of villages*, whether on *bhils*, *khals*, or large rivers, does not seem to make as much difference as might be expected; *except that the greatest sufferers have been the villages on the banks of stagnant rivers filled with vegetation and weeds.* (2) *Nature of soil:* the soil of Nadiya is much more sandy and drier than that of Hughli, but the epidemic prevailed equally in both. (3) *Want of cultivation* of lands adjoining houses and villages, and the growth and decay on such lands of thick vegetation. (4) *Overcrowding of houses*, owing to increase of population, huts being huddled together in villages, obstructing streets, paths, and drains, and preventing ventilation. (5) *Cultivation* of bamboos, plantains, &c., in close proximity to houses. (6) *Bad water*, the best and largest tanks gradually silting up; while the smaller ones are often covered by trees, which prevent the access of sun and air, and injure the water by the fall of their leaves. Also the indiscriminate use of tanks for bathing, washing clothes and animals, &c., as well as for

drinking. (7) *Drainage*; its complete absence. (8) *Burial-grounds and burning-ghats*; their too close proximity to inhabited houses. (9) As contributory causes are given (*a*) bad or insufficient food; (*b*) want of clothing; (*c*) want of conservancy; (*d*) sleeping on damp ground, instead of on cots (though it is remarked that those who slept on upper stories suffered no less than those who slept on the ground); (*e*) fear and anxiety.

As regards the exciting causes, all that can be said is that it is endemic, becoming epidemic gradually. The cause is probably a specific poison introduced into the system, most likely through the lungs, "the origin of which may be looked for either in exhalations or secretions from the bodies of those previously affected with the same disease, or in malarious emanations rising, under peculiar circumstances, from certain parts of the earth's surface." The above would certainly appear to suggest that the fever was contagious; but the writer at once goes on to say that there is no proof that the disease has been propagated or diffused by contagion, or imported by means of contagion from one place to another. The communication has taken place between the sick and healthy, without any tendency in the disease to pass from one person to *another who has not been in the tainted locality*. He mentions, however, that in huts containing several sick the atmosphere was so foul that he was unable to remain in the huts for even a few minutes. (This, though, might well be the case altogether apart from sickness.) Susceptibility to the disease is in no way diminished by a previous attack; on the contrary, it is increased. Certain towns and villages had comparative immunity, *e.g.*, Santipur, Ranaghat, Chinsura, and Dumdum. Sick persons were usually greatly benefited by removal to a locality which had not suffered. Newcomers in an affected village, such as native doctors, up-country constables, servants of officers on tour, usually suffered much. The exacerbations and remissions of the fever season are the same as those of ordinary malarial fever; the middle of June to the middle of November is the time when the epidemic reaches its highest point.

The symptoms described are those of malarial fever, much intensified. In its worst phases the fever assumes a "congestive remittent type," with a tendency to congestion of some vital organ, most commonly the brain or lungs. A preliminary stage of depression is followed by a feeling of cold, with a severe shivering fit, and prostration and collapse, in some cases so severe that the patient dies in this stage without rallying. In other cases the collapse of the cold stage is less, but reaction is excessive; the pulse continues full, with dry hot skin, severe headache, congestion of the eyes and face, and delirium, death taking place by coma in 36 to 48 hours. In other cases congestion of the lungs takes place, and causes death by asphyxia. In most cases the symptoms abate and return without any actual intermission, the periods of exacerbation and remission varying in different cases. The first stage of recovery is not marked by crisis, but the skin becomes moist, the tongue clears, thirst abates, a state of

great debility, however, is left behind, with want of appetite. The spleen or liver, or both, are apt to remain enlarged and congested, a cachectic and anæmic condition is established, with occasional intermittent attacks of fever, anasarca and ascites gradually come on; and the patient either dies of asthenia, or is carried off by bowel-complaint. In milder cases there may be gradual progress to recovery. In early stages the lungs are commonly, the bowels seldom affected.

Among the sequelæ which often follow the acute attack of fever are mentioned dyspepsia, mucous diarrhœa, œdema of the lower extremities and general anasarca, enlargement of the submaxillary and parotid glands, without much tendency to suppuration; cancrum oris, subacute attacks of pneumonia, bronchitis, and other respiratory diseases; and lastly, but by far the most common, enlargement of the liver and spleen, especially of the latter.

As regards treatment, Dr. Elliot states that hundreds died without any treatment at all; in many the end was hastened by injudicious treatment from ignorant and unqualified native practitioners. Quinine was largely used, and was said to increase the tendency to congestion without checking the fever, which the author states he believes was the case. He recommends mild purgatives, removing the patient to a veranda, or some more airy place than a confined and close native hut; shaving the head, leeches, cold sponging, diuretics and diaphoretics; and in the later stages, when the acute attack has passed off, quinine, mineral acids, and bitter vegetable infusions, with perchloride of iron. Removal to a non-affected locality was, where possible, always the best treatment.

In order to arrest the progress of the epidemic and to prevent its return, the author recommends general sanitary measures; but points out the great difficulty and expense attendant on the adoption of any such improvements. He advocates (1) cutting of superfluous jungle, and prevention of its growth in close proximity to dwelling-houses; (2) redigging and cleaning of the most important tanks, and filling up the smaller and fouler ones; (3) drainage of village sites, towards the nearest *khal* or *bhil*; (4) free ventilation, by clearing away huts where too thickly crowded together, and by opening up broad lanes; (4) removal of burial-grounds and burning-ghats to some distance from villages; (5) conservancy arrangements, for removal of foul matter from houses and compounds.

In April 1868, Dr. J. Sutherland, Deputy Inspector-General of Hospitals, Presidency Circle, submitted a report on the epidemic fever (No. 51 of 13th April 1868), which was transmitted to Government, with a few remarks, in a covering letter No. 40, of 15th April 1868, by Dr. W. A. Green, Inspector-General of Hospitals, Lower Provinces. This report also forwards four reports from the Civil Surgeons of Hughli, Bardwan, Nadia, and Jessore.

Dr. Sutherland begins by pointing out that the outbreak of devastating epidemic fever is nothing new in the history of Bengal; that Gour was depopulated in this way. He quotes Doctors Thompson and Mantell as being positive that the fever is non-infectious, but states that he is of a different opinion; and that while no one will assert that the ordinary endemic remittent or intermittent fever of Bengal is infectious, he is of opinion that, intercurrent with these, a form of infectious relapsing fever frequently occurs. He instances such an epidemic of relapsing fever as having occurred in the Patna district in 1856, and also states that, after disastrous floods in the beginning of October 1859, a remittent fever was prevalent in the Patna district, and caused nearly twelve thousand deaths. This fever differed remarkably from the ordinary endemic fever, but, unlike the relapsing fever of 1856-57, was not infectious. While very few cases under the treatment of European medical officers died, it proved very fatal in the villages in the interior of the district. He suggests that the mortality of the endemic fever in Bengal is open to the same interpretation. Both these epidemics of fever in Patna district occurred under his own personal observation, while he was Civil Surgeon of that district.

Dr. Sutherland is the strongest advocate for the infectious nature of the fever. His views may be thus summed up, in his own words:—

"It appears, therefore, that a fever of a highly infectious character may originate and spread from intensified malarious influences, aided probably by bad ventilation and the emanations from the bodies of the sick. That the fever described by Dr. Elliot did assume an infectious character I do not doubt, and that the excessive mortality in some localities depended on this is, I think, rendered highly probable; but it is only in certain favourable conditions that such a result would occur, and if the ordinary endemic fever of the place exists at the same time, the fact of there being an intercurrent wave of infectious fever may be easily overlooked. In the long period that has elapsed since the first appearance of epidemic fever in Jessore in 1824, up to the present date, it is probable that fevers of very different characters prevailed."

The following is a short summary of the four Civil Surgeons' reports appended to Dr. Sutherland's report.

Doctor R. F. Thompson, of Hughli, begins with a short sketch of the history of the disease from its outbreak in Jessore in 1824-25 up to date. He states that, from careful and repeated enquiries, he is convinced that it is not infectious, but that it is a very severe form of malarial fever, due entirely to local causes and malarious influences. In its ordinary form it differs little from intermittent fever, but if neglected it runs into the remittent type, and in its worst phases assumes a congestive form. Abdominal complications of a congestive nature cause great prostration with tendency to collapse. The mortality is much increased by the treatment of the *Kabirajes*, who starve and physic in stages when stimulation and nourishment are required. It is endemic and not epidemic; the villages which have suffered most are

situated inland and far from the line of rail. It has been much less virulent of late than it was a few years previously; and recent complaints of the ravages of the fever have been greatly exaggerated, with a view to getting dispensaries established locally at the cost of Government, without expense to the local residents. On several recent occasions, on personal investigation of localities which had been reported as devastated by the fever, little fever was found. This was the case in several of the outlying villages of the *sadr* station, Shahganj, Tolaphatak, Taldanga, British Chandarnagar, at Bansbaria and Tribeni, at Pandua, Ilsoba and Mandalai, and Dwarbasini; only at Dhaniakhali was a really severe type of fever found. As remedies he suggests that people should sleep upon *machans* instead of on the damp ground, the reservation of tanks for drinking-water, and attention to keeping clean such tanks when reserved, by destruction of vegetation on their banks, and prevention of surface water polluted by surface drainage and human excrement running into them, but aquatic vegetation should not be indiscriminately removed, nor should trees be cut down, but only lower branches overhanging tanks and preventing ventilation should be removed; separate plots of land near villages should be set apart for burial-grounds, and for trenching of night-soil and other refuse.

Doctor J. Elliott, of Nadiya, states that the endemic fever is of a congestive remittent type, with, in some cases, sudden and great depression of all the vital energies; in others excessive reaction, with rapid congestion of some vital organ, frequently the brain or lungs. The chief peculiarity is its tendency to a relapse or a succession of relapses, after it has apparently run its course of seven, eleven, fourteen or twenty-one days, and to recurrence afterwards at irregular periods. Intercurrent with this type were numerous cases of ordinary malarial fever, in an intensified form, more or less amenable to quinine, but usually followed by enlargement of the liver or spleen. It is most virulent in large and densely populated places, where the land has for many years not been cultivated or exposed to the sun's rays. In its worst type if does not remain more than a few months in one place, but few of those attacked entirely recover so long as they remain in the place where the disease was contracted. The mortality attending it exceeds that of any other known disease in the same space of time. It was equally prevalent in villages remote from the line of rail as in those near it. It seems probable that during the last thirty years some change has taken place in the general water-supply of the districts affected, due perhaps to the silting up of rivers. In places where water formerly was plentiful it is now scarce; what little water remains in tanks and wells in the hot weather becomes unfit for use. It is possible that, as the regular supply of water has diminished, and the natural drainage been intercepted or changed, the soil, saturated with animal excreta and decaying vegetation, disengages malaria in an intensified form, and thereby causes a

change in the type of disease generally. "Under these circumstances, it may be supposed that in unventilated and crowded dwellings the exhalations and discharges from the bodies of the sick act as poisons, and that in such localities the disease is communicated from one person to another and possesses contagious properties. Its rapid dissemination through a village is hardly to be accounted for in any other way."

Dr. K. McLeod, of Jessore, simply reports that no fever other than ordinary malarial fever has been known in that district for several years past.

Dr. A. A. Mantell, of Burdwan, states that the fever is essentially an intermittent or remittent malarial fever, in some cases so virulent as to prove fatal in three or four days. It is a very concentrated form of fever, resulting entirely from malarious influences, and intensified by the famine. There is no evidence of contagion: cases admitted into the jail and police hospitals have not communicated the disease to other patients.

On the 19th March 1869, Babu Joy Kissen Mookherjee, of Uttarpara, submitted to the Bengal Government a memorial from the *zamindars*, *talukdars*, and traders of the Hughli and Bardwan districts, complaining of the ravages of the fever, and asking Government aid. They begin by mentioning the Epidemic Commission of 1863-64, and state that, though the sanitary measures, such as cutting of jungle, and clearing of tanks, were in most villages to some extent carried out, and medical aid and medicines were supplied gratis by Government, yet the epidemic went on, with temporary intervals of abatement. They acknowledge with gratitude the aid given by Government, and state that they also have contributed much in subscriptions, while many of the poor have given their labour in tank-digging and jungle-cutting. They contend that the epidemic, if not originated, has been greatly aggravated by the following causes:—(1) The silting up of all the rivers which formerly drained the country, much increased by the construction of the *bund* along the east side of the Damudar, and the consequent prevention of the scouring of the old river-beds by the floods from that river. Owing to the division of estates, and the consequent disunion among those interested in land, as well as to the independent rights conferred on tenants, the *zamindars* are no longer able to dig and deepen *khals*. (2) The impregnation of the soil by human excreta for centuries; the villages which have suffered most being usually the oldest, and those which have been longest inhabited. (3) Want of good drinking-water, tanks excavated in former days having mostly silted up and become shallow, and their water impregnated with decomposing animal and vegetable matter. (4) Want of medical aid. Owing to the increasing popularity of European medicine, the study of the native system has been almost entirely neglected, and few efficient practitioners of the native system remain; while the native doctors, who have supplanted them in mofussil villages, are mostly ignorant men without skill or experience.

As remedies they suggest that the State should help in the following ways:—(1) Improvement of drainage. The silted-up river-beds should be excavated and re-opened at the expense of Government; while legislative provision should be made that, wherever a certain number of the inhabitants of a locality apply for the cutting of a new *khal* or the excavation of an old one, and the project is approved of by the Magistrate and the Executive Engineer, the *zamindars*, through whose estates the proposed *khal* will pass, shall be called upon to execute the work within a limited time, failing which the work should be done by Government and the cost recovered from the *zamindars*, who in turn should have power to recover the amount from subordinate tenure-holders; while questions of compensation for land taken should be settled by *panchayat*. (2) The removal of old villages to new sites. (3) That the inhabitants of each village be called upon to excavate a new tank for drinking-water. (4) That in each of the affected districts, as long as the epidemic lasts, four new dispensaries be established, each under a Sub-Assistant Surgeon, with four native doctors, the expense being met, partly by private subscription, partly by public funds. The memorialists state that they are aware that the requests they make will involve considerable interference with private rights, and much expenditure on the part of Government, but that the exigency of the case necessitates vigorous measures, the evil being far beyond the power of local organisation.

As instances of the ravages of the epidemic they quote the cases of Dwarbasini, where out of 2,700 inhabitants 1,900 have perished in five or six years, and out of the remaining 800 scarcely 200 are able-bodied men; and Pandua, where 5,200 have died out of a population of 6,961, and state that these are not exceptional cases, but are typical of the condition to which scores of villages have been reduced, while the evil has been aggravated by the circumstance that, in all the affected villages, a considerable proportion of the surviving population suffer from protracted illness which not unusually proves fatal in three or four years, while the number of births is so small that, for practical purposes, reproduction may be said to have ceased. They give a list of villages affected, 70 in Hughli and 111 in Bardwan, with the population of each before the epidemic, and the number of deaths. The names of the seventy in Hughli, with a large number of others added, are also given in Mr. Pellew's report of 1878. I have quoted them in my notes of that report.

Dr. D. B. Smith, Sanitary Commissioner, Bengal, submitted two reports on the epidemic fever in Hughli district, the first dated 25th March 1868, the second 12th May 1870.

The first of these reports in Dr. Smith's own handwriting is still in existence, though in a very tattered and worm-eaten condition, in the Civil

Surgeon's office, Hughli. I extract from it the following paragraphs. The italics are Dr. Smith's:—

"*Para. 9.*—The present state of the Hughli district is most lamentable. The blighting influence of malaria is everywhere conspicuous. The people are subject to constant and excessive sickness of an insidious nature, their vigour is being sapped. Silent but sure depopulation, on an alarming scale, is going on.

"*Para. 12.*—The mortality in the district has of late years been appalling. *One-third of the entire population* is said to have been removed by death within the last five years. Dr. Elliot, writing in 1863, recorded the fact that shortly anterior to the date of his report, *1,200* persons had died during six months at Pundooah alone. On visiting the place a few days ago I was informed that half the population had disappeared in three years. At other places I received similar or even worse returns.

"*Para. 18.*—It may be said, 'The mortality alluded to was chiefly due to an *epidemic* visitation, which has more or less ceased, and matters have now greatly improved.' Such a statement—which I am aware would at once be urged by many—brings me to the consideration of the amount of disease which is actually now prevailing. Here fortunately we come upon somewhat firmer ground, as the facts are clear before us.

"*Para. 19.*—There are two points upon which I would particularly insist:—

(1) That the amount of *now prevailing* disease is alarmingly excessive.

(2) That this is due simply to *endemic* malarious disease, and not to general epidemic influences.

"*Para. 20.*—It seems to me somewhat unfortunate that the fever which has of late years devastated the tracts of country around Calcutta should have been called an *Epidemic* fever.

"The only reason, so far as I can discover, why it merits such a title, lies in the degree of its prevalence and fatality. Regarded from a strictly scientific point of view it is, and has been all along, an *Endemic* fever. This distinction may at first appear somewhat subtle and unnecessary. But it is really not so; on the contrary it is *very* important. The disease is not one which merely comes at intervals and then disappears altogether. *It is always present*, and due to more or less local causes which do not disappear. Were it an epidemic, it might by some be regarded as sufficient to combat it so soon as it made its appearance. But as a matter of fact it is an ever-present enemy, against which systematic and continuous warfare must be kept up. It may be urged, 'This cannot be, the epidemic has only been recognised of late years, it was not known to exist before; it cannot be said to exist now.' What then are the actual facts of the case? Setting aside the past, as somewhat involved in obscurity, it is instructive to look at what now obtains.

"*Para 21.*—At the present moment I do not believe that less than 60 or 70 *per cent.* of the people of the Hooghly district are suffering from enlargement of the spleen; *i.e.*, from an advanced stage of purely endemic malarious fever, which is seriously undermining their strength.

"*Para. 22.*—On entering a large village one is immediately surrounded by poor, miserable, squalid creatures, with parchment-like skin, lanky limbs, swollen feet, enormously enlarged spleens, narrow chests, shoulderblades starting out from the body, puffy, sodden faces, and hearts and arteries visibly pulsating and struggling under the influence of poisoned and deteriorated blood. In a large village, hundreds of such cases are visible. It is almost impossible to imagine a more touching and saddening sight. Some are still struggling to exist. Others, after astonishing passive endurance, are yielding, and being visibly dragged along to their destruction by deadly influences. The words, tones, gestures, and looks of the sick all betoken serious loss of health or approaching death. I do not think I exaggerate when I say that *five-sixths* of the children under *eight* years of age have spleens *four* times as large as natural. The vast majority of them have been branded on the left side with the actual cautery. Infants are to be seen like famine-stricken objects bearing the expression of pinched and ghastly old age, their ribs starting outwards, and the usual tumid spleen bulging forward with ominous convexity. They more resemble the monstrosities one sees preserved

in Pathological Museums than anything else. They hang upon the breasts of mothers who creep about and call for relief in tones of painful importunity. Amidst such objects the fate of hundreds is sealed; there can be no doubt as to the ultimate cause of death, the inevitable spleen unfailingly foretells the result. An atmosphere of silent despair seems to hang over the worst villages; and no wonder indeed, for everything is rotting—the air, the ground, the vital organs of the people. We thus see humanity reduced to one of its most abject conditions; uncouth, cadaverous men and women surrounded by pitiably diseased children, moving silently about in a stronghold of malaria, which they call their village home, where every draught of water and every breath of air inhaled is poison. Such conditions and sights are infinitely pathetic, and yet they really cannot be said to be uncommon. The sad impression is intensified when we think that, unlike the diseases one meets with in purlieus of great cities where vice, obscenity, crime, and infamy appear, in the villages now alluded to, we find a simple people, kind and unselfish towards each other, of innocent habits and willing enough to work for their daily bread. Those who are not destroyed by malaria are disabled; industry is cramped; agricultural operations are impeded; misfortune and misery make their appearance; the people lose heart, and become the prey of bodily and mental distress such as would weigh down the strongest. Such a pitiable spectacle as I have described is of course not applicable to all the people of the country. Far from it. There are many in vigorous health, although the number is greatly below ordinary average; and the fact remains that in scores of large villages the condition of a by-no-means insignificant section of the people is such as I have pictured above.

"*Para. 23.*—It may be said, 'The people are to be blamed for their own apathy and imprudence, and they are accessory to great part of their own misery.' This is absolutely true. Were they more active and less ignorant, they would be better nourished, less degenerate, and longer lived. But at present I have to do with what they are, not what they might be.

"*Para. 24.*—They live in villages which appal the sanitarian. These have been so often faithfully described to the Government that it is unnecessary here to enter fully into this part of the subject. I will only say that every revolting abomination conceivable is to be met with in these villages, and that there is a close connection between the obstructed ventilation, the corrupted ground, the polluted atmosphere, the putrid organic matters, the fœcal gases, the revolting tank-water, and the sickliness, debility, degeneration, and cachexia of the people, will scarcely admit of a doubt. Yet I do *not* mean to say that all the disease in a village is due to causes discoverable, of necessity, immediately in that village. I do not think it is so. Over and above the immediately local causes of sickness and death, baneful influences probably reach the people from more or less distant points, strike them down with fever, and so complete the work in which all directly surrounding sources of pestilence co-operate.

"*Para. 25.*—The worst village I have yet seen in the district is Mohunbatty. Here is a concentration of everything that is insanitary. It is utterly unfit for human habitation. Dr. Thompson and I, after being in the village for about ten minutes, both began to suffer from headache, and to experience general discomfort. Near the centre of the village is a tree, upon which we observed numerous vultures' nests; the birds themselves were looking down, unscared, upon the festering scene below, which is literally a lair only fit for the wildest beasts of prey.

"*Para. 26.*—At Dwarbasynee the people said: 'We are all dying off; if you can do anything for us, let it be done quickly." At Mamoodpore, on asking a villager how many inhabitants there wer in the place, the reply was: 'Two or three hundred, but *they* will very soon die off.' Near Allah the appearence of the burning-place indicated a very high recent mortality. Outside many of the villages, charred spots, with broken *ghurrahs* and rags lying about, show to what a degree death has lately been prevailing. A constant village appeal was the following': 'Sahib, give us some powder that we may live.' "

Enough has probably been said to afford a general idea of the state of the people in the interior of the district. Dr. Smith then goes on to state

that the fever was undoubtedly a malarious one, and that, in an alluvial tract like the Hughli district, changes are continually occurring in the physical features; rivers and watercourses of all kinds and sizes are in a state of constant variation. *Khals*, *bhils*, and tanks silt up. Streams become sluggish, natural drainage channels are altered or become altogether obstructive, levels of water and even of soil are greatly modified; the subsoil, from being normal, becomes water-logged; animal and vegetable decomposition increases. He quotes Mr. R. V. Cockerell, the Magistrate of Hughli, as stating that "the aggravated sickness in the district commenced within a year or two of the final closing of the Damudar *khals*." He gives it as his opinion that an exact engineering survey of the whole Hughli district is absolutely necessary; it should extend in all directions, and be based upon a comprehensive system of cross-sections and carefully taken levels. The following points should be noted:—The influence of the *bund* on the eastern bank of the Damudar, as compared with what obtains beyond its western bank; the condition of the Kana and Kunti *Nadis*, and of the Saraswati, Magra, Bali, and Baidyabati *khals*; the level of the beds and of the surface water of all rivers and main water-courses in the district; general or local obstructions of drainage, how produced, the best means of rectifying them; the position, state, and level of roads, railway embankments, bridges, *bunds*, and drainage outlets; how the vicinity of village sites might be improved; how the depletion of *bhils*, swamps, and the like, could best be effected; in what direction catch-water drains might be useful, and where escape channels are required. In short, a general engineering consideration of the drainage and irrigation of the district.

The two following paragraphs are quoted from Mr. R. V. Cockerell's report, No. 42A. of 29th January 1868:—

"PARA. 7. It is very common to hear the remark made in any village in this part of the district that 'since the Railway has been made' the water in all the *khals* and rivers has diminished; that the *khals* and drains have become obstructed; that there have been no inundations, &c., &c., and probably the paragraphs in the native papers had their origin in these reports. Undoubtedly these facts are true, but the Railway is only indirectly the cause; the immediate cause being the measures taken to preserve the Railway from injury by inundation, that is to say, the entire stoppage of all the Damudar water which formerly used to traverse, occasionally inundate, a great portion of it. This change, as you are well aware, has been effected not only by the strengthening of the *bunds* so as effectually to prevent any inundation, but by the closing of the various streams which used formerly to communicate direct between the Damudar and the Hughli.

"PARA. 12. The consequence therefore of the stoppage of these periodical floods is not only that this part of the country generally never gets refreshed by the purer Damudar waters, but the beds of these *khals*, being no longer kept clear of accumulated vegetation by the periodical rush of the flood-waters, have gradually become obstructed. In most of them there is now no stream at all, whilst *bunds* have been thrown across them in many places to secure water for

irrigation purposes, and the result is that at this time of the year they present the appearance of long-stagnant pools, not seldom extremely offensive to the neighbourhood."

In Dr. Smith's second report he gives a list of the villages in Hughli district most severely affected with fever, the best known of which are Gangasnagar, Dhaniakhali, Mahmudpur, Dwarbasini, Dwarhata, Sonatigri, Kristonagar, Dingalhati, Jahanabad, and Pandua. He remarks that where there is a good water-supply there is, as a rule, little fever, but quotes several exceptions, *i.e.*, the villages of Shampur, and Konan, near Dhaniakhali, with comparatively good water and much fever; Palasi, on the Kunti *Nadi*, and Jankari, on the Dhankuni *bhil*, with bad water, and yet little fever.

He notes that the advance of the disease westward has been very slow, and states that the most important of all the causes of so-called malarious fever is insufficient drainage, by the partial or complete obliteration of rivers, and the pernicious states of soil, air and water, thereby produced. He quotes various reports by Engineers, Mr. Isaac, Mr. Leonard, Colonel Nicolls, Captain Garnault, Mr. Adley, and Captain Limond, as to the deterioration of the drainage of Hughli district in recent years. The complete closing, by a *bund*, of the old bed of the Damudar at Halara, near Salimabad, has converted the Kunti *Nadi* into a dead river, and the strong embankment down the east bank of the Damudar has prevented any flood-water passing eastwards, in consequence of which the rivers and *khals* in the district have been steadily silting up. They have been further obstructed by dams and weirs constructed across them for local irrigation or for fisheries, converting the old reaches of the river into a series of pools. The beds of these water-courses are thus gradually elevated, even rain-water is unable to flow any distance, and extreme uncleanliness of soil is caused where formerly broad and deep streams flowed.

For the health of the district, it would be better if part of the Damudar waters could still be allowed to pass in an easterly direction. For want of fresh water, want of 'scour,' and want of due oxygenation, the Hughli district seems very much in the same condition as is a man who, being strangled, must either very soon obtain more oxygen, or, after a struggle, die asphyxiated. On the varying phenomena of Indian rivers, particularly on their drying and disappearance, greatly depends the health of the people of Bengal. Given a stagnant, foul, shallow, and perhaps half-dried waterway, one may generally expect to find in the persons of those residing near it the distinctive *cachexia loci*, implying debility, sickness, spleen disease, and short life. Further, as water-courses become raised, their outlets silt up and become impracticable for drainage purposes, especially if *churs* form in the streams towards which they pass, as has happened in the cases of the Kunti *Nadi* and Saraswati, where they join the Hughli, at Naya Sarai and Tribeni respectively.

At present* the channels of the Kana and Kunti *Nadis* present many miles of damp, naked ground, and a series of shallow pools of very impure water. They are merely broad ditches, the sides of which are greatly polluted with vegetable and animal decomposition. The Saraswati is in a similar condition, but not quite so bad. The Ghia *Nadi* has still a natural, though not great, flow, and is in much better condition.

Dr. Smith considers that it cannot reasonably be disputed that there does, in very many instances, exist a general relation between the extreme unhealthiness of places and the proximity of old river channels in a half-dry filthy state. He quotes, as parallel instances, the ravages of fever, in former times, at Gaur and Kasimbazar; and cites a passage from Sir Thomas Watson (Vol. I, p. 750) giving a very similar case from the experience of the British army in the Peninsula :—

"The country was so arid and dry for want of rain that the Guadiana itself, and all the smaller streams, had in fact ceased to be streams, and were no more than lines of detached pools in the courses that had formerly been rivers. The troops there suffered from remittent fever of such destructive malignity that the enemy, and all Europe, believed that the British host was extirpated."

He further notes that while it may be said that some of the places which have suffered most from fever, *e.g.*, Pandua and Dwarbasini, have not the necessary conditions of a dead river near them, this is due to the fact that the channels of the rivers which formerly watered these villages, the Kasai at Pandua and the Kedarmati at Dwarbasini, have been so obstructed that they have practically ceased to exist, and are now almost unknown, though their outline can still be traced, in a series of deep interrupted ditches.† The majority of the places, he continues, which have suffered most severely from the prevailing fever in the Hughli district are situated either near old half-dried river-beds, or in positions where localized obstructions to drainage may easily be detected.

Dr. Smith's report concludes as follows :—

"PARA. 49. It only remains for me to consider what practical measures are most worthy of attention in the future, with reference to the improvement of the sanitary condition of the Hughli district."

"It ought, as soon as possible, to be determined by competent Engineer officers, whether the present dead rivers can again be opened out, deepened, and rendered effective as natural drainage channels, or whether new courses for drainage must be looked for and rendered practicable."

"If I am not mistaken, certain differences of opinion still exist on this point. A definite decision should be come to and acted on."

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* "At present," *i.e.*, in 1870.

† The Kasai at Pandua is now, in 1902, hardly to be distinguished. But the Kedarmati, at Dwarbasini, is visible enough, close to Dwarbasini railway station, and has some flow in the rains. Probably it has been to some extent cleared out since Dr. Smith wrote.

"The particular question as to the possibility and expediency, or otherwise, of letting water into the district through regulating sluices in the bund at Halara, near Salimabad, should be anxiously considered and definitely settled once for all."

Dr. C. J. J. Jackson, who was then Sanitary Commissioner of Bengal, spent a considerable portion of the cold weathers of 1870-71 and of 1872-73 on tour in the Bardwan and Birbhum districts, and submitted a lengthy report, which forms an appendix to the Sanitary Commissioner's annual report for 1873. In these tours he does not appear to have visited the Hughli district, in which, indeed, the fever had by that time much diminished in intensity. But, as the fever in Bardwan was undoubtedly the same disease as that of Hughli, I quote the following remarks from his report:—

"*Symptoms.*—(1) The time of attack, nearly always in the daytime. (2) Rise of temperature, either apparently slight, or very perceptible burning heat. (3) The fever was continued, no remission occurred. (4) Early appearance of brain mischief, stupor and drowsiness marking the cases from the first. (5) Constipation almost invariably present till shortly before death, when the bowels were frequently and loosely moved. (6) Vomiting sometimes present in early stages, but usually absent. (7) Very rapid course, intense prostration from the first, followed by death in from three or four days to a week. (8) Presence of a sickly, almost unendurable, effluvium from the bodies of the dying."

"I never saw a single case that suggested enteric fever, nor any symptoms which are at all compatible with my experience of that disease. The cases rather suggested typhus, but I could never decide to the satisfaction of my own reason that it was actually typhus." [Paras. 242-243, pp. 46-47].

"*Fatality.*—It was most fatal where the population was densest, and where the manufacturing element was present; it was less fatal in purely agricultural localities; it was more fatal in the higher and better drained than in the low lands; the localities in which the mortality was greatest were those in which the subsoil water was lowest, and, as regards this area at least, any theory of deficient drainage or subsoil water-logging as causes of the fever were utterly untenable." [Para. 292, p. 54.]

Bunds.—The railway embankment has been charged with causing the epidemic, but Dr. Jackson saw no foundation for the theory. The *bunds* on the Damudar have also been blamed, they are insufficiently sluiced, and do not allow the drainage of the villages beside them to escape, and they do prejudice the health of these villages by keeping them longer damp, and by depriving them of the annual floods, which cleansed them, and scoured and resupplied the village tanks. But the fever did not originate in villages near the Damudar *bund* any more than in villages near the railway, but travelled toward them from an eastern area, where there were neither *bunds* nor railways, and where, notwithstanding, nearly half the population perished. [Para. 304, p. 57.]

"*Subsoil and Drainage.*—There is no subsoil in this or the neighbouring districts in the sense in which the term is commonly used in England. Ten feet below the surface soil lies a bed of impermeable clay, which retains the water on its surface, and, except in casual hollows, precludes accumulation as well as drainage below. When the soil above the clay is saturated, the water accumulates on the surface, and there it must remain till removed partly by drainage and partly by evaporation. If the drainage be rapid, the people obstruct it, as far as they can, and that which does drain away is replenished by the frequently recurring rainfall. So long as the surface remains under water, there is no very excessive prevalence of malaria; but later on, when the main channels subside, when the rain comes in slighter showers and at longer intervals, when the surface water begins to disappear, exposing the moist land to the hot sun, something, whatever it may be, to which we give the name of malaria, appears to be added to the vapour which escapes into the air, and one of the earliest manifestations of its presence and effect is the greatly

enhanced prevalence of intermittent and remittent fevers and increase in the virulence of their type. If this drying period could be shortened, it would, no doubt, greatly increase the salubrity of the district. If there were such a thing in existence as subsoil drainage, it would dry rapidly enough; but on that impermeable clay bed which will not absorb and carry off the water, as McClelland truly remarks, the whole fertility of the district depends. 'It is,' he says, 'the ten feet of surface soil spread over the deep beds of clay that renders Bengal habitable. Without the surface soil it would be a swamp, and without the clay it would be a desert.' If, therefore, any drainage plan were introduced, it would be wholly inoperative until the close of the rains, when the main channels were clear, and it would need to be accompanied by irrigation—first, on account of the rice crop, which would die in a dry soil, and secondly, on account of the land, which rapid drying would render unworkable. This condition of things is not peculiar to Bardwan, but applies equally to almost all the other districts in Bengal." [Para. 309, p. 58.]

"*Spread.*—Entirely along the lines of traffic. Areas which had little or no communication with infected areas were not attacked. The whole history of the 'fever *exhibits a remarkable and persistent association with the lines of communication.*' (The italics are Doctor Jackson's.) There has never been any such connection between the direction of its propagation and that of the lines of drainage. [Para. 367, p. 76.]

"*Intensity.*—In all the areas successively attacked, the year of invasion is never the year of intensity. The fever is generally present for a year without attracting much notice. As a rule the year of greatest intensity in villages is the third year; in towns the second year is not unfrequently the worst. The fever also ceases or dies out, very much in the order of its invasion. Except in large towns like Burdwan, or in groups of closely crowded villages, it rarely lasts more than five years, and sometimes ceases in three or four. [Paras. 344-45, p. 69.]

"*Contagion.*—The very rapid advance of the disease, after Burdwan town had been attacked, compared to its slower progress before, points to an increased elaboration and intensification of the poison, whatever it may be—some renewal among the filthy and crowded population of Burdwan town of its most malignant characters. "If the fever be, as I am constrained by the facts which have come before me to believe, a highly contagious as well as malignant fever, such a supposition is only too probable; and the more the fever is studied, the more I feel certain will it appear that every effete, old, crowded town and village forms a nidus for the elaboration, and a focus for the diffusion of a fever poison of heightened intensity and malignicy." [Para. 340, p. 69.]

"*Duration* varies with the locality; in small isolated villages the fever often lasts but two years; in ordinary villages of 300 to 700 inhabitants, about four years; in very old villages and closely crowded clusters of villages, five or six years; in large towns six or seven years. In comparatively dry localities the fever is more intense, more fatal, and ceases sooner; in low, moist, badly drained localities it is less intense, takes a longer time to attain its maximum intensity, and lingers longer. The condition in which the fever leaves the localities it has attacked also varies greatly. In raised dry localities it disappears completely, leaving a very much reduced but healthy population, free from malarial cachexia or organic mischief. In low ill-drained localities it leaves the survivors suffering from chronic malarial affections, cachexia, enlarged spleen, &c. [Paras. 372-73, p. 77.]

"*Influence of various conditions*: (A) *Drainage.*—The fever prevailed in both ill and well drained villages, remained longer in the former, but was more intense in the latter. It is more intense in dry than in moist areas. (B) *Soil.*—Fever was equally prevalent on the low alluvium, the old alluvium, and the laterite. Some of the villages most severely attacked were on porous laterite, others on impermeable clay. (C) *Elevation.*—Villages on the higher laterite suffered as much as those on the lowest alluvium. When there was any irregularity of site in a village, almost invariably the mortality was greatest in the higher and drier half. (D) *Overcrowding* always increased the intensity of the fever, where several villages were situated close together, or along a common water-course, where houses were huddled closely together in a village, and where the

inhabitants were most numerous in single houses, alike in all three cases. (E) *Character of villages.*—Old decaying villages where the soil had become saturated with the filth of ages, where old ruined temples and *pakka* houses abound, and old polluted *pakka* tanks are found, were always the most severely attacked. In them the fever is most intense, progresses most rapidly, and kills the greatest number in the shortest time. Such places have once been of consequence and had much traffic, but have come down in the world, and have a numerous and poor population. Small isolated agricultural villages, especially those with open ground and fairly clean tanks, have suffered least. (F) *Food.*—The purely farinaceous character of the food, however capable of sustaining life under ordinary circumstances, has greatly increased the mortality. A considerable bulk of such food is required, and the sick cannot take it; the small amount of rice they can consume is insufficient to nourish them. Milk is comparatively scarce. Thousands of lives have been lost for want of proper nourishment; food, if it could have been provided on the enormous scale required, and if the people would have consented to receive it, would, if it were of suitable quality, have saved far more lives than medicine has been able to preserve. (G) *Water-supply.*—Exceptionally bad conservancy is usually accompanied by bad water, and it is difficult to separate the effects of the two. But in *all* places where the fever prevailed with special intensity, the water-supply was exceptionally bad. On the other hand, those places which escaped had usually a fair water-supply. Probably bad water had nothing to do with the origin, but much with the spread of the disease. (H) *Jungle.*—Many of the villages affected were not particularly jungly. The presence of jungle could not possibly have originated the fever, but may have aided its spread in two ways, by preventing perflation of air, and by jungle near houses always being used for the purpose of a latrine. (I) *Bhils.*—Villages on *bhils* have not been more unhealthy than others, but quite the reverse, even when their sites are flooded every year during the rains." [Para. 376, p. 77-79.]

The following paragraph, describing the crowds in attendance at one of the fever dispensaries, gives a graphic picture of the miserable condition of the residents of the fever-stricken tracts, and may help to bring home to those of us who have never had experience of a similar visitation, the sufferings this epidemic fever inflicted on the population of what were not long before among the most prosperous districts in the province. I have seen a district ravaged by an epidemic of cholera, when that disease swept over the western half of Purnea in 1891, and in a few months over twenty thousand deaths from cholera were registered, and probably half as many again occurred, but escaped registration. But no cholera epidemic ever affected any place as this epidemic fever scourged Bengal. After all, in the very worst epidemic of cholera, not one person in ten is attacked, and usually about half of those attacked recover; and, what is of even more importance, those who recover are soon as well as they were before the attack, while those who escape attack are of course in their usual state of health. But this epidemic fever was almost universal in its ravages, few villages in the fever-stricken districts escaping; while, in addition to the deaths it caused, it left the survivors weak and anæmic, in many cases unfit and unable to earn a living:—

"One of the saddest reflections forced on the mind in surveying a crowd of this kind was that a large proportion of them must die under any circumstances, and that most of them would probably die in spite of all the medical skill in the world. The first essential of all, a change of air, it was impossible to give them. The next, a sufficiency of good, nourishing, and easily

digestible food, was equally unattainable; nor could adequate and suitable clothing be found for the enormous number that needed it. When it is borne in mind that some of those wretched creatures had to walk two or three miles for their daily supply of medicine, it may be readily doubted whether the few grains of quinine or steel supplied to them could possibly compensate for the nervous and muscular waste or fatigue which the journey involved. The predominant feeling in the mind was one of utter helplessness to cope with a calamity of such magnitude, and with it came the necessary deduction that the right thing to do was to prevent these things; once in existence they are utterly beyond control. In the villages, one saw worse cases than at the dispensaries,—the poor dying creatures who could not possibly attend them." [Para. 241, p. 46.]

In the year 1871 Dr. J. Elliot, the Civil Surgeon of Bardwan, the same officer who, when Civil Surgeon of Hughli, had been placed on special duty in 1862 to enquire about the epidemic fever then raging in Hughli, Nadiya, and Baraset, submitted a report on the epidemic as now affecting the district of Bardwan. This report refers to the Bardwan district only, but as Dr. Elliot had had special experience of the fever in several of the different districts which it had attacked, I extract the following remarks from his report.

The epidemic first appeared in Bardwan district in 1866, at a village called Ghose, near Maimari, having extended from Pandua, in Hughli district. From Ghose it spread gradually over almost the whole of the Bardwan district, and also extended over great part of Birbhum. Each year the fever began about the first week of July, reached its maximum about the end of September or in October, gradually abated during the cold weather, and remained in abeyance till the beginning of the next year's rains. The disease "is an exaggerated and congestive form of malarious fever, most frequently of the intermittent, but also of the remittent type, generally assuming the most intense and asthenic characters in localities where the recognised predisposing causes of disease preponderate most." Very different theories of its causation have been put forward; meteorological, such as excessive rain, want of rain, the cyclone of 1864, the famine of 1866; obstructed drainage, either from the construction of new road, railway, and river embankments, or from changes in the course of large rivers, and the silting up of smaller ones. But facts may be brought forward which militate against each of these theories of cause. In some places the fever prevailed before the cyclone of 1864, or the famine of 1866; it had broken out as severely in places not affected by new embankments or by silting up rivers, as in those in close proximity to them. The most likely means to prevent or diminish the epidemic will be the drainage of old river-beds and *khals*, either by opening out and deepening their beds, or by flushing them by annual inundation.

In June 1874 Surgeon D. Wilkie was deputed to Bardwan to enquire into and report upon the Bardwan fever. On his arrival there, however, the Civil Surgeon, Dr. J. G. French, was placed on special duty to tour about the district, and to report upon the effect of the famine on the fever-stricken population. It was, therefore, not until the beginning of December

that Dr. Wilkie, who in the meantime had acted as Civil Surgeon of Bardwan, was able in his turn to proceed upon the special duty for which he was sent there. He spent December and January on tour, and on the 28th February 1875 submitted his report. Like Dr. Elliot's report, Dr. Wilkie's refers only to the district of Bardwan, but as the endemic fever of Bardwan was without doubt the same as that of Hughli, I extract some remarks from his report. Having been so short a time on special duty himself, great part of it consists in criticisms of former reports on the same subject.

He begins by commenting on the seasonal prevalence of the fever. In each of the three past years, 1872, 1873, 1874, there was a slight rise in March, followed by a deep fall, a rise again in August, and the attainment of the maximum in November. (This, it will be seen, gives both the beginning of the rise and the attainment of the maximum as coming a good deal later than previous observers had reported.) The regular seasonal prevalence alone is sufficient argument against the fever being a contagious one. No connection could be traced between the amount and distribution of the rain-fall and the severity of the fever, but this may have been due to a want of sufficient particulars:—

"But the important factor in the severity of the fever was obstruction to the removal of water in the soil. The two together (rainfall and obstruction) might at one time or place produce such a wet condition of the soil as to hinder the development of malaria; while a lesser degree of one or both might have the effect of producing just that degree of moisture most favourable to its evolution. The season after the rains was always distinctively '*the*' fever season, and there was always a total or comparative absence of bad fever in those months when the soil is at its driest, and scarcely any rain ever falls.

"I believe that what was wrong with Hughli and Bardwan in the fever years was the retention in the surface soil above the clay of moisture which ought to have been got rid of more quickly. In an ordinary year you have the rains, the consequent moisture of this surface soil, and the subsequent evaporation of the moisture with fever, until the soil, by evaporation and natural drainage, becomes dry. In a *jor bekar* year the same thing exactly went on, but as there was an obstruction to the natural drainage, the greater part of the moisture had to be got rid of by evaporation alone; so that the whole layer of surface soil became damp sooner, evaporation began sooner and went on longer, and fever began sooner and went on longer. In fact, the most favourable conditions for the production of malaria were present, and their existence was unusually prolonged. As a natural result, the consequences of malaria were produced in a more intense form, in greater abundance, and for a longer period. Observations, such as those of Dr. Jackson, on the dryness of the soil to great depths in January, February, and March, prove nothing at all, except that the soil is dry in non-fever months. However saturated the soil may have been in previous months, it cannot but be dry by that time under ordinary circumstances, because evaporation has been going on rapidly for months from the whole surface of the country, and the supply of moisture is not unlimited. No amount of obstruction to the drainage could keep the soil of Bengal moist throughout the year, unless frequent or heavy rains were superadded. The remarks of the writer of the *Hindu Patriot* fever articles on this subject are to the same effect. In February 1872 there had been no rain for three months, and in February 1873 only 0·12 inches for three months. I have nowhere been able to find any mention of dry soil in villages in which the *jor bekar* was actually present at the time. Dryness of the soil is mentioned as existing in some place

which *had* suffered severely. But what is wanted is a knowledge of the state of the soil when the fever was actually present. If any one could take us to a village stricken with the fever, and demonstrate that the soil is dry, there would be an end of the matter. All the observations of dry soil that I have read of were, as far as I remember, made in places not at the time suffering, and made at a time when the soil of the whole country is necessarily dry."

The question of contagion is discussed at some length. The only three observers who had considered the fever to be contagious were Doctors Sutherland, Verchere, and Jackson. Those who maintain the malarious origin of the disease hardly refer to the subject of contagion, the fact that they consider it malarious sufficiently indicating that they do not think it contagious. Dr. Verchere considered the fever to be "typhus, travelling slowly through districts much exposed to and suffering from agueish diseases;" that "the epidemic, taken as a whole, is therefore an ague grafted on a typhus;" that "the ague leaves its mark most prominently in the sequelæ, because it finds in the convalescent from typhus an habitat peculiarly suitable; but the killing element in the epidemic is the typhus, either killing *per se* during the first attack, or rendering fatal sequelæ which would be curable, were they due to ague alone. It is during the convalescence that ague attacks the patient, and it is persistent, as we know ague always is, in persons of degenerated nervous system from any cause, and it is then that the peculiar sequelæ of agueish diseases become developed in the extravagant manner I have endeavoured to describe."

Doctor Jackson also states his belief that the fever had acquired contagious properties, either in Jessore or Nadiya, that it was a contagious malarious fever, which might be called typho-malarial, and which spread along the roads and other means of communication. But in all reports on the fever, the bulk of the cases were intermittent in character, and the appearance of severe malignant fever was always preceded by an increase of ordinary fever. The fever was also, almost without exception, mild in its first, sometimes also in its second year, of invasion of any particular village; it was not till the second, or perhaps even the third, year that its full malignancy was seen. On the contagious hypothesis, this would necessitate two or even three importations of contagion into a place, before it was able to spread.

[*Note.*—Is not this just what we have seen in the last six or seven years, in the case of plague, which seldom spreads much in its first year of invasion of any particular place?]

Other arguments against the contagious nature of the disease are, that it never broke out in Calcutta, although the traffic between all the affected districts and Calcutta was great, while no better field could be imagined for the intensification and development of a typhus or typho-malarial poison than the lanes and bazars of Calcutta. Moreover, no one could ever bring forward any instance of contagion or infection occurring directly from case to case, in any hospital under competent supervision, such as the jail and police hospitals of

the affected districts, even when the said hospitals were much overcrowded, a condition notoriously favourable to the spread of typhus.

Dr. Wilkie defines the fever as follows :—

"I can come to no other conclusion than that the Bardwan fever was a non-contagious malarious fever, gradually increasing in severity at any given place as the malaria-producing condition of the soil became more and more developed, and gradually decreasing as that condition of the soil also passed away (more or less completely), that the disease was not communicated from individual to individual, or from mass to mass, but broke out successively in different places in correspondence of its steadily advancing cause."

As regards causation, he states that it is a fact that, in spite of the existence of roads and of the railway, the fever has never penetrated far into the laterite region. There is nothing in the mere fact of a place being on the laterite to exempt it from malarious fever. What really seemed to have arrested the fever was its having, along its whole line of advance march, reached land too high to be affected by the advancing cause of obstructed drainage. What was required, in the search to find the cause of the epidemic fever, was "to find something which, being added to the circumstances which produce ordinary seasonal malarious fever, caused an intensification and prolongation of the ordinary seasonal fever."

There are two chief theories regarding the way in which obstructions to drainage acted. One was that advocated by Raja Digambar Mitter in the *Hindoo Patriot*, that the disease did not travel in any definite direction, but was altogether irregular in its outbreaks, and that for each village, or group of villages affected there was a separate local cause of drainage obstruction. The second was that supported by Dr. French and Mr. Metcalf, I.C.S., "that the incidence of the disease was everywhere due to the same cause, and that that cause advanced progressively from south and east to north and west, being the result of changes in the Gangetic delta. Such a travelling cause might be due to changes affecting only the rivers, or to changes of elevation or depression affecting the whole area.

Any one who reads the history of the epidemic with a map before him will see that its cause did travel. Whatever the apparent capriciousness of the incidence of the fever in any one year, it is impossible to deny that in the following year it appeared in villages further west than in the previous year. On the local obstruction theory we should have to suppose that an epidemic mania for making roads, *bunds*, and embankments swept over the country from Baraset to Birbhum.

The impunity with which, after a few years, non-acclimatized persons could visit and live in an area which had recently been severely affected, shows that the cause travelled, that it affected a limited area only at one time, it had comparative healthiness in front of it, and left comparative healthiness behind it, and had now (February 1875) gone clean away.

The key to the whole causation may perhaps, Dr. Wilkie states, be found in an observation made by the Commissioner of Bardwan in his letter No. 422 of 14th August 1872, to the effect that the limit of the fever appeared to be coincident with a gradual rise in the level of the soil which had taken place in the northern part of the Bardwan district. Dr. Wilkie suggests that the elevation here remarked may have been the end of a process which had gradually passed over the whole delta from east to west. Such a progressive elevation would be a most efficient cause of obstructed or arrested drainage acting gradually from east to west. When by the end of 1872 this progressive elevation had advanced so far as to reach the high lands on the west, the cause ceased to act, the land-wave could no longer obstruct the drainage, and the great epidemic of fever died out. The exceptional cases in which certain places within the limit of the epidemic influence were little or not at all affected by the fever might also be explained under this theory; for "it is quite conceivable that the period of greatest potential obstruction to the drainage of a village might coincide with that season of the year when there is no drainage to obstruct. We know that at that season every year the fever died out, to return when the rains had furnished the water that had to be obstructed in its passage."

Dr. Wilkie's general conclusions are quoted below in full. He writes :—

"I believe, then—

(1) that the Bardwan fever, even at its worst, was a purely non-contagious malarial fever;

(2) that the cause of its unusual malignancy and prolongation in the year was unusual and unusually prolonged moisture of the soil, owing to retardation of the drainage flow.

(3) that this retardation was caused by a gradual elevation of the level of the country beginning in the delta proper, and advancing north and west till it reached the high lands (whether it went any further does not concern us);

(4) that the whole of the affected tracts are now somewhat higher above the level of the sea, than they were before the fever, and that probably their slope is less;

(5) that all the apparent caprices of the fever were caused by local conditions modifying the action of the general cause.

(6) that the fever has gone for good, and that if it ever comes back again it will be by the same route through the districts to the east and south.

(7) that the cause of the drainage obstruction not being preventible, earnest attention, should be directed to discovering the nature of malaria. The discovery of its nature would be a step towards a knowledge of how to protect ourselves against it. That a malaria commission should be appointed, in accordance with the recommendations of Dr. D. B. Smith; that this commission should be 'immortal,' being continued through succeeding generations, till some result of the nature of a demonstration be arrived at;

(8) that the cause of the unusual virulence of the fever being, as above stated, the condition of the soil and subsoil, is now totally different from what it was during the fever; so that present subsoil readings, &c., cannot be made applicable to that time. And more than that, as, in accordance with the above theory of the fever, the period of greatest virulence concided with the period of greatest drainage obstruction; and as the latter was dependent on the general cause, *plus* modification by local causes,

it follows, that if, of two villages near each other, one had the fever and the other not, observations of soil and subsoil made in the one would not be applicable to the other;

(9) that the influence of season on the fever is explained by the fact that for some months of the year there is no drainage flow to obstruct; the obstruction could only act in the months in which there was water to run off. In the former months there was no fever, in the latter there was."

In August 1873 the Bengal Government ordered an enquiry into the prevalence of epidemic fever, its causes and effects, to be carried out in the specially affected districts, Bardwan, Hughli, Howrah, Midnapur, and Birbhum. Two Deputy Magistrates, Babus Romesh Chandra Mukerjea and Jogeshar Mukerjea, were deputed for the purpose in Howrah and Hughli respectively; but the latter was soon withdrawn to other duties, and the former carried out the work for both districts. He submitted a voluminous but somewhat indefinite report, which was summarized by Mr. F. H. Pellew, I.C.S., Magistrate of Hughli, in a short report, dated 24th March 1874.

This report begins with a short sketch of the rise, progress, and decay of the epidemic fever in Hughli district, which may be quoted at full length.

Spreading from Jessore, through Nadiya, in 1859 the epidemic crossed the Hughli river and attacked Keota, a suburb in the north of Hughli Municipality; as well as Tribeni and Bansbaria a little farther north. In 1860 it attacked some villages in the north-east of the district with great severity; thence spread south-westward, passing Pandua in 1861, Dwarbasini in 1863, but only attacking certain villages, and leaving others untouched for the time. From all accounts, the most ancient and most populous villages were the first attacked. Certainly Pandua, Dwarbasini, Mahnad, and Tribeni, which were attacked with great severity in these years, are very ancient villages.

In 1864, while this epidemic from the north-east was advancing south-westward, towards the Damudar river, an independent outbreak of fever occurred in the tract round Howrah, and this southern invasion advanced in a manner very similar to the fever in the north of the district, that is to say, it attacked only certain villages, and left others untouched. Its general course was north-westward.

In 1866 the two converging forces had got as far as Ampta in the south, Haripal in the centre, and Dhaniakhali in the north. In 1868 the east or right bank of the Damudar was reached along the whole line; while the extreme left, passing over Khanakul, attacked the large and populous town of Ghatal, beyond the Rupnarayan, which was then in the Hughli district. Meanwhile, other villages in the rear, which had escaped the wave of invasion, were, one by one, attacked without regularity, and with less violence than those first attacked.

In 1869 the fever had advanced from the line of the river Damudar to that of the Dwarkeswar; Mayapur, Jahanabad, and other villages to the north were attacked with great violence and fatality, but Khanakul still escaped. In 1870 the fever had spread across the Dwarkeswar into Goghat *thana*, and also southwards to Khanakul.

At this period the virulence of the disease had sensibly diminished in Hughli district, east of the Damudar; still new villages were occasionally attacked, and sometimes with great mortality. But from 1871 to 1874 no new villages were attacked for the first time, and the authorities had only to deal with *new fever*, as the first attack came to be technically called, in villages which had already been ravaged by the disease. Finally, in 1874, new fever was almost unknown east of the Damudar, and there remained only chronic cases and the sequelæ of fever. Khanakul was the only remaining tract in which new fever continued to show itself. Hughli district, therefore, was in the condition of a patient who is throwing off a desperate disease; still weak and disabled, but appearing to gain strength daily.

[The dates do not exactly correspond with those given in Mr. Pellew's subsequent report, dated June 1878, in which he gives 1861 as the first year of invasion, and the advance of the epidemic generally a little later than the dates given above.]

In the orders of August 1873, setting on foot the enquiry into the epidemic, the Government set forth a list of questions, to be answered as definitely as possible for each district affected by the epidemic fever. These questions are answered at great length, but in some cases very indefinitely, in the Deputy Magistrate's report, are summarized in Mr. Pellew's report, and still further condensed below:—

"*Question 1* (*a*).—Did the great bulk of those who have died belong to the poorer classes?

"*Answer.*—Yes, certainly; but the fever attacked equally all classes. The greater mortality among the poor was due to three causes: first, their greater number; second, their inability to escape temporarily to more healthy spots, and third, their inability to secure good medical attendance, medicines, and diet appropriate to their condition.

"*Question 1* (*b*).—Have more died of the sub-tenants and labourers of the occupancy ryots than of these latter?

"*Answer.*—Yes, but to the same extent, and for the same reasons, that more died among the poor than among the well-to-do.

"*Question 1* (*c*).—What has been the amount of food procured by the labouring classes (sub-tenants, labourers, &c.) during the past few years?

"*Answer.*—The position of the agricultural labourers and sub-tenants, and their power of procuring good and sufficient food, progressively improved from 1840 to 1860, owing to increased rates of wages, and rise in price of agricultural produce. In 1860, action taken under Act X of 1859, resulting in a very general rise of rents, absorbed a portion of the surplus profits up to then

enjoyed by the sub-tenants equally with the right of occupancy ryots; afterwards the fever itself produced much individual distress. In ordinary years the labourer, agricultural or other, is more prosperous than he was 30 or 40 years ago; the occupancy ryots and tradespeople have progressed in comfort still more quickly; only the weaver class, and possibly fishermen, find a difficulty in living.

"*Question* 2.—Has the fever attacked and been as fatal in its results to the population of any thinly populated district? And, if so, were the lower classes there better off than in Hughli and Bardwan?

"*Question* 3.—Have the people of any district in which the lower classes were certainly sufficiently fed suffered in the same way?

"*Question* 4.—Have the people of any very densely populated district escaped this fever? And, if so, are there any climatic or industrial or agricultural differences between this and the districts that have suffered to account for this immunity?

"*Question* 5.—In the districts that have suffered, are there grounds for supposing that in local subdivisions, where population was most dense or their pecuniary condition worst, the mortality was highest?

"*Answer*.—Questions 2, 3, 4, and 5, did not apply to the Hughli district, and were not enquired into.

"*Question* 6.—What is the usual food of the mass of the people? What is estimated to be the weight of rice eaten by each man, woman, and child? And how many meals are eaten daily?

"*Answer*.—The Deputy Magistrate reports that each man and woman eats about three-quarter seer rice daily; a child above five years old quarter to half a seer; a child between one and five, one to three chittaks rice. Salt, and a small quantity of *dal* and curry vegetables are eaten in addition; while able-bodied working men eat a full seer or more of rice daily, in either two or three meals. The Magistrate considers the above rather overestimated.

"*Question* 7? Is there any ground for thinking that the people stint themselves in such necessaries as rice, salt, &c.?

"*Answer*.—There has been no stinting in food, except where distress had resulted from the fever.

"*Question* 8.—Has there been during the last generation or two, say since 1840, any change in the habits of the people in this respect? Do they, for instance, eat less often, or less in quantity, or inferior food? Are they more careful in consumption of food?

"*Answer*.—The Deputy Magistrate answers yes to all these questions. The Magistrate considers his opinions as rather overcoloured, even allowing for the fact that his enquiries were made during a season of scarcity.

"*Question* 9.—Has the rate of daily wages risen or fallen? Have daily labourers any difficulty in procuring the means of subsistence? Are beggars or paupers common?

"*Answer*.—Wages have doubled or trebled within the last 30 years. Day labourers in Hughli district may be roughly divided into two classes—Bengalis who mostly have a little land; and foreign coolies only partially settled, who sometimes visit their homes. These latter work sometimes on tanks or road repairs, sometimes in the fields. They are good workmen, and get higher wages than the Bengali labourers, but they have no land. In ordinary years neither of these classes of labourers are habitually stinted in food, but in cases of sickness individuals are distressed. Beggars and paupers are much less common in this district than they formerly were, and much less common than in the Upper Provinces; but the present scarcity of food is having its natural effect in increasing their numbers.

"*Question 10.*—Are the people clothed more poorly than 20 years ago? Have they more difficulty in getting clothes? Do they renew their clothes less often?

"*Answer.*—Clothed much as before; more finery is worn at festivals.

"*Question 11.*—Are there any symptoms of pressure on the land? Are rents rising? And are there many applicants for any vacant lands?

"*Answer.*—A rise in rents took place from 1860 to 1869, due to the passing of Act X of 1859, and the previous rise in the value of agricultural produce; since then the rise has generally ceased, but there is still a tendency to raise rents on lands which are still let at the old rates. The increase in rent may be taken at 50 per cent. over about half the land in the district, the rest remains at the old rates. The diminution in the population caused by fever, and the consequent paucity of local labour, have diminished the demand for land, and in almost every village tracts of land are lying vacant. This is extraordinary with so dense a population, but is due to four causes—first, the dislike of Bengalis to leave their homes, which prevents the inhabitants of an overpopulous village migrating to others thinned out by fever; second, the high price of labour, which prevents ryots from taking more land than they can themselves cultivate; third, the general somewhat high rates of rent in the district; fourth, the dislike of ryots, who by reason of the death of working adults of their households, cannot cultivate the whole of their holdings, to abandon any part of them. In course of time, if the district remains normally healthy, the young men will grow up, and these lands will be cultivated.

"*Question 12.*—Would the people be willing to emigrate to other parts of India, or to Burmah or Assam, if assisted by Government to do so?

"*Answer.*—Certainly not. While male adults have but little objection to going and serving in other districts, leaving their wives and families behind in the care of the head of the family, and occasionally visiting their homes, nothing would induce them to uproot the family residence, the *Bhadrasanbati*, in which are the family gods, and which is guarded by the spirits of their deceased ancestors."

The above series of questions and answers are followed by three tables. The first gives the prices of food and of various other articles of common use, at the markets of Sheorafuli and Bhadreswar, for fourteen years, 1858 to 1872. It is too long and complicated to extract here, but it shows that there had been no great rise in the prices of agricultural produce in these years; in fact, prices on the whole had fallen rather than risen, *e.g.*, in 1858 paddy sold at 32 seers, 11 chittaks, for one rupee; in 1872, one maund was sold at the same price. Table B gives the price per diem of labour from 1845 to 1872. The table was compiled from the accounts of an estate at Tarakeswar. It shows that the price of labour of every kind has more than doubled in these 27 years, that of *gharamis* has more than trebled. The figures of most importance are, of course, those showing the wages of *krishans*, or field labourers, by far the most numerous class of paid labourers. These *krishans* do not belong to any particular caste, but are the surplus adult males, who can be spared from the cultivation of the family holdings, of all land-tilling classes, along with the immigrants from other districts. The actual rate of pay shown in the table rather exaggerates the rise in wages, for formerly a substantial meal was given, in addition to the money payment, and still a light tiffin, called

jalpan, is given. But even taking this into consideration, the rate of pay has at least doubled:—

Table B.—Prices of labour per diem.

Year.	*Gharamis* or makers of straw houses.	*Mate gharamis.*	*Chutars* or carpenters.	*Kumars* or makers of ploughs, &c.	*Krishans* or field labourers (exclusive of food and clothes).	*Rakhals* or cowherds (exclusive of food and clothes).	Reapers or cutters and threshers.	Ploughs with bullocks and drivers.
	As. P.	As. P.	As. P.	As. P.	As. P.	As. P.	As. P.	As. P.
1845 ...	2 0	1 6	3 0	3 0	0 6	0 3	1 3	2 0
1849 ...	2 0	1 6	3 0	3 0	0 6	0 3	1 3	2 0
1854 ...	2 6	2 0	3 6	3 6	0 7½	0 4½	1 6	2 6
1859 ...	3 0	2 3	4 0	4 0	0 10½	0 7½	1 10½	3 3
1864 ...	3 3	2 6	4 6	4 6	1 0	0 9	2 0	4 0
1869 ...	5 3	3 3	5 3	5 3	1 4	0 9	2 0	5 3
1872 ...	6 6	4 0	6 6	6 6	1 4	0 9	2 6	6 0

The third table gives a list of villages in which the mortality has exceeded ten per cent. since the date of the census, *i.e.*, about two years, January 1872 to the end of 1873. Villages of all sizes, large and small, are given. It will be seen that they are all in the south of the district; the excessive ravages of the fever in the north and north-east of the district have now ceased:—

List of villages where the mortality has exceeded ten per cent. since the date of the census (of 1872).

Thana.	Village.	Total population.	Total deaths.	Percentage of deaths.	Remarks.
Baidyabati ...	Parapur ...	1,620	197	12·16	On eastern border of Dhankuni *bhil*; densely populated; no good water.
	Mahmudpur ...	265	32	12·07	On western border of Dhankuni *bhil*; densely populated; no good water.
	Komlapur ...	1,070	160	14·09	Ditto ditto.
	Deara ...	624	65	10·41	Ditto ditto.
Haripal ...	Dwarhatta ...	1,471	228	15·49	On Kana Damudar; densely populated; one or two good tanks.
	Kaikala ...	1,325	296	22·34	On a silted-up *khal*; densely populated; no good water.
	Ramnagar ...	1,427	370	25·92	Within a high embankment; densely populated; no good water.

List of villages where the mortality has exceeded ten per cent. since the date of the census (of 1872)—concluded.

Thana.	Village.	Total population.	Total deaths.	Percentage of deaths.	Remarks.
Haripal—*concld.*	Paharpur ...	1,016	253	24·90	Intersected by Old Benares Road and a silted-up *khal;* densely populated; no good water.
	Naupara ...	296	48	16·21	Apart from Kana Nadi; thinly populated; no good water.
	Bandipur ...	2,689	401	16·21	On Kana Nadi; densely populated; no good water.
	Kuarpur ...	711	79	11·11	On Kana Damudar; thinly populated; no good water.
	Basuri ...	262	41	15·26	Intersected by Old Benares Road; thinly populated; one large tank.
Kristonagar	Kristonagar ...	3,131	437	13·95	On Kana Damudar; very densely populated; only one good tank.
	Rajbalhat ...	3,436	424	12·30	A mile east of Kana Damudar; very thickly populated.
	Athpur ...	1,357	209	15·41	Has *bhils* on north, west, and south; densely populated; no good tank.
	Tora ...	505	87	17·22	On Kana Damudar; thinly populated; no good water.
	Dingalhati ...	428	44	10·28	On Kana Damudar; very jungly; thinly populated; no good tanks.
	Prosadpur ...	771	93	12·06	Ditto ditto.
	Boganda ...	438	89	20·31	Ditto ditto.
	Somangar ...	317	69	21·76	Ditto ditto.
Khanakul	Sonatigri ...	1,203	154	21·67	In low country; thickly populated; has no good tank; inundated by Damudar every year.
	Ubidpur ...	1,599	470	29·39	Ditto ditto.
	Sikandarpur ...	304	70	23·02	Ditto, but thinly populated
Chanditola ...	Bandpur ...	1,424	168	11·75	Intersected by two blind rivers, the Kausaki and Karpura; densely populated; no good water.
	Patul ...	1,686	179	10·61	In open country; densely peopled; has good tanks.
	Jayara ...	405	67	16·54	On northern border of Rajapur *bhil;* thinly peopled; no good water.
	Gopalpur ...	224	34	15·17	Intersected by silted-up Kausaki, thinly peopled; no good water.
	Sandipur ...	134	15	11·49	In open country; sparsely populated; no good tanks.

From the report, dated 24th and 28th February 1874, submitted by Babu R. C. Mookerjea, Deputy Magistrate on special duty, to Mr. Pellew, I quote the following paragraphs. After a few remarks on the history of the fever, he proceeds as follows :—

"*Para. 8.*—Repeated enquiries and exhaustive reports have been made from time to time by the most competent authorities on the subject of the dreadful epidemic fever which devastated this part of the country during the last 15 or 16 years, and there remains very little for me to add to the stock of valuable information already on record. There has been a diversity of opinion as to its primary cause and origin, and several measures have been suggested, and adopted, to arrest its progress and extension, but without avail. It defied all precautions, and when the season for its periodical visits came, it not only reappeared at places already affected, but invaded and brought within its grasp a few more.

"*Para. 9.*—From the result of the enquiries which I have made in the course of my present special deputation, and from my past personal experience as an inhabitant of the fever-stricken tract of the country, and as one whose official duties rendered it necessary for him to travel frequently over almost the whole of the tracts visited by it, I am only able to say that the districts of Hooghly and Bardwan have of late been so much overpopulated, that the increased demand for house and other accommodation has occasioned the occupation of all open ground and pasture lands by buildings, gardens, and tanks, while no attention seems to have ever been paid by the *zamindars*, or by the inhabitants themselves, to conservancy arrangements.

"*Para. 10.*—A piece of ground which originally formed the homestead of a single family, about 50 or 60 years ago, is now covered with a dozen, or even two dozen of houses to accommodate the multiplied members of succeeding generations of the original founder of the family; gardens, and covert-jungles, which formed adjuncts to the isolated houses, and accommodated a small number of persons for purposes of discharging the daily calls of nature, are scarcely to be seen at the present period; while, on the other hand, every available spot is being used as a repository for all kinds of filth, without any attempt on the part of the people to cleanse it of the noxious matters which thus accumulate, rot, and contaminate the atmosphere. The natural slopes of the country have been altered by the raising of buildings and gardens, embankments, highways, and roads, without adequate provision for the free and speedy escape of the annual rain and flood water, which, unlike the old days when it used to wash these impurities consisting of noxious and injurious matters, away into the low *jullahs*, and thence into the neighbouring *khals* and rivers, now leaves them in the form of sediments in the beds of garden trenches and numerous other water-holes which now abound everywhere, and of the choked up local drainage channels. The old practice among people of all classes of going over to the fields outside the villages for purposes of easement, is dying out with the advance of civilization and with it a sense of decency; while in its place has come into use the evil and obnoxious practice of lands attached to the back of a house being used as easing-grounds, and of sinking well-privies, from all of which poisonous moisture percolates into the neighbouring tanks, from which water is used for home consumption. The finest tanks excavated in old times in the midst of open plains which then preserved the healthiness of their water, by being used for bathing and drinking purposes by a very limited number of inhabitants in their respective vicinities, have, by the gradual increase of the number of persons resorting to them, and using their embankments as places for easement, whence the filth runs down into them, had their beds contaminated and their water rendered injurious for drinking purposes. Large open spaces which existed around human habitations, and which served to distribute fresh, healthy air to the then small number of their inmates in former days, have now been so much choked up by buildings and trees that free ventilation has been obstructed in consequence, and the surface of the earth deprived of the usual share of the sun's rays which formerly destroyed the humidity of the soil and absorbed all miasmatic moisture, which now necessarily overburdens and contaminates the atmosphere in which

the overcrowded population respire and inspire and thus render themselves predisposed to fever.

"*Para. 11.*—From all the circumstances described above, I can only repeat the opinion I have ventured to express in my Howrah report, which is to the following effect: that neither poverty of food nor of clothing, nor density of population, did alone serve as the exciting cause of the fell epidemic fever which has committed such a frightful havoc among the flourishing population of this district and Burdwan. Injurious influences of the climate, caused by the continual annual accumulation of filth, and other noxious matters, in thickly inhabited localities, and their absorption into the ground, owing to impeded drainage and without adequate sanitary arrangements for their removal, or the presence of the annual rush of the Damudar floods to wash them away, and deposit fresh healthy silt in their place, combined with the absence of good drinking-water, have all contributed to engender the devastating fever which breaks out in places most exposed to such influences, and then gradually travels round in all directions, wherever its infections are brought either by the air or by personal contamination.

"*Para. 12.*—It is needless for me to state here that when one member of a family is attacked with it, the panic which it strikes among the healthy inmates of the house, the exposure and anxieties to which they are subjected, and the consequent irregularity of food and other modes of living which are thereby occasioned, predispose them to the influence of the fever, and then begins the prostration of the population one after another without distinction.

"*Para. 13.*—A deplorable majority of the most useful portion of the population has thus been swept away, and several of those who have outlived its virulence have been dragging a miserable existence by being frequently subjected to repeated attacks, and thus rendered incapable to work and draw the means of subsistence.

"*Para. 14.*—The effect of this appalling state of things has been very injurious upon the agriculture of the country. Families which were full of robust working heads, and could very well spare many of them from their own fields to work for others, can now scarcely supply labour adequate to cultivate their own lands; while the pecuniary means at their command in older days have almost disappeared, and disabled them to hire men on wages. Extensive tracts of the best classes of lands are lying vacant here and there without any signs of cultivation, and relinquishments are being made by the best tenants, who, before the breaking out of the epidemic fever, competed most eagerly for them.

"*Para. 15.*—The *zemindars* have lost a considerable proportion of their rents, and the *mahajans* or money-lenders scarcely expect to recover their advances.

"*Para. 16.*—Notwithstanding all these calamities the *zemindars*, with a few exceptions, continue to be as apathetic towards the introduction of measures of improvement as they have hitherto been, and the people themselves are a mere inanity."

The above paragraphs form the bulk of Babu R. C. Mookerjea's summary of his report. The detailed report follows, and occupies fourteen closely printed foolscap pages, followed by six pages of tabular statements. The other Deputy Magistrate on special duty, Babu J. Mookerjea, submitted a shorter report, of thirteen pages, including tables, from which I quote the following paragraphs. This report is dated 13th November 1873:—

"*Answer 16.*—From 1850 to 1860, and even later, there were unmistakeable signs of pressure of population on the land. At Pandua, Dwarbasini, Mahanad, Parambar, Shahabazar, and Hasnan, the strongholds of the epidemic, the residents had not even land enough to dry their parboiled paddy. There was not sufficient homestead land to meet the demand of the growing population, and no place to discharge the calls of nature with decency. People had to encroach upon cultivable lands to construct new houses, and all the pasture lands had been brought under the plough to meet the growing demand of the community. Even uncultivable lands fetched a

nerick (1) of Rs. 2 a bigha as pasture lands. At Mahanad, before the commencement of the fever, a bigha of *jote* (2) land when sold would fetch Rs. 60 or 70 or 80 to the *ryot*, besides one fourth of the amount to the *zemindar* as *salami* (3). The demand for rice was so great, and rice cultivation so profitable, as to displace the cultivation of indigo. The cultivation of cotton ceased altogether. The fever has now entirely changed the aspect of affairs. In villages of the Pandua Bansbaria, and Dhaniakhali stations, where the mortality had been great, one-fourth of the land is lying uncultivated. The uncultivated lands in Dwarbasini, Megshar, Mahanad, and Hasnan are much greater in extent. The loss of population is the sole cause of this. It may be stated that on an average about one-eighth of the cultivable lands in the three *thanahs* is lying uncultivated from want of men. There are no applicants for vacant land, and looking to the conditions of the majority of villages, the population appears to be small as compared with the area of cultivable land. The people who have survived are unable to bring their ancestral *jotes* under cultivation. The *jotes* are disproportionately large compared with the labour now at their disposal. The majority of them are willing to relinquish their lands, and are dancing attendance on the *zemindars'* agents to induce them to accept *istaffa* (4), but without effect. The *ryots* are willing to relinquish their lands, retaining their *bustee* and the more productive parts of the arable land. The interest of the *zemindar* conflicts with the wishes of the *ryot*, and the law does not empower the *ryot* to throw up a part of his engagement. The *zemindar* understands the law, and would not allow the *ryot* to relinquish his *jote* in part. Matters are in this stage now, and I apprehend that serious complications will arise in future unless the parties settle their difference amicably.

"*Answer 17.*—Excepting a few estates, of which the recipients of rents have been in possession for a long time past, the rents in all estates to which the title of the *zemindar* or tenure-holder is of a comparatively recent date have been increased within the last thirty years. There has been more enhancement of rent in the western half of the district than in the eastern half."

[NOTE.—The Jahanabad or Arambagh subdivision at the date of this report was in Bardwan, not in Hughli district.]

"The tide of enhancement has now run its course, and a counter-tide has already set in. In certain *zemindaries* in which rents have been enhanced with a vengeance, people have commenced to relinquish their lands, and I fear that unless the *zemindars* abate the rents opportunely of their own accord, these relinquishments will increase year after year. I learnt on enquiry that the rental of one village has been increased from 2,200 rupees to 4,700 rupees within the last 30 years. In another village, which has suffered most from fever, the rents have been doubled within the last thirty years. I also came to know that one landlord (notwithstanding two-thirds of his *ryots* have been swept away, and the survivors are still suffering from the sequelæ of the disease) has increased the rents from 2 rupees 8 annas per *bigha*, to 3 rupees 4 annas, only in June last. In a majority of estates the enhancements have been on a more moderate scale than in the three cases cited above, being about 4 annas to 6 annas in every rupee of the rent . . . . .

"*Para. 5.*—I will here incidentally allude to another point which is connected with population, viz., how far are prudential checks known to the people of this country? Unfortunately there is very little to be said in the affirmative regarding this question. The principles inculcated by Malthus are opposed to the accepted tenets of the people, which are based on fatalism. As regards population, the prevailing belief is that it depends entirely on the preordination of fate, and that man has no power whatever to regulate the increase or decrease of his race. So far as our volition is concerned, it may be said that moral restraint is not known in this country, if we except the fact that though polygamy is not prohibited by law, the people, as a rule, contract but

(1) *Nerick*, nirkh-tariff: fixed price.
(2) *Jote*: holding of cultivated land.
(3) *Salami*: offering.
(4) *Istaffa, istifa*: resignation.

one marriage. There are other causes, however, working independently of our will, which operate as a check to population. These are, firstly, marriage expenses; and secondly, prohibition of widow-marriage. To a certain extent marriage expenses, that is, the consideration to be paid to the bride's father, disable some people from entering into matrimony. This difficulty, however, is often got over by borrowing. The prohibition of widow-marriage, as it exists among Hindus and some classes of Mahomedans, is the principal check to the increase of population in this country. The effect of such a prohibition is now fully illustrated in the epidemic-stricken tracts. There is no prospect there for the increase of population for some time to come. As remarked by some of the residents, husbands are without their wives, and wives without husbands. At Dwarbasini, about three-fourths of the existing female population are widows, and these will have to remain in lifelong widowhood till death relieves them of all their sufferings.

"*Para. 6.*—I beg now to give a *résumé* of the principal facts connected with the epidemic which have attracted my notice as a non-professional observer:—

"(*a*) The fever broke out first at Kaota in the suburbs of Hooghly, and last in the villages on the Kana *Nadi*, and the Damudar. Kaota, on the Hooghly, was affected so far back as the year 1857, and the villages on the western border of the district about ten years later, *i.e.*, about the year 1867."

[NOTE.—The Damudar was the western boundary of the district when this was written.]

"(*b*) The fever which has raged in the district for the last 15 years is not a new disease, but was known to the people from time out of mind. Many families had been swept away by fever of a similar type long before the appearance of the present epidemic. The only difference is as to the extent of operation of the disease at different times. Formerly cases of fever were few and far between, but now they are very common.

"(*c*) The denser the population of a village the greater the mortality. Pandua, Dwarbasini, Dhaniakhali, and its adjoining villages, Shahabazar, Parambar, and Hasnan, carry out my assertion.

"(*d*). All classes alike were affected by the disease, but the labouring classes generally, whether cultivators or petty traders, suffered more severely, *i.e.*, the mortality was more heavy amongst them than amongst the well-to-do people.

"(*e*) Good medical treatment, proper regimen, and change of place, cured many people who would otherwise have succumbed to the disease.

"(*f*) Within the five *thanas* Hughli, Bansbaria, Pandua, Balagarh, and Dhaniakhali, there is not a single village which can claim exemption from the fever, but its effects were mitigated in certain localities by proper conservancy arrangements, good water-supply, and timely medical aid.

"(*g*) Before the outbreak of the fever the rural population of the Hughli district had attained a point which is unexampled in any other part of the world.

"(*h*) Villages along the banks of the silted-up rivers, the Kana *Nadi*, the Kedarmati, the Ghia, and the Saraswati, &c., *e.g.*, Parambar, Shahabazar, Dwarbasini, Hasnan, and Debanundpore, have suffered more than other villages not so circumstanced. The village of Megshar, on the borders of a tank of that name, which contains about 400 *bighas* of *jalkar*, almost silted up, has suffered most from fever; more than three-fourths of the people having died away. This village affords the most tangible illustration of the effects of malarial poisonings and bad water-supply.

(i) "Taking all circumstances into account, villages with bad water-supply have suffered more than those in which the supply of water was good.

"(*j*) The cultivation of rice and vegetables was carried on on an unprecedented scale about the year 1860 to meet the growing demands of the community. The cultivation of cotton and

indigo ceased, their place being taken up by the more remunerative crops, and the village common and pasture lands were brought under the plough.

"(*k*) As an effect of reclamation of the pasture lands the breed of cattle has deteriorated.

"(*l*) As a natural sequence of the extension of the margin of cultivation to inferior lands the rents were enhanced in most places, and in some the rates were doubled.

"(*m*) Notwithstanding the increased population, the supply of food was kept on a par with the demand by sheer dint of labour on the part of cultivators. All classes of the community,—cultivators, labourers, petty traders, and manufacturers,—had to labour alike to make the supply of necessaries commensurate with the demand, and to retain their position.

"(*n*) Simultaneously with this excessive physical labour amongst cultivators and others, there was a great increase of mental labour amongst the rising generation of the higher classes of the community. The mental labour, which the school-going population and the educated men in service and the liberal professions have to undergo, was never known in India in former ages.

"(*o*) The railway, by enabling the people to perform more work in less time, has tended materially to the increase of labour.

"(*p*) Notwithstanding this increase in physical and mental labour, there was no change whatever in the diet of the people.

"(*q*) Though there was no diminution in the quantity of food in 1860, as compared with previous years, the old diet of the people was insufficient under the altered conditions of the population.

"*Para.* 7.—In my humble opinion the ultimate cause of the Hughli epidemic is malaria, and the proximate cause, overpopulation. The causes which engender malaria have all along existed in the water-logged soil of Bengal; but they were multiplied and concentrated in this district within the last 30 years by natural and artificial causes, such as the silting-up of rivers, formation of *chars*, obstructed drainage, and the exclusion of the Damudar water. To these predisposing causes was added overpopulation, which operated, if I may use the expression, as the last feather on the camel's back. Overpopulation, without increased attention to the commonest conservancy arrangements, vitiated the soil, air, and water, and intensified the effects of malarial poisoning, while it weakened the constitution of man by throwing on him additional labour, and thereby rendered him peculiarly susceptible to the disease. There were, therefore, causes operating both in and out of the human system when the disease broke out with extreme virulence. It is in this way that I account for the origin of the Hughli fever. It is the joint effect of both malaria and overpopulation, of which, to my humble apprehension, the first appears to be the primary cause."

The subdivision of Jahanabad, now Arambagh, suffered severely from the epidemic fever. This subdivision comprises three *thanas*, Jahanabad, Goghat, and Khanakul, the first two of which were in the Bardwan district from 1st July 1872 to 1880. Information about them must therefore be sought in the report on epidemic fever in Bardwan district. This report was compiled be Babu Bogola Nundo Mookerjee, who was on special duty for the purpose; it is dated 14th February 1874; and was submitted with a covering letter, dated 7th March 1874, by Mr. E. H. Whinfield, I.C.S., who was then Magistrate of Bardwan. I have taken from this report only remarks about villages which are now within, the limits of the Hughli district.

Kamarpokhar is a large village, with an extensive trade. The population is 3,716. The soil is dry, the drainage imperfect, and the water very bad. In

digging tanks water is found at a depth of ten feet. The population has been greatly diminished by the fever, and large numbers have gone to Calcutta and to Baidyabati in search of work. In four contiguous villages of which this is one, only one child had been born during the past two years. The epidemic fever first appeared in 1869, and is said to have been imported from Jahanabad. It was mild the first year, very bad in 1870 and 1871, less virulent in 1872 and 1873.

Garhmandaran is a very old village, formerly the seat of an extensive fort. The population was formerly large, but much diminished by death and desertion. Many people had gone to Calcutta in search of work. The fever first attacked this village in 1871, when it was very severe; it was less so in 1872-73; more than half the population had died.

Kirtibaspur is a small village in *thana* Goghat, with a population of 134. The soil is sandy and clayey. The fever appeared in 1872, when nine were attacked, and three died.

Hajipur is a village in *thana* Goghat, with a population of 1,671, mostly weavers. Their trade has been entirely ruined, and as they are unfit for field work they have been in great distress. The soil is as dry now as before the appearance of the fever. The people drink tank-water; the tanks in the village are all very old. Fever first appeared in 1871, and is said to have been imported from Bardwan; it was mild in 1871, very severe in 1872, less so in 1873.

Mayapur is a large village in *thana* Jahanabad, population 1,733. Rents have recently been greatly enhanced. Fever first appeared in 1275 (1868), at the same time as it attacked Jahanabad, Saraighata, Mathurdanga, Shusanpara, and other neighbouring villages. For the first three years the fever was very severe; it has since been milder, disappearing in the cold and hot seasons, and only breaking out during the rains.

Keshabpur and Malaipur are large villages in *thana* Jahanabad, with a population of upwards of 6,000 between them. The soil is clay. During the rains these villages are so deeply flooded that the inhabitants can only get from one house to another in boats and canoes. "*This calamity is attributed solely to the construction of the railroad.*"

[NOTE.—The italics are mine. There is not, and never has been, any railroad anywhere near Jahanabad *thana*. A very large river, the Damudar, runs between this *thana* and the railway."]

The fever first appeared in these villages in *Kartik* 1275 (October 1868), therefore a little later than in Jahanabad. In the second year there were a large number of deaths. In 1279 (1872) the fever was very slight, and in the following year there were no new attacks, but most of the people were suffering from the sequelæ of fever.

Shibpur is a village, about a mile from the subdivisional head-quarters, and forms part of Jahanabad town, where fever first appeared in 1868. In 1869

three Deputy Magistrates were successively invalided by fever at Jahanabad, and one of them died. From 1869 to 1872, fever raged with great violence, but diminished in 1873.

Mr. E. H. Whinfield, the Magistrate of Bardwan, in his covering letter, summarizes the Deputy Magistrate's report. He briefly answers the questions asked by the Government of India. The most interesting answers are as follows:—(1) The majority of the deaths occurred among the poorer classes. (2) The fever has equally attacked and been equally fatal to the population of thickly and thinly populated villages. (4) The densely populated *thanas* of Raniganj, Katwa, and Ketugram have almost wholly escaped the fever, as well as many densely populated villages in other *thanas*. (8) The only change in the habits of the people is that the middle and many of the lower classes have taken to drink. (9) The rate of daily wages has risen in proportion to the rise in price of food. (10) The lower classes are better clothed than formerly. (11) The pressure on the land has undoubtedly increased. (12) The people are not willing to emigrate. I quote his general conclusions as follows:—

"And first, I think the results of the Babu's enquiry have left the question of the causation of the fever much as it stood before. He has found that the class visited most severely by the fever has been the lowest class—that of the daily labourers, which class is also notoriously the poorest, the worst fed, clothed, and housed. From this, then, we may not unreasonably infer that poverty and its concomitants are a predisposing cause of the fever: in other words, that frames weakened by underfeeding and exposure are the most congenial soil for the fever to take root in. But, on the other hand, the facts elicited in this enquiry go to negative the theory that poverty is the sole cause, because they show that the well-to-do have been stricken with the fever as well as the poor.

"Secondly, as to the extent and degree of the poverty of the poor in this district, I cannot come to any other conclusion than that the poor in this district live on the very minimum of sustenance capable of supporting life.

"Thirdly, can Government do anything to mend matters? I think not. The people here will not emigrate, and, when that is said, no opening appears to remain for Government interference. The people here have, like their fathers before them, the very lowest possible standard of comfort, and next to no secondary wants at all; and that being so, it follows, with the cogency of a mathematical deduction, that they will infallibly populate on and on, and press harder and harder on the means of subsistence, as their fathers did before them, till they get a check in the shape of Bardwan fever, or famine, which will again reduce population within the limits which the district can support. Nature is stronger than Government, and there is no use in trying to fight against her laws."

Raja Degumber Mitter, who was the only native member of the Commission appointed to enquire into the epidemic fever of Bengal in 1864, published as a pamphlet on the subject in 1873, a reprint of various articles contributed to the *Hindoo Patriot*; and in 1876 a second pamphlet, containing the articles given in the former one, with a good many others. His views are of much interest, being those of a well-educated native of the country, familiar with the physical conditions of the fever-infected tracts, and a shrewd observer who makes no pretence to scientific knowledge. Briefly stated, his

opinion is that there was nothing novel in the epidemic fever, that it was simply the ordinary malarial fever which always affects the districts in question at and after the close of the rains, but intensely aggravated by the increased dampness of the soil of the *villages*, owing to interference with drainage caused by the construction of railways and roads without sufficient waterway. In some cases the same effect has been produced by the *zamindars* damming up the *khals*, by which the monsoon water escapes from the paddy fields and *bhils*, in order to retain the water for a longer time on comparatively high lands, and so enable rice to be grown on these lands, which could not otherwise be done. He brings forward a number of instances in proof of his statements, some from the Hughli district and some from other parts of Bengal.

In Lower Bengal the banks of the large rivers are usually the highest spots to be found, and as such, as well as for convenience of water-supply and of trade are the sites of the most important towns and villages. The normal course of their drainage is not to, but from the river. The surplus water which falls during the rainy season, passes from the villages inland on to the rice fields, thence usually into the marshes known as *jullahs*, *jhils*, or *bhils*, and from these again into small *khals*, or water-courses, which flow into larger *khals* or into rivers, which finally reach the principal rivers. Thus it may be said that the surplus water which falls on a highly situated village on the bank of a large river, traverses a huge ellipse before it finally reaches and falls into the river, on whose bank it originally fell. During the rains all the land cultivated with paddy (and this comprises the greater part of the Hughli district) must be under water for some months, as its normal condition. But, as long as the natural drainage of the country remains undisturbed, the villages among the rice fields, being built on the highest available land, and above the normal level of the water, will, except in the case of extraordinary floods, remain above water and fairly dry. The construction of roads or railways behind, *i.e.*, on the land side of the villages, will have the effect of stopping the natural flow inland of water, and will thus raise the water level between them and the river, and cause villages which were formerly fairly dry, to become saturated with moisture, and hence with fever. The damming up of *khals* to retain water in the fields will have the same effect. The surface of the land as a whole being almost level, the general flow of water over it is imperceptible, and hence no waterway is allowed for it, in the construction of roads and railways. Where an obvious *khal* or water-channel is seen, a bridge or culvert is built ; but these *khals* do not convey the drainage of the river-side inland, but bring back to the river the water which has gradually flowed inland over the rice fields from the *bhils*. Hence the provision of waterway for these *khals* does not help the drainage of the tract between the river and the road.

Among the most important instances brought forward by the Raja, of such interference with natural drainage by the construction of a road or other embankment, are the following:—The first outburst of the Bengal epidemic fever is usually stated to have taken place at Mahamadpur in Jessore, at a date which is given as 1834–36, and subsequently to have scourged Jessore town. This immediately followed the construction of the road through Nadiya and Jessore to Faridpur, usually known as the Dakka road. Similarly Cossimbazar was almost depopulated by a very fatal form of fever, subsequent to the construction of an embanked *pakka* road from Murshidabad city to Barhampur cantonment. He also suggests that the ruin and abandonment of the ancient capital, Gaur, in the Malda district, was brought about by much the same cause. the embankments constructed to keep flood-water out having effectually kept in the storm-water of the rains, and so saturated the city with moisture and malaria.

To come to instances nearer our own time and more closely connected with our special subject of Hughli district, the following paragraph accounts for the spread of the epidemic along the banks of the Hughli river:—

"It is nevertheless a fact that while impeded drainage is now acknowledged to be alone sufficient to account for the epidemic fever, it is contended, substantially though not in so many words, that it has not been occasioned by any other of the different causes assigned, but by the silting up of the rivers alone. The fallacy of this assumption, however, may be easily proved by references to many instances in which the epidemic fever has broken out and in the most virulent form in villages, whose drainage outfall, viz., the river, is quite intact. Take, for example, the case of the continuous line of villages from Ichapur to Chagda, numbering among them such thickly populated places and standing on uncommonly elevated planes, as Halishahr and Kenchrapara. These places are all situated on the eastern bank of the Hooghly, the farthest not being more than 20 miles from Calcutta."

[NOTE—Kenchrapara is 28 miles by the Eastern Bengal State Railway, almost a straight line, from Sealda.]

"The drainage of these villages, until the obstruction offered to it by the Eastern Bengal Railway, obeying the laws so correctly enunciated in another paragraph of the Appendix referred to above, first ran in a direction away from the river on which they stand, but eventually came back to it through the two khals called the Ichapur and Bager *khal*. Neither the Hooghly river nor the *khals* have silted up, and yet the people of all these villages suffered from a severe type of the epidemic fever, which broke out, exactly in the order of time in which the railway embankment progressed and passed along their eastern borders, completely shutting out their drainage from the *beels* Burrotee and Mothoora. Precisely the same might be said of all the epidemic-stricken villages on the other or western side of the river Hooghly, from below Bullagore to Kulna. The river is perfectly open and is tidal up to the latter place, and yet a number of villages, some of which might with propriety be called towns, such as Bullagore, Gooptipara, and Culna, were decimated by the epidemic, from which some of the villages have scarcely yet recovered. Such instances might be easily multiplied, proving beyond the possibility of a doubt that the silting up of rivers had least to do with the impeded drainage of the epidemic villages."

Another instance given is that of Balagarh and the neighbouring villages. It is stated that a *kacha* road from Damurda to Inchura, where it met the

Pandua feeder road, both roads being constructed in 1860-61, was responsible for the epidemic fever which broke out with great violence in Balagarh, Somra, and Guptipara, in 1863-64.

A similar case is that of the *kacha* road, extending from the Old Benares Road at Mayapur, to Khanakul, a distance of about eleven miles. This road, it is stated, was constructed in 1868-69, crossing in its course the drainage channels of many villages, and thereby intercepting their flow into the Kana *Nadi*.

[NOTE.—The Dwarkeswar Kana *Nadi*, not to be confounded with the Damudar Kana *Nadi*, in the *Sadr* and Serampur subdivisions.]

The names of the following villages are given, as having been affected by fever, subsequent and consequent to the construction of this road, the epidemic being mild in 1870, virulent in 1871:—Khalatpur, Saota, Tanksabi, Gaurang, Saibona, Langulpara, Raghunathpur, Kishennagar, Gopalnagar, Narainpur, and Khanakul. At the same time it is stated that several large villages situated south of Khanakul, and also on the west side of the Kana *Nadi*, planted in a particularly low and marshy tract, so that it is only in years of drought that hey get a fair crop, were not affected with epidemic fever, because the road was not extended to them.

Another instance quoted, where the obstruction was due not to road-making, but to the deliberate damming up of a *khal*, is that of Jahanabad. This town lies high on the east bank of the Dwarkeswar, its drainage passes, inland, eastwards, through paddy fields and *khals* to the Dwarkeswar Kana *Nadi*. The chief of these *khals* is called the Garbari *khal*, which reaches the Kana *Nadi* at Gopinathpur. The mouth of this *khal* was dammed by the *zamindar* in 1866-67, in order to retain water on the rice lands, which are high. The villages whose drainage passed through this *khal*, Jahanabad, Purul, Moheshpur, Garbari, Dehi, Baira Jairampur, and Gopinathpur, were affected with epidemic fever soon afterwards, mildly in 1868, virulently in 1869.

It may be granted that obstructed drainage, due to insufficient waterway, had something to do with the spread of the epidemic fever, in some cases at least. The Government recognised this so far as to embody in the embankment Act [section 2, Act VI (B.C.) of 1873] a clause empowering Magistrates to remove "any obstructions of any kind which interfere with the general drainage of any tract of land." The instances quoted above appear to show some connection between the construction of roads or railways, and the out-break of epidemic fever in particular places. But if embankments with insufficient waterway were the sole cause of the spread of the fever, one would expect that, while all the villages on one side of the embankment, the obstructed side, were attacked with fever, all those on the other side would escape. It cannot be contended that the embankment would stop the drainage of the villages on both sides of it, *i.e.*, that while the villages on the east

were water-logged owing to the prevention of their drainage from passing westwards, those on the west were similarly affected by their drainage being prevented from passing eastward. But, as a matter of fact, the epidemic wave of fever swept steadily on, in a general direction southwards and westwards, omitting particular villages, it is true, and striking some more heavily than others, but still as a whole moving regularly in one direction. In Hughli district the East Indian Railway was blamed as the great cause of the epidemic, owing to its insufficient waterway. But the East Indian Railway runs pretty much in the same direction as the Grand Trunk Road, parallel to and usually near to it, and provides a very much greater extent of waterway than does that road, which was constructed in the first ten years of the 19th century, many years before the Railway. Again, it can hardly be contended that the construction of roads was carried gradually westwards before the fever, from Jessore to Midnapur. But it is universally admitted that the fever gradually spread westwards. Roads were constructed years before the epidemic fever began, and years after it disappeared, without causing epidemic outbreaks.

Babu Bogola Nundo Mookerjee, Deputy Magistrate, who was placed on special duty to enquire into and report on the epidemic fever in the Bardwan district, in 1873-74, devotes considerable attention to the allegations brought forward by Raja Digambar Mitter, to the effect that the epidemic fever in Jahanabad or Arambagh subdivision, which then formed part of the Bardwan district, was due to and had directly followed the damming of various *khals* at Jahanabad, and the construction of the road from Mayapur to Khanakul. He states that the Raja's statements were investigated by a professional Engineer, whose name he does not give, but from whose report he quotes largely. A summary of this Engineer's report follows—

The Garbari *khal* has been *bunded* yearly for many years past. This was certainly done before the Bengali year 1239 (A.D. 1832). It was still being done in 1254 (1847), and up to 1273 (1866), when a stronger *bund* was constructed across the *khal*, but this new dam was washed away in 1275 (1868). The present dam was made in 1280 (1873). He goes on to state that, as far as he can judge, "the closing of the *khal* in question has not in any way obstructed the drainage of the villages mentioned."

Five small *khals* in the same neighbourhood, named the Raipur, Tamlabad, Arakul, Shatmasa, and Geriatola *khals*, were *bunded* every year by the villagers in order to retain water in their paddy fields. During heavy rain or high floods, these *bunds* usually give way, the *raiyats* also cut them if water accumulates behind them to a height sufficient to injure the standing crops. The *bunds* are also lower than the level of the surrounding fields. The Engineer concludes that the damming of these five small *khals* may have to some extent obstructed the drainage of the surrounding villages, and may

have increased the development of malaria, but can hardly be the sole cause of the outbreak of epidemic fever.

As regards the road from Mayapur to Khanakul, the Engineer states that the road is *kacha*, and up to date had never been completed. For the first five miles from Mayapur earthwork had been done, to the average height of a foot. No culverts were made, but sites for culverts were left open. For the next four miles the road had not been constructed, and, at the date of his examination, this whole length was under water. For the last two miles the road had been completed and culverts put in. The openings of some of the culverts had been dammed up, to prevent flood-water backing up through them and damaging the crops, and here the drainage was to a certain extend impeded. In the first four miles no obstruction to drainage was caused, and the water in the paddy fields on each side of the road stood at the same level.

The Engineer's report concludes by stating that the yearly closure of the *khals* enumerated, all situated close to each other in a circumscribed area, could not be the immediate and only exciting cause of an epidemic fever which had spread over the whole Jahanabad subdivision. Every village had suffered, more or less; and in those villages which were old and populous, there the epidemic was intense and virulent, whether the drainage was impeded or not.

Babu B. N. Mookerjee endorses the conclusions given in the Engineer's report, and points out that, while the Raja in his pamphlet quoted Chandur as a village which had escaped the fever, it had as a matter of fact been one of the worst sufferers, nearly half of the population having died. He also states that from this village the (Dwarkeswar) Kana *Nadi* is traceable.

The state of the road from Mayapur to Khanakul may be very different now from what it was thirty years ago; however, I should think that, from its present condition (6th June 1901), it can never have been a great obstruction to drainage. For the first six and-a-half miles, going southwards from Mayapur, the earthwork is very low, usually about six inches above the level of the surrounding fields, never more than a foot, except in a few places where it rises to allow of a culvert being inserted. For about a mile, from $6\frac{1}{2}$ to $7\frac{1}{2}$ miles, it crosses a lower level of country, and here the road embankment is about three feet high. Just north of the seventh milestone is a large wooden and iron bridge, of six spans. The waterway allowed by this bridge was evidently insufficient, for the embankment has been widely breached at each end of the bridge, which now stands "in the air;" the embankment has also been extensively breached north of the bridge. For the last three miles, from Kishennagar to Khanakul, the road is carried along the top of a high and strong embankment on the west bank of the (Dwarkeswar) Kana *Nadi* or Muneswari river, and in this stretch there are only a few very small culverts. Here there can be no question that drainage from the fields to the river is entirely obstructed. But, on the hypothesis that the natural flow

of drainage is always from a large flowing river, as the Muneswari undoubtedly is now, whatever it may have been thirty years ago, no drainage riverward should be required in this part of the road. And in the 6-7 mile, where insufficient waterway was allowed, the water appears to have speedily settled the question of waterway for itself.

In June 1878 Mr. Pellew, Commissioner of the Bardwan Division, who had been for some years Magistrate of Hughli district, submitted to Government a report on the progress of the epidemic fever through Hughli district, which may be summarized as follows:—

"*1861.*—Severe fever crossing the Hughli river from Chogda, in Nadiya, passed over the river *churs* and attacked all the thickly populated riparian villages from Naya Sarai on the north to Hughli town on the south, inclusive. These villages are all on main roads as well as on the river. Their drainage is bad, but they are all situated on a high bank, composed of porous soil, with a deep river bed beneath, and could not possibly, therefore, have suffered from saturation of the subsoil. In Naya Sarai and Tribeni the water-supply is doubtful, a *chur* in the river having formed in front of them; in the rest good river-water. All these villages are old and overpopulated.

"The attack was violent but short. Naya Sarai suffered most. By 1865 public health in all of them was improving, and by 1869 the epidemic had disappeared. By far the greatest mortality occurred in 1861."

[In the above quotation 1861 is given as the first year of the appearance of the epidemic in Hughli district. But this epidemic, crossing from Chogda to the right bank of the Hughli, had attracted attention as early as 1859. The water of the river is by far the best water-supply available in the district, but even in the riparian villages it is probably only those who live within a few hundred yards of the river bank who use river-water. The rest, with a few exceptions, use the water of the nearest tank, clean or dirty, rather than fetch river-water. And all use the water of such tanks for cleaning cooking utensils and other crockery.]

"*1862.*—Severe fever began to spread westward and inland, attacking villages on the Saraswati, on the Kunti *khal*, and a large town, Pandua, on an old Kana *nadi* or silted-up river called the Kasai (Cossye), some ten miles inland. The fever caused a much higher mortality in these villages than in those previously attacked on the river bank. Their drainage is worse than that of the riparian villages. Some of these newly attacked villages were on the railway, some on main roads—all were densely populated. Pandua, on a dead river, suffered much the worst. Pandua, eleven miles as the crow flies from the Hughli, was also much in advance of the general line of the epidemic, which had nowhere else advanced more than four miles from the river. In this year severe fever was rapidly decreasing in the riparian villages attacked previously.

"*1863.*—Only two new villages were reported as attacked this year. One, Kamdebpur (No 22), lies between the Saraswati and Kunti *nadis* south of the Dhaniakhali road; the other, Dwarbasini, was ten miles from the Hughli; and, like Pandua, formed an advanced post of the epidemic. It lies on a dead river called the Kedarmati. Both Pandua and Dwarbasini were municipal unions under Act XX of 1856, and had to some extent obstructed drainage by roads injudiciously planned. Both the Grand Trunk Road and the East Indian Railway run through Pandua."

[Dwarbasini, according to the map, is twelve miles as the crow flies from Tribeni, the nearest point on the river. It was one of the places which suffered most from the fever, the alleged mortality being higher than that of any other village in the district. The village had not recovered its former health up to the date of the report (1878), and still (1901) is a very malarious place.]

"*1864.*—Fever dying out in the riparian villages, but advancing westwards, rapidly along the lines where the villages stand on the banks of dead rivers, slowly elsewhere. Many of the villages in such situations, attacked in 1864, had not recovered their former state of health up to 1878.

"*1865.*—Fever spread over the villages in the north-east of the district, either by travelling north-east from Pandua, or westwards from Nadiya district. These villages did not suffer for very long, and all had regained their normal state of health in a few years. Along the rest of the line there was a temporary halt.

"*1866.*—Fever advancing along the Kana *Nadi* from Nalikul to Sonatigri (westwards) ; also makes a sudden leap to the line of the Kana Damudar, ten miles south-west of Nalikul, and attacks six villages there.

"*1868-69.*—Rapid advance of the fever up the lines of the Kana *Nadi* and Kana Damudar. No connection with roads.

"*1870.*—Fever has completely ceased in the riparian villages first attacked, but is raging on the dead rivers. Signs of a spread southward to Serampur and Howrah. Khalsini, a village on the Saraswati near Chandarnagar, was first reported as attacked this year.

"*1871-73.*—Fever much more widely spread than in former years. Very fatal along all the dead rivers; not only the Kana *Nadi* and Kana Damudar, but also the Kausaki, the Kurpura, the Khajuria *khal*, the Ajudhia *khal*, and the Metia *khal* ; less fatal in other parts. The fever had also now gained a firm hold on the river bank south of Chandarnagar, Serampur, Rishra, Kotrang, and Konnagar. Fever continued up to 1878 in these villages, and probably was connected with local bad drainage.

"*1877.*—The tide of epidemic fever has completely past away, only the pools remain. The fever is of a strictly endemic character; it dies away in the hot weather and rains, but sets in with the cold season."

The accompanying map shows three fever centres, in which the disease is still endemic; the first on the Kausaki and Kana *Nadi* rivers, east of Tarakeswar; the second on the Kana Damudar and Ranaband *khals*, south of the Old Benares Road; the third on the river bank, from Serampur to Uttarpara. On the dead rivers the type of fever was still very fatal; on the river bank a less malignant type prevailed.

The report concludes by saying that the writer has no doubt that the unhealthy condition of the beds of the dead rivers had much to do with the spread of the fever; and that there was a universal consensus of opinion among the inhabitants of the affected parts that great improvement in public health followed the admission of the water of the Damudar into the dead rivers in the years 1873, 1874, and 1875. The water was admitted, however, at a time of year when fever is usually on the decrease.

The report is accompanied by the series of sketch maps of the district, showing the advance of the fever from east to west, from 1861 to 1877.

Some confusion is caused by the constant use of the term "Kana *nadi*" to signify a silting-up river. The term "*kana*" (literally "blind of one eye") is applied to all silting-up rivers. But at the same time one such river is known as *the* Kana *Nadi* (see description of rivers of Hooghly district, Chapter I). Two others are known as the Kana Damudar and Kana Dwarkeswar. There are a large number of these dead rivers about the Hughli district,

some of which, such as the Kasai at Pandua, are silted up to such an extent that they do not become running streams even in the rains, and their very beds can only be made out here and there.

The following list of villages attacked by epidemic fever, year by year, is taken from the report by Mr. F. H. Pellew, I.C.S., Commissioner, Bardwan Division, dated June 1878. The names, population, and mortality of the villages are taken from the *zamindars'* memorial of 19th March 1869. Villages which had not recovered their normal condition of health up to 1878, but remained subject to severe sickness and mortality, are marked with an asterisk. Villages No. 93 to No. 134, are taken from a list compiled by the Sanitary Commissioner, and include a few in Bardwan and Howrah districts. The Jahanabad subdivision was then (1878) in Bardwan district. The Sanitary Commissioner also includes a large number of the villages entered in previous years. He gives no figures of population or mortality :—

Year of attack.	No.	Name of Village.	Original population.	Number of deaths.	Remarks.
1861 ...	1	Keota (Hughli Town)	1,940	468	Fever declining in a few years and extinct by 1869.
	2	Shahganj(„)	295	102	
	3	Aimarbagh	341	127	
	4	Ujitnagar	182	71	
	5	Amirkhal	277	107	
	6	Mirerhat	275	120	
	7	Kamarpara... ...	386	163	
	8	Bansbaria	2,165	700	
	9	Sibpur	260	95	
	10	Tribeni	1,932	645	
	11	Naya Sarai... ...	2,377	1,140	
1862 ...	12	Kolora	691	400	Fever gradually declining from 1865 to 1870.
	13	Rajhat	2,500	1,400	
	14	Rudra Naupara ...	250	170	
	15	Bhatua	2,000	1,200	
	16	Barakpur	200	100	
	17	Debanandpur ...	1,800	1,000	
	18	Kazidanga	300	150	
	19	Panchrukhi ...	300	175	
	20	Naricha	550	350	
	21	Pandua	6,961	5,222	

Year of attack.	No.	Name of Village.	Original population.	Number of deaths.	Remarks.
1863 ...	22	Kamdebpur ...	655	324	
	23	* Dwarbasini ...	2,743	1,959	
	24	Diga	838	439	
1864 ...	25	Ramnagar	358	86	
	26	Ashua	187	68	
	27	Neali	267	65	
	28	Megsha	982	662	
	29	Mahnad, Harmala ...	326	41	
	30	,, Kurpara ...	387	111	
	31	,, Bijpara ...	655	134	
	32	,, Nagarpara ...	232	73	
	33	,, Bazarpara ...	128	34	
	34	,, Dakhinpara	400	118	
	35	,, Mirapar ...	289	68	
	36	Usoba (Ilsoba) ...	1,937	391	
	37	Mandalai	1,791	520	
	38	* Gopalnagar (*a*) ...	2,500	300	
	39	* Nalikul	2,000	800	
	40	* Singur	...	...	
	41	Kuchpala	526	269	
	42	Dumarpur	436	282	
	43	Faridpur	590	458	
	44	Jair Alasin... ...	1,534	861	
	45	Rameswarpur ...	1,569	981	
1865 ...	46	Kumarganj... ...	1,136	435	
	47	Kendur	613	186	
	48	Kantagaria... ...	500	382	
	49	Srirampur	200	90	
	50	Nuapara	475	225	
	51	Jamgram	748	158	
	52	Balagarh, &c.... ...	9,755	2,271	

(*a*) No. 38 is accidentally omitted in the original, to make up for which there is a number 139*a*. The numbers from 38 to 139 therefore differ from the original, each being one in advance of the original number, *e.g.*, 39 in the original is 38 in this list.

Year of attack.	No.	Name of Village.	Original population.	Number of deaths.	Remarks.
1866 ...	53	* Dwarhatta ...	4,182	3,045	
	54	* Chandbati	1,253	722	
	55	* Dipa	995	582	
	56	* Jangipara, Kristo-nagar	5,000	1,200	
	57	Kistopur	451	133	
	58	* Sonatigri	900	700	
	59	* Taldha or Tora ...	700	250	
1867 ...	60	* Abhirampur ...	997	574	
	61	* Baligari	1,937	1,284	
	62	* Shampur, Jainagar ...	2,123	1,279	
	63	Agararsharampara ...	935	479	
	64	Hamidpur	256	49	
	65	Kamrai	571	217	
	66	* Paramba	3,125	2,169	
	67	* Gangasnagar ...	1,215	735	
	68	* Shahbazar	3,519	2,176	
	69	Makurpol	577	70	
	70	* Takra	1,500	750	
	71	Baidipur	1,000	500	
	72	Ramnagar	3,000	600	
	73	Srirampur	200	90	
	...	Akloki (Jahanabad) ...	1,327	249	
	74	Ala	1,155	635	
1868 ...	75	* Mahmudpur ...	1,527	937	
	76	* Samaspur ...	3,859	2,737	
	77	* Dhaniakhali ...	1,112	697	
	78	Harpur	870	500	
	79	* Mirzanagar ...	2,525	516	
	80	* Chakpur	483	86	
	81	Mohanbati			
	82	Pritiharpur ...	3,000	2,000	
	83	Sonapara	200	100	

Year of attack.	No.	Name of Village.	Original population.	Number of deaths.	Remarks.
	84	* Khanpur	2,500	250	
	85	Hasnan	575	225	
	86	Rajbulhat	...	...	
	87	Harit	...	...	
1868 ...	88	Apurbopur	600	100	
	89	Mujpur	300	50	
	90	Nanda	1,378	679	
	91	* Paratol	1,000	350	
	92	* Parbatpur	750	300	
1869 ...	...	Kamarpukhar (Goghat)	...	...	
	93	Gauraspur	...	...	Nos. 93 to 134 from list drawn up by D. B. Smith, Sanitary Commissioner, in 1870. Data of population and deaths not given.
	94	Bindrampur ...	...	...	
	95	Jotmadhab ...	...	...	
	96	Balia	...	...	
	97	Ajudhia	...	...	
	98	Panchgachi ...	...	...	
	99	* Gopinathpur ...	...	...	
	100	* Prasadpur	...	...	
	101	Subhapur	...	...	
	102	* Dingalhati	...	...	
	103	* Gobindpur	...	...	
1870 ...	104	Purbpara	...	...	
	105	Goalpata (Howrah) ...	...	...	
	106	* Mondolika ...	...	...	
	107	* Mora	...	...	
	108	Rajapur	...	...	
	109	Jahanabad	...	...	1868 according to Bardwan report.
	110	Ampta (Howrah) ...	...	...	
	111	Salimabad (Bardwan)	...	...	
	112	* Mayapur (Jahanabad)	...	...	1868 according to Bardwan report.
	113	* Haripal	...	...	
	114	Paharpur	...	...	
	115	Kasipur	...	...	

Year of attack.	No.	Name of Village.	Original population.	Number of deaths.	Remarks.
1870 ...	116	Sultanpur	...	...	
	117	* Jaganathpur (Howrah)	...	...	
	118	Khalsini	...	...	
	119	Kantakpur	...	...	
	120	Ichanagari (Howrah)	...	...	
	121	Jagatbalabpur („)	...	...	
	122	Gaja	...	...	
	123	Bitragar (Jahanabad)	...	...	
	124	Bahadurpur ...	...	...	
	125	Beldanga	...	...	
	126	Kamalpur	...	...	
	127	Kenkrakuli ...	...	...	
	128	Konan	...	...	
	129	Hajipur	...	...	
	130	Bashua	...	...	
	131	Palimpur	...	...	
	132	Jaipur	...	...	
	133	Bighati	...	...	
	134	Anarbati	...	...	
	...	Keshabpur (Jahanabad)	...	...	1868, according to Bardwan report, but after Jahanabad.
	...	Malaipur („)	...	...	

Villages suffering between 1871 and 1873, from police reports.

The date of first attack uncertain in some cases. Data of population and deaths not given.

Thana Kristonagar.

56. *Jangipara (Kristonagar).
59. *Taldha or Tora.
86. Rajbulhat.
100. *Prasadpur.
102. *Dingalhati.
106. *Mondolika.
135. Madhabpur.
136. Ranibazar.
134. Anarbati.
137. Lohagachi.
138. *Athpur.
139. Bahirgora.
140. Chandanpur.
141. Syamnagar.
142. Santoshpur.
143. Umarpur.
144. Gulta.
145. *Durgapur.
146. *Khorigachi.
147. *Badul.

Villages suffering between 1871 and 1873, from police reports—continued.

The date of first attack uncertain in some cases. Data of population and deaths not given.

Thana Kristonagar—concluded.

148. *Badulhati.
149. *Dilakhas.
150. *Khulakhas.
151. *Kundarpanagar.
152. *Satgor.
153. *Borul.
154. *Mathurabati.
155. *Nikash.
156. *Vishnupur.
158. *Ajudhia.
159. *Phurphura.
160. Belpara.
161. Sitapur. (1872.)
162. Dakhindihi.
163. Bhutalpur.
164. Nandigram.
165. Hijli.
166. Harirampur.
167. Jugulgari.
168. Bhurkul.
169. Moheshpur.
170. Santaripur.
227. Srirampur.

(No. 157 missed out, no name given.)

Thana Serampur.

171. Serampur.
172. Chatra.
173. *Konnagar.
174. *Mahesh.
175. *Rishra.

Thana Chanditola.

176. Begampur.
177. Khursarai.
178. Bandpur.
179. Aya.
180. Kalyanbati.
181. Shamsundarpur.
182. Akuni.
183. Makundpur.
184. Jagatpur.
185. Raghunathpur.
186. Madhupur.
187. Sheakhala.
188. Moshat.
189. Patul.
190. Bhatta Bural.

Thana Baidyabati.

191. Baidyabati.
192. Sankarpur.
193. Mahendrapur.
194. Sheorafuli.

Thana Haripal.

53. *Dwarhatta.
58. *Sonatigri.
61. *Baligari.
95. Jotmadhab.
96. Balia.
98. Panchgachi.
107. *Mora.
113. *Haripal.
115. Kasipur.
122. Gaja.
195. Kuarpur.
196. *Chautara.
197. *Kaikola.
198. Kirtinagar.
199. Ichapur.
200. Bahirkhund.
201. Piyasara.
202. Naupara.
203. Jairampur.
204. *Gopinathpur.
205. Goburhara.
206. Sahara.
207. Basuri.
208. *Bandipur.
209. *Baladband.
210. *Basudebpur.
211. *Harishpur.
212. *Nandanbati.
213. *Radhanagar.
214. *Moheshpur.
215. *Kakrajol.
216. *Hara.
217. *Bargachia.
218. *Bhola.

Villages suffering between 1871 and 1873, from police reports—concluded.

The date of first attack uncertain in some cases. Data of population and deaths not given.

Sadr Subdivision.

50. *Dipa.
60. *Abhirampur.
62. *Jainagar.
66. *Paramba.
67. *Gangasnagar.
68. *Shahbazar.
70. *Takra.
74. *Ala.
75. *Mahmudpur.
76. *Samaspur.
77. *Dhaniakhali.
79. *Mirzanagar.
80. *Chakpur.
84. *Khanpur.
91. *Paratol.
92. *Parbatpur.
97. Ajudhia.
115. Kasipur.
116. Sultanpur.
127. Kenkrakuli.
130. Bashua.
132. Jaipur.
219. *Dasghara.
220. *Mandra.
221. *Belmuri.
222. *Tilkuria.
223. *Moheshgaria.
224. (No name given.)
225. *Radhanagar.
226. *Bhandarkhali.
228. *Kapurpur.
229. *Baghanda.
230. *Kinkarbati.
231. *Paniscola.
232. *Mahamaya.
233. *Chitrasali.
234. *Jejur.
235. *Ramchandarpur.
236. (No name given.)
237. Aknapur.
238. Gurup.

(227 above under Kristonagar.)

Goghat Thana (from Burdwan report.)

Kamarpukhur attacked 1869.
Garhmandaran „ 1871.
Kirtibaspur attacked 1872.
Hajipur „ 1871.

In the annual Sanitary Report for 1866 Major G. B. Malleson, the then Sanitary Commissioner, states that fever was very prevalent from October to January in many Bengal districts, especially in Hughli and Bardwan. He also quotes, at some length, a report by Dr. Wise, the Civil Surgeon of Dakka, of an epidemic of fever in that district, which from Dr. Wise's account seems to have been very like that which devastated Western Bengal. This is important, as it is the only reference I have seen to this fever east of Jessore. At any rate, the endemic fever did not ravage the eastern districts of the province as it did those in the west; apparently it never either caused the same mortality or attracted the same attention. Dr. Wise states that in the year 1862, an up-country boat arrived at the village of Jagir, on the Dhaleswari (Dullaserry) river, with its crew dying from low remittent fever. The disease gradually spread through Manikganj subdivision, it had decreased and broken out again, and had devastated a number of villages, all within four miles of Manikganj. The village of Jagir was now, in 1866, uninhabited and in ruins. It was said that, out of about 5,000 inhabitants in the villages attacked, over 3,000 had died. The fever was said to be a severe remittent

with rapid enlargement of the spleen, occasionally the patient became delirious and then died comatose within three or four hours of the first attack.

The annual Dispensary Report for 1868 states that fever was severe at Gobindpur, Singur, Nalikul, Haripal, Dhaniakhali, and Ghatal, as well as in the Jahanabad subdivision. An itinerant dispensary was at work during the year, first at Ghatal and then at Gobindpur; native doctors were sent to Dhaniakhali and Jahanabad. Fever had diminished at Shahganj, Bansbaria, Tribeni, Ilsoba, and Mandalai. The fever was not contagious: none of the patients admitted to hospital spread the disease. The remarks in the Sanitary Report are to the same effect.

The annual Dispensary Report for 1869 contains a long report, by Dr. R. F. Thompson, the Civil Surgeon, on the fever epidemic in Hughli district. It was worst in the Jahanabad *thana*. Of fourteen prisoners admitted to the Hughli Jail from Jahanabad, suffering from fever, not one spread the disease. The other places chiefly affected were Dhaniakhali, Pandua, the villages bordering on the Dhankuni *jhil;* Baidyabati, Haripal, and Kristonagar. Incorporated in the report are special reports by Dr. G. Saunders, Deputy Inspector-General, Presidency Circle, on the fever in Hughli and Bardwan. He concludes that the fever is purely malarial, and not contagious; that it is due partly to want of proper nourishment, partly to blocked drainage caused by the silting up of the rivers intersecting the district, and recommends drainage works. During the year special epidemic fever dispensaries were at work at the following places: Pandua, Mahanad, Dhaniakhali, Kristonagar, Basuri, Khanakul, Ghattal, Jahanabad, Balagarh; and also in connection with the permanent dispensaries at Hughli, Serampur, Sultangachia, Dwarbasini, and Baidyabati; special travelling medical aid was organised.

The Sanitary Commissioner, Dr. D. B. Smith, in his report for 1869-70, states that fever was very prevalent in the Serampur subdivision, and was of the same type as that in Bardwan, though less intense and less fatal. A large number of *bunds* across *khals* were removed, and proceedings taken against the owners of filthy tanks under sections 62 and 308 of the Criminal Procedure Code. A careful survey of the district was carried out during the year by Mr. C. Adley, C.E. Dr. Smith remarks that the fever in Hughli is far worse than in Jessore and Nadiya.

The Sanitary Report for 1871 contains a short report by Dr. A. J. Payne, then officiating as Sanitary Commissioner, on the fever in Hughli and Bardwan. He only visited places in close proximity to the *sadr* stations, as, when he made his inspection in December 1871, fever had everywhere declined. He states that rich and poor had suffered equally; that it did not appear that scarcity of food had anything to do with the disease.

The Dispensary Report for 1871 contains a report by Dr. J. Elliot on the fever which was now devastating the district of Bardwan, of which district he was then Civil Surgeon. This is the third special report on the fever submitted by this officer. It has been previously summarized at page 130. After describing the fever generally, its history, causes, symptoms, and remedies he recounts at length the measures taken for the relief of the sufferers in the district. There were three circles of relief, each under an inspecting medical officer—the Mangalkot Circle, with seven special dispensaries, under Assistant Surgeon T. Robinson, I.M.S.; the Bardwan Circle, with eight dispensaries, under Sub-Assistant Surgeon Dino Bundhu Datta; and the Raina Circle, under Sub-Assistant Surgeon Tara Prasanno Roy, with ten dispensaries. Of the twenty-five dispensaries, two were under Sub-Assistant Surgeons, and 23 under local native doctors. There were also four food depôts at work in the district. The history of the epidemic in Bardwan does not, however, specially concern us here. In the Hughli district the fever prevailed with great severity from August 1871 to May 1872, in the Jahanabad subdivision. The special fever dispensary at Jahanabad was converted into a permanent dispensary from 5th December 1871, and five special dispensaries were opened, at Bali in Goghat *thana*, at Balagarh, Singur, Kristonagar, and Dhaniakhali.

The Dispensary Report for 1872 contains a detailed report on the fever in the Bardwan district by Dr. J. G. French, who was Civil Surgeon at the close of the year. Four officers held that appointment during the year, in succession—Drs. J. Elliot, A. A. Mantell, H. B. Purves, and J. G. French. Six commissioned officers served during the year as inspecting medical officers in four circles, viz., Assistant Surgeons T. Robinson, K. P. Gupta, F. C. Ghose, G. C. Roy, R. L. Dutt, and B. B. Gupta. Sixteen Sub-Assistant Surgeons and 73 native doctors were also employed. At the beginning of the year, besides six regular permanent dispensaries, 25 special fever dispensaries were open, and 80 more were opened during the year, while 48 were closed. At these dispensaries 1,275,035 patients were treated. Thirty-six food depôts were also in existence during the year. Two of these food depôts, Jahanabad and Bali, and eight special fever dispensaries, Bali, Chandur, Mayapur, Kamarpukar, Hajipur, Gourhati, Bhadur, and Mandalghati, were in Jahanabad subdivision, which had been transferred from Hughli to Bardwan on 1st June 1872. As regards the death-rate from fever, Dr. French says:—

"We have no means of finding out what the real mortality was, and we shall never know it. It has been rightly estimated at about one-third of the total population, which, in my opinion, is very near."

In Hughli district fever was very prevalent in Goghat, Bansbaria, Dhaniakhali, and Khanakul. Dengue fever was very prevalent throughout the district from December 1871 to June 1872; and after it had subsided,

epidemic malarial fever caused great sickness and mortality in the river-side towns, from Baidyabati to Uttarpara. Dr. Greene, the Civil Medical Officer of Serampore, states that fever ravaged these towns from July to December 1872; about fifty per cent. of the population were attacked, and about one case in ten proved serious. It attacked whole families simultaneously, though fortunately most cases were slight. All classes suffered alike, some of the worst cases occurred among the richer classes. Few Eurasians suffered, and no Europeans. Some of the worst cases reminded Dr. Greene very much of yellow fever. Death occurred either with congestion of the brain and coma, or with diarrhœa and collapse. Relapses were common. Fever was prevalent also in the thanas of Singur and Kristonagar.

The following table gives the epidemic dispensaries at work during the year in Hughli district, and the number of patients treated:—

No.	Name.	Date of opening.	Date of closing.	Total treated.	Remarks.
1	Dhaniakhali ...	7th Nov. 1871	Still open*	31,519	* At date of report.
2	Balagarh ...	8th Nov. 1871	29th Feb. 1872	2,352	
3	British Chandernagore	12th Nov. 1872	20th Feb. 1873	1,498	
4	Hasnan	15th April 1872	15th April 1873	20,902	
5	Khanakul	1st Oct. 1872	Still open *	3,136	
6	Haripal	Dec. 1872	Ditto	1,190	
7	Badinan	27th May 1872	1st Dec. 1872	2,260	
8	Gurup	15th Nov. 1872	15th April 1873	1,622	
9	Singur	Dec. 1871	April 1872	2,663	
10	Kristonagar ...	Dec. 1871	Still open *	6,022	
11	Baidyabati ...	Jan. 1872	April 1872	1,740	A permanent dispensary.
		Nov. 1872	Still open *	.....	
12	Rishra	Dec. 1872	Ditto	716	
13	Bandipur	June 1872	Ditto	1,828	
	Total ...	.....	.....	77,448	

The report contains maps of the affected districts, Burdwan, Hughli, Birbhum, and Midnapur, showing the fever dispensaries.

The Sanitary Commissioner's report for 1872 gives much the same information, and also contains a special report upon the epidemic of dengue.

The Sanitary Commissioner's Report for 1873 states that fever prevailed with great severity in Hughli district during the year, but less than in the previous year. Special fever dispensaries were at work on the 1st January at Gurup, Hasnan, British Chandarnagar, Khanakul, Tribeni, and Dhaniakhali. The last was constituted a permanent dispensary from 1st October 1873. All the others, except Khanakul, were closed during the year, fever having abated. Dr. Greene, of Serampur, reports that no new epidemic of fever took place, but traces of the last epidemic still lingered throughout the subdivision; the sufferers being almost invariably persons who had experienced previous attacks. He attributes the fever to interference with drainage, by embanking the Damudar, and by road embankments, and submits a map to show that the fever occurred persistently along the line of the Old Benares Road. As remedies he suggests the improvement of water-supply, attention to drainage, and the plantation of *Eucalyptus globulus*. The Sanitary Commissioner states that the works connected with the admission of water from the Damudar to the Kana *Naḍi* were completed during the year, and the flushing out of the bed of that stream was attended with excellent results, and had been highly appreciated by the people. The Dhankuni canal, commenced in 1872, was completed in July 1873; it ran from the Baidyabati *khal* to the Balli *khal*, draining part of the Dhankuni *bhil*, 23 square miles in extent; the canal was provided with sluice gates at each end, and could be used either for irrigation or for drainage. During part of this year Surgeon J. M. Zorab was employed as an inspecting medical officer in Hughli district.

The Dispensary Report for 1873 gives somewhat similar information at less length. In subsequent years the dispensary reports do not specially refer to the epidemic fever in Hughli. A report by Dr. French on the fever in Burdwan is included in the report for 1873.

Dr. Jackson's lengthy report on the Bardwan fever forms an appendix to the Sanitary Report of 1873.

The Sanitary Report for 1874, written by Dr. J. M. Coates, contains Dr. Wilkie's report as an appendix. Dr. Coates states that the fever "is purely malarious, and neither typhus, typhoid, nor relapsing fever, and therefore not contagious. The proper name for it is 'the endemic fever of Lower Bengal.'" He is unable to accept Dr. Wilkie's theory of a gradual elevation of the delta from east to west as being the cause of the gradual spread of fever in that direction, but quotes Mr. Whitfield, Irrigation Engineer, as stating that "the Damudar, the Bhagirathi or Hughli, and Ganges, alternated in spilling over the country, the last greatly preponderating." From this he concludes that, since these rivers have been embanked, and spilling over

the country prevented, a special and exceptional elevation of the fever tracts has not occurred. Upheaval would favour health and not disease, yet the fever is distinctly malarial, and connected with, if not entirely caused by, moisture evaporating from a decomposing surface or subsoil. This extra subsoil water evaporation arises, not from land elevation, but from river elevation above intervening land, and the consequent filtration outwards of this high level water towards the intervening low ground, and its evaporation in and round the villages there situated. Now, of the different rivers which traverse the affected districts, the Matabhanga was furthest east, and being nearest the delta was first affected, and Jessore, therefore, first felt the fever; next the Jalangi, which affected Nadiya; then the Bhagirathi, and Bardwan and Hughli suffered; lastly the Damudar, and Midnapur and Bankura got the fever. The report subsequently states that the Dhankuni drainage works were completed during the year, with the result that a large tract of country, which was formerly the centre of much disease and mortality, had become healthy.

The Sanitary Report for 1875 states that fever in Bardwan has greatly diminished. It contains a summary of a report by Dr. C. H. Joubert, the Civil Surgeon, whose conclusions are as follows:—

"Whatever may have been the name given to the fever which a few years ago decimated the inhabitants of this district, judging by the after-effects one can see now, and by the universal prevalence of intermittent fever and ague, I am of opinion that it was a purely malarious fever locally intensified into a very virulent type. This type is now rarely met with, either because the exciting cause has died out, or because the disease has exhausted itself on all such as were liable to be affected by it. All those who have had opportunities of studying the disease thoroughly hold the same opinion that it is or was purely malarial fever. In conclusion, I may state my opinion that the Bardwan district has regained about as good a condition of general public health as can probably ever be expected."

In the Hughli district, Dr. R. F. Thompson, the Civil Surgeon, states that fever was very prevalent at the beginning and end of the monsoon, in Hughli and Serampur towns, and in Bansbaria *thana*. He finds that the fever is not contagious, but under certain conditions, overcrowding, filth, imperfect ventilation and drainage, want of proper care and treatment, it might become infectious. Dr. Thompson had hitherto been a strong and consistent opponent of the contagious theory, and the above seems to indicate some weakening in his views. The report subsequently states that for the last two years the water of the Damudar has been allowed to flow into the Kana *Nadi* and Saraswati in the cold and dry season. This measure has converted these old dead rivers into running streams, has given the people on their banks a supply of good drinking-water, and has greatly benefited the health of the district. The Irrigation Department has a large project in hand for permanently letting water into these rivers, through a cut at Jujati.

The Sanitary Report for 1876, by Dr. J. M. Coates, states that the Bardwan fever is a thing of the past, both in the Bardwan and Hughli districts. In Hughli large numbers of people were still suffering from the effects of the fever, especially from enlargement of the spleen. Fever was most severe during the year in Serampur, Baidyabati, and Balagarh. In Bardwan district relief operations were entirely withdrawn in March 1876. From 1869 up to that date, 4,073,039 persons were treated in the relief dispensaries; the *recorded* deaths numbered 78,970, and Rs. 5,27,632 were spent by Government on relief and food. The figures, of course, refer to the Bardwan district only. The Government Resolution on the Sanitary Report of this year, after noting that the epidemic fever has come to an end, sums up as follows the history of the fever:—

"It does not appear that this is the result of improved drainage. No doubt the remedy is really in the hands of the people. If it be true that this fever arises from the dampness of the soil and want of house drainage, the people of these districts should do what is done in Rangpur, Burma, and other places subject to the same causes of disease,—sleep on raised beds or platforms of bamboo, or build houses of bamboo well raised from the ground. At present the people do nothing and make no attempt to help themselves, and appear to believe that it is the duty of Government to undertake house drainage and the construction of sleeping platforms in all the houses of many of the largest villages of Bengal. If such a duty were really a proper function of Government, it could only be carried out by imposing upon the province a large and heavy taxation. If the villagers will help themselves, they may make their villages dry, so far as this is possible in Bengal, at a very slight expense, and at all events they can make their houses very much drier than they are. Where fevers are caused by local obstructions to drainage, the Lieutenant-Governor has indicated in a recent circular what remedies are open to the people in the provisions of the Embankment Act."

With this formal endorsement by Government of the statement that the epidemic fever had come to an end, though it clung to the villages on the banks of the dead rivers in Hughli district for a year or two longer, this account of it may close, and it only remains to consider briefly a few points in its history. It had lasted about half a century in all from its first appearance in Jessore to its final disappearance from the western districts; in Hughli, including Jahanabad subdivision, it had been prevalent for about twenty years, in Burdwan for about half that time. It had ravaged nine districts; three, Bardwan, Nadiya, and Hughli, with great severity, few places within their limits escaping. In the other six, Jessore, the 24-Parganas, Howrah, Birbhum, Midnapur, and Bankura, though probably equally fatal where it made its appearance, it had not spread so widely. Writing in 1878, Mr. F. H. Pellew, then Commissioner of Bardwan, states that much information formerly available is no longer in existence. How much more is this the case writing nearly a quarter of a century later, and with no personal experience of the epidemic.

Firstly, what was the type of the epidemic? Was it a contagious zymotic disease, or was it simply an aggravated type of malarial fever? The natives,

as a rule, believed that it was contagious, and numerous instances are quoted in the reports in which a man from an uninfected village went to an infected one, and came home with the fever, and from him it spread through his village. Three observers considered it contagious. Dr. Verchere confidently states that it was typhus, Dr. Sutherland that it was relapsing fever. Dr. Jackson is much less positive. He is "constrained to believe" that it is contagious; he remarks on its similarity in some cases to typhus, but cannot convince himself that it is typhus; another part of his report strongly suggests that the epidemic was one of relapsing fever. In addition to these three, Dr. Elliot, who had more personal acquaintance with the epidemic than any other individual, appears to be convinced against his will that the fever did acquire contagious properties under specially insanitary conditions. And Dr. Thompson, who also had a very long experience, lasting over twelve years, of the fever in Hughli district, after being a strong opponent of the contagious theory, at last hesitatingly admits that under certain circumstances it may become infectious. The three last observers, however, evidently adopted the contagious theory only to account for its rapid spread in the localities invaded, contrasted with its slow invasion of new localties. In this respect, if not in any other, it presents a remarkable similarity to the epidemic plague of the last six years. All the other observers considered the fever to be purely malarial, and even those who advocated the contagious theory admitted a malarial element; *e.g.*, Dr. Verchere calls it "an ague grafted on a typhus." On the whole, the balance of authority is that the fever was purely malarial, and not contagious. No case was ever proved to have infected an individual previously healthy, in a hospital or jail.

Secondly, what was the cause of this epidemic wave of fever, passing slowly from east to west? Opinions are tolerably unanimous that it was due to increased subsoil moisture, following obstructed drainage. The only observer, I think, who is more or less opposed to this, is Dr. Jackson, judging from the results of observations made in the cold weather. Many secondary causes are suggested, bad water-supply, absence of any conservancy arrangements, insufficient and improper food, growth of jungle, overcrowding and overpopulation, the last being most prominently put forward by those observers who were not medical men. But practically all are agreed upon the evil influence of obstructed drainage. It is when they come to consider how and why drainage is obstructed that wide differences of opinion appear. What we want is to find some cause which will account for the appearance of the fever; its slow march in one general direction, east to west, crossing great rivers and high embankments on the way, and producing effects just as bad on one side as on the other; and finally for its disappearance. No completely satisfactory explanation of all these three points has ever been offered.

Dr. Wilkie's theory, of a gradual elevation of the delta, proceeding slowly from east to west, does no doubt account for all three. But it is a theory

avowedly invented to account for the facts, and having no foundation in fact itself. As far as I know, on one else has ever suggested, certainly no one has ever proved, that any such gradually travelling elevation took place.

A considerable party, of whom Raja Digamber Mitter in the *Hindu Patriot* may be considered the exponent, asserted that the obstruction of drainage was entirely due to the construction of road and railway embankments. On first reading the articles in the *Hindu Patriot*, this theory appears plausible enough. And no doubt there was a certain amount of truth in it, in so far that such embankments did, and do to this day, in many cases locally intensify a cause acting over a wide area. But many of the facts on which this theory was founded, unfortunately for it, turned out not to be facts at all, but misstatements of fact. The articles in the *Hindu Patriot*, indeed, are inaccurate in many respects. Even in such a trivial matter as the distance from Kenchrapara to Calcutta they are nearly fifty per cent out. Apart from this, there are two objections to this theory, each equally fatal. The first is that, to account for a gradually spreading wave of fever, we must suppose that roads and railways spread gradually from Jessore to Midnapur, which we know was not the case. The very idea is absurd. The second is that the fever prevailed with equal virulence and fatality on both sides of embankments, in every case. The embankment theory was a very favourite one with the native community, as under it the Government could be blamed for causing the fever, alike in the cases of the strong and solid embankments, usually with plenty of waterway, built by railway companies, and the *bunds* of village roads constructed by petty village unions. To such an extent was this theory pushed that the embankment of the East Indian Railway was actually said to be the cause of fever in the village of Malaipur, in Arambagh thana. Now, the nearest point on the East Indian Railway was fully twenty miles from Malaipur, and a great river, the Damudar, runs between. To blame the construction of the East Indian Railway for fever in Arambagh *thana* resembles the theory that the building of Tenterden Steeple was the cause of the formation of the Goodwin Sands. [The nearest point on the Bengal Provincial Railway is only some seven miles from Malaipur, but that railway was opened in 1895, a quarter of a century after the fever spread into Arambagh *thana*, and the Damudar still separates the two.]

The theory most generally held was that the obstruction to drainage which caused the spread of the fever was due to the gradual silting up of rivers. The construction of the great embankment along the east bank of the Damudar, completely closing, as it did, the sources of the old streams which take their rise from the overflow of that river, and traverse the district throughout its length, immensely aggravated the evil in Hughli. The disappearance of the fever almost coincided in time with the re-opening, by means of sluices, of the heads of these streams

Overpopulation, as a secondary cause of the fever, is strongly insisted on by several non-professional observers. Though not pressed by the medical reporters, it appears to me that it must have had much to do with the spread and the virulence of the epidemic. Overcrowding gives rise to insanitary conditions of every possible kind, and intensifies all impartially—want of ventilation, absence of conservancy, impurity of water. The water-supply which may absorb and purify the drainage, the soil which may safely dispose of and utilize the excreta, of a limited population, utterly fails to perform the same service when the population is doubled or quadrupled. The number of human beings which can live and thrive on a fixed area may vary under various conditions of soil, temperature, &c., but must always be strictly limited. And with a population which fulfils the Biblical command to increase and multiply at the very earliest possible age, and so contrives to get five or six generations into a century, instead of three, as in Europe; which absolutely refuses to emigrate; which is contented with the lowest possible standard of existence, and literally takes no thought for the morrow; the increased pressure of population upon the soil must go on, till nature steps in to redress the balance by famine or disease. "*Aetas parentum, pejus avis, tulit nos nequiores, mox daturos progeniem vitiosiorem.*" Three great checks have operated to restrain the increase of population in India through the past centuries—war, famine, and pestilence. The *Pax Britannica* has put an end to war. No Government can prevent famine, but the British Government in India has, at an enormous expense, it is true, to the survivors, reduced the mortality of famine by ninety per cent. Could we put a stop to the ravages of all known epidemic and endemic diseases, the rapid increase of population would, ere long, render it impossible for the survivors to get a living from the soil.

The mosquito theory of malaria was, of course, still in the dim future when the epidemic fever raged. How does it fit in with the facts? According to this theory, two things are required for the spread of malarial fever—firstly, the presence of former sufferers from malaria to infect the mosquitos; and secondly, the infected mosquitos to carry the germ to persons hitherto free. Fever has always been present in this tract of country, and no doubt the anopheles mosquito has always been present too. And so the persistence of malarial fever from generation to generation is insured. But this does not help to account for the gradual spread of an intensely exaggerated form of fever from east to west. No one, as far as I know, mentions that mosquitos were exceptionally prevalent in the affected tracts; but then, the mosquito theory being unheard of, probably no observer would have thought of mentioning, even if he had noticed, any such exceptional prevalence. There is nothing inherently improbable in a great increase of mosquitos at any particular place or time, and nothing to show that any such increase either

did or did not take place. Obstruction to drainage, and the conversion of running streams into dead rivers, would no doubt largely increase the number of suitable breeding places of anopheles. But in any Bengal rice-growing district, where for several months in the year the whole surface of the country is a swamp, there must under ordinary conditions be breeding places available already for an absolutely unlimited number.

It has been asserted by some that the anopheles larvæ do not flourish in pools of water large enough to contain small fish, which feed upon them, but will only be found in small stagnant puddles where no fish are present. They have, however, been found in rice-fields in India by Captain S. P. James, I.M.S. And in Italy, where perhaps more has been done than in any other country to work out the relationship of the mosquito to the carriage of malarial infection, no doubt is entertained on this subject. I take the following quotations from Professor Angelo Celli's latest work on malaria (pp. 132–135) :—

"The irriguous cultivation of some other crops is much more dangerous, as that of *rice*, for instance. . . . . From the investigations already mentioned, made in the province of Parma, the injurious influence of rice-fields on the production of malaria, even when these are in sites of mild or latent malaria, is undeniable. Imagine what must happen in sites of intense and severe malaria! After what we have said of the life of the Anopheles larvæ in the environment, it is evident that rice-fields with their clear and slowly-running waters and their typical paludal vegetation are the best habitat of these larvæ, that is, the best they could wish to live in. . . . . The movement of the water, even when the supply is abundant, does not free a rice-field from the larvæ. These escape from the parts where the current is strongest and take refuge in those where it is weakest or where the plants are thickest. It is not possible, therefore, to render a rice-field healthy by the movement of the water."

Again, at pages 166-67—

"In the first-half of May the new generations of larvæ made their appearance in some waters; they were more common in June, and in the second-half of this month they appeared in the rice-fields, where they increased from day-to-day by successive generations; in July and August, besides having increased in the rice-fields, they were found in all the clear and slowly-running water-courses; here they remained till the abundant autumn rains washed out, so to speak, and cleansed the water-courses; and at the end of the year they were found only in the rice-fields and in the deeper collections of waters."

In Italy the cultivation of rice has been entirely stopped in some places (p. 133); in others it is forbidden within 200 metres of a house, or 2,000 metres of a town (p. 245). In all the rice-growing districts of Bengal, including Hughli, great part of which is one vast expanse of rice-field, the paddy is grown right up to the outskirts of the villages, almost up to the doors of the houses. If any attempt to lessen malaria in Bengal were to begin by stopping the cultivation of rice, it would be absolutely bound to fail. Great part of the country depends on the rice crop for its prosperity, and no other staple food crop could take its place.

The mosquito theory, however, accounts for the infectiousness of the fever in certain cases, as in those of which frequent instances are found in the reports, where a man is said to have gone from an uninfected to an infected village,

contracted the fever there, and returned home with it, after which it spread through his previously uninfected village. If we suppose that this man, having contracted the fever in an infected village, returning to his own, was then bitten by mosquitos, which in turn bit other individuals previously healthy, we can easily understand how the fever seemed to possess infective properties, and how others were supposed to have contracted it, and in fact did contract it, from the first sufferer.

What was the mortality of the fever in Hughli district? No one knows; not even a trustworthy estimate can be formed. The registration of deaths was in its infancy, and was attempted even only in specially selected localities. It was not till the year 1877 that registration of deaths was made compulsory throughout rural areas, and not till many years later that it approached the truth. It still leaves much to be desired in respect to accuracy, although registration of at least the total number of deaths probably now approximates to the facts. The population also could only be estimated in the roughest possible way. The first census was not taken till the year 1872, 15 years after the fever made its appearance in the district. I will, however, try to bring together a few facts about the population as estimated at different times, from which some deductions as to the mortality may be made. In the Sanitary Report for 1868 (p. 28), the population of Hughly district is estimated at 1,600,000, or 1,100 per square mile. The district then included the *thanas* of Ghatal and Chandrakona, transferred to Midnapur on 1st July 1872. At the census of 1872 Ghatal had a population of 102,740, Chandrakona of 106,480. Deducting these figures we get a balance of 1,390,780 as the population of the rest of the district. This does not include Howrah, which is separately given as 564,000. At the census of January 1872, the population of Hughli district, including Jahanabad subdivision, was 1,157,906, a drop in between three and four years of 232,874. Considering that the epidemic fever had been extending over the district for ten years previous to 1868, if the population diminished by over 200,000 in four years, what must it have fallen in the previous ten years?

It is only fair to say, however, that a second estimate, on the same page of the Sanitary Report for 1868, puts the population of Hughli district at a much lower figure, 1,370,120. Deducting the population of Chandrakona and Ghatal, this leaves only 1,161,900 for the rest of the district. Taking these figures, the fall between 1868 and 1872 would be only 4,000.

Such speculations, however, are of little value, as the figures given for the population in 1868 are only a rough estimate. A comparison between the census of 1872 and that of 1881 rests upon surer grounds. In 1872 the population, including Jahanabad, was 1,157,906. In 1881 it was 1,012,768; a drop of 145,138 in nine years. But the mere figures by themselves only give half the truth. Of the nine years between 1872 and 1881 only the first half were years of fever prevalence; the second half were years of recovery after the

fever. And yet the population had fallen by 12 per cent.! If the diminution in population went on at anything like the same rate between 1857 and 1872 that it must have done between 1872 and 1878, it would appear that before the fever broke out the Hughli district must have had a population of something like 2,000,000, and that during the 20 years the fever lasted, the population fell by about 50 per cent. Not merely that half the population died. For half the population to die in twenty years would mean an average death-rate of 25 per 1,000 per annum, which would be nothing startling. But, at the same time, reproduction was greatly diminished, in fact almost ceased. Emigration from the district was practically nil. Deducting births from deaths, the population must have been reduced to about one-half of its previous numbers.

Since 1881, the population has slowly risen. In 1891 it was 1,076,710. In the ten years the population of Serampur subdivision rose considerably, of Jahanabad appreciably, of the *Sadr* subdivision slightly. According to the census of 1901, the population is now 1,050,365. After allowing for the diminution caused by the transfer to Howrah in 1894 of Singti outpost, with a population in 1891 of 42,414, the total population of the district shows a slight increase, the Serampur subdivision an appreciable, and Arambagh a small increase, the *Sadr* subdivision a small decrease.

To conclude this review of the history of the epidemic, the following are the conclusions to which my study of the various reports and statistics has led me. Others may perhaps draw different deductions from the same facts:—

(1) That the epidemic fever was a malarial fever of an intensely virulent and fatal type.

(2) That it was mainly due to increase of moisture in the subsoil, caused probably by obstructed drainage, and was probably spread, to a great extent, by the agency of mosquitos.

(3) That the cause of this obstruction of drainage was the gradual silting up of the rivers of the delta.

(4) That the spread of the epidemic was accelerated and its fatality increased by other general insanitary conditions, of which over-population, with its attendant evils, was the chief.

(5) That the epidemic, during the 20 years it lasted, reduced the population of the Hughli district by about one half; *i.e.*, that the population of the district at the end of the epidemic was only about one-half of what it had been at the beginning.

The following list gives the places at which temporary special epidemic fever dispensaries were from time to time opened, with, as far as can now be ascertained, the dates of the opening and closing of each. It appears that in all 51 such temporary dispensaries were opened, including those in the Jahanabad subdivision, while it formed part of Burdwan, and also Chandrakona

and Ghatal, which were in Hughli when they were opened. In several cases two, and in a few three dispensaries were opened at different times in the same place. The *thanas* in the list are given according to the arrangement of the district at the present time.

In addition to these 51 fever dispensaries in Hughli district, the Civil Surgeon of Hughli was, during the years 1863-64, appointed inspecting medical officer of a number of fever dispensaries in the districts of Nadiya, the 24-Parganas, and Bardwan, which were more easily accessible from Hughli than from the *sadr* stations of their own districts. These dispensaries appear to have been closed at the end of 1864. Their names were as follows: Ula and Chogda in Nadiya; Kenchrapara, Rajarhat, Naihati, and Majergram or Duttpukar in the 24-Parganas; and Purbasthali in Bardwan. An allowance of Rs. 200 per month was given to the Civil Surgeon for this work.

List of Temporary Epidemic Dispensaries in Hughli District.

No.	Place.	*Thana.*	Date of opening.	Date of closing.	Remarks.
1	Tribeni (1st) ...	Hughli ...	1863 ...	30th April '65	
2	Pandua (1st) ...	Pandua ...	„ ...	30th „ „	
3	Balagarh (1st) ...	Balagarh ...	„ ...	30th „ „	
4	Guptipara ...	Ditto ...	„ ...	30th „ „	
5	Somra	Ditto ...	„ ...	30th „ „	
6	Dhaniakhali (1st) ...	Dhaniakhali...	15th July '69	15th Feb. '70	
7	Singur (1st) ...	Singur ...	15th „ „	15th „ „	
8	Pandua (2nd) ...	Pandua ...	15th „ „	15th „ „	
9	Kristonagar (Jangipara) (1st).	Kristonagar...	15th „ „	15th „ „	
10	Mahnad ...	Pandua ...	15th „ „	15th „ „	
11	Basuri ...	Haripal ...	15th „ „	?	Maintained for some years as a private dispensary.
12	Khanakul (1st) ...	Khanakul ...	15th „ „	15th Feb. '70	
13	Jahanabad (1st) ...	Jahanabad ...	15th „ „	15th „ „	
14	Ghatal ...	Ghatal ...	15th „ „	15th „ „	
15	Balagarh (2nd) ...	Balagarh ...	15th „ „	15th „ „	
16	Hughli	Hughli ...	15th „ „	15th „ „	In addition to and in connection with the permanent dispensaries at these places.
17	Dwarbasini ...	Pandua ...	15th „ „	15th „ „	
18	Serampur	Serampur ...	15th „ „	15th „ „	
19	Sultangachi ...	Polba ...	15th „ „	15th „ „	
20	Baidyabati ...	Serampur ...	15th „ „	15th „ „	
21	Jahanabad (2nd) ...	Jahanabad ...	15th Aug. '70	5th Dec. '71	Made permanent, 5th December 1871. An itinerant dispensary kept up till 14th March 1872.
22	Dhaniakhali (2nd) ...	Dhaniakhali...	7th Nov. '71	1st Oct. '73	Made permanent.

List of temporary Epidemic Dispensaries in Hughli District—concluded.

No.	Place.	*Thana.*	Date of opening.	Date of closing.	Remarks.
23	Balagarh (3rd) ...	Balagarh ...	8th Oct. '71	29th Feb. '72	
24	British Chandarnagar (1st).	Hughli ...	8th „ „	19th „ „	
25	Bali	Goghat ...	1st Dec. „	19th „ '76	Transferred to Bardwan, 1st July 1872.
26	Singur (2nd) ...	Singur ...	1st „ „	19th April '72	
27	Kristonagar (2nd) ...	Kristonagar ...	1st „ „	19th Dec. „	
28	Chandrakona ...	Chandrakona	8th Jan. '72	19th Oct. „	Transferred to Midnapur, 1st July 1872.
29	Mayapur ...	Jahanabad ...	8th „ „	15th Mar. '75	Transferred to Bardwan, 1st July 1872.
30	Chandur ...	Ditto ...	8th April „	5th Oct. '72	
31	Hasnan (1st) ...	Dhaniakhali ...	15th „ „	8th April '73	
32	Babnan (Badinan) ...	Ditto ...	27th May „	1st Dec. '72	
33	Bandipur	Haripal ...	8th June „	'72	Made permanent.
34	Kamarpukhar ...	Goghat ...	27th Sept. „	15th „ '75	Bardwan, 1st July 1872.
35	Mandalghati ...	Do. ...	19th „ „	6th Oct. '72	Bardwan, 1st July 1872.
36	Hajipur	Do. ...	5th Oct „	15th Mar. '75	Bardwan, 1st July 1872.
37	Bhadur	Do. ...	6th „ „	6th Jan. '73	
38	Khanakul (2nd) ...	Khanakul ...	„ „	Dec. '72	Transferred to Haripal.
39	British Chandarnagar (2nd).	Hughli ...	12th Nov. „	20th Feb. '73	
40	Gurup (1st) ...	Dhaniakhali ...	15th „ „	15th April „	
41	Rishra ...	Serampur ...	Dec. „	15th Feb. „	
42	Haripal ...	Haripal ...	„ „	15th „ „	
43	Gaurhati ...	Jahanabad ...	17th „ „	15th Mar. '75	Bardwan, 1st July 1872.
44	Tribeni (2nd) ...	Hughli ...	7th Jan. '73	1st April '73	
45	Khanakul (3rd) ...	Khanakul ...	„ „	Nov. „	Transferred to Howrah, November 1873.
46	Badanganj ...	Goghat ...	30th Oct. „	31st Dec. '75	Bardwan, 1st July 1872; made permanent, 1st January 1876.
47	Patul	Chanditola ...	11th Dec. „	1st Jan. '74	
48	Hasnan (2nd) ...	Dhaniakhali ...	1st Jan. '74	28th Feb. „	
49	Gurup (2nd) ...	Ditto ...	1st „ „	28th „ „	
50	Mandara ...	Ditto ...	1st July „	30th Sept. „	
51	Phurphura ...	Chanditola ...	„ „	„ „	

Bibliography of the Epidemic Fever.—The following list gives the names of all the special reports upon the epidemic fever of Bengal which I have been able to trace:—

(1) ELLIOT.—Report on Epidemic Fever in parts of the Nuddea and Burdwan Divisions, by Dr. J. Elliot, Civil Surgeon, Hooghly. Supplement to the *Calcutta Gazette*, 18th March 1863. [Also separately published in pamphlet form.]

(2) Report of the Committee to enquire into the causes of the Epidemic in the districts of Hooghly, Burdwan, Nuddea, Jessore, and 24-Pergunnahs. Supplement to the *Calcutta Gazette* of 1864, p. 71.

(3) Report of the Commission of Inquiry on the Epidemic Fever in the districts of Hooghly, Burdwan, Nuddea, Jessore, and 24-Pergunnahs. Supplement to the *Calcutta Gazette* of 1864, p. 243.

(4) Epidemic Fever, Burdwan. Supplement, *Calcutta Gazette* of 1864, p. 413.

(5) Epidemic Fever, Nuddea and 24-Pergunnahs. Supplement, *Calcutta Gazette* of 1864, p. 413.

(6) Report on the outbreak of Fever in the Hooghly district. Supplement, *Calcutta Gazette* of 1867, p. 67.

(7) COCKERELL.—Report from R. V. Cockerell, B.C.S., Magistrate of Hooghly, to Commissioner, Burdwan Division, No. 42A., dated Camp Myapore, 29th January 1868. Supplement, *Calcutta Gazette* of 1st July 1868, p. 494.

(8) SUTHERLAND.—Report on Epidemic Fever, by J. Sutherland, M.D., Deputy Inspector-General, Presidency Circle, No. 51, dated 13th April 1868, forwarding reports from Civil Surgeons, Dr. R. F. Thompson of Hooghly, Dr. J. Elliot of Nuddea, Dr. K. McLeod of Jessore, and Dr. A. A. Mantell of Burdwan; with covering letter, No. 40 of 15th April 1868, from W. A. Green, Inspector-General of Hospitals, Lower Provinces. [Reprinted with Pellew's report of 1878.]

(9) Report on the Nature and History of Fever in the districts of Lower Bengal. Supplement, *Calcutta Gazette* of 1868, p. 398.

(10) The humble Memorial of the *Zamindars*, *Talookdars*, Traders, and other inhabitants of the districts of Hooghly and Burdwan to the Government of Bengal, dated 19th March 1869. [Reprinted with Pellew's report of 1878.]

(11) SMITH.—Report by the Sanitary Commissioner, Bengal (Dr. D. B. Smith), to the Secretary to the Government of Bengal, Judicial Department, dated Hooghly, 25th March 1868. [Partly reprinted with Pellew's report of 1878.]

(12) Report on measures adopted for the purpose of preventing the continuance of Epidemic Fever in the districts adjoining Calcutta. Supplement, *Calcutta Gazette* of 1869, p. 230.

(13) Epidemic Fever in Lower Bengal. Supplement, *Calcutta Gazette* of 1869, pp. 467–668.

(14) Smith.—Report on the Endemic Malarious Fever of the Hooghly district, by Dr. D. B. Smith, Sanitary Commissioner, dated 12th May 1870. [Reprinted with Pellew's report of 1878.]

(15) Report on epidemic fever in the Hooghly district. Supplement *Calcutta Gazette* of 1870, p. 411.

(16) Elliot.—Report on the Epidemic Fever in Burdwan district in 1871, by Dr. J. Elliot, Civil Surgeon, Burdwan. [In Annual Report on dispensaries for 1871, pp. 25–34.]

(17) Barker.—Report on the Epidemic Fever in the Beerbhoom district during the year 1872, by Dr. J. Barker. [In Annual Report on dispensaries for 1872, pp. 24–35.]

(18) French.—Report on the Endemic Fever in Bardwan for the year, 1873, by Dr. J. G. French. [In Annual Report on dispensaries for 1873, pp. 8–16.]

(19) Selections from Supplements to the *Calcutta Gazette*, 1871–74. [Contains various short reports on the fever.]

(20) Jackson.—Report on the Burdwan Fever, by Dr. C. J. J. Jackson, Sanitary Commissioner. [Appendix to Annual Sanitary Report of 1873.]

(21) Mitter.—The Epidemic Fever in Bengal. [Reprinted from the *Hindoo Patriot*, Calcutta, 1873.]

(22) Reports to Government on Epidemic Fever, 1874—

(*a*) Burdwan, by B. N. Mookerjee and E. H. Whinfield.
(*b*) Beerbhoom, by R. D. Hume.
(*c*) Midnapore, by F. F. Handley and H. L. Harrison.
(*d*) Hooghly, by J. Mookerjea, R. C. Mookerjea, and F. H. Pellew.
(*e*) Howrah, by R. C. Mookerjea and T. J. C. Grant.
(*f*) Presidency Division, by Lord H. U. Browne.

(23) Wilkie.—Report on the Burdwan Fever, by Dr. D. Wilkie Surgeon, B.M.S., on special duty in Burdwan, dated 28th February 1875. [Appendix to Sanitary Commissioner's Annual Report for 1874.]

(24) Mitter.—The Epidemic Fever in Bengal, by Degamber Mitter. [Reprinted from the *Hindoo Patriot*, Calcutta, 1876.]

(25) Pellew.—Note on the Malarious Fever in the Hooghly district, by F. H. Pellew, Commissioner of Burdwan, June 1878.

(26) Roy, G. C.—Burdwan Fever, or the Epidemic Fever of Lower Bengal: its Causes, Symptoms, and Treatment. 8vo. London, J. and A. Churchill; Calcutta, Thacker, Spink and Co., 1876. [Not an official report.]

Mortality Table, Fever, from 1879

Month.	First Decennium.											
	1879.	1880.	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.	Total.	Average.
January ...	1,260	956	1,812	1,669	1,681	1,361	1,531	1,363	1,638	1,656	14,927	1,492·7
February	1,083	941	1,762	1,502	1,336	1,239	1,419	1,137	1,226	1,384	13,029	1,302·9
March ...	913	998	1,356	1,579	1,360	1,248	1,548	1,255	1,265	1,438	12,960	1,296·0
April ...	649	727	1,241	1,297	1,138	1,201	1,232	944	1,038	1,248	10,715	1,071·5
May ...	460	664	1,006	1,198	851	934	1,019	900	938	1,009	8,979	897·9
June ...	481	484	662	927	670	726	883	634	648	856	6,971	697·1
July ...	477	580	818	1,044	818	706	838	697	697	772	7,447	744·7
August ...	611	849	1,161	1,212	965	807	1,056	875	891	925	9,352	935·2
September	734	962	1,171	1,385	1,116	946	1,503	1,031	892	1,050	10,790	1,079·0
October ...	705	1,390	1,453	1,606	1,162	1,317	1,478	1,273	1,372	1,371	13,127	1,312·7
November	841	2,172	2,020	1,867	1,730	1,803	1,709	1,783	1,650	1,555	17,130	1,713·0
December	938	2,220	1,942	2,019	1,699	1,948	1,761	2,201	1,770	1,754	18,252	1,825·2
Total	9,152	12,943	16,404	17,305	14,526	14,236	15,977	14,093	14,025	15,018	143,679	14,367·9
Ratio per 1,000.	12·08	12·77	16·19	17·08	14·34	14·50	15·74	13·88	13·81	14·79	...	14·18

Mortality from all diseases in the Hughli

Month.	1879.	1880.	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.	1889.
January	1,855	1,302	2,452	2,209	2,446	1,828	2,113	2,009	2,477	2,393	2,240
February	1,432	1,254	2,410	1,973	1,823	1,678	2,013	1,656	1,836	2,046	1,768
March ...	1,275	1,468	1,739	2,046	1,865	1,887	2,411	1,795	1 835	2,262	1,775
April ...	875	1,276	1,819	1,660	1,702	2,008	1,915	1,470	1,668	2,179	1,921
May ...	722	1,036	1,406	1,596	1,200	1,411	1,518	1,256	1,319	1,662	1,363
June ...	753	678	923	1,333	952	1,011	1,331	960	953	1,271	1,292
July ...	731	837	1,123	1,452	1,188	1,067	1,285	1,104	1,053	1,205	1,796
August ...	889	1,183	1,534	1,645	1,365	1,149	1,689	1,362	1,329	1,370	2,028
September	1,020	1,305	1,569	1,800	1,532	1,328	2,566	1,537	1,343	1,624	2,437
October	965	1,881	1,965	2,128	1,605	1,813	2,276	1,961	1,930	2,099	2,651
November	1,089	2,718	2,720	2,493	2,200	2,571	2,305	2,761	2,248	2,413	3,338
December	1,272	2,857	2,569	2,940	2,267	2,671	2,468	3,421	2,459	2,696	3,809
Total ...	12,878	17,795	22,229	23,273	20,145	20,422	23,890	21,292	20,450	23,220	26,418

to 1898, in the District of Hughli.

Second Decennium.											
1889.	1890.	1891.	1892.	1893.	1894.	1895.	1896.	1897.	1898.	Total.	Average.
1,430	1,626	1,908	2,764	2,263	3,081	2,558	2,995	2,053	2,590	23,268	2,326·8
1,164	1,487	2,331	3,072	1,614	2,026	2,096	3,475	2,122	1,913	21,300	2,130·0
1,155	1,636	2,336	3,314	1,393	2,118	2,170	4,169	2,587	2,314	23,192	2,319·2
1,272	1,626	1,541	2,293	1,314	2,372	2,663	2,377	1,963	1,867	19,288	1,928·8
900	1,262	1,094	1,865	1,627	1,980	1,951	1,736	1,786	1,588	15,789	1,578·9
757	1,058	1,054	1,281	1,140	1,314	1,381	2,103	1,280	1,147	12,515	1,251·5
1,079	1,080	905	1,394	1,457	1,694	1,824	1,385	1,288	1,251	13,357	1,335·7
1,274	1,227	1,322	1,738	1,799	1,857	1,840	1,758	1,776	1,512	16,103	1,610·3
1,597	1,569	1,765	1,389	1,742	1,893	2,453	1,748	1,643	1,793	17,592	1,759·2
1,770	1,606	1,971	1,641	2,969	2,389	2,869	1,668	1,830	1,978	20,691	2,069·1
2,278	1,885	2,854	2,391	2,958	2,584	3,314	2,285	3,223	2,482	26,254	2,625·4
2,596	2,469	3,156	2,266	3,061	3,034	4,345	2,533	2,740	2,132	28,332	2,833·2
17,272	18,531	22,237	25,408	23,337	26,342	29,464	28,232	21,291	22,567	237,681	23,768·1
17·01	18·25	20·65	23·59	21·67	25·46	28·48	27·29	23·48	21·81	...	22·07

District for each month from 1879 to 1898.

1890.	1891.	1892.	1893.	1894.	1895.	1896.	1897.	1898.	Total.	Mean.	Percentage of total mortality of 20 years.
2,423	2,769	3,607	3,060	4,338	3,741	3,947	2,714	2,364	53,187	2,659	9·87
2,210	3,260	3,905	2,260	3,082	2,910	4,396	2,835	2,455	47,202	2,360	8·76
2,314	3,318	4,398	2,029	3,003	3,036	6,447	3,805	2,889	51,595	2,580	9·57
2,372	2,338	3,987	1,910	3,118	4,018	4,394	3,009	2,408	46,047	2,302	8·54
1,717	1,515	3,076	2,368	2,559	2,651	2,913	2,533	2,090	35,911	1,796	6·66
1,464	1,553	1,932	1,724	1,760	1,851	3,036	1,878	1,536	28,191	1,409	5·23
1,620	1,285	2,120	2,177	2,453	2,465	2,062	1,869	1,699	30,591	1,530	56·8
1,759	1,880	2,398	2,622	2,705	2,488	2,370	2,523	2,027	36,315	1,816	6·74
2,192	2,450	1,832	2,568	2,654	3,206	2,329	2,283	2,424	39,999	2,000	7·42
2,171	2,875	2,157	4,312	3,309	3,671	2,138	2,635	2,634	47,176	2,359	8·75
2,482	3,835	3,124	4,193	3,487	4,237	2,853	4,354	3,187	58,608	2,930	10·88
3,334	4,359	3,029	4,365	4,260	5,731	3,274	3,561	2,782	64,124	3,206	11·90
26,058	31,437	35,565	33,588	36,728	40,005	40,159	33,999	29,375	538,946	26,947	100·00

The above table, giving the mortality from fever, month by month for twenty years, 1879 to 1898, divided into two periods of ten years each, was compiled from the annual printed reports of the Sanitary Commissioner. The table following, giving the total mortality, month by month, for the same period of twenty years, was compiled and furnished by the office of the Inspector-General of Civil Hospitals. The most noteworthy point about these tables is the very much higher mortality in the second, when compared to the first decennium. The second shows a mortality fully fifty per cent higher than the first. This great increase in mortality is due, not to increased insalubrity, but to improvement in registration. The great bulk of the death-rate in Bengal is always registered under the head of fevers, and the ratios registered in the first few years, indeed during the whole of the first decennium, are much too low to be anything like correct. Registration was only made general in rural areas from 1877, and has greatly improved since that date. During the decennium 1879 to 1888, the most unhealthy month was December, followed by November, January, October, February, March, September, April, August, May, July, June, in that order. In the decennium 1889 to 1898 the order is somewhat altered. The first three and the last four are the same, but March and October, April and September, have changed places. The table brings out well the established fact that the months of greatest mortality in Lower Bengal are those following the rains, as the soil gradually dries, and the influence of the chill of the cold season takes effect. The latter part of the hot weather and the beginning of the rains are the seasons of lowest mortality. The year of highest fever mortality is 1895, and the highest month December 1895. As regards the mortality month by month, the total death-rate, as might be expected, follows exactly the sequence of that from fever, December, November, January, March, February October, April, September, August, May, July, June. But the year of highest total mortality is not 1895, but 1896, and the highest total month is March 1896. This unexpected divergence between the fever curve and the total mortality curve is due to a severe epidemic of cholera in the early months of 1896.

From 1877 up to the present day fever has been pre-eminently the disease of the rural areas, while cholera has been that of the towns, in the Hughli district. I have gathered from the annual sanitary reports a few notes about the prevalence of fever from year to year, and the localities most effected in each year. The report for 1877 says that fever was more prevalent than in the previous year, though much less so than it had been a few years before. The tract chiefly affected was the right bank of the Hughli, from Bansbaria to Uttarpara. In 1878 the same was the case, the river bank suffering most, while fever had greatly diminished in the interior of the district. The only

place away from the Hughli which was severely affected was the town of Shambazar, in Goghat *thana*, then forming part of Bardwan district.

In 1879 there was a great decrease in fever. Dr. Coates, the Sanitary Commissioner, reviews the history of fever in Hughli for the past few years. He states that the admission of water from the Damudar into the Kana *Nadi* in 1873-74 and 1875, was followed by an immediate improvement in the health of the inhabitants of the villages along the banks of that stream. The supply of Damudar water was discontinued in 1876 and 1877, and the health of these villages again at once deteriorated. River-water again was let into the Kana *Nadi* in 1878 and 1879, and the pernicious fever had entirely disappeared. He quotes Mr. Pellew, the Commissioner, however, as saying that in the villages along the Kana *Nadi* scarcely one-tenth of the population had survived, and himself agrees with the statement.

In 1880 it is again stated that the pernicious epidemic fever had entirely disappeared. Ordinary malarial fever was, of course, common. The areas which suffered most were the *thanas* of Pandua, Polba, Balagarh, Serampur, and Singur.

In 1881 Kristonagar is mentioned as the area which gave the highest fever mortality; in 1882 Polba *thana*, with a mortality of 36·40 per 1,000, and the small town of Shambazar (33·22).

In 1883 the following *thanas* returned the highest death-rate from fevers: Hughli (32·28 per 1,000), Polba (22·17), Balagarh (21·61), and Pandua (19·58). In the appendix it is stated that the cut connecting the Kana *Nadi* with the Saraswati was made during the year.

In 1884 the following *thanas* suffered most from fevers: Hughli (32·28), Pandua (19·54), Balagarh (19·32), and Shambazar town (18·77). A report by the Subdivisional Officer of Serampur is quoted at length, in which it is stated that the villages along the banks of the Kana *Nadi* and the Saraswati were again becoming unhealthy owing to the beds of these streams having been greatly obstructed by weirs constructed for fishing purposes by the inhabitants. This forms an excellent illustration of the difficulty experienced in Bengal in carrying out any sanitary reform. One would have thought that, after the awful lesson of the epidemic fever of 1857 to 1877, the residents in the villages along the banks of the dead rivers, whose channels had been re-opened with great trouble and expense, would not have tolerated any interference with these streams for a trifling profit to a few individuals. But no, these people are the very men who do their best to undo all the good that has been done, and to throw matters back into their previous condition. In 1885 the sanitary report states, on the authority of the Deputy Sanitary Commissioner, Metropolitan Circle, that the residents on the banks were most anxious that the river-beds should again be opened out. In this year these streams were placed under the authority of the Public Works

Department, the obstructions removed by the Canal Officers, and the residents near these rivers informed that the erection of dams was illegal, and would be severely punished. In 1885 the highest death-rates from fever occurred in the *thanas* of Hughli (31·76), Pandua (22·30), Polba (20·74), and Shambazar town (22·14).

In 1886 Serampur subdivision and Bansbaria town are said to have suffered severely from fever. Cerebro-spinal fever is said to have occurred, and of course to have proved very fatal. Complaints are again made that dams are constructed in the Saraswati at Bansbaria. In 1887 fever was worse than in the preceding year, but much less than in the neighbouring districts of Birbhum, Bardwan, and Midnapur.

In 1888 the areas most severely affected by fever were the *thanas* of Hughli (32·02), Pandua (22·21), and Polba (21·22); in 1889 Pandua (25·56), Polba (22·19), Hughli (22·11), and Dhaniakhali (20·63); in 1890 Hughli (26·31), Pandua (25·72), Dhaniakhali (24·08), and Polba (22·53). It will be seen that the same four *thanas* head the list in each of these three years, the order varying slightly among themselves from year to year. All four are in the *Sadr* subdivision, and in fact comprise the whole area of that subdivision, except Balagarh *thana* and the towns.

In the next two years there is a considerable difference, Singur *thana* heads the list each year, Balagarh also comes in, as do some of the towns, In 1891 the worst areas were the *thanas* of Singur (32·04), Pandua (28·65), Hughli (28·39), and Balagarh (28·29); followed by three towns, Bhadreswar (28·21), Jahanabad (27·24), and Hughli-Chinsura (26·28). In 1892 the chief sufferers were Singur *thana* (36·39), Hughli (35·37), Balagarh (32·01), Pandua (30·59), Polba (29·65), Goghat (27·64), Dhaniakhali (26·33), Kristonagar (25·65), and Hughli-Chinsura town (25·01)—altogether a bad fever year. This is the first time that one of the *thanas* in Jahanabad subdivision comes into the list.

In 1893 the fever death-rate was less, but a very unusual thing happened, three towns heading the list, viz., Bhadreswar (37·45), Kotrang (34·66), and Bansbaria (31·10); followed by the *thanas* of Kristonagar (29·88) and Hughli (29·55).

The three next years are those which have shown the highest mortality from fever in Hughli district since death registration became general, and also since the epidemic fever died out. In 1894 the number of deaths registered from fever was 26,342, with a death-rate of 25·46 per 1,000; in 1895, 29,464 (28·48); and in 1896, 28,232 (27·29). In 1894 a town again heads the list, Bansbaria (40·10), followed by Balagarh (35·35), Hughli *thana* (34·06), Bhadreswar (33·92), Pandua (33·05), Polba (32·26), and Goghat (31·57). In 1895, the highest year on record, the worst area was the very small Serampur rural circle (39·36), followed by Hughli rural (37·85), Bansbaria (37·59),

Balagarh (34·73), Kristonagar (33·80), Pandua (33·79), and Goghat (33·48). In 1896, though the death-rate from fever for the whole district had somewhat decreased, we get the highest fever death-rate ever recorded in any registering area in the district. This death-rate is furnished by Hughli *thana* or rural circle, rather a small area, and amounts to 42·49. The next in order are Kristonagar (36·93), Serampur rural (36·25), Pandua (34·09), Kotrang (31·95) Haripal (31·83), and Polba (31·24).

The next four years show a lessened fever mortality, the death-rate of 1898 being the lowest of the four. In 1897 the highest ratios were shown by Bhadreswar (37·45), Kristonagar (35·11), Kotrang (32·14), Hughli rural (31·59), Serampur rural (30·29), Serampur town (27·75), Haripal (27·21), and Polba (25·37). In 1898, as in 1897, a town heads the list, the chief mortality from fever being given by Bansbaria (31·25), Pandua (28·45), Serampur town (27·84), (Hughli rural (27·38), Chanditola (26·02), Polba (25·15), and Kristonagar (25·14). In 1899 the ratios registered were highest in Hughli rural (30·99), Bhadreswar (29·25), Pandua (28·60), Bansbaria (27·27), Chanditola (26·63), Serampur (26·28), Balagarh (26·04). In 1900 the highest ratio from fever is shown by Hughli rural (37·79). The ratio of the whole district was 34·38, a higher rate than that of any year since 1896. 1900, however, was a bad fever year all over province, sixteen districts showing a fever death-rate considerably higher than that of Hughli. In this year also, in the Sanitary Commissioner's Annual Report, it is stated that the growing unhealthiness of Faridpur district "is probably due to the silting up of the rivers and the consequent non-flushing of the country causing general stagnation of water."

Statement of Births, Deaths, &c., in the Hughli District, including Serampur,

Year.	Births.		Number of deaths registered.			Number of deaths of males to every 100 deaths of females.
	Total number.	Ratio per 1,000 of population.	Male.	Female.	Total.	
1879	Births were not registered during these years.		6,990	5,888	12,878	118
1880			9,568	8,227	17,795	116
1881			11,709	10,520	22,229	111
1882			12,201	11,072	23,273	110
1883			10,504	9,641	20,145	108
1884			10,794	9,628	20,422	112
1885			12,344	11,546	23,890	106
1886			11,162	10,130	21,292	110
1887			10,792	9,658	20,450	111
1888			12,480	10,740	23,220	116
1889			13,902	12,516	26,418	111
1890			13,676	12,382	26,058	110
1891			16,579	14,858	31,437	111
1892	23,014	22·72	18,894	16,671	35,565	113
1893	38,638	38·15	17,696	15,892	33,588	111
1894	29,008	28·04	19,504	17,224	36,728	113
1895	28,183	27·24	21,373	18,632	40,005	114
1896	27,794	26·87	21,464	18,695	40,159	114
1897	31,885	30·82	18,649	15,350	33,999	121
1898	27,799	26·87	15,734	13,661	29,395	115
Total ...	206,321	200·71	286,015	252,931	538,946	2,251
Average ...	29,474·42*	28·67*	14,300·75	12,646·55	26,947·30	112·55

* Average of 7 years.

Deaths registered according to age in the Hughli District

	1879.	1880.	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.
Under 1 year ...	During these years the Statistics were compiled under different heads.			2,008	2,050	2,366	2,756	2,844	2,884	3,721
1 year and under 5				1,860	1,661	1,740	2,295	2,233	2,012	2,176
5 years „ „ 10				1,632	1,188	1,267	1,561	1,413	1,273	1,293
10 „ „ „ 15				978	828	952	973	815	692	862
15 „ „ „ 20				1,612	1,208	1,473	1,424	1,102	995	1,311
20 „ „ „ 30				3,464	3,067	3,063	3,597	3,062	2,821	3,112
30 „ „ „ 40				3,271	2,736	2,726	3,059	2,517	2,396	2,883
40 „ „ „ 50				3,044	2,599	2,557	2,828	2,615	2,517	2,678
50 „ „ „ 60				2,569	2,118	1,998	2,263	2,041	2,028	2,173
60 „ „ upwards				2,835	2,690	2,280	3,134	2,650	2,832	3,011
Total ...	...	...	...	23,273	20,145	20,422	23,890	21,292	20,450	23,220

from 1879 to 1898, and of diseases treated in the dispensaries.

Deaths per 1,000 of population from						All causes.			Cases of sickness treated in the dispensaries.
Cholera.	Small-pox.	Fever.	Dysentery and diarrhœa.	Injury.	All other causes.	Male.	Female.	Total.	
·45	·13	9·03	1·75	·23	1·10	14·29	11·24	12·71	45,534
·74	·10	12·77	1·87	·42	1·64	19·56	15·70	17·57	40,082
1·39	·03	16·19	2·15	·35	1·81	23·94	20·83	21·94	34,570
1·45	·008	17·08	2·31	·31	1·79	24·95	21·13	22·97	36,175
1·33	·01	14·34	2·03	·32	1·83	21·48	18·40	19·89	37,932
1·36	·10	14·05	2·05	·37	2·20	22·07	18·38	20·16	37,414
1·71	·03	15·77	2·96	·42	2·67	25·24	22·04	23·58	38,685
1·38	·006	13·91	2·31	·45	2·94	22·82	19·33	21·02	39,734
·92	·001	13·84	2·21	·35	2·85	22·07	18·43	20·19	41,206
1·59	·01	14·82	2·37	·41	3·69	25·52	20·50	22·92	38,688
1·23	·02	17·05	2·77	·45	4·54	28·43	23·89	26·08	38,752
·75	·15	18·29	2·42	·45	3·63	27·97	23·63	25·72	36,686
1·87	·04	21·95	2·48	·46	4·21	33·90	28·36	31·04	43,719
3·37	·03	25·08	2·09	·46	4·06	38·64	31·82	35·11	42,242
·92	·008	23·04	2·27	·54	6·36	36·19	30·33	33·16	58,222
1·79	·06	25·46	2·65	·42	5·10	38·30	32·80	35·51	79,830
2·21	·38	28·48	2·46	·38	4·74	41·97	35·48	38·67	82,407
4·23	·07	27·29	2·10	·38	4·72	42·15	35·60	38·82	76,086
1·52	·22	23·48	2·05	·54	5·06	36·60	29·23	32·87	72,041
·42	·05	21·81	1·46	·47	4·17	30·90	26·01	28·42	69,692
30·63	1·45	373·73	44·76	8·18	69·11	576·99	483·13	528·35	989,597
1·53	·07	18·68	2·23	·40	3·45	28·84	24·15	26·41	49,479·85

including Serampur, during the years 1879 to 1898.

1889.	1890.	1891.	1892.	1893.	1894.	1895.	1896.	1897.	1898.	Total of 17 years.	Average of 17 years.
5,302	3,995	4,460	4,673	7,661	6,862	6,701	6,068	6,191	5,771	76,313	4,489·00
2,686	2,624	3,433	3,272	3,220	3,496	4,228	3,297	2,998	2,614	45,845	2,696·52
1,537	1,654	2,267	2,282	2,218	2,322	2,777	2,625	2,295	1,895	31,499	1,852·88
1,000	956	1,204	1,606	1,387	1,481	1,705	1,881	1,716	1,645	20,681	1,216·52
1,397	1,263	1,558	2,069	1,664	1,885	2,322	2,462	2,279	2,226	28,250	1,661·76
3,389	3,023	3,415	4,393	3,290	4,150	4,533	5,106	4,229	3,401	61,115	3,595·00
2,958	3,132	3,492	4,489	3,476	4,368	4,822	5,190	4,020	3,215	58,750	3,455·88
2,804	3,002	3,537	4,317	3,451	4,257	4,522	4,827	3,764	3,068	56,387	3,316·88
2,235	2,449	3,024	3,588	2,932	3,276	3,520	3,700	2,831	2,361	45,196	2,658·58
3,110	3,960	5,047	4,876	4,289	4,631	4,875	4,913	3,676	3,199	62,008	3,647·52
26,418	26,058	31,437	35,565	33,588	36,728	40,005	40,159	33,999	29,395	486,044	8 590·82

The two preceding tables were complied in and furnished by the office of the Inspector-General of Civil Hospitals. The first table gives, for the twenty years from 1879 to 1898, the numbers of male and female deaths registered each year, with their ratios per thousand, the ratios of deaths registered each year under various heads, and the total number of cases treated in the dispensaries of the district each year. The births registered are also given, from 1892, the year in which birth registration in rural areas was introduced, to 1898.

The second table shows the deaths registered, according to periods of age, in the seventeen years from 1892 to 1898. To make a proper study of this table, however, it is necessary to know the numbers living at each age-period. That period which shows the largest numbers living will naturally show the largest number of deaths. But when we know the numbers living at each period, as well as the average death-rate of that period, we can easily calculate the ratios of the death-rate of the various periods. I have therefore constructed the following table to give this information, using the figures of the census of 1891 :—

Age-period.	Number living—			Average death-rate of 17 years.	Ratio per 1,000.
	Male.	Female.	Total.		
Under 1 year	64,409	67,802	132,211	4,489	54·34
1-5 ...				2,696	
5-10 ...	68,359	64,284	132,643	1,852	13·97
10-15 ...	58,968	47,951	107,919	1,216	11·26
15-20 ...	40,356	45,667	86,023	1,661	19·32
20-25 ...	39,512	47,617	87,129	3,595	19·24
25-30 ...	47,952	51,905	99,657		
30-35 ...	47,268	48,410	95,678	3,455	20·47
35-40 ...	38,543	34,511	73,054		
40-45 ...	40,711	40,440	81,151	3,316	26·52
45-50 ...	22,687	21,197	43,884		
50-55 ...	22,824	26,970	49,794	2,658	35·31
55-60 ...	11,884	13,661	25,505		
Over 60 ...	25,706	37,356	63,062	3,647	57·83
Total ...	529,139	547,571	1,076,710	28,585	

The above table shows, as might be expected, that the two extremes of life are those which have the greatest mortality, that of persons above 60 being somewhat higher than that of children under five. I have been unable to ascertain the numbers living under one year; no doubt, if they could be separately given, they would show an enormous mortality of infants under one year of age, and a comparatively small mortality of those between one and four years. The mortality of the other periods shows nothing worthy of remark; a gradual rise in the age-periods 30 to 40, and 40 to 50.

CHAPTER VII.

TOWNS AND LARGE VILLAGES.

THE District of Hughli contains eight municipal towns, viz., Hughli-Chinsura, Bansbaria, Serampur, Bhadreswar, Baidyabati, Kotrang, Uttarpara, and Arambagh, formerly Jahanabad. These eight towns contained a population, at the census of 1891, of 123,793, and by the preliminary figures of the census of 1901, 134,034. The division of the population into urban and rural has been considered at full length in Chapter III—Population, and need not be further dealt with here.

The early history of municipal Government in the district is described in the account of Hughli-Chinsura Municipality, the *sadr* station, below. The municipalities now existing were formally constituted as such at different dates, varying from 1st April 1865 in the case of Hughli, to 1st July 1886, in that of Arambagh.

Besides the eight municipalities which now exist, several other towns, or large villages, were for several years municipal unions, and their vital statistics appeared in the Sanitary Commissioner's reports for varying periods, viz., Balagarh from 1876 to 1880, and Khanakul, Shambazar, and Arambagh (Jahanabad) from 1877 to 1885. At the present date the following villages, though not full-blown municipalities, have some measure of local self-government as unions, Balagarh, Pandua, Haripal, Chanditola, and Bali. They raise no taxes, but administer funds allotted to them by the District Board.

From the Sanitary Commissioner's reports, and from the Government Resolution on the working of municipalities in Bengal during the year 1899-1900, I have compiled the following tables, which include information about all eight municipalities:—

I.—General information: Date of establishment, area, population, number of rate-payers, mode and rate of assessment.

II.—Comparative table of births and deaths in municipalities for ten years, 1891 to 1900.

III.—Comparative table of births, birth-rate, and death-rate in municipalities for fourteen years, 1887 to 1900.

IV.—Table of income and expenditure, 1899-1900.

V.—Table of percentage of total expenditure under chief heads, 1899-1900.

Tables Nos. II and III give some very startling facts regarding the comparative birth-rate and death-rate of these eight towns. Table No. II gives

the number of births and of deaths registered in each of the eight towns for a period of ten years, *i.e.*, eighty entries in all. Out of these eighty entries, in *two* only appears a birth-rate higher than death-rate, viz., in Uttarpara in 1892, and in Arambagh in 1893. On the other hand, four entries show a death-rate *treble* the birth-rate, all four in Bhadreswar, viz., the four years from 1894 to 1897, inclusive. And no less than sixteen entries show a death-rate *double* the birth-rate, viz., Hughli in 1895; Bansbaria in 1894; Bhadreswar in 1891, 1892, 1898, 1899, 1900 (only once in ten years has this town had a death-rate less than double its birth-rate, in 1893); Baidyabati in 1891 and 1894; Kotrang in the five years 1893 to 1897, inclusive, and in 1900; and Arambagh in 1892. The other two towns, Serampur and Uttarpara, do not show a death-rate double the birth-rate in these ten years, but each comes very close to it; Serampur in 1891, 1894, and 1895; and Uttarpara in 1900.

For comparison, I have included in table No. II the deaths and births registered in the whole district for nine years, 1892 to 1900. As registration of births in rural areas was only introduced in 1892, the figures of births for 1891 are not available. But in these nine years the number of births has exceeded the number of deaths only once, and that by a mere fraction. The total number of births registered in the district in nine years is 267,046, of deaths 316,014; the excess of deaths over birth being 48,968, and the number of births registered 84·05 per cent. of the number of deaths.

The total number of births registered in the eight towns in ten years is 30,069, and of deaths 53,309; the excess of deaths over births being 23,240, and the total number of births registered 56·40 per. cent. of the total number of deaths. The proportion of births to deaths is highest in Arambagh, 74·55 per cent.; and lowest in Bhadreswar, 42·55 per cent.

If in ten years the number of births registered is to the number of deaths, in all the eight towns taken together, only 56·40 per cent., it seems that were the population of the towns not kept up by immigration from outside, before very long the towns in Hughli district would be left without a single inhabitant.

There are, however, two fallacies in the above argument: first, that the male population of the towns being very much greater than the female population, a comparatively low birth-rate is normal, and to be expected; second, that probably the registration of deaths is less inaccurate than that of births, and that, therefore, the difference between births and deaths is not so great as would appear from the figures. Still, making every allowance for these two circumstances, the facts are sufficiently impressive. During the decennium 1891 to 1900, some towns, Serampur and Bhadreswar, had a rapidly rising population; but in others, especially in Hughli-Chinsura, the population was diminishing.

I.—Municipalities in Hughli

PARTICULARS.	Hughli-Chinsura.	Bansbaria.	Serampur.
Date of establishment	April 1865 ...	1st April 1869 ...	1865 ...
Population, 1891	33,060	6,783	35,952
Number of rate-payers	8,961	1,812	6,870
Percentage of rate-payers to population	27·1	26·7	19·1
Area (square miles)	6	6¼	3½
Mode of assessment in vogue ...	Rate on annual value of holdings.	Tax on persons ...	Rate on annual value of holdings.
Rate per cent.	6¼	Rs. 1-2 per cent. on income.	7

II.—Comparative table of Births and Deaths in Municipalities,

YEAR.	Hughli-Chinsura.		Bansbaria.		Serampur.		Bhadreswar.	
	Births.	Deaths.	Births.	Deaths.	Births.	Deaths.	Births.	Deaths.
1891 ...	847	1,620	168	286	842	1,648	269	545
1892 ...	749	1,502	139	280	695	1,357	203	410
1893 ...	1,021	1,411	246	310	962	1,689	380	604
1894 ...	781	1,581	160	411	851	1,683	199	613
1895 ...	815	1,632	155	390	984	1,932	184	573
1896 ...	836	1,392	196	346	930	1,647	163	562
1897 ...	859	1,298	223	276	1,051	2,051	156	534
1898 ...	829	1,162	162	288	857	1,608	168	339
1899 ...	829	1,092	155	261	845	1,669	245	515
1900 ...	761	1,265	170	307	903	1,636	263	558
Total ...	8,327	13,955	1,774	3,155	8,920	16,920	2,230	5,253
Excess of deaths over births.	.....	5,628	.....	1,381	.....	8,000	.....	3,023

District : General information.

Bhadreswar.	Baidyabati.	Kotrang.	Uttarpara.	Arambagh.
1st April 1869 ...	1st April 1869 ...	1st April 1869 ...	1865 ...	1st July 1886
9,639	18,380	5,164	6,489	8,326
2,047	3,953	946	1,400	1,841
21·2	21·5	18·3	21·5	22·1
3	5¼	2	½	3
Holdings, wards 1 and 3. Persons, wards 2 and 4.	Tax on persons ...	Tax on persons ...	Rate on annual value of holdings.	Tax on persons.
6¼ 7	7	Rs. 1-4	7½	As. 12.

Hughli District for ten years, 1891–1900.

Baidyabati.		Kotrang.		Uttarpara.		Jahanabad.		Total.		District Total.	
Births.	Deaths.	Births.	Deaths.	Births.	Deaths.	Births.	Deaths.	Births.	Deaths.	Births.	Deaths.
206	536	117	128	136	215	257	290	2,842	5,268	.....	.....
384	604	170	189	235	212	139	293	2,714	4,847	23,014	35,565
525	711	156	312	227	301	304	289	3,821	5,027	38,638	33,588
315	655	100	229	163	279	188	354	2,757	5,805	29,008	36,728
379	718	132	302	152	262	227	364	3,028	6,173	28,183	40,005
337	656	127	290	164	256	221	373	2,974	5,522	27,794	40,159
472	557	137	346	183	305	244	289	3,325	5,656	31,885	33,999
323	505	88	170	139	253	208	246	2,774	4,571	27,799	29,395
319	489	115	197	181	272	219	237	2,908	4,732	31,214	31,006
337	551	89	205	146	285	257	301	2,926	5,108	29.511	35,569
3,597	5,982	1,231	2,368	1,726	2,640	2,264	3,036	30,069	53,309	267,046	316,014
...	2,385	...	1,137	...	914	...	772	.....	23,240	.....	48,968

III.—Table showing Births and Birth-rate of

Year.	Hughli-Chinsura.			Bansbaria.			Serampur.			Bhadreswar.		
	A.	B.	C.	A.	B.	C.	A.	B.	C.	A.	B.	C.
1887	797	20·58	— 6·33	103	14·64	—12·95	728	27·47	—11·63	60	6·40	—25·32
1888	864	22·31	— 5·19	173	24·60	+ 0·71	697	26·30	—14·38	79	8·54	—28·46
1889	1,001	31·59	— 0·28	162	23·04	—13·51	945	35·66	—10·42	143	15·47	—27·16
1890	868	27·39	— 6·78	142	20·19	—14·94	800	30·19	—13·25	119	12·87	—25·54
1891	847	26·01	—23·74	168	24·76	—17·40	842	23·42	—22·41	269	14·63	—14·53
1892	749	22·65	—22·78	139	20·49	—20·78	695	19·33	—18·41	203	21·06	—21·46
1893	1,021	30·88	—11·79	246	36·26	— 9·44	962	26·75	—20·22	380	39·42	—23·24
1894	781	23·62	—24·20	160	23·58	—37·01	851	23·67	—23·14	199	20·64	—42·95
1895	815	24·65	—24·71	155	22·85	—34·64	984	27·36	—26·37	184	19·08	—40·36
1896	836	25·28	—16·82	196	28·89	—22·11	930	25·86	—19·95	163	16·91	—41·39
1897	859	25·98	—13·28	223	32·87	— 7·82	1,051	29·23	—27·81	156	16·18	—39·21
1898	829	25·07	—10·07	162	23·88	—18·57	857	23·83	—20·89	168	17·42	—17·74
1899	829	25·07	— 7·96	155	22·85	—15·62	845	23·50	—22·92	245	25·41	—28·01
1900	761	23·01	—15·25	170	25·06	—20·20	903	25·11	—20·39	263	27·28	—30·60

1887 { 7 minus. / 1 plus. 1889... 8 minus. 1891... 8 minus. 1893 { 7 minus. / 1 plus.

1888 { 6 minus. / 2 plus. 1890... 8 minus. 1892 { 7 minus. / 1 plus. 1894... 8 minus.

Municipalities in Hughli District, 1887–1900.

Baidyabati.			Kotrang.			Uttarpara.			Jahanabad.			Remarks.
A.	B.	C.	A.	B.	C.	A.	B.	C.	A.	B.	C.	
58	3·96	— 7·31	62	10·78	— 6·79	110	19·96	+ 1·61	7	0·66	— 4·38	
243	16·51	+ 1·16	108	18·79	— 2·61	109	19·78	— 9·25	12	1·14	— 6·75	
291	19·77	— 1·36	129	22·44	—14·10	158	28·67	—12·79	182	17·32	— 3·04	
267	18·14	— 4·89	81	14·09	—10·61	133	24·13	— 9·62	209	19·89	— 1·33	
206	21·37	—35·17	117	22·65	— 2·13	136	20·95	—12·18	257	30·86	— 3·97	
384	20·89	—11·97	170	32·92	— 3·67	235	36·21	+ 3·54	139	16·69	—18·50	
525	28·56	—10·12	156	30·20	—30·21	227	34·98	—11·40	304	36·51	+ 1·80	
315	17·13	—18·50	100	19·36	—24·98	163	25·11	—17·88	188	22·57	—19·94	
379	20·62	—18·44	132	25·56	—32·92	152	23·42	—16·95	227	27·26	—16·45	
337	18·33	—17·36	127	24·59	—31·56	164	25·27	—14·18	221	26·54	—18·25	
472	25·68	— 4·62	137	26·52	—40·48	183	28·20	—18·80	244	29·30	— 5·41	
323	17·57	— 9·90	88	17·04	—15·83	139	21·42	—17·56	208	24·98	— 4·56	
319	17·35	— 9·25	115	22·26	—15·82	181	27·89	—14·02	219	26·30	— 2·16	
337	18·33	—11·64	89	17·23	—22·46	146	22·49	—21·43	257	30·86	— 5·29	

A. = Number of births registered.
B. = Birth-rate, ratio per 1,000 of population
C. = Excess (+) or deficit (—) of birth-rate, as compared to death-rate.

1895... 8 minus. 1897... 8 minus. 1899... 8 minus.

1896... 8 minus. 1898... 8 minus. 1900... 8 minus.

IV.—Table showing Income and Expenditure

I.—

Particulars.	Hughli-Chinsura.	Bansbaria.	Serampur.
	Rs.	Rs.	Rs.
Balance at close of last year	3,131	377	3,917
Tax on houses and lands	27,494	36	26,439
„ on animals and vehicles	4,269	314	1,267
„ on professions and trades ...	488	157	907
Tolls (on roads and ferries)	2,964	.....	4,400
Conservancy	15,098	.....	14,504
Tax on persons	.....	3,801	.....
Miscellaneous receipts	305	32	658
Total ...	50,618	4,340	48,175
Realizations under special Acts ...	931	103	823
Revenue derived from municipal property	704	1,764(*a*)	3,530
Grants and contributions	463	.....	3,144
Miscellaneous	613	42	819
Extraordinary and debt	1,223	1,557(*b*)	1,955
Total income, excluding opening balance	54,552	7,806	58,446
„ „ including „ „	57,683	8,183	62,363
Incidence of taxation per head of population.	1-8-5	0-10-2	1-5-5

(*a*) Burning-ghat, Rs. 1,761. | (*b*) Advances, Rs. 1,185.

II.—Expen

General administration	5,905	982	5,675
Public safety (fire, lighting, police, &c.)	4,025	2	3,876
Water-supply	161	.....	.....
Drainage	1,364	311	6,176
Conservancy	23,840	904	21,597
Hospitals	202	191	6,911
Vaccination, markets, &c.	304	114	866
Public works	10,186	2,151	5,040
Education	797	400	2,023
Contributions	.....	.....	25
Miscellaneous	2,194	558	2,607
Total expenditure	48,978	5,613	54,796
Extraordinary and debt	2,670	2,407	2,394
Closing balance	6,035	163	5,173
Grand Total ...	57,683	8,183	62,363

Municipalities in Hughli District, 1899-1900.

INCOME.

Bhadreswar.	Baidyabati.	Kotrang.	Uttarpara.	Arambagh.
Rs.	Rs.	Rs.	Rs.	Rs.
4,455	3,017	1,321	2,133	621
6,819	27	5	7,174	444
1,040	5,343	87	1,028	328
472	1,083	673	432	.....
.....	390	.....	1,000	.....
4,055	4,093	.....	2,945	1,142
1,786	7,233	1,965	.....	2,927
16	70	27	60	23
14,188	18,239	2,757	12,639	4,864
193	205	101	161	193
348	551	77	153	535
500	.....	.....	23	1,511
131	331	119	195	99
1,008	1,937	.....	1,011	9
16,368	21,263	3,054	14,182	7,211
20,823	24,280	4,375	16,315	7,832
1-7-6	0-15-10	0-8-6	1-15-1	0-9-4

DITURE.

1,776	2,296	777	2,359	721
870	1,967	287	978	260
.....	.....	.....	.....	.....
50	3,559	.....	333	195
5,161	4,912	1,483	5,976	1,734
931	1,425	187	395	1,947
73	105	69	62	35
6,531	3,688	591	1,648	883
894	887	128	679	387
.....	.....	.....	.....	.....
624	1,229	167	364	362
16,910	20,068	3,689	12,794	6,524
1,058	1,769	189	990	66
2,855	2,443	497	2,531	1,248
20,823	24,280	4,375	16,315	7,832

V.—Municipalities in Hughli District. Percentage of total

Particulars.	Hughli-Chinsura.	Bansbaria.	Serampur.
	Rs.	Rs.	Rs.
Total expenditure	48,978	5,613	54,796
General establishment	11·7	17·4	9·8
Lighting	8·16	.....	4·7
Water-supply	0·32	.....	.....
Drainage	2·78	5·5	11·2
Conservancy	48·68	16·1	39·4
Medical	0·41	3·4	12·6
Vaccination	0·6	1·0	0·3
Public works	20·79	38·3	9·1
Education	1·62	7·1	3·6

expenditure on some of the principal items of expenditure, 1899-1900.

Bhadreswar.	Baidyabati.	Kotrang.	Uttarpara.	Arambagh.
Rs.	Rs.	Rs.	Rs.	Rs.
16,910	20,068	3,689	12,794	6,524
10·4	11·4	21·06	18·9	11·05
5·1	8·04	6·1	7·1	3·90
.....	.....	.....	.....	.....
0·2	17·7	.....	2·5	2·9
30·5	24·4	40·2	46·7	26·5
5·5	7·1	5·06	3·08	29·8
0·3	0·2	1·4	0·4	0·5
38·6	18·3	16·0	12·8	13·5
5·2	4·4	3·4	5·3	5·9

Rough sketch map of Hughli-Chinsura Municipality.

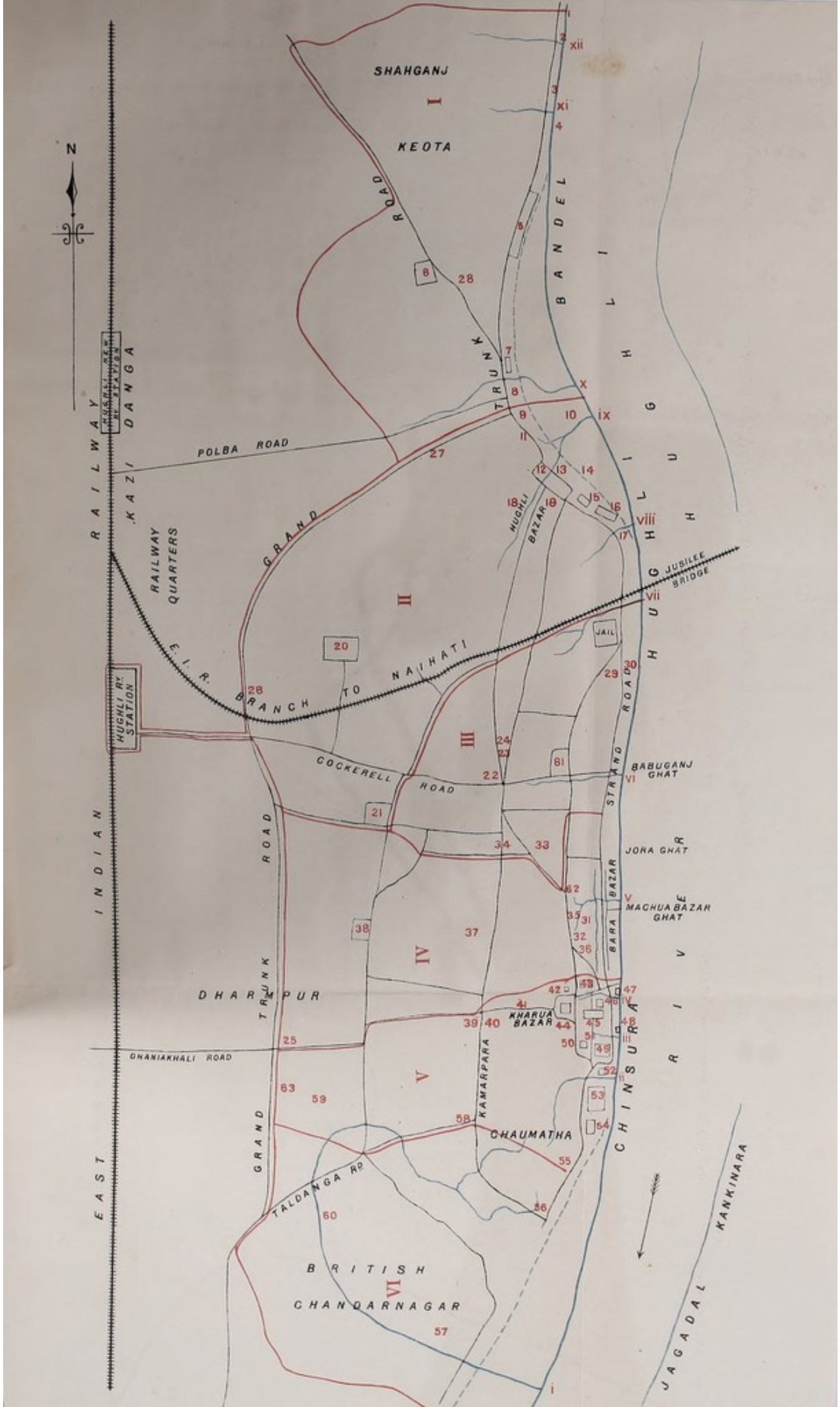
[Not drawn to scale.]

Red lines show the municipal boundaries and division into wards.
Blue lines show drains.

References.

1. Shahganj market.
2. „ latrine.
3. „ police outpost.
4. „ burning-*ghat*.
5. Bandel House.
6. Jail cholera camp site.
7. Bandel Church.
8. Bally slaughter-house.
9. „ latrine.
10. „ burning-*ghat*.
11. „ market.
12. Old Courts' latrine.
13. Hughli training school.
14. Smyth's *ghat*.
15. Magistrate's house.
16. Imambarah.
17. Imambarah market.
18. Hughli Bazar latrine.
19. „ „ market.
20. Alipur trenching-ground.
21. Musalman *karbela* (cemetery).
22. Pipalpati latrine.
23. „ police outpost.
24. Municipal Office.
25. } Milestones on Grand Trunk
26. } Road.
27. } Road.
28. } Road.
29. Gutia Bazar market.
30. „ „ burning-*ghat*.
31. Moghultoli latrine.
32. Armenian Church.
33. Cart depôt latrine.
34. Malik Kasim's *hat*.
35. Hughli *thana*.
36. Bardwan *Rajbhari*.
37. Khagrajol slaughter-house.
38. European cemetery.
39. Kharua Bazar police outpost.
40. „ „ market.
41. „ „ slaughter-house.
42. Mission Church.
43. Hospitals, Imambarah and Female.
44. Police barrack.
45. Large barrack (Courts).
46. Dutch barrack.
47. Free Church Mission.
48. Commissioner's house.
49. Officers' barrack.
50. „ servants' quarters.
51. Chinsura *maidan*.
52. Church.
53. Hughli College.
54. Muhamadan hostel.
55. Sindeswartola, temple of Shiva.
56. Sham Babu's burning-*ghat*.
57. British Chandarnagar police outpost.
58. Kamarpara market.
59. Taldanga trenching-ground.
60. Gargaripara latrine.
61. Old Musalman cemetery, Gutia Bazar.
62. Post-mortem house.
63. Dutch tomb.

i-xii. Drains.


N
SHAHGANJ
I
KEOTA
ROAD
TRUNK
BANDEL
HUGLI
RIVER
RAILWAY
EAST INDIAN
KAZI DANGA
RAILWAY QUARTERS
POLBA ROAD
GRAND
HUGHLI BAZAR
JUBILEE BRIDGE
E.I.R. BRANCH TO NAIHATI
HUGHLI RY STATION
II
III
IV
V
VI
JAIL
COCKERELL ROAD
STRAND ROAD
BABUGANJ GHAT
JORA GHAT
BARA BAZAR
MACHUA BAZAR GHAT
DHARMPUR
TRUNK ROAD
KHARUA BAZAR
DHANIAKHALI ROAD
KAMARPARA
CHAUMATHA
CHINSURA
GRAND
TALDANGA RD
BRITISH
CHANDARNAGAR
JAGADAL
KANKINARA

I.—Hughli-Chinsura Municipality.

The first attempts at municipal administration were made under Regulation XIII of 1813, which enabled the inhabitants of towns to make provision for watch and ward, and for the protection of their property. This law was introduced into Hughli in June 1814. The Magistrate divided the town into two wards, for the purposes of the Act, Bali and Golghat. The former contained 2,359 huts and houses, the latter 1,719. These two divisions would correspond roughly to the town north and south of the East Indian Railway branch line respectively. It must be remembered that Chinsura was then Dutch, and that the town of Hughli then extended south only as far as the northern boundary of Chinsura. This law was amended by Regulation XXII of 1816, which was the first law providing for conservancy, lighting, and the rest of what is now usually understood by municipal administration. In a minute dated May 1823, the Government handed over the surplus of the town duties levied under Regulation X of 1810 to the towns concerned, directing that they should be used in "filling up hollows, stagnant pools, and useless ditches, in the construction of *pakka* drains and bridges, the opening up and widening of the public roads, and in other minor improvements." In 1825 about Rs. 2,000 was spent in this way, and in 1829 Rs. 4,768. In the latter year the large tank opposite the barracks, and the Pipalpati tank, were dug, some roads were metalled with broken brick, and trees planted along the road-sides. Financial pressure then intervened, and at the end of 1829 the surplus town duties were withdrawn. In February 1836 the population of Hughli and Chinsura was estimated at 21,216. There were six conservancy carts, and Rs. 90 was spent monthly in paying sweepers. The town, however, was overgrown with jungle, and full of stagnant pits; dead bodies and the contents of the conservancy carts were thrown into the river. Roads were metalled with the remains of the old Portuguese and Dutch Forts. Gangs of prisoners from the Jail were employed on the roads of the town up to about 1840.

In 1840 the inhabitants of the town came forward and offered to take the collection and expenditure of the rates into their own hands, guaranteeing the full existing assessment. At a public meeting held on 5th June 1840 the first Municipal Committee was elected, to represent the three conjoined towns of Hughli, Chinsura, and (British) Chandarnagar. Three members were chosen for each division—for Chinsura, Mr. G. Herklotts, Babu Jiban Kishan Pal, and Moulvi Akbar Shah; for Chandarnagar, Babus Chandi Charan Ghose, Tarini Charan Chakravarti, and Rassik Lall Ghose; for Hughli, Syad Karamat Ali, Syad Ahmad Khan Bahadur, and Babu Haladhur Ghose. Syad Karamat Ali, who was the *Matwali* of the Imambarah, was elected president of the Committee. Mr. Herklotts was a Dutch official, who, when the English took over Chinsura in 1825, took office under them as "Fiscal of Chinsurah and

Registrar and Secretary of the European Courts of Justice" on a salary of Rs. 500 per month. He subsequently became *Sadr Amin*, or Small Cause Court Judge. Babu Jiban Kishan Pal gave his name to the large house and garden near the railway station. This Committee, however, was found to have no legal powers, and practically could do nothing. In September 1841 the term of one year, for which it had been elected, expired, and it came to an end. Soon after was passed Act X of 1842, the first purely municipal law in force in Bengal, under the provisions of which the Act could be introduced into any town at the request of two-thirds of the inhabitants, they could choose their representatives at a Committee, and impose upon houses a rate not exceeding five per cent. of their value. Under this Act British Chandarnagar was added to Hughli and Chinsura.

The above sketch of the introduction of municipal institutions into Hughli is taken from Toynbee. The earliest description of the sanitary condition of Hughli which I have been able to find is by Dr. Esdaile. The exact date at which it was written I cannot say, as it does not exist in original, but is only a quotation in a later report by Dr. H. Baillie, dated October 1854; but Dr. Esdaile was Civil Surgeon of Hughli from 1842 to 1848, so his report must have been written within these six years. He writes, with reference to the large number of filthy tanks and pits in the town:—

"The thing is so general that every cottage may be said to be built over a green putrefying pool out of which the house was built, and into this all the animal and vegetable *débris* of the house is thrown. The pigs wallow in it, the people wash fish and rice, and bathe in it, and it is then used for drinking and cooking, because it is conveniently at hand, and saves the trouble of going to the river, or neighbouring tank. This accumulation of animal and vegetable matter, festering under a burning sun, converts every hole into a pest-pit, and the whole of the population eat, breathe, and drink infection."

Dr. Esdaile also calls Hughli "a wretched and obscure village."

The next sanitary report on the town which I am able to quote was written by Assistant Surgeon W. H. B. Ross, and is dated 18th February 1853. It is addressed to the Magistrate, and runs as follows:—

"The late epidemic visitation of cholera makes it incumbent on me to bring to your notice the sanitary condition of the station of Hooghly, and its immediate vicinity, as I am decidedly of opinion that if the epidemic has not been caused, it has been much aggravated by the existence of the innumerable dirty holes and tanks which abound in all parts of the station, and in the contiguous towns of Bandel and Chinsurah. The immense underwood which exists in and near the station is calculated to render the inhabitants unhealthy. A considerable quantity of jungle has been cut down during the last three years, but much remains yet to be felled.

"I beg leave to make the following suggestions, and am convinced that, should the improvements be carried into effect, the health not only of the prisoners, but also of all of the inhabitants would be promoted:—

"(1) As many of the dirty holes and tanks as possible should be filled up, and such a number of clean tanks should be dug or enlarged as would insure an adequate supply of water to the inhabitants.

"(2) The whole of the drains should be sloped and cleaned once every year before the setting-in of the rains. There are three large drains, two between the jail and the Imambara Bazar; they require to be attended to constantly, more particularly the drain nearest the Imambara; the bridge which passes over this drain interferes with the drainage from the large tank. The drain should be so sloped that there might be a free exit for the superfluous water which runs into the tanks. The jungle near the tank and drains should also be kept constantly down, as the jail is not far distant. The principal drain of Hooghly, which runs to the west of the *cutcherries* and partly through Professor Thwayte's garden, is very badly sloped, so much so that even now there is some stagnant water in the drain. I beg to recommend that this drain should be well sloped. The foundation of the bridge near the Hooghly *Ghaut* here also interferes with the drainage.

"The drains in the town of Chinsurah are very badly constructed. They are partly covered and partly open. The drains are too small to admit of men going into them to clean them, and become the receptacles of decayed animal and vegetable matter, and the dens of jackals. I beg to suggest that all these drains should be made open, or so much enlarged as to admit of men going in to clean them.

"(3) Privies and privy drains exist in all parts of the station, and the remains of animal and vegetable matter and the washings of the house cook-rooms and privies are allowed to run into small *puckah* drains, after which they pass into earthen drain and render the whole of the neighbouring air perfectly horrible from the stench. It is in fact on a small scale what is seen and smelt every day in the Chitpore Road, Calcutta. Most stringent measures should be (if legal) adopted to put a stop to the above nuisances. All the privies near the public roads and near large tanks should be put a stop to, and the ordure should be collected in earthen vessels and removed into deeply dug holes or into the river by the police carts. The people should be severely fined for allowing any nuisances to accumulate near their houses, and they should be compelled to collect the remains of their cooking, &c., and throw them daily into the police carts. The small dirty drains should be daily kept clean. It is now almost impossible to go into any of the lanes of Chinsurah without being almost suffocated with the offensive smells from these drains. They are worse near the houses of the rich Baboos and Moulvies than in the poorer quarters. All privies near the public road should be strictly prohibited, if possible.

"(4) *Jungle.*—The whole of the dense jungle and the numerous thatched houses near the jail should be removed, and a fine open space cleared all around the jail except where the *puckah* houses are. The jungle between the public roads from Chinsurah to Hooghly should be cut down, more particularly the underwood and useless trees. The fruit trees, &c., might be allowed to remain, but a proper thinning of the entire jungle is much needed, so as to admit of a proper ventilation of the station. Much has been done by yourself and your predecessor, but much remains to be done. The roots should be removed, the jungle is again springing up.

"(5) *Walls and enclosures.*—All the walls and hedges should, if practicable, be reduced to three and-a-half feet, there are many of them 8 and 10 feet high even along the public roads. I am of opinion that the above suggestion would, if carried into effect, conduce much to the health of the inhabitants, as it would not only admit of circulation of air, but enable us to look better after he sanitary condition of the station. The expense would be great, but as Government allowed a considerable sum to improve the sanitary condition of Jessore, I am convinced that a sufficient sum of money would be granted for improving the large and important station of Hooghly."

On the 28th April 1853 Dr. Ross submitted a second longer report, which is too long to quote in full; but I will make a few extracts under the various heads which he discusses:—

"(1) *Jungles.*—Dense jungles exist in several places, especially on the south of Hughli Chauk Bazar, and between the road from Chinsura to Hughli, *viâ* Pipulpati, and the road along the river.

"(2) *Tanks.*—The countless number of tanks and dirty holes; the use of the polluted water of these pits may be a cause of the great prevalence of elephantiasis in Hughli, as well as of cholera.

"(3) *Drains* are very imperfect, and in many cases obstructed by bridges, the groundwork of which is often considerably above the level of the drains themselves. All the drains leading from dwelling houses are in a filthy state. These drains usually form the exit of private privies, the contents of which run for a short distance along small *pakka* drains, then pass into *kacha* drains, where they speedily sink into the ground, and 'we have on a small scale, in many parts of the station, all the horrors of the Calcutta Chitpore Road.'

"(4) *Roads* are as a rule well kept."

Dr. Ross then makes a very strong recommendation that all the huts and houses along the bank of the river, from the station Chapel to Jora *Ghat*, should be cleared away, so as to make a promenade along the banks of the river.

Another report was submitted by Dr. H. Baillie, then Civil Assistant Surgeon of Hughli, on the 11th October 1854, which I quote almost in full, as it deals with the subject clearly, without being long :—

"I have carefully perused the report of my predecessor, Dr. Ross, on the subject of the sanitary conditions of the station, and I coincide entirely in the views he has expressed, and the recommendations he has made. The sooner these suggestions are carried into effect the better. There cannot be a doubt that this station and its neighbourhood are more covered with unwholesome vegetation than most stations. An ascent up and view from the towers of the Imambara will serve to convince any one of the evil and its extent—houses and dwellings are all but concealed by the luxuriant vegetation, whose growth must be aided by the moist emanations from the countless offensive pools and holes, which spread like a net over the ground, not only in the retired recesses of the jungles, but to the very borders of the high-roads of the station, where these pieces of stagnant water form a chain on each side of the road and diffuse their pestiferous exhalations to the injury of all passers-by. To quote the graphic account of Dr. Esdaile when Civil Surgeon here. [Here is quoted the extract from Dr. Esdaile's sanitary report, which has already been given.] This is strong language, but unfortunately not one whit stronger than the enormity of the evil calls for, and but that it is so extensive there can be but little doubt that it would long since have been remedied.

"2. Besides the great amount of brushwood, which requires cleaning and rooting up, the tanks and holes to be filled up, the drains of the station might with advantage be renewed or fresh cut, sloped, and turfed. Closed *pacca* drains are objectionable on many accounts. Wide open drains are not only less costly, but more efficient; but care should be taken that, previous to the setting-in of the rains, the drains should be annually cleared; nor should fishing operations or obstructions of any kind be allowed to prevent the free flow of the filthy solution.

"3. As to any facts to support the opinion, which it must be borne in mind is that not only of myself but of every one of my predecessors, that the public health is affected by the jungle and other evils before mentioned, I may mention that I have met with fevers of very severe type, in many places about the station, including Bandel and Chinsura; but if I were to fix upon one place where oftenest I have met with disease arising apparently from malarial causes, I should say that it was the immediate neighbourhood of the jail and that part of the town beyond on the river bank called Ghoota bazar. Another bad locality is Barodwaree, situated between the two roads leading from Hooghly to Chinsurah, and another focus for disease exists behind the Hooghly *thana*. The localities indicated are, I am sure, made use of to supply the place of *tatties*, there being

none of a public character that I am aware of in the station; they are much required, and if erected would, I am sure, prove of service; but first the brushwood which screens offenders should be cleared.

"4. There is one matter more of which I find no mention in Dr. Ross' report, viz., the burial grounds belonging to the Mohamedans. Some of them are situated in the midst of the population, as in Ghoota Bazar and Dhobapara. Bodies are buried not very deep, and the emanations from the corpses cannot but have a very prejudicial effect upon the living. It would conduce to the health of the neighbourhood if these receptacles for the dead were closed, and a proper site assigned for this purpose, at some little distance from the town.

"5. I refrain from saying more at present, as it will be time enough to do so when all the recommendations made by my predecessors have been fully carried out."

Dr. Baillie must have been a sanguine man if he had any hopes that his and his predecessor's recommendations would be fully carried out during his tenure of the Civil Surgeoncy of Hughli. Drs. Esdaile, Ross, and Baillie have all long since joined the majority, but the recommendations made half a century ago might be made with equal effect, or perhaps rather with equal want of effect, to-day; and will probably still be devoutly to be desired another half century hence, when the present generation of officials have followed their predecessors into oblivion. Not that nothing has been done; far from it; a good deal has been achieved since 1854, but much more remains, and will remain to be done, because practically it cannot be carried out at any reasonable cost. For instance, the existence of innumerable filthy pools and pits, *dobas* as they are called, is as marked now as it was fifty years ago. The Municipality fill up one or two a year with street sweepings and other rubbish, but what are they among so many? In a country which is all a dead flat, but little above water level, where is the earth to come from to fill up literally hundreds, perhaps thousands of small tanks? It could only be got by digging numerous large tanks; and when one reckons up the cost of acquisition of land, in a town where land is valuable, for large tanks, the cost of excavation of these large tanks, and the cost of transport of earth all over the town, in many cases with a very long lead, to the smaller tanks, one can only admit that the cost is prohibitive. Similarly, with the removal of jungle. Something is done in the way of cutting down jungle, but it grows again almost as soon as cut. In the damp moist atmosphere of Lower Bengal, all ill weeds grow apace, and even the total eradication of underwood and scrub is only a very temporary measure: they will soon spring up again if not yearly kept in check. As in 1854, so now in 1901, the view from the towers of the Imambarah is chiefly one of jungle. Only in two spots is anything like a cluster of houses visible, in Hughli *Chauk* and Ghutia Bazar; for Chinsura proper, which is urban enough in character, is entirely cut off from view by intervening trees.

On the other hand, I gather from Dr. Ross' report that fifty years ago there were huts piled closely along the river bank from the Church up to the

south of Bara Bazar, between the Chinsura *maidan* and the river. If so, they have long since been cleared away, and the only house left on the river bank in this stretch is the fine old Dutch house occupied by the Commissioner. Dr. Ross further recommended that the houses along the river bank should be cleared away all the way up tc Jcra *Ghat*, which is at the north end of Bara Bazar. This space remains uncleared. As it is half a mile in length, and the houses are mostly large *pakka* two-story houses, the cost of compensation would be immense, certainly several *lakhs*. And, while an open promenade along the river bank would be an improvement, its value would be in no way commensurate with its cost.

The two Musalman burial grounds mentioned by Dr. Baillie have both long since been closed, at least I have never seen any sign of recent use in them. That near Ghutia Bazar is a large one, and is in a very neglected condition; that at Dhobapara, west of the Imambarah, is small. The present Musalman burial ground is called the "*Karbela*;" it is near the Grand Trunk Road, a little east of the 5th furlong of the 26th mile, in a part of the town almost free from houses. Dr. Baillie also mentions that not a single public latrine was in existence in his time; there are now eight. It is true that the number is quite insufficient; that they are badly looked after, and some of a very bad pattern; still, there is a considerable difference between eight latrines and none at all.

During the next thirty years after the date of these old sanitary reports improvements were carried out very slowly; but yet something was done from time to time. In 1857 the Strand Road was begun by the then Magistrate, Mr. F. R. Cockerell, and finished by Lord Ulick Browne. The annual Sanitary Commissioner's reports give a few notes on sanitary improvements carried out in Hughli. The Sindeswartola and Tolophatak roads were made in 1871. In 1872 some tanks were redug, and an open *pakka* drain built on both sides of the road in Chinsura, Hughli, and Kamarpara Bazar. In September 1874 the Act for compulsory registration of deaths [(Act IV (B.C.) of 1873] was introduced in the town. In 1876 Dr. Coates, then Sanitary Commissioner, noted that there were only three public latrines and 50 *mehtars*, not nearly enough; that there were sixty well-privies, which should be closed. In 1877 a new public latrine was built in Hughli *Chauk* Bazar, 25 *bighas* of land were taken up for trenching night-soil, and a tank in Sindeswartola was filled up. In 1878 another new latrine was put up, a cart got for conveying dead bodies to the burning-*ghats*, and these *ghats* were improved.

In the Sanitary report for 1879 Dr. J. M. Coates, on giving up the office of Sanitary Commissioner, published a very long statement, carefully comparing the sanitary state of all the chief towns in Bengal in 1879, with

what it had been ten years previously, in 1868. The report for Hughli runs as follows:—

Condition in 1868.	Condition in 1879.
I.—Conservancy.	
The sanitary condition of the Hughli and Chinsura town is on the whole good. There are three public latrines or *tatties*,—two at Chinsura and one at Hughli. They are always kept clean. Well-privies do not exist. A plan of a self-consuming smoke furnace has been submitted for the approval of the Municipality, in which the whole of the night-soil is to be burnt daily; if successful it will be a boon to the people everywhere.	The conservancy establishment consists of one overseer, two *ameens*, two *sirkars*, 30 coolies, ten cartmen, five burning-ghat *mohurirs*, five *murdafarashes*, 20 carts, and ten bullocks. The streets are daily swept, and the sweepings are collected in sites selected for the purpose to be used in filling up wells, excavations, &c. The roads are in good condition; some of them are metalled and have been recently widened. The cultivation of waste places is being extended. There are five public latrines conveniently situated, irrespective of those near the Courts, and two more will be constructed. Three of the present latrines are *pakka*, and three are mat enclosures around *pakka* platforms. They have separate accommodation for females and are provided with tarred *gumlahs*. A *mehtar* and his wife attend to each latrine, and they are frequently visited by the overseer, and a report as to their condition is submitted to the Joint-Magistrate weekly. There are many private latrines. Some are brick-built and others are *kacha*. They are provided with earthern receptacles for excreta. They are kept clean by private *mehtars* and supervised by the municipal overseer. There are only a few well-privies. Act VI (B.C.) of 1878, investing the Commissioners with the control of the public and private latrines, has been sanctioned to be introduced from the 1st April 1880. When this is done the private latrine arrangements will be regulated in a better manner. The night-soil from both the public and private latrines is removed in properly closed buckets, and trenched by a special establishment in two plots of ground set apart for the purpose. One of these grounds, situated in Awash in the south of the town, is 27 *bighas* in extent, and the other, situated in Kazidangah to the north, is ten *bighas* in extent. The former is cultivated by the tenants of its owner, as the lease held by the Municipality only empowers them to deposit the night-soil there.
Drainage.	
The drainage is defective, but is being improved. The drains are cleaned periodically. In times of	The general drainage is tolerably good. Its direction is, in the first instance, rather away from

Condition in 1868.	Condition in 1879.
Drainage—concld.	
heavy rain the surface drains overflow. Many of the drains run through private premises, and are often obstructed.	than direct to the river. The drainage of the southern portion of the town is discharged into the river mainly through a large *khal* at Kooshegunge, and of the northern portion through a large *khal* at Bandel. There are many other outlets that drain small areas. The drainage of the Cantonment, which has been given up by Government and has been included in the Municipality, flows directly to the river through large underground masonry drains. There are several *pakka* drains which are kept in fair repair, and are, as a rule, free from obstructions. There are also many large and small shallow *kacha* drains on the sides of the roads. All the drains are supplied with sufficient waterway by means of culverts and pipes. Encroachments and obstructions on public drains are prohibited, and promptly removed if constructed surreptitiously.
Water-supply.	
The tanks, which are numerous, are used for drinking purposes, but most of them receive surface drainage and the drains around them are everywhere unclean. A tank in the centre of the Chinsura Cantonment has been reserved for drinking purposes. It is well protected and guarded, and is considered to contain wholesome water, which is used by all the European inhabitants. Well-water is not used for drinking purposes. The few wells that do exist are *pakka*, from 20 to 40 feet deep, and are periodically cleaned during the dry season.	Those living near the river use its water for drinking purposes, and those away from it use tank-water. There are many tanks which are kept fairly clean by the owners. Two have been set apart for drinking-water, one near the *kutcherry* and one at the Chinsura Cantonment. They are railed, protected from surface drainage, kept free from jungle, and guarded by constables against other pollutions. The throwing of corpses into, and the committing of nuisances on the banks of the river are strictly prohibited, and the offenders are prosecuted.
Disposal of the dead.	
No report.	There are three burial grounds for Christians, and three large and 154 small ones for the Mahomedans. They are all private. The three large Mahomedan burial grounds are situated, one 20 bighas in extent, for Shiahs and Soonies, at Karbala; one 15 *bighas* in extent, for Shiahs, at Ghutia Bazar, and the third, 10 *bighas* in extent, at Imambarah. It is found difficult to close the small burial grounds, as they are family ones, and have been in existence for many years. All the grounds are, however, kept in good order, and bye-laws, framed under the Municipal Act, to ensure the burial of the dead at a proper depth, and to prevent the opening of old graves, or the

Condition in 1868.	Condition in 1879.
	Disposal of the dead.
	interment of corpses in too close proximity to old graves, are in force. The Mahomedan pauper dead are buried by subscription raised from the people in the locality where the death occurs. The bodies of those who die in hospital are buried at the cost of the Imambarah. There are four municipal burning-*ghats*, to each of which a municipal *mohurir* and a *murdafarash* are attached; the former to look after the general arrangements and to keep a register of the dead, and the latter to keep the place clean. A Brahmin for attending to the burning ceremonials, and a contractor for supplying fuel, &c., are nominated for each *ghat* by the Municipality, but are paid, the former by fees, and the latter at a certain rate per body, by the friends of the deceased. A set of rules has been prescribed for regulating the conduct of the municipal officers at the *ghats* and the mode of cremation, and bye-laws, framed under the Municipal Act, for ensuring the complete cremation of the bodies, are also in force. The Hindu pauper dead are burnt at municipal cost. All deaths are reported to the police.
	Markets and Slaughter-houses.
No report.	There are no municipal markets or slaughter houses. There are four private markets. They and the two slaughter-houses in Chinsura and Hughli are kept in good order. There is a slaughter-house in the cantonment, but it is not used at present.
	Medical Relief.
No report.	There is a hospital at the Imambarah, and to it is attached an outbuilding in which contagious diseases are treated.

I have, of course, no personal acquaintance with the sanitary condition of the town in either 1868 or 1879, but I should fancy that both reports present a far more roseate view of the sanitary condition of the town than would be justified by the facts. For instance, the report of 1868 states that there are no well-privies, that of 1879 states that there are only few; but the Sanitary Commissioner, in his inspection report of 1876, says that there are sixty. The project of using an incinerator to destroy night-soil and other refuse, which is noted in the 1868 report, is mentioned in the Sanitary Report for 1871, by Dr. R. F. Thompson, as in use, but apparently it cannot have been a success. Indeed, to this day no satisfactory method of destruction by fire of such refuse is available. Apart from burning actual night-soil, which, as far as I

am aware, has not been tried, the street sweepings and refuse of an Indian town are far more difficult to deal with in this way than similar waste products in England. The dry cinder and ash, which form so large a proportion of such refuse in England, have no existence in India; there is, on the contrary, a far larger proportion of moist vegetable refuse, and for at least four months in the year the whole mass is sodden with damp. The only use to which such sweepings can be put in India is to utilize them to fill up filthy pits and small tanks; and about the best that can be said of their use in this manner is that while, during the actual process of filling up, the remedy is almost worse than the disease, when the work has been completed the refuse has been got rid of, and perhaps to some slight advantage. That pit has been got rid of, and its filthy contents can no longer be used for drinking or for washing cooking utensils. Similarly, the report that obstructions to drains were prohibited, and if surreptitiously constructed were removed, appears overcoloured, and certainly is not borne out by the present state of the drains. The statement also that commission of nuisances on the banks of the river was forbidden, and that all offenders were prosecuted, appears somewhat improbable. To this day the river bank is far more popular and more generally used than any of the public latrines; prevention is practically an impossibility. In both cases no doubt the prohibition was made all right, but in neither can it be said to have been enforced.

The Hughli-Chinsura Municipality was established in April 1865, under the provisions of Act III (B.C.) of 1864, and now works under Act III (B.C.) of 1884, as amended by Act III (B.C.) of 1886, and Act IV (B.C.) of 1894. Originally the Municipal Commissioners were all nominated, and consisted of the Magistrate, who was Chairman, the Superintendent of Police, and the Executive Engineer, *ex-officio*, with not less than seven of the inhabitants. The present number of Municipal Commissioners is 18, of whom one, the Civil Surgeon, is an *ex-officio* member, five are nominated, and 12 elected by six wards, which return two members each. The area, population, rates levied, &c, as well as the amount expended under each of the chief heads of expenditure, are given in tables which include all the eight municipalities in the district.

From an old report in the office, I find that in 1870 the population was estimated at 28,000, and the number of houses at 8,072. The conservancy establishment consisted of one overseer, three *amins* or sub-overseers, 35 *dhangar* coolies, used wherever their services were required, three *mehtars*, 5 *murda farashes*, and 10 cart-drivers; with 16 carts and 15 bullocks. The total receipts in 1869-70 were Rs. 49,987, and the expenditure under various heads, omitting fractions of a rupee, was as follows: Police, Rs. 11,438; Conservancy, Rs. 5,289; Roads and drainage, Rs. 13,473; Collecting establishment, Rs. 2,116;

Office establishment, Rs. 2,383; Watering establishment, Rs. 1,124; and Contingencies, Rs. 2,132.

Subsequent to Dr. Coates' report in 1879, there are numerous references to Hughli town in the Sanitary Commissioner's reports. In 1880 two new latrines were opened, at Moghultoli and Kasiali, making eight in all. Act VI (B.C.) of 1876, the Latrine Act, was introduced from 1st April 1880. Two new drains were constructed, in Gutia Bazar and Chaumatha. In 1881 the Compulsory Vaccination Act was extended to the town [Act V (B.C.) of 1880], and a new latrine was put up. With the eight mentioned as in existence in the previous year, this would make nine, a larger number than now exists in the town, twenty years later. In 1883 it is stated that three new latrines were constructed.

The report for 1887 contains a lengthy account of an inspection made by the Sanitary Commissioner, Dr. Lidderdale, in February 1887. He states that many improvements (not specified) have been carried out, but that the condition of the town is still far from satisfactory. There are several grave defects, particularly under the heads of drainage and water-supply. Parts of the town abound with foul pits and water-holes full of decaying vegetation, and there is great overgrowth of jungle. Among the suggestions made are the execution of a proper survey of the town, taking levels, and the gradual provision of an efficient system of drainage, making some progress every year; the clearance of jungle; the gradual filling up of foul pits with rubbish; the acquisition and re-excavation of tanks to be reserved for drinking-water, especially two at Bali and Kadamtola; the preparation of an estimate for the supply of filtered water from the Hughli, in co-operation with the other river-side municipalities; the strengthening of the conservancy establishment; the provision of more public latrines; the proper management of the trenching-grounds, and their subsequent cultivation; and the improvement of markets. A note at the end gives the action taken on the suggestions as follows :—

"Nothing adequate seems to have been done in this direction. It was simply reported that the instructions with regard to the weeding out of jungle and cleansing of tanks were translated into vernacular, and printed copies of same were distributed among the people to impress upon them the necessity of adopting the suggestions for the sake of their health."

Here we see the municipality carrying out a line of action, if it can be called action, which has been its usual method of procedure from that day to this; *i.e.*, trying to get other people to make the improvements which it was the duty of the municipality to make for themselves. Of any consciousness that it was the duty of the municipality to spend any public money, or to make any exertion, in the direction of sanitary improvement, there is not a trace.

Dr. Lidderdale again inspected Hughli in February 1888, and reports that he was much disappointed to find that little had been done to improve the sanitary condition of the town since his last visit, a year previously. The

town was in exactly the same state as before. The defects which were noticed under the several heads of sanitation at his last visit were still noticeable, and called for early removal. A long list of recommendations follows, practically the same as those made in the preceding year. The note on action taken on the suggestions shows that the municipality resolved to make many improvements, but not that anything was actually done.

In the report for 1890 a short note on drainage and water-supply simply states that the drainage of Hughli is defective, that the drains after running in opposite direction to the river Hughli wind round and discharge into it; that the water-supply is chiefly from the river, tank-water being also used; that the Howrah water-supply scheme includes Hughli. The scheme as first planned may have included Hughli; this report states that it includes all the towns on the west bank of the Hughli from Bansbāria down to Howrah; as carried out it supplies Howrah alone.

The Sanitary Report for 1892 contains a long report on Hughli by the Sanitary Commissioner, Surgeon Lieutenant-Colonel W. H. Gregg, who must have had a thorough acquaintance with both the actual condition and the requirements of the town, as he had been Civil Surgeon here for nine years on end, 1877 to 1886. He points out that the Government having relieved the municipality of the charge for police, ten years earlier, in 1882, amounting to Rs. 11,800 a year, and as this charge had not been replaced in Hughli, as in almost all other municipalities, by the maintenance of the dispensary being handed over to them, a very large sum had been available for sanitary improvement, in spite of which very little had been done. He states that, from personal experience of many years, he knows that the most important sanitary requirement of the town is an improved system of drainage, and adds that a complete drainage scheme is under preparation. The town cannot at present afford a filtered water-supply scheme, (apparently the inclusion of Hughli in the Howrah scheme had already been dropped), but much should be done in the way of acquisition and improvement of tanks, re-excavating as many as possible of the filthy, useless *dobas* with which the town is honeycombed, and converting them into good tanks, reserved exclusively for drinking purposes. This course would be doubly advantageous, inasmuch as, while ridding the town of some of its worst disease centres, it would also increase and improve the water-supply; while the spare earth could be utilized in filling up other pits. The sinking of wells is not advisable, as they are both very expensive, and very difficult to keep clean. Surface-cleansing is not properly attended to. There are six *pakka* and five corrugated iron latrines, fairly clean, but many more are required. Trenching is very badly done. The slaughter-houses are unsuitable. The markets require drains.

The only references to Hughli in the Sanitary Commissioner's reports subsequent to 1892 are statements in 1897 that the preparation of an

approximate estimate of the cost of supplying filtered water to the municipalities above Howrah on the right bank of the Hughli was nearly completed; and that an approximate estimate of the cost of a drainage scheme had been prepared for the muncipality, which was not in a position to carry it out; and a statement in 1898 that eight alternative schemes have been prepared for the supply of filtered water to the municipalities on the west bank of the Hughli, varying in cost from 24 to 35 lakhs of rupees. Even the smallest estimate would be utterly beyond the means of these municipalities.

Population.—The first estimate of the numbers inhabiting the district and town of Hughli is that of Mr. E. A. Samuells in 1837, which states that the population of the district, which then included Howrah, was 1,508,843, of whom 70,025 were "in the town." What is meant by the town I cannot say; it can hardly have been the area covered by the present municipality, which has never reached half the above numbers. Possibly the whole riparian strip was included in the town, or possibly Howrah city is intended. This subject is discussed under the head of population in Chapter III. In 1870 the population was estimated at 28,000; at the census of 1872 it was 34,761; in 1881, 31,177; in 1891, 33,060; and by the preliminary figures of the census of 1901 it was reckoned as 29,404. It has thus fluctuated considerably, but on the whole has decreased during the last 30 years.

The statistics of births and deaths registered in the town for the last fourteen years, from 1877 to 1900, are given in a comparative table of births and deaths. During these fourteen years the number of births registered have been 11,857; and of deaths 17,825; an excess of 5,968 deaths over births. In all towns males considerably preponderate over females, and registration of births is probably less complete than that of deaths, but these facts will not account for an excess in the number of deaths over that of births amounting to fifty per cent. There is no doubt that the death-rate, even allowing for the above qualifications, is considerably higher than the birth-rate, and the conclusion is obvious that, unless the population of the town were constantly recruited by immigration from outside, it would rapidly diminish, and in no long space of time be reduced to zero.

The table overleaf gives the number of deaths, with their ratio per thousand, for the past 24 years, 1876 to 1900. From this table it will be seen that the highest death-rates have been in 1895 (1,632, or 49·36 per 1,000) and 1891 (1,620, or 49·75 per 1,000), the latter being calculated upon a somewhat larger population than the former. Both were years of considerable prevalence of cholera, though that disease has been much more fatal in some other years than in either 1891 or 1895. The years of greatest cholera prevalence have been 1900 (279, or 8·43 per 1,000); 1888 (249, or 6·43); 1892 (247, or 7·47); 1894 (225, or 6·80); 1896 (214, or 6·47); 1897 (206, or 6·23). To these we

HUGHLI-CHINSURA MUNICIPALITY.

Death-rate from different causes.

YEAR.	CHOLERA.		SMALL-POX.		FEVERS.		DYSENTERY AND DIARRHŒA.		INJURIES.		OTHER CAUSES.		TOTAL.		Place on list.
	Deaths.	Ratio per 1,000.	Deaths.	Ratio per 1,000.	Deaths.	Ratio per 1,000.	Deaths.	Ratio per 1,000.	Deaths.	Ratio per 1,000.	Deaths.	Ratio per 1,000.	Deaths.	Ratio per 1,000.	
1876	197	5·66	36	1·03	505	14·52	103	2·96	8	0·23	166	4·79	1,015	29·19	...
1877	190	5·46	6	0·17	529	15·21	130	3·73	10	0·28	170	4·89	1,035	29·77	...
1878	106	3·04	20	0·57	647	18·61	332	9·55	14	0·40	212	6·09	1,331	38·29	...
1879	37	1·06	14	0·40	486	13·98	231	6·64	7	0·20	154	4·43	929	26·72	...
1880	24	0·69	16	0·46	355	10·21	163	4·68	14	0·40	145	4·17	717	20·62	...
1881	51	1·46	5	0·14	471	13·54	250	7·19	16	0·46	250	7·19	1,043	30·00	...
1882	91	2·35	4	0·10	540	13·94	238	6·14	12	0·30	261	6·74	1,146	29·59	...
1883	146	3·77	1	0·02	523	13·50	231	5·96	10	0·25	225	5·81	1,136	29·34	...
1884	100	2·58	6	0·15	461	11·90	222	5·73	21	0·54	299	7·71	1,109	28·64	...
1885	50	3·87	...	...	536	13·84	314	8·10	12	0·30	311	8·03	1,323	34·17	...
1886	199	5·13	...	...	527	13·61	262	6·76	26	0·67	180	4·64	1,194	30·83	...
1887	82	2·11	1	0·02	535	13·81	260	6·71	20	0·51	144	3·71	1,042	26·91	...
1888	249	6·43	5	0·12	400	10·33	207	5·34	29	0·74	175	4·51	1,065	27·50	27
1889	99	3·12	4	0·12	452	14·26	233	7·35	18	0·56	204	6·43	1,010	31·87	21
1890	142	4·48	25	0·78	500	15·77	146	4·60	9	0·28	261	8·23	1,083	34·17	23
1891	172	5·28	1	0·03	856	26·28	248	7·61	16	0·49	327	10·04	1,620	49·75	8
1892	247	7·47	1	0·03	827	25·01	193	5·83	16	0·48	218	6·59	1,502	45·43	16
1893	175	5·29	...	...	694	20·99	204	6·17	25	0·75	313	9·46	1,411	42·67	21
1894	225	6·80	10	0·30	817	24·71	271	8·19	7	0·21	251	7·59	1,581	47·82	24
1895	145	4·38	45	1·36	904	27·34	265	8·01	13	0·39	260	7·86	1,632	49·36	7
1896	214	6·47	4	0·12	745	22·53	199	6·01	9	0·27	221	6·68	1,392	42·10	34
1897	206	6·23	7	0·21	620	18·75	212	6·41	18	0·54	235	7·10	1,298	39·26	34
1898	23	0·69	...	...	691	20·90	207	6·26	11	0·33	230	6·95	1,162	35·14	17
1899	40	1·20	1	0·03	633	19·14	204	6·17	23	0·69	191	5·77	1,092	33·03	53
1900	279	8·43	12	0·36	591	17·87	128	3·87	17	0·51	238	7·19	1,265	38·26	...

may add 1901, with 181 deaths in the first six months of the year.* In both 1900 and 1901 the town has gone through a severe cholera epidemic, due to general bad sanitation. Small-pox has been most fatal in 1895 (45 deaths or 1·36 per 1,000); 1876 (36, or 1·03); and 1890 (25, or 0·78); and in 1901, with 54 deaths in the first half of the year, a total which had never before been equalled in twelve months. The fever death-rate has been highest in 1895 (904 deaths, or 27·34 per 1,000); 1891 (856, or 26·28); 1892 (827, or 25·01); and 1894 (817, or 24·71). Dysentery and diarrhœa have caused the largest number of deaths in 1878 (332, or 9·55); 1885 (314, or 8·10); and 1894 (271, or 8·19). In 1900 the number of deaths under this head was only 128 (3·87 per 1,000). The largest number of deaths from injury occurred in 1888 (29, or 0·74 per 1,000); and from other causes in 1891 (327, or 10·04); 1893 (313, or 9·46); and 1885 (311, or 8·03). The difference in the population at different times is the reason why in many instances a larger number of deaths gives a smaller ratio per thousand. The column "Place on list" shows the place occupied by Hughli town in the list of municipalities in Bengal, a varying number, but usually about 150, the town with the highest death-rate being considered as first. In the twelve years for which these figures are available, Hughli has never been lower than fifty-third (in 1899); and has been as high as seventh (in 1895), and 8th (in 1891). The highest numbers of births registered in the town have been 868 (27·39) in 1890, and 864 (22·31) in 1888.

Present condition of Hughli-Chinsura Municipality.—The area of the municipality is about six square miles. It is bounded on the east by the river Hughli; on the west by the Grand Trunk Road, as far as the railway station, and north of the station by an artificial line; on the north by Bansbaria Municipality, and on the south by French Chandarnagar. It is divided into six wards, which are numbered from north to south—Ward I, Keota, Shahganj, and Bandel; Ward II, Bali and Hughli proper; Ward III, Babuganj, Gutia Bazar, and Pipalpati; Ward IV, Bara Bazar and Chinsura; Ward V, Chaumatha, Kamarpara, and Chinsura; Ward VI, Britsh Chandarnagar. The number of rate-payers is 8,961 or 27·1 per cent. of the population (of 1891); the mode of assessment is by a rate on the annual value of holdings, which is levied at 6¼ per cent., Hughli being one of the very few municipalities in Bengal which refuse to levy the rate at its normal maximum of 7½ per cent.

* The total deaths registered in Hughli-Chinsura Municipality, under the various heads, in 1901, were as follows:—

Cholera,	243	deaths,	8·26 per 1,000.	Injuries,	25	deaths,	0·85 per 1,000.
Small-pox,	57	,,	1·93 ,,	Other causes,	255	,,	8·67 ,,
Fevers,	703	,,	23·90 ,,	Total deaths,	1,554	,,	52·81 ,,
Dysentery and diarrhœa.	271	,,	9·21 ,,	Births,	861	births,	29·28 ,,

The first impression which strikes the visitor to, or the newly-arrived resident in, Hughli-Chinsura will probably be, as it was in my own case, the general aspect of dilapidation and decay. This is visible in two chief respects: First, the very large number of *pakka* houses in every stage of disrepair, from the house, ricketty and unsafe, but still inhabited, to mere masses of ruined brickwork, overgrown with jungle, a harbour for snakes, jackals, and other vermin, and a screen for the commisson of nuisances. Most of these could and should be dealt with under sections 210 and 210A of the Municipal Act; there are certainly over a hundred such ruins in the town. Second, wherever main roads run along the side of tanks, and also in the case of the Strand Road, which runs along the river-side for about a mile, from the north end of Bara Bazar to the Jail, may be seen the remains of protective railings. In most cases only the posts which once supported the rails are now visible; the rails themselves have long since disappeared.* I mention these two matters first, not because they are of first-rate sanitary importance,—the second, indeed, is not a sanitary matter at all, while the sanitary aspect of the first is of little consequence as compared to questions of conservancy, drainage, &c.,—but simply as evidence of general and long-continued administrative neglect. The usual excuse for all ruins is that they were caused by the earthquake of 1897, and aggravated by the great rainfall of September 1900. But to judge from their timeworn appearance, many of these ruins must be of much older date than 1897. And, in any case, an interval of four years should have been sufficient to deal with cases due to the earthquake. Such ruins are especially noticeable in the block known as Chaumatha, south and west of the Hughli College. In this block, which is fully half-a-mile square, there are several large two-story houses, or the remains of such houses, where it seems to me to be positively dangerous to pass along the street below. There are also several high compound or garden walls in a similar condition; in some cases the walls appear to me to be nearly a couple of feet out of plumb. One of the worst of these walls fell during 1901, luckily without doing any damage.

Roads.—The mileage of *pakka* road in Hughli town is very large in proportion to its area. The total mileage is about 127 miles, of which about 51 miles is *pakka* road, and about 76 miles *kacha*. Considering the very large amount of road to be kept up, I consider that most of the *pakka* roads are in fair order. The Grand Trunk Road is kept up at the expense of Government, as are also a few short lengths of road in the old cantonment. The Municipality, however, certainly cannot afford to make any more *pakka* roads, and indeed cannot keep up all the *pakka* roads which already exist, and some of the less important ones have practically been abandoned. The

* Many of these railings have been replaced during the cold weather of 1901-1902.

only direction in which expenditure in making new *pakka* roads would be justifiable would be the provision of a few short lengths to trenching-grounds. For night-soil carts, above all other vehicles, require a *pakka* road, being very heavy in proportion to their size, and usually so constructed that only one bullock can draw them. Expenditure on *pakka* roads is, I think, the most popular form of expenditure with rate-payers, with the possible exception of education. Perhaps I should say the least unpopular, for no form of municipal expenditure is popular; but roads and education appeal much more to the general public than sanitation.

The removal of rubbish and road-clearing are as a rule fairly done. Heaps of refuse on the sides of the roads, put out or collected there for the purpose of removal, are usually taken away without any very great delay. It is only in some very out-of-the-way lanes that I have seen heaps of rubbish which had the appearance of having been left *in situ* for any considerable length of time. And in the case of many of the smaller lanes, a cart cannot be taken through them, so that rubbish has to be removed, at least as far as the end of the lane, by hand. On the other hand, I have seen, more than once and in more than one place, the roadside drains absolutely blocked by rubbish of this kind; but in such cases the rubbish usually has been deliberately thrown into the drains, to get rid of it, by the inhabitants of the neighbouring houses.

Bastis.—The improvement of *bastis* may be said to be an important part of municipal sanitation. *Bastis* are usually overcrowded, deficient in ventilation, and without proper drainage or conservancy arrangements. I should say that this town, as compared to many others, has not very many crowded *bastis*. The crowded parts of the town are mostly *pakka*, while the *kacha* parts are mostly not over-crowded. Still, though not much in evidence, insanitary *bastis* may be found by those who know where to look for them. One such, just west of the Hughli College, is known as the Bhangabari *basti*. Of course all such insanitary collections of huts stand in need of improvement—for choice of improvement off the face of the earth. But at the same time, in comparison with the crying wants of the municipality in the way of conservancy and drainage, they are a very minor evil. In any case their condition is not nearly so insanitary as that of the crowded blocks of two-story *pakka* houses, such as Chaumatha and Gutia Bazar. It is the mansions of the rich, not the huts of the poor, which form the chief insanitary evil of an Indian city. After all, this is much what Dr. Ross said in his report on the town half a century ago.

Water-supply is from the river Hughli, from tanks, and from wells. Each of the six wards draws its supply partly from the river and partly from tanks. Wells are comparatively little used, though a good many exist in the town. The following table, showing the various sources of water-supply

available in the town, is taken from Appendix M to the Government Resolution reviewing the reports on the working of municipalities in Bengal during the year 1899-1900, the latest year for which the figures are available :—

Number of ward ...	I.	II.	III.	IV.	V.	VI.	Total.
Wholesome tanks ...	18	62	2	65	7	1	155
Unwholesome ,, ...	...	...	161	...	99	280	540
Total ...	18	62	163	65	106	281	695
Wholesome wells ...	40	2	...	167	193	...	402
Unwholesome ,, ...	...	...	141	31	19	150	341
Total ...	40	2	141	198	212	150	743
Total sources ...	58	64	304	263	318	431	1438
Perennial	58	20	11	191	219	160	659
Intermittent	...	44	293	72	99	271	779

Two tanks, in wards III and VI, are the property of Government, and four of the municipality, as well as one well. Of these last, three tanks, in wards I, II, and IV, are set apart for the supply of drinking-water, and one, in ward III, for washing. The one municipal well in ward II is also set apart for drinking. The other tanks and wells in the town are private property.

In considering the above table, it seems to me that, whoever may be responsible for the original report (probably the outdoor inspectors or *amins* of each ward), the different wards must have been judged by very different standards. For instance, in ward No. III 161 out of 163 tanks, and all the 441 wells, are returned as unwholesome; while in ward IV all the 65 tanks, and 167 out of 198 wells, are called wholesome; and in ward, VI, again, 280 out of 281 tanks, and all the 150 wells, are entered as unwholesome. There is no such great difference in the sanitary condition of the various wards as would be required to account for so marked a difference in the state of the tanks and wells.

The return shows no less than 743 wells as existing in the town, of which 402 are called wholesome, and 341 unwholesome. An enormous majority, in fact almost all of these wells, must be private wells in the courtyards of the large *pakka* houses which abound in the town. Public wells hardly exist. As far as I know, there is only one public well, the large

pakka well, the property of the Municipality, on the east side of Hughli *chauk*. How far these wells are used for the supply of drinking-water I am unable to say. Being mostly situated in the compounds of large houses, they necessarily belong to, and are used chiefly by the well-to-do classes, who can best afford to get good water, and whom we might expect to be more particular about their drinking-water than the poor. Many of their owners doubtless do get their drinking-water from the river; but in any case their private wells are used for all washing and culinary purposes, for the cleaning of cooking and eating utensils, and probably the well-water being the easiest to get, is used for drinking by the servants, and by the women. Sunk as they are in ground within the courtyards of, and in close proximity to large houses, many of them in quarters where the whole ground is thickly covered with houses, and often in close proximity to latrines and urinals, I should greatly doubt whether there is a single well in the town, the water of which should really be classified as wholesome.

The European residents use water from the Jail for drinking. This is river-water, pumped up, settled, filtered, and then boiled, in the Jail, which sells it at the rate of two pice per *ghara*. A few native gentlemen also obtain their drinking-water from the Jail. Since December 1901 the Jail water has been filtered through a Pasteur filter.

The number of tanks shown in the return is 695, out of which 155 are classified as wholesome, and 540 as unwholesome. Here, again, my ideas as to what constitutes wholesome water differ widely from those of the compiler of the return. I should say that there is only one tank in the town which might fairly be called wholesome; and even in that one case I should not be too confident as to the result of a chemical or bacteriological analysis of its water. This tank is the one on the south of the great barrack, now occupied by the Courts. It receives storm water only from the *maidan*; it is carefully railed in; and a constable is always on duty to prevent pollution of the water. It is reserved for drinking purposes; bathing and washing clothes in it are strictly forbidden, and I think I may safely say that nothing of the sort occurs. Yet even here the only way of drawing the water is to wade into the tank and fill the *ghara* or other vessel in which the water is carried away. The amount of impurity carried into the tank in this way, on the feet and ankles of those who draw water, must be considerable in the course of a day, used, as the tank is, the whole day long. And sometimes a man proceeds to wash his vessel in the water before filling it, though this is supposed to be forbidden. The only way in which even a reserved tank like this one could be protected from pollution, would be to have a pump, which would lift water from the tank, and discharge it in such a way that those who went to get water would be unable to approach the tank itself. All droppings and overflow from the pump would have to

be carried away by drains in an entirely different direction. In addition to this reserved tank, there may be some twenty to thirty others in different parts of the town, which are in fair condition; for instance, the tank in the Municipal Office compound, another large tank on the north of the Municipal Office, which is private property, one at Tolaphatak, one at Keota, &c. But the great majority of tanks can only be considered as utterly and irredeemably bad, if regarded as a source of water-supply.

The number of 695 tanks must refer only to those which have a more or less definite form, and contain a fair quantity of water. If all the pits, holes, *dobas*, &c., in the town were reckoned up, their numbers would come to far more than 905. These holes are, I consider, one of the worst of the insanitary features of Hughli. Their existence and their dangerous qualities have been pointed out half a century ago, and more, in the reports of Drs. Esdaile, Ross, and Baillie. The reason why they are so numerous is that their excavation has provided the material for building all the mud huts in the town. Almost every hut, certainly every group of huts, has its little tank, or pit, which serves equally as a source of water-supply and as a receptacle for rubbish. Many of them contain such filthy water that I can hardly believe that any one, not actually dying of thirst, could swallow the thick, slimy, green liquid. But their water is extensively used for washing, whatever may be the case as regards drinking. In many of these abominable holes may be seen small mat enclosures, carried down into the water from the houses on their banks, to enable women to go down into them, bathe, and draw water for domestic purposes, without being exposed to the gaze of passers-by. I have myself seen a woman washing a set of eating and cooking utensils in an almost dry tank, which held just such thick, slimy, green liquid as described above, and in addition was not more than three inches deep, and that in close proximity to a much larger and cleaner tank, and at no great distance from the river. To get rid of these pits seems to me, I must confess, almost impossible. A few of them are filled up yearly with street sweepings and other rubbish, but the few which can be so treated make hardly any impression on the total number; and in addition the filling-up process creates a nuisance almost worse than the existence of the pit itself. Something might be done in the way of filling up a good many if all the deserted ruins in the town were levelled, and the materials thrown into these pits, but even a clean sweep of all these ruins would not fill up nearly all the pits and holes in the town, and earth or other materials for filling them up could only be got at a prohibitive cost, not so much of material as of transport.

Latrines.—Dr. Baillie's report shows that in 1854 there were no public latrines. Dr. Coates' report shows that in 1868 there were three, and five in 1879. Subsequent reports show eight in 1880, while the reports for 1881

and 1883 show one and three new latrines as being constructed in these years. This would make at least twelve in existence 17 years ago. Whatever may have been the number in former years, the present number, exclusive of one at Tolaphatak which has fallen down and entirely disappeared, is only eight. Their locality, material, and accommodation are shown in the following table :—

No.	Locality.	Ward.	Material.	No. of seats.	Remarks.
1	Shahganj	I	*Pakka*	8	4 male, 4 female.
2	Bali-Kalitola	II	,,	8	
3	Old Courts, Hughli ...	II	Iron	24	8 seats closed.
4	Hughli Bazar	II	,,	8	5 male, 3 female.
5	Pipalpati	III	*Pakka*	6	4 ,, 2 ,,
6	Conservancy cart depôt ...	III	Iron	8	4 ,, 4 ,,
7	Moghultoli	IV	*Pakka*	8	
8	Gargaripara	VI	Iron	6	4 ,, 2 ,,

(1) *Shahganj.*—An old *pakka* latrine, with eight seats, four for males and four for females, arranged in two rows, back to back, with separate entrances. Apparently not much used.

(2) *Bali-Kalitola.*—Same pattern as No. 1.

(3) *Hughli Old Courts.*—Four separate iron latrines, two with eight, and two with four seats each. One of the larger ones is kept closed. Probably these latrines originally belonged to the old Courts, being close to the site where the Courts were held, before they were moved from Hughli to Chinsura.

(4) *Hughli Bazar.*—An iron latrine, with eight seats, four for males and four for females.

(5) *Pipalpati.*—An old *pakka* latrine with six seats in one row. A screen wall shuts it off from the high-road, but there is no screen in front of the seats, so that any one using the latrine is immediately in view of any one else who comes into the enclosure. Naturally this latrine is not much used. The last two seats are for females.

(6) *Conservancy cart depôt.*—An iron latrine with eight seats, four for males and four for females. On very low ground and difficult of access in the rains, though close to the road from Chinsura to Pipalpati.

(7) *Moghultoli.*—An old *pakka* latrine, with eight seats, four for males and four for females, of the same pattern as Nos. 1 and 2.

(8) *Gargaripara.*—An iron latrine, with six seats, four for males and two for females. Apparently very little used.

The public latrines are defective in three chief respects—insufficient number, faulty location, and defective construction. As regards the first, insufficient number, the population of the municipality is nearly thirty thousand, and the total latrine accommodation amounts to 76 seats, of which 24, or nearly one-third, are in one latrine. In reckoning the amount of accommodation required, two numerous classes should be deducted from the total

population—(*a*) the better classes who have more or (generally) less efficient private privies; and (*b*) the inhabitants of the rural parts of the municipal area, who can resort to the neighbouring fields or jungle for purposes of nature, without being a nuisance to themselves or their neighbours. But, even making every allowance for these two classes, the public latrine accommodation is utterly insufficient for the numbers who ought to avail themselves of it.

As regards faulty location, three of these latrines, those at Shahganj, Pipalpati, and Gargaripara, are not near any crowded centre, which is exactly where public latrines are required, but in more or less rural parts, where such institutions are hardly necessary. On the other hand, there is no public latrine in the whole of ward No. V, and the densely crowded bazars of Kamarpara and Karua Bazar have no public latrine within half a mile. Land has been taken up for a new latrine at Karua Bazar, a locality where a latrine is much required, but up to May 1902 the building had not been begun.

As to defective construction, the four *pakka* latrines are all old, and saturated with the smell which appears to be inseparable from all old latrines constructed of brickwork, into which, no doubt, a small proportion of the matters passed in the latrine must constantly sink, and be absorbed, so that thorough cleaning of old *pakka* latrines appears to be an impossibility. Even of the four iron latrines, not one is of a really good pattern; but iron by its nature does not get saturated with foul matter as brick does, and, therefore, these latrines are less objectionable, and can be more readily cleaned, than the *pakka* ones. By far the worst in construction is the old *pakka* latrine at Pipalpati; where there is no screen whatever in front of the seats, so that any one using the latrine is in full view of any one else who comes into the enclosure. Under these circumstances, it is not to be wondered at that this latrine is little used. Two of the seats are reserved for women! How could any woman be expected to use a latrine where she is not in the smallest degree concealed from view?

A public latrine, under the best of circumstances, is seldom a thing of beauty, but it is an institution of great practical utility and of absolute necessity, and there is no reason why it should not be kept reasonably clean, and free from objection. Three out of the eight, as mentioned above, are so little used that they hardly affect their neighbours in any way. Three more, all in localities where public latrines are much needed, those at the old Courts, Hughli Bazar, and Bali-Kalitola, I have usually found in fair condition, at the numerous inspections I have made. The other two, those at the conservancy cart depôt and Mogultoli, are less well looked after, and I have frequently found them dirty and a source of nuisance to those living near.

In addition to the eight public latrines described above, there are six which, though not exactly public, are used by large numbers of people. These are the latrines attached to the Chinsura Courts, three in number, two at the police barracks, and one attached to the servants' quarters of the officers' barrack. These are all good iron latrines; they are all the property of Government, and are always well kept. Such public institutions as Hughli College, the hostels, the hospitals, the training school, &c., have also their own latrines, which are usually fairly well kept.

Trenching.—This is the very worst insanitary feature of Hughli Municipality, taking into consideration the fact that bad drainage or bad water-supply can only be remedied at an enormous cost, while efficient trenching of night-soil is much more a matter of attention than of expense. There are two trenching-grounds, one at a place called Alipur, in ward II, north of the East Indian Railway branch line to Naihati; the second at Taldanga, in ward V. The first contains several *bighas* of land, and more land is available in the immediate neighbourhood; but the side-road leading to it from Cockerell Road is *kacha*, and in the rains it is a matter of great difficulty for the night-soil carts to reach the ground. The second consists simply of a narrow strip of land, 15 or 20 feet wide, on each side of a road about a quarter of a mile long, and a small piece of ground at the end of the road. Both are situated in places well out of the way, where there are no houses very near, and no one likely to suffer much from their condition, which is fortunate, for anything more revolting than the system of trenching pursued it would be difficult to imagine. I am used to inspecting dirty places, and have a fairly strong stomach, but a visit to these trenching-grounds usually makes me pretty squeamish. The system pursued is to dig long trenches, two to three feet in depth, pour in night-soil and sullage water to within a few inches of the top, then cover the trench over with a layer of thin branches and brushwood, and sprinkle a thin layer of soil on the top. The roof of branches and the layer of earth on the top are usually so thin that the contents of the trenches are visible through them in places. I have seen the ordinary system of trenching very badly carried out in other places, but I have never seen anywhere else this special system of roofing in the trenches with brushwood, and have no idea how it arose, or who deserves the credit of having invented such an objectionable method.*

In addition to the two trenching-grounds above mentioned, in the early part of 1901 a small strip of ground at Khagrajol was utilized for the same

* Since October 1901, and after the above was written, considerable improvement has been effected in trenching. Two new trenching-grounds have been taken up, one in the extreme north of the town, west of Shahganj, and one opposite (east of) the old cemetery, while the Taldanga trenching-ground has been largely extended, and new land has been taken up at Alipur. The actual system of trenching pursued has also been greatly improved, and now, for the time at least, this important branch of conservancy is fairly carried out.

purpose, but was speedily filled up with trenches constructed and filled in the same way as the other grounds. A fourth trenching-ground was taken up in 1901 at Tolaphatak, but hardly any use was made of it. It was first utilized in June 1901, but up to the end of August only one trench had been dug and filled in. Owing to objections made by the residents of the locallty, it was soon afterwards given up.

It is interesting to compare with the description above of how trenching is now actually done at Hughli, the following extracts from the Sanitary Commissioner's (Surgeon Major Gregg's) Circular No. 148, of 16th November 1888, in which the Hughli system of trenching is held up as a model for imitation by less enlightened municipalities. After describing the proper way of trenching night-soil, in trenches three feet deep, in which nine inches of night-soil should be covered by 2¼ feet of earth, he continues :—

"At Hooghly the above system of trenching is worked under the supervision of the Municipal Inspector, Piaru *Ameen*, with much advantage to the municipality, and credit to himself. In the last Inspection Report of my predecessor on the Hooghly Municipality, I find the following remarks on the subject: 'I was very glad to see that two of the trenching-grounds are cultivated very successfully, and excellent crops of English vegetables, gram, mustard, egg-plant, plantains, beans, &c., raised. I have never seen finer cabbages except in England.' These remarks are very encouraging, and I would strongly urge all municipalities to adopt the shallow-trenching system, and to discontinue as soon as possible the deep-pit system of burying, which, as already stated, is most injurious to health."

It is sad to think that, for sheer want of supervision, and lack of interest on the part of the municipal executive, a system of trenching which, only thirteen years ago, was described by the Sanitary Commissioner as a model for imitation by others, should have been allowed to degenerate into the abominable nuisance described. During part of the last thirteen years, a medical officer, the then Civil Surgeon, was Chairman of the Municipality.

That trenching well done is not found a nuisance, is proved by the Jail, which is situated in a crowded locality, Gutia Bazar. The night-soil of over 400 persons, prisoners and staff, is all trenched in the Jail garden by two men, and I have never heard a complaint on the subject from the neighbours, who, I believe, have no idea in what part of the garden the work is done. The Jail trenching-ground has, it is true, one great advantage over those belonging to the municipality—a very short lead.

Drainage is one of the worst sanitary features of Hughli town, as in many other towns. At the same time, drainage is perhaps the most difficult of all the thorny questions which embarrass any one who attempts to do anything to improve municipal sanitation. A moderate amount of money, and a moderate amount of supervision, if only it be thorough and constant, should suffice to put the question of, say, public latrines, upon a proper footing. But drainage, where estimates run into *lakhs*, is a very different matter. It is useless, as well as unfair, to blame the members of any particular Board, and to point out that the drains are badly laid, without proper

levels, not properly cleaned, and, in fact thoroughly inefficient, possibly to such an extent that they may be considered worse than no drains at all. All this would be true of many *mofussil* towns; I certainly think that it would be true here. But at the same time, it is not a matter for which any individual, or any particular Board, can be held responsible. The whole drainage system, if system it can be called, is a gigantic evil, which has been growing for at least a century. In the first instance, some of the drains may have been properly levelled and laid, though more probably they were not. But in the course of years, drains have been extended, new drains have been put in, different drains have been connected together, and all without any system, without consideration of levels or of the natural flow of water. And worst of all, in many places individuals have been allowed to build their houses over the drains, until the course of a drain can only be inferred from glimpses of it got at places where at intervals it may emerge into the light of day between one house and the next. All this has been an old and a constantly growing evil. I do not know with certainty, but it is probable that a great part of this gradual obliteration of drainage took place long before 1865, the date when the Hughli-Chinsura Municipality was first constituted.

I propose now to describe the drainage system of the town, such as it is, in detail, from south to north. All the main drains of the town eventually debouch into the river, in some cases after a very circuitous course. The word "man-hole" is used to denote an opening from above into an underground drain, which can only be traced by these openings. But, except in the case of No. (*iv*), and of a few of the largest drains for a short distance back from their exit into the river, these underground drains are nowhere large enough for a man to get along them underground, and clean them out.:—

(*i*) A large open channel opens into the river in British Chandarnagar, some distance below Sindeswartola. A large number of deep, narrow *pakka* drains, along the sides of the streets and lanes of Chaumatha, the large block of mostly *pakka* houses which covers half a square mile west and south of Hughli College, gradually join and form two large main drains, which are *kacha*. These two drains, passing westwards, unite in the part of the town called Taldanga, then take a southward course for some distance, then again turn to the east, and come out into the river by the exit above described.

(*ii*) The second drain falls into the river immediately north of the Hughli College grounds. For the last quarter mile of its course it is a large covered-in drain, and for perhaps 100 yards back from the river is large enough for a man to get along it underground. About 150 yards from the river it turns abruptly

to the south; it then gradually splits up into a number of deep, narrow, *pakka* street drains, which drain a part of Chaumatha.

(*iii*) The third drain reaches the river south of the Commissioner's house. It has a large mouth, but drains only the *maidan* of the present civil station, the parade ground of the old cantonment, and receives little or no deleterious matter.

(*iv*) The fourth drain reaches the river immediately on the south of the Mission House compound. It has a very large exit, about five and-a-half feet high by four broad. Probably a man could make his way along it for almost its entire length, some 500 yards. It may be traced back through the civil station, on the north of the Courts, to their western limit, by a series of man-holes. It is said that this drain does not receive any tributaries from any place outside the limits of the Government lands. If so, it probably receives not much noxious matter, though it certainly receives all the drainage of the compound of the present hospitals. From the general lie of the land, too, it seems that the drains from the southern half of the east side of Bara Bazar must flow into this drain.

(*v*) Half-way along Bara Bazar, a very large drain passes under the road. Its exit on the river bank is large, about five and-a-half feet high by four broad. Probably a man could get along it as far back as Bara Bazar, some 40 or 50 yards. From the river up to this point it is covered in, and *pakka*. On the west side of Bara Bazar it receives two drains, which more or less drain the western side of that street. That coming in from the south is very large, the one from the north smaller. Both are built over almost throughout their entire length. A large drain from the east side of Bara Bazar also probably falls into this drain; but as the spot where the two meet (if they do meet) is entirely built over, I am not certain about this. Tracing this drain westwards (backwards) from Bara Bazar, it may be seen as a very large open *pakka* drain for some 20 yards, then abruptly turns to the south, and after a few yards disappears among private houses. In the lanes west of Bara Bazar may be seen a number of man-holes, here and there, opening into drains which, I presume, communicate with and go to make up this drain. These man-holes may be traced as far as the west side of the Armenian Church.

(*vi*) The sixth drain comes out on the river some distance north of Bara Bazar. It is fed mainly by *kacha* street side-drains.

A number of smaller drains also debouch into the river along the Strand Road, from Bara Bazar to the Jail.

(*vii*) The seventh is the large drain which falls into the river immediately north of the Jail. This drain is formed by two large *kacha* street drains which pass from the quarter called Kolupara, on the west of the Jail grounds, into the Jail garden, where they unite, then pass along the north of the Jail, where this drain forms the boundary of the Jail lands, and finally reaches the river between the Jail and the Jubilee Bridge. In March and April 1900 a long stretch of this drain, north of the Jail, was made *pakka*, at the joint expense of the Municipality and the Jail, and at a cost of about Rs. 360. A further stretch of some fifty feet was made *pakka* early in 1902.

(*viii*) The eighth drain enters the river on the south of the Imambarah. It has a large exit, but is not very long.

(*ix*) The ninth drain enters the river immediately on the north of the old Courts. It has a very large exit, about 20 feet square. I believe that this drain formed the moat on the north-west of the old Mogul fort of Hughli. It is *kacha* throughout, and is the main drain of Hughli proper. Most of the drains which fall into it are *kacha*, except the side drains of Hughli Chauk.

(*x*) The tenth drain is the Bandel *khal*, a large outfall, just south of Bandel Church. It is *kacha* throughout, as are all its tributaries, which drain a large part of the north of the town, a semi-rural quarter.

(*xi-xii*) Two more large drains flow into the river at Shahganj, and drain the extreme north of the town.

The above is a very imperfect sketch of the drainage system of the town. But it is a very difficult matter to ascertain the direction and course of drains, which disappear under houses, and pass through private compounds, where they cannot be followed up, especially when they are dry. With many of these drains the only way in which they could be traced, and their course ascertained with any certainty, would be to pour into them, at the man-holes, large quantities of coloured water, and see where it came out. As far as I know, no plan of this drainage system is in existence, and I doubt whether any one knows the exact course of the underground drains. Some of the older drains in the southern half of the town are often referred to as the "old Dutch drains." Which of the drains were constructed, or supposed to be constructed, by the Dutch, I am not sure; but I believe they are those numbered above as (*ii*), (*iv*) and (*v*), possibly also No. (*i*).

I have mentioned above how some of these drains are blocked up by houses having been built over them, as on both sides of Bara Bazar. An even worse instance of this may be seen on the south side of Karua Bazar. This is the locality which was infected with plague from February to April 1900. There is a drain on the south side of this street, which has been encroached upon by the houses being built forwards over it, until now the drain is at least a yard back under the houses, and only glimpses of it can be seen here and there, where a lane intersects the line of houses at a right angle. This drain is about a foot broad, and varies from a foot to eighteen inches in height, so that any cleaning of it would be absolutely impossible. This drain, as far as I can make out, opens into another drain running southwards, at right angles. This latter drain is covered in for about ten yards, but may be seen at one place where its roof has given way, and then runs as a large open drain into a tank behind (south of) Karua Bazar. This tank appears, from remants of cemented walls round its sides, to have been once lined with masonry all round, but most of the masonry has now disappeared. On its west bank stood, in January 1901, one of the most dangerous ruins in the town, a large two-storied house, most of which had fallen down, but one wall remained standing, far out of plumb. During the first half of 1901 this remaining wall fell; I did not hear of any damage being done by its fall. Karua Bazar has now got drains in front of the houses on both sides of the road, in addition to the old built-over drain on the south side; but the line of houses on the south, which has swallowed up and covered over one drain, is now encroaching on the new drains in the usual manner. First small moveable wooden stands or platforms, to sit upon, are placed over the drain; then small *pakka* steps bridge it over, then these steps are connected, and the drain disappears; then the houses are built forwards over the steps, and the drain is lost, or only remains as a tradition; while the house-owners have succeeded in annexing a yard or more of the street and rendered a road, too narrow before, still narrower. In addition to encroachments on the drains, in many places, and especially in Karua Bazar, the drains get completely blocked, and often remain for a long time in that condition, owing to the inhabitants of the houses throwing all the rubbish of their shops and houses into them.

The narrow, deep side-drains in many parts of the town, especially in the two quarters where large *pakka* two-storied houses chiefly abound, Chaumatha and Gutia Bazar, receive all sorts of filth, the worst of which consists of sullage from latrines and cook-room refuse. Small *pakka* drains come out from the compounds of the large houses along the side of the street, and pour their contents into the street side-drains. The exits of these house drains are usually slimy, coated with filthy black or green matter, and their contributions to the street drains are of much the same nature. I do not

suppose that much actual solid night-soil finds its way into the street drains. Urine no doubt does so to a considerable extent, and so does the water used for washing out latrines. This may be illegal, and is certainly objectionable, but it is difficult to see what else could happen to such sullage, unless it were simply allowed to sink into the soil and fester there in *kacha* cess-pools under the houses. The municipality certainly cannot undertake to cart it it all away. The water lying in the drains is usually black and evil-smelling. This is bad in open drains, which can be, and are, washed and swept by the *mehtars*, but is infinitely worse in the small covered drains. These can only be cleaned, in a very inefficient way, by raking out with a hoe, or some such implement, as much of the contents as can be reached from the different man-holes or openings into the drains. The matter thus raked out is semi-solid, black filth, with a most abominable smell. As regards the open drains, they are more or less flushed by the *mehtars* pouring water into them by hand, and then sweeping the liquified contents along with brooms. Flushing is hardly a proper term to describe cleaning of this sort. The only way in which these drains could be really flushed would be by a steam-pump, pouring into them sufficient water to convert them into rapidly running streams for five minutes or so, at least twice daily.

I think it is practically admitted by all that the present state of the drainage of Hughli is unsatisfactory, and that some improvement is desirable. It may also be granted that improvement will be a difficult, a complicated, and an expensive business. To substitute an efficient system of drainage for the state of affairs described above is not a matter the plan of which can be knocked off by any amateur in his spare time. Any drainage scheme, to be anything like satisfactory, would require to be carefully worked out, with plans and estimates, by a competent Sanitary Engineer specially appointed for the purpose, and giving his whole time to the business; and even then it would probably take him several months to do the work thoroughly.

Recent sanitary inspections of the Hughli-Chinsura Municipality refer frequently to a drainage scheme for the town which is pending before the Sanitary Board. I have carefully gone through the files of correspondence on the subject in the Municipal Office, and, as far as I can discover, no such scheme has ever been prepared, nor has there ever been the slightest attempt on the part of the municipality to have such a scheme prepared. What has actually been done in the matter may be summarized as follows:—

(*i*) Secretary, Sanitary Board, gives an approximate estimate of one lakh for a drainage scheme (No. 397S.B. of 7th March 1894).

(*ii*) Magistrate (No. 511M. of 29th June 1894) suggests that municipal area may be divided as follows into three parts—(*a*) the town proper, *pakka* houses; (*b*) thatched huts, pretty thick; and (*c*)

rural areas; and that the cost might be much reduced by taking up first (*a*), and then (*b*), while leaving out (*c*) altogether.

(*iii*) Municipal meeting of 18th January 1895. Resolution No. 3 : Accepts classification of roads for drainage scheme into (*a*), (*b*), and (*c*), as made by the Magistrate.

(*iv*) Commissioner, Bardwan Division (No. 468M. of 13th June 1896), urges the Municipality to take up the scheme.

(*v*) Sanitary Board (No. 316S.B. of 18th June 1896) states that approximate cost of drainage scheme for class (*a*) will be Rs. 54,000, for class (*a*) and (*b*) together Rs. 70,000. This letter is a copy of a previous letter, No. 460S.B. of 16th May 1895, which appears to have got lost.

(*vi*) Municipal meeting of 18th August 1896. Resolution No. 2 : To ask Sanitary Board for further information about drainage scheme.

(*vii*) Sanitary Board (No. 684S.B. of 24th September 1896) gives rough estimates of Rs. 54,000 and Rs. 70,000 for drainage of class (*a*), and of classes (*a*) and (*b*) together, respectively.

(*viii*) Municipal meeting of 10th November 1896. Resolution No. 3: Proposed by Surgeon-Lieutenant-Colonel R. L. Dutt, Civil Surgeon, that the consideration of the drainage scheme be deferred until the details of the drainage scheme are received.

(*ix*) Commissioner, Burdwan Division (No. 812M. of 18th November 1896), states that the old Dutch drains require careful examination by an expert.

(*x*) Municipal meeting of 7th December 1896. Resolution No. 3: Thanks Commissioner for above proposal, and are ready to indicate to the Engineer deputed what has been done and what is required in respect of the Dutch drains of Chinsura.

(*xi*) Municipal meeting of 19th May 1900. Resolution No. 9: Chairman authorized to communicate with Sanitary Commissioner, Bengal, with respect to the drainage scheme still pending in his office.

(*xii*) Municipal meeting of 1st September 1900. Resolution No. 6 : Appoints a sub-committee to consider on what points the Sanitary Board should be addressed in connection with the drainage scheme.

The proper procedure to be followed by a municipality which is desirous of introducing an important scheme of sanitation, either drainage or water-supply, is, in the first place, to get a rough estimate from the Sanitary Board. Then, having got this rough estimate, to engage, and, of course pay, a competent man to carry out a survey, and to draw up a complete scheme, with plans and estimates. When the scheme has been prepared, it has to

go to the Sanitary Board for approval; and if found satisfactory, to Government for administrative sanction; after which the question of finance, ways and means, has to be gone into.

From the above summary of correspondence and of municipal resolutions, it will be seen that, for seven years, the Hughli-Chinsura Municipality has never gone, nor attempted to go, beyond the first step, that of getting a rough estimate, free of cost, from the Sanitary Board. When it came to be a question of paying to have a scheme drawn up, they have simply let the matter rest, and have made no attempt to do anything. Apparently they have been waiting for some one else, *i.e.*, for the Government, to do their business for them. This appears from their resolutions to defer consideration of the drainage scheme until details are received, and to point out their requirements, with respect to the Dutch drains, to any Engineer whom Government might depute to do their business for them. Of any idea that it was the duty of the Municipality themselves to carry out the work not a trace appears in the resolutions or in the correspondence. Nor does it appear to have struck them as unreasonable that Government should be expected to do at the public expense, *i.e.*, at the expense of the general body of tax-payers in the province, a costly work for the special benefit of a wealthy town, the inhabitants of which, through their elected representatives, have always firmly refused to tax themselves at the normal rate, adopted by most other towns in the province.

After an interval of three and-a-half years, the Municipality again began to move slowly in the matter, in May 1900, when the present body of Municipal Commissioners came into office. A sub-committee appointed to consider the drainage scheme sat during the last three months of 1900, and recommended that a scheme of drainage be drawn up by a competent Engineer, who might also at the same time survey the town and draw up a map, as no proper map at present exists. At a meeting on 19th January 1901 the Municipality accepted in principle the recommendations of the sub-committee, subject to funds being available in the budget for 1901-1902; and subsequently Rs. 1,000 for the purpose was provided in the budget of the current year 1901-1902. The cost of survey and scheme will probably amount to double the sum provided; but if a similar sum is provided in the budget for 1902-1903, the work might be carried on without interruption in 1902.*

Difficult as the question of drainage everywhere is, it appears to me that Hughli presents a problem even more thorny than that of other Bengal towns. The town is a long and straggling one, extending for nearly six miles along the bank of the river Hughli, and only about a mile in breadth; while on the

*A second sum of Rs. 1,000, making Rs. 2,000 in all, was provided in the budget for 1902-1903, and now, in 1902, a survey is being carried out by a surveyor recommended by the Sanitary Engineer.

west, within at most two miles of the town, runs the Saraswati. North lies the municipality of Bansbaria, south the town of Chandarnagar. Obviously the drainage cannot be carried the whole length of the town, and poured into Bansbaria or Chandarnagar. Then it must go east or west. East is the river Hughli. To carry the drainage of the town into the Hughli would mean to pour it into the river at various points from five to ten miles at most above the intake of the Calcutta water-works. Would this be tolerated? I doubt it. Of course, if we were providing drainage for storm-water only, it would not matter; the storm-water of the town, with such small modicum of sewage as does not sink into and get absorbed by the soil of the town itself, already finds its way into the Hughli, and the same applies to every town on the river bank on either side, from Cossipur to Naihati, from Bali to Bansbaria. But it would hardly be worth while to spend a *lakh*, or half a *lakh*, on a drainage scheme to get rid of storm-water alone, most of which already somehow or other runs off into the river, while what remains may render the soil unduly damp, but at least will not poison it. What we want is to get rid of the sullage and sewage which at present sinks into the soil of the town, and poisons the water of tanks and wells. Failing the Hughli, if the drainage cannot go north, or south, or east, then it must go to the west. But to discharge it to the west would mean to pour it into the Saraswati: and this would be infinitely worse than discharging it into the Hughli. That river is at least a great river, bringing down a vast volume of water, and capable of oxidising and purifying a very large quantity of diluted sewage. But the Saraswati is at its largest, in the rains, an insignificant stream; while in the hot weather it is a feeble trickle, not more than ten or twelve feet wide, by as many inches deep. At its largest, I should not think it would amount to one per cent. of the volume of the Hughli. And the Saraswati was connected with the Eden canal system, *viâ* the Kana *Nadi*, and is yearly flushed from the Damudar, in order that it might provide a fairly decent water-supply for the numerous and populous villages on its banks, from Tribeni down to Sankrail. The united population of these villages, though not equal to that of Calcutta, is still considerable, and to discharge all the sewage of Hughli town into the Saraswati would be to turn that river into an open sewer, and poison the residents on its banks along its whole course. Unless some plan, such as the septic tank system, can be devised, and found workable, to deal with the sewage of Hughli locally, into the Hughli river it must go.

Slaughter-houses.—Of these there are three; in the first two both bullocks and goats are slaughtered, in the third goats only—(*i*) At Bali, consists of two *pakka* walls, front and side, a *pakka* floor, drain, and reservoir, all more or less out of repair; (*ii*) at Khagrajol, a small *pakka* platform, with drain and reservoir, and a brushwood fence round it; both these two have thatched roofs; (*iii*) at Karua

Bazar. Up to the end of 1900 this "slaughter-house" consisted of three bamboos, two upright and a cross piece, on which the slaughtered goat was hung to be cut up. In 1901 a thatched roof and a small *pakka* platform, reservoir, and drain were constructed.* All three are private slaughter-houses. No doubt well planned, constructed, and managed municipal slaughter-houses would be an improvement; but I have never, at frequent unexpected visits, seen anything especially objectionable at any of them; nor anything more than is inseparable from the existence of a slaughter-house. There is also a very large slaughter-house at Khagrajol, which was that used for the supply of meat to the troops, when Chinsura was a garrison station. Since then it has not been used, but remains the property of Government.

Burning-ghats.—There are nominally four, all being on the river bank. They are as follows from north to south:—(*i*) Shahganj, in ward I; (*ii*) Bali, in ward II; (*iii*) at Gutia Bazar, in ward III; (*iv*) Sham Babu's *Ghat*, Chinsura, in ward V. Of these, the one at Gutia Bazar is the only one which can be called a properly constructed burning-*ghat*. It is enclosed on three sides by a wall, being open to the river on the fourth, and has accommodation for burning three bodies at a time. At the other three *ghats* bodies are burned on the river bank, the actual place varying a good deal with the height of the river at different times of the year. I have never seen anything particularly objectionable at any of the burning-*ghats*.

Burial grounds.—The European cemetery is at least 150 years old. It is well kept. Dr. Coates' report of 1879 speaks of three Christian cemeteries. The other two, I suppose, must be the grounds around the Armenian Church at Chinsura, and the Roman Catholic Church at Bandel, each of which contains a number of graves. In the west of the town, somewhat east of the 5th and 6th furlongs of the 26th mile of the Grand Trunk Road, are two Musalman cemeteries called *karbela*, after the Shiahs' holy city near Bagdad, and a pauper burial ground, all of which are fairly well kept. There are also the two old Musalman burial grounds, near the Imambarah, and in Gutia Bazar. The latter is tumble-down and untidy, but not in any sense a nuisance. There are also numerous small private Musalman burial grounds, each of which contains very few bodies, scattered over the town, here and there.

Markets.—There are seven markets regularly held in the town. All are in private hands. From north to south they are as follows:—

(*i*) Shahganj, daily, held in a small open space of ground, no building.

(*ii*) Bali, daily, on west of road, held in a small shed.

(*iii*) Hughli bazar, daily, on east of Hughli *Chauk* bazar.

(*iv*) Imambarah, on east of road, south of great Imambarah building held in a large walled enclosure, on Tuesdays and Saturdays.

* This slaughter-house was closed and given up by its owner in March 1902.

(*v*) Gutia Bazar, a small building on east of road through Gutia Bazar, on Mondays, Wednesdays, and Fridays.

(*vi*) Malik Kasim's *hat*, on west of road from Chinsura to Pipalpati, held on Thursdays and Sundays, consists of a large number of thatched stalls.

(*vii*) Karua Bazar, in a number of small covered-in stalls behind (south of) the main road through Karua Bazar, a little east of the police outpost; held daily.

(*viii*) Kamarpara, on the west side of Kamarpara, at the south end; a very small market, held daily.

Malik Kasim's *hat* and Karua Bazar are the most important. The Municipality has no market.

Melas.—A number of *melas* are held every year in the town. Besides the more important, which are enumerated below, on all Hindu holy days and festivals, on the occasions of eclipses, &c., large numbers of Hindus from the country on the west come into Hughli to bathe in the Hughli, and having done so, go away again:—

(*i*) Sindeswartola, the *Baisakhi mela*, held during the first month of the Hindu year, and going on for the whole month. The number of shopkeepers, &c., who come for the *mela* and remain during the whole month is probably not more than between 100 and 200. Daily for a month some 300 to 400 Hindus come to the temple of Sindeswar (Shiva), bathe in the river, pour water over the image, and go away. Usually the festival is over, for the day, by noon; the great majority come in the morning. While this *mela* was going on, in 1901, a severe epidemic of cholera was raging in the town, and especially in that part where this temple is situated, but only two deaths from cholera took place at the *mela*.

(*ii*) The *Rathjatra*, or journey of the car. This is the *mela* whose chief celebration takes place at Puri (Jagannath). Next to Puri its most prominent celebration is at Serampur, but every village in the district has its *rath*, or car, which is dragged about in connection with this *mela*. At least half-a-dozen celebrations take place in Hughli town. The car is dragged to another place, at some distance from its usual resting-place, which is supposed to be the country-house of the god (Vishnu), remains there for eight days, and on the eighth day is hauled back to its usual abode, this being called the *Ulta Jatra*, or return journey. The festival takes place in the Hindu month of *Ashar* (June or July). Not more than 2,000 to 3,000 attend the *melas* of the journeys at Hughli.

(*iii*) The *Doljatra* (swing festival) held at the *Rajbhari* in Chinsura in *Phalgun* (February or March), and lasts two days. There is no great crowd at any one time, but numbers come and go all day. It is more commonly called the *Holi*.

(*iv*) The *Gosaighata mela* is a large festival held in British Chandarnagar in the month of *Kartik* (October). The religious festival lasts for fifteen days, and the fair for about a month. There is a constant coming and going of people all this time, the attendance being reckoned at about 2,000 a day.

(*v*) The *Muharram* is celebrated with great pomp at the Hughli Imambarah. The festival lasts for three days, and the attendance is about 3,000 a day; numbers of Musalmans come from Calcutta to attend. The other Musalman festivals, the *Id-al-Fitr* and *Id-al-Zaha*, are not much celebrated in Hughli.

Lighting.—The Municipality keeps up 477 street lamps.

Manufactures.—Not much in this line is done in Hughli town. There are a number of small steam mills where *surkhi* is manufactured, but no institution in the town comes under the provisions of the Factory Act. In Bara Bazar there are several shops where neat little wooden boxes are made, which are sent for sale to Calcutta and elsewhere. Brass utensils are made at Shahganj. There are no specially insanitary trades.

Hospitals.—There are two hospitals in the town, the Imambarah and the Female Hospital, which are described in Chapter VIII. A *Yunani* and an English dispensary are maintained in the Imambarah building.

Education.—The principal educational institution in the town is the Hughli College, which has been described above in Chapter III, under the head of education. It has two schools attached to it—the collegiate school at the College itself, with 210 pupils; and the branch school, at Hughli, with 163 pupils. Both are Higher English schools. There are two other Higher English schools in the town—the Chinsura Free Church Mission School, with 452 pupils; and the Chinsura Training Academy, with 393 pupils. Then there are two special schools—the Hughli Training College for school-masters with 85 pupils; and the Hughli *Madrasa*, with 95 pupils. There are three Middle English schools—the Hughli Model School with 118 pupils; St. John's School at Bandel, with 80 pupils; and the Madrasa at Joraghat, with 28 pupils. For boys there are two Upper Primary schools, the Hughli-Barodwari School, with 76 boys; and the Chinsura Suripara School, with 63 boys; and eleven Lower Primary schools, scattered all over the town, with a number of pupils varying from 58 to 15. For girls there are seven Upper Primary and two Lower Primary schools. In the former the number of pupils varies from 115 at the Kamarpara Girls' School to thirty in the Chinsura Suripara Girls' School; in the two latter the number of pupils is 27 and 29, respectively.

All the Girls' Schools are maintained by Missions, one by a private Mission, the others by the Free Church Mission. The numbers of pupils are given as they were on 31st March 1901. There is also a small Sanskrit *tol* at Hughli.

Recreation.—There is a public library, which was established in 1854. It has Rs. 3,500 invested capital. It is located in a building at the north-west of the Courts. The subscription is one rupee per month. There are many football clubs, and a few cricket clubs.

Police.—"D" Company of the Military Police are stationed at Hughli. They were raised in 1898, and were stationed in Bandel House, the old Circuit House, from July 1899 to September 1901. That place proving very unhealthy, they were then moved to the Dutch barrack at Chinsura.

Hughli is also, of course, the head-quarters of the Hughli District Police. The District Reserve are stationed in the Police barracks, which were formerly the hospital for British troops. Hughli *sadr thana* is about a quarter of a mile north of the Courts; and there are four outposts, at Shahganj, Pipalpati, Karua Bazar, and British Chandarnagar.

Staff.—The Municipality keeps one overseer on Rs. 50 per month, *plus* Rs. 15 horse allowance; and six outdoor inspectors, or *amins*, at Rs. 15 per month each, who do all the outdoor work, one to each ward, except the collection of the holding and latrine taxes. They have to collect the other rates, on horses, carriages, carts, trades, &c., to serve notices under these heads, to look for encroachments, serve conservancy notices, conduct prosecutions for breaches of Municipal Acts, &c. The overseer's primary duty is to look after the roads. The *amins*, as will be seen from the list of their work above, have their hands pretty full. Neither overseer nor *amins* have any sanitary knowledge whatever, and, perhaps naturally, take little or no interest in the work of sanitary inspection; and this work, as a consequence, practically is left undone. To expect the municipal executive, the Chairman or Vice-Chairman, to take any interest in, or even to inspect, such matters as latrines and trenching-grounds, would be a vain hope. It can hardly be expected that the Civil Surgeon, who is the official adviser of the Municipality on sanitary matters, shall do more than visit all the sanitary arrangements once a quarter, or at most once a month. No doubt the Municipality would like to have a highly paid officer practically placed at their disposal, while paid by Government, for the purpose of sanitary inspection. But the other multifarious duties of a Civil Surgeon,—hospitals, jail, office, inspection in the *mufasal*, &c.,—entirely prevent him from carrying out a regular daily sanitary inspection of the town. Such regular minute inspection it is the duty of the Municipality to provide, and as regards this duty the Municipal executive have before them the proverbial three courses, which are, in the present case, (*a*) to do the work of inspection themselves; (*b*) to pay some one else to do it for them; (*c*) to

leave it undone. Hitherto the third has been the course followed. It is much to be desired that a sanitary inspector with some slight qualifications for the work, such, say, as might be possessed by a smart Civil Hospital Assistant, should be appointed. Such an officer, making daily inspections of all the sanitary arrangements of the Municipality,—latrines, trenching-grounds, &c.,—might, it is to be hoped, by daily reports through the Civil Surgeon to the Municipality, effect some improvement in the sanitary condition of the town.

The lower conservancy staff consists of five *mehtar jamadars* on Rs. 7-8 per month, and over 100 *mehtars* and *mehtaranis* on Rs. 6-8 and 6 per month. The number somewhat fluctuates from time to time. Of these *mehtars*, six are in charge of public latrines, four drive night-soil carts, while the rest are employed in the cleansing of, and removal of night-soil from, private latrines. Not only does the number of *mehtars* vary somewhat, but also the number of occupied holdings is constantly fluctuating. It is, therefore, impossible to give a perfectly accurate estimate of the number of latrines allotted for cleansing purposes to each *mehtar*, but the following table gives a pretty close approximation to the truth:—

Ward.	Number of mehtars.	Holdings.		Latrines.	
		Number.	Average per man.	Number.	Average per man.
No. I ...	5	212	42	249	50
„ II ...	22	874	40	998	45
„ III ...	19	929	48	1,039	55
„ IV ...	18	868	48	1,049	58
„ V ...	28	1,271	45	1,466	52
„ VI ...	17	708	41	871	51
Total ...	109	4,862	44·5	5,672	52

Finance.—The percentage of total expenditure on some of the principal items of municipal expenditure for all the towns in the district is shown in a table (No. V), in the earlier part of this chapter; the figures being taken from the Government Resolution of the annual reports on the working of municipalities for the year 1899-1900, the latest year for which statistics are available at the moment of writing. For Hughli, the figures are as follows: Total expenditure; Rs. 48,978, expenditure on establishment, 11·7 per cent; on lighting, 8·16; water-supply, 0·32; drainage, 2·78; conservancy, 48·68; medical

0·41; vaccination, 0·6; public works, 20·79; education, 1·72. It will be seen that the lion's share, almost one-half of the whole year's expenditure, went under the head of conservancy. Here it must be remembered that, in municipal budgets, conservancy includes roads, and Hughli has over 50 miles of *pakka* road to maintain. The actual repair of roads comes under the head of public works, but road cleaning and watering are debited to conservancy, and account for about two-fifths of the total spent under this head.

Up to the year 1882, every municipality had to pay the cost of the police force maintained within the town. In that year, the Government took over the whole cost of municipal police, and in its place threw upon the municipalities the charges for maintaining dispensaries, great part of which had hitherto been borne by Government. The charges for dispensaries were, in most cases, much smaller than those for police, and it was directed that the savings made by municipalities owing to the change, should be spent, partly on education, partly on sanitation. As the Hughli Hospital, the Imambarah dispensary, had hitherto been entirely maintained by endowment, the *whole* of the police charges remitted, amounting to over Rs. 11,000 a year, were clear profit to the Municipality. An annual sum like this ought to have been sufficient to do a great deal to improve sanitation, but practically no use was made of it. From that day to this the Municipality have never contributed anything to the Imambarah Hospital, which even has to contribute to the municipal revenues by paying the tax upon holdings at the usual rate. To the Female Hospital, founded in 1894, the Municipality makes a small contribution of Rs. 17 per month, as well as remitting the tax upon holdings.

The Hughli-Chinsura Municipality, like most others, has made it a subject of constant complaint that their funds are too limited to allow of their undertaking any sanitary improvement of importance. The use they made of the magnificent windfall they got from the abolition of police charges, however, goes to show that, if more funds were available, not much better use would be made of them. And to this day, to a considerable extent, the funds available are limited because the Municipality, of set choice and deliberately, prefers that they should be limited. Hughli is one of the very few towns in Bengal, with the exception of Krishnaghar, I think, the only *sadr* town, which imposes the tax on holdings, the chief source of municipal revenue, at less than the ordinary and normal rate of 7½ per cent., levying only 6¼ per cent. The amount which this tax produced in the year 1899-1900 is returned as Rs. 27,494. An increase to the normal rate of 7½ per cent, *i.e.*, an increase of one-fifth, would give an additional Rs. 5,500 a year. This sum, of course, would not, of itself, suffice to carry out an expensive scheme of drainage or water-supply. But it would pay interest on a loan of nearly one lakh for either of the above purposes. Or, looked at in another way, it

would in one year suffice to pay for eight or nine good public latrines, of the latest pattern.

When I say that the Municipality deliberately prefer not to levy the tax at its full rate, I am within the mark. The rate at which the tax should be levied for the ensuing year, 1901-1902, was fixed at a special meeting of the Municipality held on 9th March 1901. At this meeting I proposed to increase the rate from 6¼ to 7½ per cent. Nine members, including the Chairman and Vice-Chairman, were present, of whom not one was willing even to second the motion, which accordingly fell to the ground.

Table of Income and Expenditure, Hughli-Chinsura Municipality.

INCOME.

	1899-1900. Rs.
(1) Balance in hand at close of previous year	3,131
(2) Tax on houses and lands	27,494
(3) „ on animals and vehicles	4,269
(4) „ on professions and trades	488
(5) Tolls (on roads and ferries)	2,964
(6) Conservancy (including scavenging and latrine rate)	15,098
(7) Miscellaneous receipts (penalties)	305
Total ...	50,618
(8) From pounds	522
(9) „ hackney carriages	409
(10) Rents	100
(11) Fees from markets and slaughter-houses	206
(12) Other fees	45
(13) Fines under municipal and other Acts	353
(14) Grants for general purposes	463
(15) Miscellaneous	613
(16) Advances	586
(17) Deposits	637
Total income, excluding opening balance ...	54,552
Ditto, including ditto ...	57,683
Incidence of taxation per head of population ...	1-8-5

Expenditure.

	1899-1900. Rs.
(1) General administration	2,919
(2) Collection of taxes	2,812
(3) Refunds	53
(4) Pensions and gratuities	121
(5) Lighting	3,997
(6) Destruction of snakes and animals	28
(7) Water-supply	161
(8) Drainage, (establishment and repairs)	1,364
(9) Conservancy	23,840
(10) Hospitals and dispensaries	202
(11) Vaccination	297
(12) Pounds	7
(13) Public Works: Establishment	1,140
(14) Ditto: Buildings	214
(15) Ditto: Roads	8,783
(16) Ditto: Stores	49
(17) Education	797
(18) Miscellaneous	2,194
Total ...	48,978

The above table fails to bring out one important point in the finance of Hughli Municipality—the comparatively small proportion collected out of the taxes levied. In 1898-99, Rs. 23,982 was collected as tax on houses and lands. Of this sum, Rs. 14,745 was out of that year's current demand, and no less than Rs. 9,237 arrears from former years. Similarly, the latrine tax in 1898-99 yielded Rs. 13,545, out of which Rs. 8,169 was current demand, and Rs. 5,376 arrears. In 1899-1900 the tax on houses and lands was estimated to yield Rs. 32,000, viz., current demand, Rs. 20,000, and arrears Rs. 12,000; the latrine tax, Rs. 11,000 current demand, and Rs. 8,000 arrears, total Rs. 19,000. It will be seen from the above table that the actual collections fell greatly short of the estimates for 1899-1900; the tax on houses and lands was less than the estimate by Rs. 4,500, and that on latrines by Rs. 4,000 nearly. I am unable to give later figures; but up to the close of the year 1900-1901 the situation had not materially improved.

An enormous proportion of municipal income is expended on establishment, very much greater than what appears in the returns. Of course, nearly the whole expenditure on conservancy and road cleaning, repairing, &c., must go in establishment, the pay of *mehtars*, road coolies, &c. I find that, in the year 1900-01, the total amount expended by the Municipality was Rs. 59,022; and of this, no less than Rs. 26,826 was spent on establishment of various kinds, viz., conservancy establishment, Rs. 12,096; road establishment, Rs. 10,518; general office establishment, Rs. 4,212.

Objects of interest in Hughli-Chinsura Municipality.

1. *The Roman Catholic Church at Bandel.*—Described under the head of "The Portuguese and Bandel" in the History.

2. *The Roman Catholic Chapel in Chinsura*, near the Armenian Church, was completed in 1740, chiefly from funds bequeathed by Mr. Sebastian Shaw.

3. *The Armenian Church*, in Chinsura, a little north of the barracks. Its dome is a conspicuous object from the river, though the church itself is hidden in a maze of small winding lanes. Next to Bandel, it is the oldest Christian church in Bengal, having been founded in 1695, by Margas, son of Khojah Johanness, and completed in 1697 by his brother Joseph. It is dedicated to St. John the Baptist. A large oil-painting is hung over the altar, at the east end of the Church. Annually on the feast of St. John the Baptist, which is held every year on the 25th of January, the Armenian community of Calcutta come to worship at this church. Around the church are a large number of tombs, the oldest of which is that of Khojah Johanness Margas, the father of the founder, who died at Hughli on 27th November 1697.

4. *The Protestant Church* was erected in 1768 by the Dutch Governor, Sir G. Vernet, at his own cost. The steeple had originally been erected in 1744 by the then Governor, Sichterman, as a clock tower. This steeple fell in the cyclone of 5th October 1864. The church is in shape an octagon, or rather it consists of two octagons, an inner and an outer. The inner was the original building, the outer one was added to accommodate the troops when Chinsura contained a large British garrison. The altar, as in the church at Bandel, is at the north end of the church. Over the eastern door is an inscription: "*Ad majorem Dei gloriam edificare jussit G. Vernet A. D. 1767.*"

The inner part of the church will now seat between fifty and sixty people. Round the walls are hung fourteen hatchments, inscribed with the arms and epitaphs of some of the old Dutch Governors and other officers, and their wives. The oldest are W. A., 13th August 1662, and Rogier Van Heyningen, 19th June 1665. Seven of the fourteen are of a date older than the church itself. The latest is that of Pieter Brueys, 23rd August 1793. Vernet, the builder of the church, died in Batavia, on 13th December 1775.

5. *The European Cemetery* is situated on the west of the road named after it *Gorstan* Road, about half a mile west and a little north of the police barracks. The original cemetery must be nearly two centuries old. It was about 120 yards long, by 50 broad at the south and 75 at the north end. More than half of this ground was filled by the Dutch; the rest, at the south end, by the English garrison, subsequent to the cession in 1825. About eighty years ago the cemetery was extended by taking in another piece of land north of the former burial ground, about 140 yards long by 80 broad; the oldest graves in the new part date back to the fifties. The present ground

should last the now scanty Christian population of Chinsura and Hughli for a couple of centuries to come.

The oldest grave with a legible epitaph is that of Sir Cornelius de Jonge, died 10th October 1743. The next are Anna (no surname), 7th December 1753, and Adriana Johanna Wyborch, December 1760. The oldest English grave is that of Lieutenant Dent, June 1782. Other graves of interest are those of Pieter Brueys, Administrator of Chinsura, died 23rd August 1783; "Mrs. H. A. Borwater, relict of the Hon'ble George Louis Vernet, *cidevant* Director of the Dutch East India Company in Bengal, obiit 12th July 1793;" "Daniel Anthony Overbeck, late Dutch Governor of Chinsura, obiit 25th September 1840, aged 76;" and Gregorius Herklots, Fiscal of Chinsura, born at Bremen, 9th January 1768, arrived at Chinsura in 1789, resided there 63 years, and died 26th May 1852, aged 84. Five medical officers lie in this burial ground. One is a Dutch surgeon, whose epitaph runs as follows:—"*Aula lucis* John Frederic Geissler, Surgeon, died 27th May 1828, aged 76 years." Three were officers of the Army Medical Department, viz., N. W. Giffney, Assistant Surgeon, Her Majesty's 16th Regiment, died at Chinsura, 12th November 1832; James Robertson, Assistant Surgeon, Her Majesty's 49th Infantry, died 17th April 1838; and Matthew Griffin, Assistant Surgeon, Her Majesty's 9th Foot, died 4th July 1837. Only one is an officer of the Indian Medical Service, Surgeon Major J. J. Monteath, died at Chinsura, 1st September 1888.

I have heard it suggested that the massive tombs, or rather mausolea, of brickwork, which are so common in old burial grounds of the 18th century, were intended to receive the bodies of their tenants, who, strictly speaking, were never buried at all, in the sense of being buried in the earth, but their coffins were merely placed inside the brickwork structure, which was then closed up. There is one tomb in this burial ground which seems to me to afford proof positive of the truth of this theory. The masonry superstructure has long since fallen, and there remains a stone plinth, 12 feet square by 1 foot high, on which stand two iron gratings, or gridirons, each about 7 feet long, 2½ feet broad, and 1 foot high. It seems to me that obviously these gratings were intended to support coffins, which presumably were left resting on them, when the masonry superstructure was closed up. The inscription on this tomb has been fixed upon the plinth, comparatively recently, after the masonry had fallen and been removed. It consists of a slab of grey granite with an inscription much defaced and worn away by time and weather. With great difficulty I made out what seemed to me to be Johanna Wyborg. On referring to Wilson's "Inscriptions on tombs or monuments in Bengal," I find that the name is Adriana Johanna Wyborch, died December 1760.

Near the north-east corner of the burial ground, on the opposite side of the road, in unconsecrated ground, is a very large tomb, some 30 feet

high, with no inscription. Tradition says that this is the grave of a Dutch Governor, who committed suicide; whether there is any truth in this story I cannot say.

There is a fine old European house a little north of the cemetery, now going to rack and ruin, which is said to be haunted, though I have never heard any definite story about the place. Indeed, this house shares its reputation with another still finer old European house, which is likewise slowly going to ruin, on the west side of the Grand Trunk Road.

6. *The Barracks.*—There are four large barracks in Chinsura. Of these the oldest is called the Dutch barrack, having been built in pre-British times. It is the most northerly, and is parallel with the river, built north and south. It has two racquet courts, probably of later date, at its north end, and beyond them, twenty years ago, was a swimming bath, which unfortunately has long since been filled up. The site is now covered by the Judge's stables. The Dutch barrack was recently occupied by the Hindu Hostel of Hughli College, and by the Chinsura Post Office. It is now (1901) being got ready for the reception of "D" Company, Bengal Military Police.

The largest barrack stands at right angles to the Dutch barrack, south of it, running east and west. It is about 300 yards in length. The Judge has quarters at the eastern end of the upper story; the rest of the barrack contains almost all the courts and other public offices of the district. An inscription about the middle of the south side of the upper story states that these barracks were begun in January 1827, by Lieutenant J. A. C. Crommelin, Executive Engineer, and completed in December 1829, by Captain William Bell, Artillery, Executive Officer. In this barrack the main body of troops were quartered.

The third barrack is almost in line with and to the west of the second, but is a higher and more airy building, though on the whole smaller. It was formerly the hospital for the troops, and is now the police barrack.

The fifth barrack is at some distance south of the others, on the opposite side of the Chinsura *maidan*, or parade ground. It was the officers' quarters, and now contains the Circuit House, as well as quarters for the Civil officers, Civil Surgeon, District Superintendent of Police, &c. All four barracks are two-storied.

Chinsura was occupied by a British garrison for about 45 years, 1825 to 1870; but for great part of that time it was simply a depôt, for recruits on arrival, waiting to be sent on to their various regiments; and for invalids, time-expired men, and regiments which had completed their tour of Eastern service, and were waiting to be embarked at Calcutta for England. In fact, it fulfilled the functions now discharged by Deolali, all troops now entering and leaving the country *viâ* Bombay. I have compiled from old Army Lists the following list of regiments stationed at Chinsura from time to time. One

regiment which we would hardly have expected to meet at Chinsura is the 9th Lancers, which was here for a short time in 1859, pending embarkation for England:—

1830	... 14th Foot.	1844	... 10th Foot.
1831-33	... 16th ,,	1845	... Recruit depôt.
1835	... 38th ,,	1849	... Right wing, 87th Foot.
1836-38	... 9th ,,	1855-56	... 3rd European Regiment.
1839	... 41st ,,	1857	... 84th Foot.
1840-41	... Depôt.	1859, April	... 9th Lancers.
1842	... 50th Foot.	1859, October	... Wing, 53rd Foot.
1842, October	... 29th ,,	1860-1870	... Depôt.

The fact that Chinsura was for a long time a garrison station is still evident from the number of guns, which, planted muzzle up in the ground, do duty as posts all over the cantonment. The troops were finally removed on 23rd January 1871.

7. *The old Circuit House at Bandel* was built in 1829. It is a very fine two-story house, with an immense compound, nearly half a mile long, by 200 yards broad, which forms the only open space on the river bank, not crowded with houses, from Chandarnagar to Tribeni, except the small *maidan* at Chinsura. Unfortunately the site has proved very unhealthy. The house has been at various times occupied as a private residence, and as the circuit house. Up to September 1901 it served as quarters to "D" Company, Bengal Military Police, who suffered terribly from fever while stationed here. This house was the Dacoity Commissioner's head-quarters for a long period.

8. *The Commissioner's house* is a very fine two-story house, on the river bank, with a splendid staircase leading to the upper story, up each side of the hall. It is said to have been the Dutch Governor's house. I believe this is the house which Stavorinus describes as follows:—

"Mr. Sichterman erected a very handsome building, not far from the church, to which he gave the name of "Welgeleegen" (well-situated). It lies close to the Ganges, and a gallery, with a double row of pillars, projects over the water, above which is an elegant terrace and balcony, which commands the finest prospect at Chinsurah; on one side the view extends as far as Chandernagore, and on the other beyond Bandel. The gardens which are adjoining to this building are delightfully shady and pleasant."

Owing to the winding of the river, it is not possible now to see both Bandel and Chandarnagar at the same time from any spot on the west bank of the river; and I do not believe that it can ever have been possible. It is barely possible to see them both at once from Naihati *Ghat*, on the east bank, opposite Hughli. Still the situation of this house is the spot whence the best view up and down the river can be obtained. The shady gardens have perished, also the elegant terrace over the river; but there are still remains of a good deal of masonry, on the very bank of the river, which must be the ruins of the buildings described by Stavorinus. Hodge's "Travels" (1780–86) contains a view of Chinsura from the river. The plate shows a large building,

immediately north of the church, with a pavilion built out over the river. The Commissioner's house is about a quarter of a mile north of the church, but, as there is not a vestige of remains of any other building between it and the church, this must be the building with pavilion over the river shown in the plate.

9. *The Imambarah and the Mohsin Fund.*—The Mohsin Fund is a bequest of a rich merchant of the name of Muhamad Mohsin, who was born in 1732, settled in Hughli district, and died there in 1812. He founded the trust by a deed dated 9th June 1806. The proceeds of the property bequeathed to the trust, the bulk of which is the income of the estate of Syadpur, in Khulna district, were to be divided, under the deed of trust, into nine equal shares. Three of these shares were to be devoted to religious celebrations, feasts, &c. and the maintenance and repair of the Imambarah building and the cemetery attached to it. Four shares were to be spent on establishment and pensions; while to each of the *mutwalis* appointed by the founder to supervise the trust, one-ninth share was to be paid as remuneration for their trouble. Owing to the mismanagement and quarrels of the *mutwalis*, Rajab Ali Khan and Shakir Ali Khan, the latter of whom had in the meantime died and been succeeded by his son, Bakir Ali Khan, Government stepped in, under Regulation XIX of 1810, and took over the trust. On 6th September 1815 Syad Ali Akbar Khan was appointed *amin* or controller of the funds, on a salary of Rs. 200 a month, with Rs. 100 for establishment. The Local Agents were instructed to make a searching inquiry into the affairs of the Imambarah. In 1817 the senior Local Agent, Mr. D. C. Smyth, submitted a very full report, which brought to notice that nearly fifteen thousand rupees had been spent by the *mutwalis* on unauthorized items of personal expenditure. In August 1818 the *mutwalis* were formally dismissed, and Ali Akbar Khan appointed in their place. They contested the legality of their dismissal in the Civil Courts, and this litigation was not finally settled in favour of Government until 1835. By this time a very large surplus had accumulated, amounting to over 8½ lakhs. This surplus was employed in the establishment of the Hughli College and the construction of the present Imambarah buildings.

In 1836 the Local Agents were the Collector, the Magistrate, and Dr. Thomas Wise, the Civil Surgeon; the last named was also Secretary, and as such received Rs. 100 per month. Subsequently the Collector and the Judge were joint agents, and now the Local Agent is the Magistrate and Collector.

In 1836, the *mutwali*, Ali Akbar Khan, was removed from office for spending the lapsed one-ninth share in spite of repeated orders to the contrary. Maulvi Zainudin Hosein acted as *mutwali* temporarily, until Syed Karamat Ali of Jaunpur, the companion of Lieutenant Conolly's travels, who was appointed as *mutwali* by Government order No. 12 of 5th January 1837, joined, which he did on 18th April 1837. He received a salary of Rs. 500 per month, *plus* any surplus over and above that amount which his one-ninth share might yield.

The present Imambarah buildings were commenced about 1841, but were not completed until May 1861. The Imambarah cost about Rs. 2,17,413; and the revetment along the river bank about Rs. 60,000. The original building was erected about 1694, in the reign of Aurangzeb, by Muhamad Mutahar, of whom Muhamad Mohsin was a descendant in the female line. They were one-storied, except the residence of the *matwali*, which was of two stories.

The present building stands on the right bank of the river Hughli, which here runs a short distance almost due east, so that the right is here the south bank. South of the building runs the road from Chinsura to Hughli, along the river, usually called the Strand Road. On to this road the building faces. Going in through a lofty gate, surmounted by a high edifice, with a tower on each side of it, one enters a large oblong quadrangle, whose long sides lie north and south, containing a long masonry cistern, with fountains. On the north of this quadrangle is the great mosque, profusely decorated with texts from the *Koran* in black and various colours. On both sides of the quadrangle are ranges of two-storied buildings. East of the entrance gate are the quarters of the *matwali*, and west of it a very well equipped *Yunani* dispensary. A small dispensary on the European system is accommodated on the eastern side of the quadrangle The towers are about 80 feet high, 155 steps lead to a gallery near the top, from which a fine view of the surrounding country may be had. Between the towers is an enormous clock which was imported from England at a cost of Rs. 11,721. The range of buildings on the south of the road also belongs to the Imambarah.

List of Matwalis of the Hughli Imambarah.

1.	Rajab Ali Khan	1812–18
2.	Shakir Ali Khan	1812
3.	Bakir Ali Khan	1818
4.	Syad Ali Akbar Khan	1818–36
5.	Maulvi Zainudin Hosain	1836–37
6.	Syad Karamat Ali	1837–75
7.	Syad Ashrafudin Ahmad	25th June 1875

The present distribution of the funds is as follows: one ninth is the *matwali's* share or salary; three-ninths are spent on the upkeep of the Imambarah, and religious purposes; four-ninths are in the hands of the Magistrate and Collector, who is *ex-officio* Local Agent, for general charitable purposes, the chief of which are the maintenance of the College and the Hospital. Since 1st April 1876 the administration and control of the three-ninths share has been in the hands of a Committee of Muhammadan gentlemen. The remaining ninth, which represents the salary of the original second *matwali*, is retained by Government. [The early history of the Imambarah is taken from Toynbee's work.]

The Imambarah is a Shiah institution, its founder having been a Persian. The word Imambarah means a building in which the festival of the Muharram

is celebrated, and service held in commemmoration of the deaths of Ali and of his sons, Hasan and Husain. At other times the *taziahs*, or shrines, are preserved in it, and sometimes it is used as the mausoleum of its founder The most celebrated Imambarah is that of Lucknow.

10. *The Jubilee Bridge* over the Hughli is described in Chapter IV—Communications.

11. *The Hughli College* is described under the head of Education in Chapter III.

12. *The Hospitals* are described in Chapter VIII.

13. *The Forts.*—Four forts have existed at Hughli at different times, three of which must have been places of strength and importance in their day. The earliest of these was the Portuguese Fort, which was captured by the Moguls in 1632. Two low, broken walls, which run into the river opposite the Jail gate, but are visible only at low tide, and not even then when the river is high, are supposed to be remnants of this Fort. Of the other three, no vestiges remain *in situ*. The second was the Mogul Fort, built when Hughli was declared the Royal Port of Bengal, after 1632. It occupied the ground now covered by the Imambarah, the Magistrate's house, and the old Courts. The large drain which runs into the river just north of the old Courts was probably part of the moat of this fort. This fort was pulled down in 1830. The third was the English Fort, which stood on the river bank, a little south of where the Jail now stands. This can hardly he called a fort, as it was abandoned before the European nations had seriously fortified their settlements on the Hughli. Fort William at Calcutta was the first position really fortified by the English. The fourth was the Dutch stronghold, Fort Gustavus. It occupied the ground where the barracks now stand, and was pulled down in 1827, soon after the cession of Chinsura, to make room for the barracks.

14. *The United Free Church Rural Mission.*—The Mission House and the principal school stand on the north-east corner of Chinsura *maidan*, at the south end of Bara Bazar; the Church on the north of the Police Barrack; another large school in Hospital Road, north of Hughli *thana*, the Zanana Mission House at Jiban Pal's garden near the railway station. The Mission has also out-stations at Tribeni, Mahnad, Sonatigri a mile south of Sultangachi, and Inchura.

15. *Mrs. Yeates tomb.*—Fifty yards east of the fourth furlong post, in the 25th mile of the Grand Trunk Road, stands a fine old Dutch mausoleum. The building is some 40 to 50 feet in height. An arched chamber, some 15 feet high, stands on a slate plinth six feet high, and above it rises a dome, with a tiny steeple on its summit. Round the dome, in letters nearly a foot high, is inscribed the name of the occupant of the tomb, Susanna Anna Maria Yeates, who died on 12th May 1809. In the large chamber is a slab with this name and date, the rest of the epitaph being in Dutch.

The epitaph runs as follows:—

"Ter Gedagtenis/ Van/ Susanna Anna Maria/ Yeates/ Geboore Verkerk/ Obiit/ Den 12er May Anno 1809/.

Ik lag in het graft zonder geklag
En rust dar tot den Jongsten dag
Dan zult gy Heer! myn graft ont dekken
En myter Eeuwige vreugd verstrekken."

It may be thus translated—

"To the Memory of Susanna Anna Maria Yeates, *née* Verkerk. Died the 12th May, Anno 1809

I lie in the grave without complaint
In rest until the Last Day.
Then shall you, Lord! open my grave
And take me away to eternal joy."

Toynbee, in his "Sketch of the Administration of the Hughli District" (pp. 138-9), gives some information about Mrs. Yeates. By her will, dated 21st November 1805, she left Rs. 4,000 as a trust, the interest to be applied in the first place to the repair of her own tomb, and those of her two husbands, Pieter Brueys and Thomas Yeates, the surplus to be given to the Chinsura Poor Fund. She also bequeathed to the station, as a burying-ground, sixty *bighas* of land, between the Taldanga and the Grand Trunk Roads, known as *Ayesh Bagh*. The administration of this land was made over to the Lord Bishop of Calcutta, in 1825, along with that of the church and cemetery. She herself lies buried in this ground, under the mausoleum above described, but as the cemetery was enlarged in 1833, at a cost of Rs. 246 for 26 *kathas* of land, the *Ayesh Bagh* has never been used as a burial ground. It still belongs to the church, but is now used as a municipal trenching-ground.

16. *Shahganj temple*.—On the river bank at Shahganj, in the extreme north of the town, stands a temple of Shiva, with eight small separate shrines.

II.—Bansbaria Municipality.

Bansbaria is the most northern of the seven municipalities which lie along the west bank of the Hughli river in this district, and of the urban strip which extends along that bank from Tribeni to the southern extremity of Howrah. It is the largest of the seven in area, covering a space of 6¾ square miles, but in population it stands sixth out of the seven, Kotrang being the only one with a smaller population. The Municipality contains three urban areas—Kamarpara in the south, Bansbaria in the middle, and Tribeni in the north; but the greater part of its area is practically rural. It was constituted a municipality on 1st April 1869. Its western boundary lies near the East Indian Railway, the Hughli river forms the eastern boundary, on the south it is continuous with Hughli-Chinsura Municipality, while the northern boundary is an artificial line, about half a mile north of Tribeni. The name is usually held to mean "the place of bamboos", but another derivation also put forward is that the name means "Bangshobati," the house of a noble family, the family alluded to being that of the Bansbaria Raj. There are four wards, going

from south to north they are as follows: I—Kamarpara and Mirarhat; II—Bansbaria; III—Bansbaria, Sibpur, and Shahpur; IV—Tribeni. Other general information will be found in municipal table No. I.

Population has steadily fallen during the last thirty years, each succeeding census showing the number of inhabitants as somewhat smaller than at the last census. In 1872 it was estimated as 7,861, in 1881 as 7,031, in 1891 as 6,783, and in 1901 6,473. The death-rate has always been high. Figures for the last eleven years are available, as shown in the accompanying table. Of these eleven years, the highest death-rate was reached in 1894 (60·59 per 1,000), the next in 1895 (57·49). The lowest year was 1890 (35·13 per 1,000), and the next 1899 (38·47). In the table showing the death-rates of all municipalities in the province, in the Sanitary Commissioner's annual report, Bansbaria stands third in 1895, sixth in 1894 and 1898, out of about 150 towns; while the lowest positions it has held have been 32nd in 1892, 29th in 1897 and 1899. In 1894 the death-rate (411 deaths, 60·59 per 1,000) more than doubled the birth-rate (160 births, 23·58 per 1,000), and in several other years has been not far off double the birth-rate. Bansbaria is not a manufacturing town, nor one which has any great preponderance of males over females in its population.

Death-rate from different causes.

Year.	Cholera.		Small-pox.		Fevers.		Dysentery and Diarrhœa.		Injuries.		Other causes.		Total.		Place on list.
	Deaths.	Ratio per 1,000.	Deaths.	Ratio per 1,000.	Deaths.	Ratio per 1,000.	Deaths.	Ratio per 1,000.	Deaths.	Ratio per 1,000.	Deaths.	Ratio per 1,000.	Deaths.	Ratio per 1,000.	
1876	32	4·61	...	...	127	18·30	21	3·02	2	0·28	20	2·90	202	29·11	
1877 to 1889 figures not available.															
1890	11	1·56	3	0·42	134	19·05	38	5·40	2	0·28	59	8·39	247	35·13	19
1891	31	4·57	...	...	167	24·62	23	3·39	7	1·03	58	8·55	286	42·16	20
1892	68	10·02	...	...	143	21·08	18	2·65	8	1·17	43	6·33	280	41·27	32
1893	14	2·06	...	...	211	31·10	27	3·98	11	1·62	47	6·92	310	45·70	14
1894	42	6·19	2	0·29	272	40·10	51	7·51	10	1·47	34	5·01	411	60·59	6
1895	32	4·71	11	1·62	255	37·59	32	4·71	7	1·03	53	7·81	390	57·49	3
1896	49	7·22	...	...	204	30·07	38	5·60	3	0·44	52	7·66	346	51·00	9
1897	4	0·58	1	0·14	168	24·76	28	4·12	2	0·29	73	10·76	276	40·69	29
1898	19	2·80	...	...	212	31·25	25	3·68	6	0·88	26	3·83	288	42·45	6
1899	5	0·73	...	...	185	27·27	25	3·68	3	0·44	43	6·33	261	38·47	29
1900	37	5·45	...	...	174	25·65	34	5·01	4	0·58	58	8·55	307	45·26	27

Out of the eleven years for which statistics are available, cholera was most fatal in 1892, with 68 deaths (10·02 per 1,000), and 1896, 49 deaths (7·22); least prevalent in 1897, 4 deaths (0·58), and 1899, 5 deaths (0·73). Small-pox has not affected the town much, except in 1895, the year of the great Calcutta epidemic, when there were 11 deaths (1·62 per 1,000). The only other years from 1890 to 1900 which show any deaths from small-pox are 1890, with three deaths, 1894 with two, and 1897 with one. The year 1901, however, has again witnessed a great outbreak of small-pox in Calcutta, and seven deaths from this disease occurred in Bansbaria during the year. Malarial fever is, of course, the chief cause of death, and the highest death-rates have occurred in 1894 (272 deaths, 40·10 per 1,000), and 1895 (255 deaths, 37·59 per 1,000); the lowest years have been 1892 (143 and 21·08), 1891 (167 and 24·62), and 1897 (178 and 24·76). 1894 also heads the list in the death-rate from bowel-complaints (51 deaths, 7·51 per 1,000); 1892 again is lowest, with 18 deaths (2·65).

Roads.—The Municipality contains about eight miles of *pakka* road, and between eight and nine miles of *kacha* road. There is one important engineering work, the suspension bridge over the Saraswati at Tribeni. The bridge is described under road No. 32, in Chapter IV, the river in Chapter I.

Water-supply.—A good water-supply is available from the river Hughli, and is used by a large number of the people. There are 142 tanks in the town, viz. in ward I, 24; ward II, 27; ward III 54, ward IV, 37. Their water is not much used. None of them are classed as wholesome. There are no wells.

Conservancy.—There are two public latrines, one at Tribeni, on the north bank of the Saraswati, west of the suspension bridge; the other in Bansbaria, on the bank of the Hughli. Part IX of the Municipal Act [Act IV (B.C.) of 1894] is not in force. There are no night-soil carts; three scavenging carts for removal of refuse. There are said to be no well-privies. There is a trenching-ground near Trishbigha.

Drainage.—There is nothing in the way of a drainage system. The drains, which are all surface drains, run into the Saraswati and the Hughli.

Slaughter-houses.—None.

Disposal of the dead.—There are two burning *ghats*, one at Bansbaria and one at Tribeni. The latter is of great sanctity; bodies are brought from considerable distances to be burned at this ghat. There is no fixed burial ground. Musalmans bury indiscriminately in their own grounds.

Markets.—There are two held daily, at Tribeni and Bansbaria, and one at Mirarhat, held twice weekly, on Thursdays and Sundays.

Melas.—Tribeni is a place of great sanctity, owing to its being, as the name implies, the place of junction of three rivers. Here the Saraswati leaves the Hughli, while the Jamuna enters the Hughli on its other, or eastern

bank, not far off. Several important religious festivals are held here, all of which are also utilized for purposes of trade:—

(*i*) The *Makara Sankranti*, or *Uttarayan* (coming into the north) *mela*, is held on the day on which the sun enters the Tropic of Capricorn. It lasts two days, the last day of *Push*, and the first of *Magh*, which fall in January; but the accompanying fair lasts three days. Large numbers of pilgrims, among whom women predominate, visit the Tribeni temple and *ghat*, the tomb of Zafar Khan Ghazi at Tribeni, and the temple of Hamsesvari at Bansbaria. It will be noticed that one of the three is a Musalman tomb, while two are Hindu temples; but the pilgrims appear to visit all three indiscriminately. Hunter, in his Statistical Account, puts the attendance at about 8,000 persons. I was told at Tribeni that fully a *lakh* of people attend during the three days the *mela* lasts. This number is probably exaggerated, but I believe that the attendance is much over 8,000 a day.

(*ii*) The *Bisuva Sankranti*, held in honour of the sun at the time of the vernal equinox, on the last day of *Magh*, which falls in February.

(*iii*) The *Baruni mela*, or more strictly the *Varuna mela*, the great bathing festival of Bengal, held in March, in the month of *Phalgun*, in honour of Varuna, the god of the waters. This *mela* lasts only one day. Hunter gives the attendance as 6,000. I was told on the spot that it was about 25,000. This festival is especially popular with Urias.

(*iv*) The *Dasahara*, held in June, in the Hindu month of *Ashar*, in honour of the goddess Ganga; lasts one day.

(*v*) The *Kartik puja*, on the last day of the month of *Kartik*, falling in November, in honour of the god Kartikeya, the son of the goddess Durga. The *mela* lasts only one day; attendance about 6,000.

(*vi*) All such occurrences as eclipses are attended by great bathing festivals, large crowds assembling to bathe in the Hughli at Tribeni *ghat*. Many of the pilgrims come by train to Magra station, about three miles west, and thence walk to Tribeni.

The Revd. J. Long, in his article on "The Banks of the Bhagirathi" in the *Calcutta Review* for 1846, states that human sacrifices by drowning used to be carried out at Bansbaria, and that the first Christian church under a native minister was established here. Tarachand was the minister's name.

Manufactures.—Brass and bell-metal work are made at Bansbaria and Kamarpara. Bricks are also largely made.

Hospitals.—The Free Kirk Rural Mission has a small out-patient dispensary at Tribeni, in charge of a Civil Hospital Assistant.

Education.—Dr. Duff, of the Free Kirk, founded an English school at Bansbaria in 1845, the cost of the school building, Rs. 6,000, being contributed by Sir James Outram from the Sind prize-money. The school was closed and the house sold in 1883.

There are now in Bansbaria a Higher English school with 76 pupils; a Middle English school with 45 pupils; an Upper Primary school for girls, with 55 pupils, at Bansbaria; a Lower Primary school for girls, maintained by the Free Kirk Mission, at Tribeni, with 29 pupils; and three Lower Primary schools for boys, with 56, 25, and 17 pupils, respectively.

Police.—There is an outpost of Hughli *thana* at Bansbaria, with three constables; 20 town *chaukidars* are also employed in the town.

Staff.—The conservancy staff is very small; two *mehtars*, one for each public latrine, at Rs. 4 each, and thirteen road coolies for cleaning the roads. One overseer supervises all the work of the Municipality.

Finance.—The bulk of the income is derived from a tax on persons, and revenue from the Tribeni burning-ghat. Municipal table No. V shows the proportion of income spent under various heads. Roads take up by far the largest amount, followed by establishment and conservancy.

Objects of interest in this Municipality are three in number—Tribeni temple and *ghat*, the tomb of Zafar Khan Ghazi at Tribeni, and the temple of Hamsesvari at Bansbaria:—

(*i*) *Tribeni temple and ghat*, in spite of their sanctity, are not much to look at. The *ghat*, a fine flight of steps, is said to have been built by Mukund Deo, the last independent king of Orissa, whose dominions extended up to this spot, and were bounded by the Saraswati. The temples stand about fifty yards from the river, on the north of the road. The chief temple is a small conical-roofed building, about 30 feet high and 12 square, with a *lingam* inside. It faces south. East and west are rows of similar but smaller temples, three on each side.

Tribeni is one of the four *samaj*, or places famous for Hindu learning, the other three being Guptipara, Santipur, and Nadiya. Formerly there were over thirty Sanskrit *tols* here. Babu Bholanath Chunder, in his "Travels of a Hindu," states that Tribeni is mentioned by Pliny and Ptolemy. The embassy, sent by the East India Company to the Emperor Farakhsiyar at Delhi, in 1714, was received in great state at Tribeni, on its return, by the President, Robert Hedges, and four members of Council, about 20th November 1717. This was the famous embassy of which Factor John Surman was Chief, and William Hamilton Surgeon, when by his cure of Farakhsiyar, Hamilton obtained for his countrymen liberty to trade, free of duty,

in Bengal, and the *zamindari* of certain villages. Hamilton returned only to die, in Calcutta, on 4th December 1717.

Stavorinus visited Tribeni in 1769-70, and gives the following account of the place. He and his party walked from Naya Sarai to Tribeni. He writes :—

"About an hour before we came to Terbonee, we entered another wood, into which, having advanced a little, we met with an ancient building, of large square stones, which seemed as hard as iron; for whatever pains we took, we could not, with a hammer, break any pieces off. The building was an oblong square, 30 feet in length, and 20 in breadth. The walls were 13 or 14 feet in height. It had no roof, and within it were three tombs, four feet above the ground, made of a blackish kind of stone, and polished, with here and there some Persian characters engraved upon them. About 40 paces further was a large but very ruinous building, the roof of which consisted in five domes, or cupolas, which had been adorned with sculptured imagery, but which was much obliterated."

The above seems to be an account of Zafar Khan Ghazi's tomb, but the tomb is about a quarter of a mile south of Tribeni, while Stavorinus calls it an hour's walk further north. They must have walked very slowly, for Naya Sarai, from which they started, is not quite three miles, *i.e.*, not an hour's walk, north of Tribeni. Stavorinus does not mention the *ghat*, but saw the *mela*. He writes :—

"The number of people, whom I saw arrive in the latter end of March, at Houghly and Terbonee for the above purpose" (bathing in the Ganges) "was incredible. The concourse continued for three days together."

Hunter quotes the Revd. J. Long, writing in the *Calcutta Review*, as follows :—

"Tribeni was formerly noted for its trade. Pliny mentions that the ships assembling near the Godavari sailed from thence to Cape Palinurus, thence to Tentigale opposite Fulta, thence to Tribeni, and lastly to Patna. Ptolemy also notices Tribeni. Formerly there were over thirty *tols* or Sanskrit schools in the town. The famous *pandit*, Jagannath Tarkopanchanan, the Sanskrit tutor of Sir William Jones, was a native of this village, and in the time of Lord Cornwallis he took an active part in the publication of the Hindu laws.

It is probable that the sea-going ships which came to Tribeni were bound for Satgaon, which lies only some four miles down the Saraswati from Tribeni. It is not likely that anything like a sea-going ship can ever have got up to Patna.

(*ii*) The *tomb of Zafar Khan Ghazi* is thus described by Hunter, quoting the account given by Professor Blochmann in the "Journal of the Asiatic Society of Bengal," Vol. XXXIX, Part I, for 1870, p. 222 :—

"The *astanah* consists of two enclosures. The first, which lies near the road leading along the bank of the Hughli, is built of large basalt stones, said to have been taken from an old Hindu temple, which Zafar Khan destroyed. Its east wall, which faces the river, shows clear traces of mutilated Hindu idols and dragons; and fixed into it, at a height of about six feet from the ground, is a piece of iron, said to be the handle of Zafar Khan's battle-axe. The second enclosure, which is joined to the west wall of the first, is built of sandstone. The *khadim*, or keeper of the *astanah*, a man not altogether illiterate, told me that the western tomb was that of Zafar Khan. The

other three, he said, are those of Ain Khan Ghazi and Ghain Khan Ghazi, sons of Zafar Khan and of the wife of Bar Khan Ghazi. The first enclosure contains the tombs of Bar Khan Ghazi, third son of Zafar Khan, and of Rahim Khan Ghazi and Karim Khan Ghazi, sons of Bar Khan.

"About twenty yards to the west of the second inclosure are the ruins of a mosque, likewise built with the materials of an old Hindu temple. The low basalt pillars supporting the arches are unusually thick, and the domes are built of successive rings of masonry, the diameter of each layer being somewhat less than that of the layer below, the whole being capped by a circular stone covering the small remaining aperture. Two of the domes are broken; on the western wall there are several inscriptions. According to the Arabic verses written about the principal *miḥrab*, the mosque was built by Khan Muhammadan "(Muhammad ?)" Zafar Khan, who is called a Turk, in A. H. 698, or A. D. 1298. The ground round about the mosque is very uneven; several basalt pillars lie about; and there are foundations of several structures, as also a few tombs, which are said to be the resting-places of former *khadims*."

Zafar Khan is said to have been the uncle of Shah Safi, the conqueror of Pandua. The date of 1298 on Zafar Khan's mosque is over forty years earlier than the date of the battle of Pandua, which is placed about 1340A.D, but I believe that the date of the conquest of Pandua is really quite uncertain. Zafar Khan is said to have been killed in a battle fought with Raja Bhudea. Zafar Khan's third son, Bar Khan Ghazi, conquered the Hindu Raja of Hughli, and married his daughter, who is buried within the shrine. This is said to be the reason why Hindus visit this tomb, as well as Tribeni and Bansbaria temples, at the January *mela*. Zafar Khan, though a Musalman, is also said to have worshipped the Ganges.

The tomb stands on the west of the main road from Hughli to Kalna, which here runs close to the bank of the Hughli river, immediately south of the Saraswati suspension bridge. When I visited it, on the 27th February 1901, the tombs in the enclosure appeared in good order, but were whitewashed. I could make out no inscriptions on them. The surrounding wall is made of large black stones, some carved, but the outer wall is in ruins. The "List of ancient monuments in Bengal" gives a few more particulars about the tomb. It says the building is oblong, and contains two nearly square chambers, each about 30 feet in length and breadth. Its greatest length is from east to west. It is constructed of massive stones, some of which are basalt, probably brought from the Rajmahal hills; other parts are built of sandstone. Many of the materials are of Hindu workmanship, being covered with carvings, representing living creatures, and were probably taken from some old Hindu temple. The design of the building externally is simple and symmetrical. A doorway or window occupies the centre of the side wall of each square, flanked by a shallow recess with an ogee canopy. The greater part of the wall surface is quite plain. Zafar Khan Ghazi, the occupant of the shrine, is said to have assisted Shah Safi against the Pandua Raja. The *dargah* is supposed to date from that time, about 1300 A.D., but some of the tombs inside are comparatively modern.

(*iii*) The *temple of Hamsesvari*, at Bansbaria, is the handsomest building in the district, and one of the finest in Bengal. The temple consists of a central spire, 60 or 70 feet high, surrounded by four smaller spires, one at each angle, each of which is again flanked by two still smaller spires, one on each side, diagonally. The goddess Hamsesvari, a form of Kali, is made of *nim* wood, painted blue. The god Mahadeva is shown, lying on a *trikonajantra* (three-cornered seat), and the goddess Hamsesvari is placed on the lotus which springs from the navel of Mahadeva. The door of the temple faces south. It was completed in 1814, at a cost of five lakhs of rupees, by Rani Sankari Dasi, wife of Raja Nrisinha Deb Rai, zamindar and Raja of Bansbaria. West of this temple is a much older temple of Ananta Deva, another name for Vishnu or Vasudeva, which was erected in 1679. North of the temple of Hamsesvari is a shrine of Mahishamardini, or Swambhaba, which was erected in 1788. On the west and south-west of the temples is the palace of the Rajas of Bansbaria. The whole ground is surrounded by a broad and deep moat, which encloses 401 *bighas* of land. The moat is crossed by a causeway, leading eastwards, at the west end of which is the gateway of the palace, the only old part, the rest of the palace being quite modern. The gateway is a little south of the temple; it is approached by a fine avenue of *bokul* trees. The palace and temple are situated about half a mile inland from the river bank. This "moated grange" formed a strong place of refuge for the inhabitants of the neighbouring villages during the incursions of the Mahrathas in the eighteenth century. It is known as *Garhbati*, the fortress. It is said to have resisted all attacks by the Mahrathas, who were never able to take it.

III.—Serampur Municipality.

Serampur (Srirampur, the city of Holy Ram) was, up to 1891, the second in importance of the towns in the Hughli district, but is now by far the largest and most important, its rapid rise being due to the extension of mill industries. It covers an area of 3½ square miles, and is divided into four wards. These are, from north to south, I—Chatra, II—Serampur, III—Mohesh and Rishra, IV—Konnagar. It is bounded on the north by Baidyabati Municipality, on the south by Kotrang, on the east by the Hughli river, on the west by the East Indian Railway from Konnagar to Serampur station, then the boundary crosses the railway to include Bahir Serampur, which belonged to the Danes, and runs north, a little west of the line, to Baidyabati Municipality.

The history of Serampur, under the Danes, up to its purchase by the English in 1845, is given in the History. Other general information will be found in municipal table No. I. The Danish name of the town was

Frederiksnagar. Serampur was created a municipality in 1865, and was the first *mofussil* municipality in the province to which the right of electing Municipal Commissioners was extended in 1873.

Population has steadily risen during the last thirty years, during the last twenty with great rapidity. In 1872 the number of inhabitants was 24,440; in 1881, 25,559; in 1891, 35,932; and in 1901, 44,451. The town has always had a very high death-rate, but this has been partly due, for the last twenty years at least, to the fact that through the rapid rise in population, the actual number of inhabitants has always been considerably greater than the number at the last census, on which the death-rate is calculated. During the last ten years, 8,920 births and 16,920 deaths have been registered, showing an excess of deaths over births of exactly 8,000, or nearly double the number. Curiously, in no individual year has the number of deaths doubled that of births, though it has usually been very near doing so. Here it must be remembered that, in addition to the rise in population, there is always a great excess of male over female inhabitants, in an Indian manufacturing town.

The figures of the number of deaths, under each of the headings under which deaths are registered, are available for a quarter of a century, as shown in the accompanying table. By far the highest death-rate recorded was in 1878, 1,980 deaths, or 18·01 per 1,000; the lowest 901 deaths (34·00) in 1884. The former occurred before Serampur began to increase largely in population. During the last thirteen years, the highest place which has been taken by Serampur, in death-rate, among the 150 towns of Bengal, was third, in 1898, with 1,608 deaths (44·72); the lowest 42nd, in 1892, with 1,357 deaths (37·74). The highest actual death-rates, however, during these thirteen years, have been 57·04, with 2,051 deaths, in 1897, when Serampur stood 8th, and 53·73, with 1,932 deaths, in 1895, when it was 6th. The actual, as well as the comparative, lowest death-rate, was in 1892. Cholera has always scourged Serampur with great severity. The highest number of deaths have occurred in 1896, 468 deaths (13·01); 1891, 312 deaths (8·67); 1895, 309 deaths (8·59); and 1882, 287 deaths (10·83 on a much smaller population). The lowest cholera death-rate is 47 (1·30) in 1898. Small-pox has several times occurred in epidemic form. In 1897 it caused no less than 85 deaths (2·36); in 1878, 37 deaths (1·51); the only years since 1888 in which no deaths from small-pox have taken place are 1893 and 1899. The great bulk of the mortality of course takes place from fever. The year of highest mortality is 1878, with 1,042 deaths (42·63), when fever was prevalent in a real epidemic; the next was 1898, with 1,001 deaths, (27·84 in a population much greater than that of 1878). The lowest fever death-rates are 233 deaths (8·79) in 1888, and 274 deaths (10·34) in 1889. Dysentery and diarrhœa have also bulked largely in the mortality, year after year. The highest death-rate registered from these complaints is 17·75,

with 434 deaths, in 1878 ; the highest actual number of deaths 471, in 1894 (13·10 on a much higher population). The lowest number of deaths and ratio per thousand are 144 deaths (5·43), in 1883. Dengue was prevalent in 1871 and 1872, but did not add much to the death-rate :—

Death-rate from different causes.

Year.	Cholera.		Small-pox.		Fevers.		Dysentery and Diarrhœa.		Injuries.		Other causes.		Total.		Place on list.
	Deaths.	Ratio per 1,000.	Deaths.	Ratio per 1,000.	Deaths.	Ratio per 1,000.	Deaths.	Ratio per 1,000.	Deaths.	Ratio per 1,000.	Deaths.	Ratio per 1,000.	Deaths.	Ratio per 1,000.	
1876 ...	147	6·01	...	...	505	20·66	202	8·26	13	0·53	157	6·43	1,024	41·89	...
1877 ...	98	4·00	...	...	710	29·04	307	12·56	26	1·06	252	10·31	1,393	56·99	...
1878 ...	137	5·60	37	1·51	1,042	42·63	434	17·75	16	0·65	314	12·84	1,980	81·01	...
1879 ...	54	2·20	5	0·20	501	20·49	230	9·41	16	0·65	184	7·52	990	40·50	...
1880 ...	52	2·12	...	...	434	17·79	176	7·24	19	0·78	199	8·14	880	36·00	...
1881 ...	177	7·24	2	0·08	414	16·93	191	7·81	8	0·32	198	8·10	990	40·50	...
1882 ...	287	10·83	1	0·03	461	17·39	220	8·30	21	0·79	207	7·81	1,197	45·17	...
1883 ...	130	4·90	...	...	341	12·86	144	5·43	22	0·82	175	6·60	812	30·64	...
1884 ...	220	8·30	16	0·60	323	12·19	153	5·77	12	0·45	177	6·68	901	34·00	...
1885 ...	80	3·01	1	0·03	377	14·22	228	8·60	17	0·64	234	8·83	937	35·36	...
1886 ...	202	7·62	2	0·07	336	12·68	217	8·18	20	0·75	387	14·60	1,164	43·93	...
1887 ...	142	5·35	...	...	316	11·92	229	8·64	17	0·63	342	12·53	1,046	39·10	...
1888 ...	258	9·73	...	...	233	8·79	210	7·92	16	0·60	361	13·62	1,078	40·68	8
1889 ...	213	8·03	5	0·18	274	10·34	267	10·07	27	1·01	435	16·41	1,221	46·08	4
1890 ...	90	3·39	12	0·45	382	14·41	230	8·68	22	0·83	415	15·66	1,151	43·44	7
1891 ...	312	8·67	1	0·02	545	15·15	380	10·56	24	0·66	386	10·73	1,648	45·83	14
1892 ...	284	7·89	8	0·22	575	15·99	264	7·34	26	0·72	200	5·56	1,357	37·74	42
1893 ...	161	4·47	...	...	881	24·50	420	11·68	23	0·63	204	5·67	1,689	46·97	10
1894 ...	206	5·72	1	0·02	766	21·30	471	13·10	20	0·55	219	6·09	1,683	46·81	29
1895 ...	309	8·59	14	0·38	967	26·89	413	11·48	8	0·22	221	6·14	1,932	53·73	6
1896 ...	468	13·01	4	0·11	666	18·52	269	7·48	13	0·36	227	6·31	1,647	45·81	19
1897 ...	202	5·61	85	2·36	998	27·75	426	11·84	26	0·72	314	8·73	2,051	57·04	8
1898 ...	47	1·30	4	0·11	1,001	27·84	306	8·51	21	0·58	229	6·36	1,608	44·72	3
1899 ...	128	3·56	...	...	945	26·28	386	10·73	28	0·77	182	5·06	1,669	46·42	5
1900 ...	171	4·75	11	0·30	837	23·28	377	10·48	23	0·63	217	6·03	1,636	45·50	26

Serampur has always been a separate medical charge from Hughli, and a separate Medical Officer, usually a Civil Medical Officer of the Uncovenanted Service, has always been stationed there, except in the four years 1865 to 1869, when an Assistant Surgeon was in charge, and was under the Civil Surgeon of Hughli. In medical matters, therefore, Serampur has always been practically a *sadr* station, and, being also a town of much importance, and one easily accessible from Calcutta, figures frequently in the annual reports of the Sanitary Commissioner. From these reports I have taken the following extracts, of inspection reports, &c., somewhat curtailed in most cases :—

1875.—The earliest inspection report of Serampur recorded was made by Surgeon-Major J. G. Pilcher, the then Sanitary Commissioner, on 5th November 1875. He states that the town has had much attention devoted to it from the earliest times. The roads were broad, fairly metalled, and very clean. There are the usual masonry drains at the sides of the roads, rectangular, narrow in proportion to their depth, built over by approaches to houses, in many cases for a considerable distance, and at all times difficult to inspect and cleanse. Those that were exposed were clean and in good order. Deep rectangular drains, without any means of flushing them are not suited to this country; they are difficult to keep in order, and when out of order are simply cess-pits. Wide and shallow saucer-drains should be substituted for them. A few culverts are required on some of the side-roads. The drainage outlets of the town are obstructed in two ways, by the railway embankments lying across the direction of outfall towards the large *khal* on the west, and by the blocking up of a large drain between Rishra and Mohesh. The Magistrate has been greatly hampered in action taken towards improving the drainage, by decisions of the Civil Courts, declaring important drains to be private property, and allowing the owners to block them up. [This has always been a source of frequent difficulty in municipal administration in Bengal, the acquisition of right of property by private persons in land taken from the public by encroachment, especially in the case of encroachments on drains. Private right, in such cases, means public wrong.] The river and tanks afford an abundant water-supply, but some tanks should be reserved for drinking purposes. Conservancy arrangements are satisfactory, and considering its large area, the cleanliness of the town is creditable to the Municipality. Nightsoil is buried in a piece of land, taken up for the purpose, near the conservancy depôt. It is in contemplation to build a *pukka* public latrine. Private latrines are registered, and a rate levied for cleaning them, which is regularly paid. The mill-owners have made proper conservancy arrangements for their employés. There are two burning-*ghats*, one municipal and one private; but at least half of the dead are simply thrown into the river. The clothes and mats of the dead should be burned. Musalmans bury

indiscriminately; there is no fixed burial ground; but the number of Musalmans is small. Registration is fairly done, and much attention paid to the matter.

1878.—Surgeon-Major J. M. Coates, the Sanitary Commissioner, inspected Serampur in December 1878. His suggestions were as follows:—

(1) To allot a more liberal proportion than 18 per cent. of the municipal income to the sanitation of the town.

(2) In improving the drainage, to adopt Mr. Pellew's plan, which consists of making a continuous ditch along Ryland's Road parallel to the railway, towards which all drains not running into the river are to be emptied, and causing the main drain to empty itself into the bazar *khal*.

(3) To remove the jungle.

(4) To provide more public latrines.

(5) To introduce Act VI (B.C.) of 1878, to enable the Municipality to undertake the cleansing of private latrines, and to do away with well-privies and objectionable private latrines. [This recommendation seems somewhat inconsistent with Dr. Pilcher's report of 1875, which says that the cleansing of private latrines is already undertaken by the Municipality.]

(6) To prohibit burials in private compounds.

(7) To repair and look after the rest-houses on the Grand Trunk Road.

(8) To provide latrines for the large number of hands (about 20,000) employed in the mills, levying from the mill-owners a rate of about one pice per head per month, to be spent in providing them with latrines and medical assistance.

1879.—The Sanitary Commissioner, Dr. J. M. Coates, in 1879, gives a lengthy report on the sanitary condition of Serampur Municipality, and states that the condition of affairs in 1868 is not available on record for comparison. *Conservancy* arrangements are not satisfactory. Establishment consists of one overseer, four *amins*, six carters with six carts and bullocks for sweeping the streets, 30 coolies and three *doms* for removing carcases and dead bodies found lying about, and 38 *mehtars* for cleaning the public and private latrines, removing night-soil, and keeping the markets clean. Street sweepings are thrown on the river-side to stop the encroachments of the river and recover lost land; they are sometime also used for filling up hollows and tanks. The roads are wide enough, well-kept, and a good portion of them is metalled. The village roads are narrow and not sufficiently provided with cross-drains. There are only three public

latrines, one near the bazar and one near the Courts, on the Bardwan plan, and a third, on a different plan, near the railway station. The number is insufficient, but it is intended to put up two more, one in the Rishra *basti* and one in Chatra. There are no separate latrines for females. There is an urinal near the Courts. The latrines are let out to a contractor, who pays the Municipality eleven rupees a month, and is allowed to charge the people two annas a month, or half a pice a visit. The low state of the funds renders it necessary that the latrines should be self-supporting. The overseer and the *jemadar* of the *mehtars* look after these latrines, and also prosecute people for promiscuous defœcation, which has lately been prohibited by beat of drum. There are many private privies of various kinds, some are two-storied, some are on the ground floor, some are mat enclosures round a hole in the ground, and some are well-privies. They are mostly badly built and unsatisfactorily kept, and need the greatest care to prevent their being absolute nuisances. Some of the well-privies have been closed, and notices have been issued to close the rest. In a certain portion of the town the privies of 194 houses are cleaned by ten municipal sweepers, and a voluntary cess of three per cent. per month on the assessed value of the houses is paid by the owners for this service. Efforts are being made to bring the rest of the town under the same system. Night-soil from both public and private privies is trenched in a piece of ground rented for the purpose. The old ground is fully used up, but another piece of land close to it has been taken on a permanent lease. Land is also being sought for to make trenching-grounds at Rishra and Chatra, where public latrines are much needed. *Drainage.*—A proper system of drainage is much required, though the present drainage cannot be said to be very defective. The town being old, and the drains and roads constructed at different periods, the drains are not alike nor on a uniform plan. All except a few are *kacha*. Drainage is effected by means of several drains into the Serampur *khal* and the Hughli, and partly into the fields to the west. When the river is high during the months of August and September, especially at spring tides, its water at flow tide runs up the drains and *khals*, and keeps them full, so that for certain days during these months drainage is obstructed. When the river falls, and so long as its height is below that of the drains, drainage into the river is free and unobstructed, and the drains gradually dry up, and are free from stagnant water. A survey of the drainage has been made by an Engineer, who is now making a map of the town, but it will be difficult to find funds for any important scheme of improvement. Encroachments on, or obstructions to drains are not allowed, but in many places the drains are arched over, or have bamboo or wooden crossings, to allow of ingress to houses. *Water-supply.*—As the Municipality lies along the banks of the river, most of the people drink river-water. The banks of the river are fouled by promis-

cuous defœcation; corpses are not thrown into it. There are several private tanks, chiefly used for domestic purposes. There are two good tanks, one at the railway station, and one within the compound of the Small Cause Court, the water of which is used by the people living in the vicinity. The condensed water of the Serampur mills is also utilized, by being led through the public drains, into several tanks, which are thus kept full throughout the year. The water of these tanks is used chiefly for domestic purposes. They are not protected from pollution, and the water from the mills is somewhat fouled by passing through muddy and impure drains. It was proposed to construct a system of pipes to conduct the water from the mills to the tanks, but funds for their construction were not available. There are a few private wells, but their water is chiefly used for drinking and cooking. Three *khals* traverse the town. *Disposal of the dead.*—There are three Christian burial grounds, and a large burial ground for Musalmans in Mallikpara, the quarter where Musalmans mostly reside. In other quarters the Musalmans have private burial grounds, of which 63 are registered. The bodies of paupers dying in the hospital or picked up from the streets are buried in a ground provided by the Municipality. There are one municipal and five registered private burning-ghats for Hindu dead along the river, viz., Kali Babu's *ghat* and *Sarkari ghat* in Chatra; Harish Chander De's *ghat* in Rishra; Ballupur *ghat* in Mohesh; and Sambhu Chatterjee's *ghat* in Konnagar. Burning at other *ghats* is not permitted, except at one private *ghat* belonging to the De family in Serampur. *Markets.*—There are three municipal markets. *Hat* Bazar in Oxford Street, Bartola Bazar on the Grand Trunk Road, and Purna Bazar in Purna Bazar Street. They are kept clean and in good order. There are also some private markets. *Slaughter-houses.*—None. Beef is brought from Barrackpur, and sold in the butchers' shops in *Hat* Bazar.

1886.—Dr. Lidderdale inspected Serampur in December 1886. He states that the general condition of the town was much as before, and no drainage or other important works had been constructed since last inspection. Except metalling of roads, no original sanitary works appeared to have either been in progress or under consideration. The drainage was still in the defective condition in which it had always been, and the amount of jungle was very great. The old tanks, pits, and holes were exactly as when last seen, and their condition had by no means improved. The water-supply was unchanged, and still in the same defective state as before. The arrangements under the head of "Disposal of the dead," as far as interments were concerned, were very unsatisfactory, and in several respects objectionable, while those relating to markets were as bad as possible. In short, most of the elements that predispose to disease abounded in this Municipality, to the detriment of public health. [This inspection report shows a state of sanitary affairs much worse, in almost every respect, than the previous reports of 1878 and 1879.]

Dr. Lidderdale makes a very long list of suggestions for sanitary improvement, the chief of which are as follows:—

(1) To devote a much larger proportion of income than 5·62 per cent. to the removal of the grave sanitary defects which exist.

(2) To require householders to keep their holdings free from noxious vegetation.

(3) To observe some method in employing street sweepings, &c., for filling up pits and excavations.

(4) To acquire some of the larger excavations, and convert them into good drinking-water tanks, using the surplus earth to fill up smaller pits.

(5) To connect the chain of filthy pits, along the west of the railway line, from Sheorafuli to Serampur, with each other and with the tidal *khal*.

(6) To fill up some of the filthy pits and hollows with earth, every year.

(7) To permit no interference with existing drainage channels.

(8) To construct gradually *pakka* shallow saucer-shaped drains along the principal streets, making progress every year.

(9) Where *pakka* drains are provided, to see that all house drains have *pakka* connections with them.

(10) To join in a scheme for supply of filtered river-water to the towns on the west bank of the Hughli.

(11) To increase the conservancy establishment, and to supervise it properly.

(12) To sweep lanes and by-paths at least twice a week, and to remove the sweepings.

(13) To provide wheelbarrows for the proper conservancy of the narrow lanes.

(14) To remove fluid house-refuse to the trenching-ground in barrel-carts, until *pakka* drains have been constructed.

(15) To construct more public latrines, and to reserve some of them for females, and to replace the present miserable mat structures by Horbury's patent iron latrines.

(16) To prevent urine and latrine washings from the latrines on the river bank flowing into the river, by collecting them in *pakka* reservoirs and removing them to the trenching-grounds.

(17) To try to put down promiscuous defœcation.

(18) To extend Part IX of the Municipal Act to Mohesh, Rishra, and Konnagar.

(19) To procure plots of land, convenient to the night-soil depôts, for trenching-grounds.

(20) To keep the municipal market clean and in good repair.

(21) To have the new market, under construction at Chatra, properly planned and built, with the houses in regular rows and broad spaces between, supplying latrines and urinals at the owner's expense.

(22) To attend to the conservancy of the markets.

(23) To prohibit intramural burial, and to forbid interments in private grave-yards close to houses.

(24) To see that graves in the burial grounds are dug in regular rows, with the *chappar* over the corpse at least four feet deep.

(25) To utilize the Compulsory Vaccination Act.

(26) To pay more attention to the registration of vital statistics.

[While some of the above recommendations refer to important sanitary improvements, such as water-supply and drainage, many of them merely reiterate the necessity of ordinary attention to cleanliness and routine work. The fact that the Sanitary Commissioner found it necessary to suggest that the market should be kept clean is enough to show the state into which sanitary administration had been allowed to drift.]

1889.—Dr. W. H. Gregg, then Sanitary Commissioner, visited Serampur in January 1889. His report, which is accompanied by a rough sketch map, fills five and-a-half printed foolscap pages. It shows some improvement over the state of affairs reported in 1886, and states that the Municipal Commissioners have done something towards improving the sanitary condition of the town, but there are still numerous defects which remain to be remedied, many of which would not cost very much, and might easily be taken in hand at once. *Drainage* is the greatest and most pressing want of the Municipality, especially of those parts lying on the west of the Grand Trunk Road, where the natural flow of drainage is towards the open fields on the west of the railway. The railway embankment, however, does not allow sufficient waterway for this drainage to pass; it therefore stagnates on the east of the line. The drainage of the Chatra and Konnagar wards was fairly good. That of Serampur ward also, as regards the part east of the Grand Trunk Road, left little to be desired. Here the natural flow of drainage is either into the river, the Serampur *khal*, or the old Danish ditch. This ditch was made *pakka* at its entrance into the river, and for some distance back therefrom, by the Danish Government; the other end of the ditch had also recently been made *pakka*, the middle portion remains *kacha*. The ditch is kept constantly flushed by a stream of clean discharge water from the Serampur mill. It is, however, especially in the Mohesh-Rishra ward that drainage is impeded. At the beginning of the century a *khal*, known as the Champa *khal*, opened into the river immediately to the north of Warren Hastings' country-house. The mouth of this *khal*, however, gradually silted up, and has for many years

been completely obliterated, the site being now covered by one of the buildings of the Hastings Jute Mill. The rest of the *khal*, west of the Grand Trunk Road, remains as it was originally, and the culvert by which that road crossed the *khal* is still in existence. The only way by which the Mohesh-Rishra *bastis* could be properly drained is by opening a three-foot drain from the Grand Trunk Road to the river, which would more or less form a continuation of the Champa *khal*. *Water-supply.*—A great part of the town derives its supply from the Hughli, and is, therefore, fairly well off. There are a great many tanks in the town, some of which contain good water, but many do not; and as none are especially reserved for drinking-water, there is always great danger of their pollution. And there is great need for the provision of a pure water-supply for the western parts of the town. In the year 1884 there was a serious outbreak of cholera, in which more than 200 deaths occurred, in the Mohesh-Rishra *bastis*, on the west side of the Grand Trunk Road, almost opposite the Hastings Mill. The Manager then made arrangements to supply the *bastis* with pure water, pumped from a cleaned tank, specially reserved for drinking purposes, in the mill compound, and carried by underground pipes to a hydrant, which he set up in the *basti*. *Conservancy.*—There are nine public latrines, constructed of half-burnt brick, deficient in design, and in other respects objectionable. Three new iron latrines should be constructed, one near the railway station, one in Chatra Bazar road in place of the present mat latrine there, and one near the municipal market. The general conservancy arrangements are satisfactory, but there is a good deal of room for improvement at little extra cost. The arrangements with regard to the disposal of night-soil are all that can be desired. The soil is trenched in grounds to the west of the railway station. The universal existence of small pits and *dobas*, which are nothing more or less than objectionable cess-pits, is a great sanitary evil. *Markets.*—The sanitary arrangements, especially those for drainage, of the large municipal market, are very unsatisfactory. There are a number of small drains, but their levels are very defective, and in several places they are filled with disgusting filth. They should be levelled, and connected with the nearest main drain. There are nine private markets. *Disposal of the dead.*—The arrangements are satisfactory. There are thirteen burning-*ghats;* four would be sufficient. There is no public burial ground within municipal limits, but there is a large one, just outside the town, west of the Serampur ward. There are sixty private burial grounds within the Municipality.

Present condition of the Serampur Municipality.

Roads.—There are 37½ miles of *pakka*, 18½ miles of *kacha* road in the Municipality. There are three railway stations in the town—Serampur, Rishra, and Konnagar.

Bastis.—There is one very large *basti*, at Rishra, in which the coolies of the Hastings and Wellington Jute Mills live, which has a population of over 8,000. It is constructed on a Government *khas mahal* estate. There is at present (1901) a project in hand for the improvement of this *basti* by levelling and draining it, and providing proper ventilation and conservancy, at a cost of over half a *lakh*. There are also numerous smaller *bastis* in the town.

Water-supply—The following table is taken from Appendix M of the Municipal Report for 1899-1900. Three of the tanks belong to Government. One municipal tank is said to be set apart for drinking purposes, and four for washing clothes. I should greatly doubt whether it is true that 259 tanks, and 177 out of 195 wells, especially the latter, really contain wholesome drinking water :—

Ward	I, Chatra.	II, Serampur.	III, Mohesh-Rishra.	IV, Konnagar.	TOTAL.
Wholesome tanks ...	4	89	102	64	259
Unwholesome „ ...	85	247	143	38	513
Total ...	89	336	245	102	772
Wholesome wells ...	12	134	30	1	177
Unwholesome „ ...	...	10	8	...	18
Total ...	12	144	38	1	195
Total sources ...	101	480	283	103	967
Perennial	33	274	126	56	489
Intermittent	68	206	157	47	478

As regards the history of water-supply in Serampur, the Sanitary Commissioner's Report for 1878 states that steam-water from the mills was first let into some of the tanks, by sluices, in that year. In 1882 it is again stated that four sluices had been put up, to let water from the mills into the tanks. In 1884 it is said that cholera was very severe in Serampur, especially among the coolies employed in the mills, living in the Mohesh-Rishra *bastis* It was after this outbreak that pure water was supplied to the *bastis* from hydrants, by the mill authorities, as mentioned in Dr. Gregg's inspection report of 1889. In 1888, and again in 1889, the reports mention that cholera was very severe in Serampur, which in both years had a death-rate from cholera much higher than that of any other registering area in the district;

but that the Mohesh-Rishra *bastis*, which had been supplied with pure hydrant water in 1885, remained almost free from cholera, though their general sanitary condition was in no way improved.

At the present day, the water-supply of these *bastis*, from hydrants supplied by the mills, is much the best in the town. That from the river, which supplies all the river bank, may also be called good; while that from the tanks, even from most of the so-called wholesome tanks, is a decidedly unwholesome supply. There are now two hydrants in the *bastis*, supplied by the Hastings Mill; and two on the Grand Trunk Road, supplied by the Wellington Mill.

Conservancy.—Part IX is in force throughout the Municipality. There are nine public latrines. There is a large trenching-ground beyond the railway station, on the west, for Serampur, and separate smaller ones for Mohesh, Rishra, and Konnagar. There are 16 night-soil carts, five sullage water carts, and 16 conservancy carts.

Drainage.—The necessity for improving the drainage of Serampur has long been admitted, as may be seen from frequent references in the sanitary inspection reports quoted above. So long ago as 1876 the annual sanitary report states that improvements were being made in the drainage of Konnagar, by the removal of obstructions; while a survey was in progress, with a view to improve the drainage of Mohesh and Rishra. In 1878 it is stated that a survey of the town was being made, to improve its drainage; and in 1879 that a survey *has been* made by an Executive Engineer of the Public Works Department, who was then engaged in making a map of the place, but it was anticipated that it would be difficult to find funds for any improvement. Dr. Gregg's report of 1889 states that "some years ago a complete survey of Serampur was made with the view of undertaking a thorough and systematic drainage scheme. The estimate amounted to about Rs. 30,000, of which Government promised to pay one half; provided the Municipality could raise the other half; but they were not able to do so, and the scheme fell through." More fortunate than most towns, Serampur appears to have got its drainage scheme drawn up at the cost of Government, without expense to itself. Not only that, but Government actually offered to pay half the cost of carrying out the scheme, if the Municipality would raise the other half; and they declined to take advantage of this offer. Their refusal affords an excellent example of the truth of the proverb, "He that will not when he may," for Serampur is now engaged in working out its own salvation, in the way of drainage, by means of a sum of Rs. 30,000, afterwards, in 1891, got from Government as a loan, half of which they might have had in 1889 as a free gift, had they only made use of their opportunities. Apparently, however, the original scheme of 1878 was never adopted for use, as in the sanitary report for 1892 reference is made, as follows, to a new scheme. It

could hardly have been stated as news in 1892 that a scheme was finished which had been completed fourteen years before; so evidently a new scheme is meant:—

"A survey for an internal drainage project for Serampur has been finished, but the Municipal Commissioners have not yet submitted the plans to the Board, nor have they expressed any opinion although frequently asked to do so, as to whether they intend to carry out any such project, and to utilize the main drainage channel which they began to construct in a half-hearted way in the previous year, and continued, in spite of many remonstrances, in much the same way during the year under review."

Not very much has been done, even yet, in 1901, to carry out the Serampur drainage scheme. A large drain has been made from near the railway station to the Bagir *khal*, between the Mohesh-Rishra and the Konnagar *khal*, but the internal drains have not yet been connected with it. The Serampur *khal* divides the Chatra from the Serampur ward, and receives drainage from the southern half of the former, and the northern half of the latter. Rishra drains through private tanks into the Bagir *khal*. Mohesh and Konnagar have practically no drainage.

Slaughter-houses.—There is one, in the Serampur ward.

Disposal of the dead.—There are four Christian burial grounds, two public municipal burial grounds, and land has been acquired in Konnagar for a third, and four other public Musalman burial grounds. There are 56 private Musalman burial grounds, about 40 of which will be closed when the new burial ground is opened. There are 12 burning-*ghats* along the river front, one of which belongs to the Municipality.

Markets.—There is one large municipal market in Serampur, an iron building. There are private markets in Rishra and Ballabhpur.

Melas.—Two great *melas* are held annually at Mohesh and Ballabhpur, in Serampur. The first is the *Snanjatra*, or bathing journey, when the image of the god Jagannath is taken down to be bathed in the river. The festival is held in June, and lasts one day, when fifteen to twenty thousand attend. The second is the *Rath Jatra*, or car journey. It lasts off and on for about a month, but there are two days of special sanctity, the first when the car makes its outward journey, which is the *Rath Jatra* proper, the second eight days later, when the car makes its return journey, called *Ulta Jatra*, or return journey. About fifty thousand attend on each of these two special days.

There are two temples, one of Jagannath, at Mohesh, and one of Radhaballabh at Ballabhpur; each has its own image. Formerly the image from Mohesh used to visit Ballabhpur at the *Rath Jatra*, but owing to a dispute that practice has been discontinued, and each makes its own journey. Jagannath of Mohesh now goes to his garden-house in the north of Mohesh. Jagannath of Ballabhpur goes a little way north in his car, then the image

of Radhaballabh is brought on a tray to it and is carried round the car in a procession, by which it invites Jagannath to come and spend a few days with it, then Jagannath and his car are taken to Radhaballabh's temple near the river. The *Rath Jatra* or car festival of Serampur is the largest celebration of this festival in India, with the single exception of that of Puri.

Lighting.—There are 217 street lamps.

Manufactures.—The great mills of course form the chief element in the manufactures of Serampur. They are the India, Wellington, and Hastings Jute Mills, the Serampur Cotton Mills, and Messrs. D. Waldie and Company's Chemical Works at Konnagar. These are described in Chapter II. Besides the mills, a certain amount of silk and cotton weaving by hand is carried on; also some silk dyeing, brick-making, pottery, and mat-making.

Hospitals.—There are an in-patient dispensary at Serampur, and an out-patient dispensary at Rishra.

Education.—The Serampur College is described in Chapter III. There are three Higher English schools—Konnagar, with 223 pupils; Serampur Union, with 302; and Chatra, with 208; six Middle Vernacular schools, the number of pupils; varying from 219 to 87; one Upper Primary for boys, with 28 pupils ten Lower Primary for boys, with from 15 to 45 pupils; and four Upper Primary schools for girls. These latter are situated, one at Serampur, with 31 pupils; one at Akna, with 28; one at Konnagar, with 42; and one at Rishra, with 28 pupils.

Recreation.—There are some football clubs. The College has a fine library. There is also a public library.

Police.—The head-quarters of Serampur *thana* are situated in the town. There are also four town outposts, Chatra, Tantipara, Mohesh, and Konnagar, with a force of one Sub-Inspector, eight head constables, and 70 constables.

Staff.—The conservancy staff consists of one conservancy overseer on Rs. 60; four *amins*, one for each ward, on Rs. 15; six *jamadar mehtars* on Rs. 8; 11 trenchers on Rs. 7; 20 night-soil carters on Rs. 7; 77 *mehtars* on Rs. 7; and 56 *mehtaranis* on Rs. 6. Besides these, for roads, there are one overseer on Rs. 50, *plus* Rs. 10 horse allowance; one road *sarkar* on Rs. 10; 45 road and drain coolies on Rs. 7-8; and 16 carters on Rs. 7-8.

Finance.—The chief source of income is the tax on houses and lands; conservancy is by far the largest item of expenditure. The proportion of municipal income spent under each of the chief heads of disbursement is given in municipal table No. V.

Objects of interest in Serampur.

(*i*) *The College*, with its library and pictures, has been described in Chapter III, under Education.

(*ii*) *The Danish, now the English Church*, was built by public subscription, through the agency of Colonel Bie, and completed in 1805, at a cost of Rs. 18,500. Of this sum, the Marquis of Wellesley gave Rs. 1,000, Rs. 8,000 was collected in Calcutta, and the remainder in Serampur and Denmark. Though built by the Danes, no Danish clergyman has ever performed service in it, as Serampur was taken over temporarily by the English in 1808, soon after its completion; and after its restoration in 1815 the number of resident Danes was so few that no Danish clergyman was posted to the settlement. Service was conducted by the famous Serampur missionaries, and by their colleague, Mr. Mack. The Church contains memorial tablets of the three famous missionaries, William Ward, died 7th March 1823; William Carey, D.D., died 9th June 1834; and Joshua Marshman, D.D., died 5th December 1837; of I. S. Hohlenberg, late Chief of His Danish Majesty's Settlement of Frederiksnagar, died on the river Hughli, 11th May 1838; and J. O. Voigt, Surgeon in the service of His Danish Majesty, in medical charge of this town from 1827 to 1842, died in London, 22nd June 1843.

(*iii*) *The Mission Chapel*, the scene of the labours of the famous missionaries, may still be seen on the banks of the river. It was purchased in 1800, and subsequently altered and repaired.

(*iv*) *The Roman Catholic Chapel*, originally erected in 1764, but found too small. It was taken down in 1776, and the present building erected, at a cost of Rs. 13,386, by the Baretto family of Calcutta.

(*v*) *The Mission Cemetery* contains the tombs of Carey, Marshman, and Ward. There is also a memorial to Carey in the Circular Road Baptist Chapel, Calcutta; and memorials to all three in Lal Bazar Baptist Chapel, Calcutta.

(*vi*) *The Danish cemetery* contains the graves of I. S. Hohlenberg, 1795–1833, the Governor to whom the memorial in the Church is erected; and of "Jacob Krofting, Knight of the Royal Order of the Dannebrog, Colonel of His Danish Majesty's Force, Chief and Director of the Danish possessions in Bengal, from May 1805 till October 1828; died at Serampur, 7th October 1828, after a service of 44 years in India."

(*vii*) *The Danish Government House* was the Subdivisional Officer's quarters up till 1892, when it was turned into Courts, new quarters for that officer being built, which were completed in 1899. There is a fine gateway on the eastern side of the compound, surmounted by a crown and the initials F.R. VI (Frederick Rex VI).

(*viii*) *Temple of Radhaballabha at Ballabhpur*, about a mile and a half from Serampur station. There is a tradition that Virbhadra Goswami of Khardaha brought a stone from Gaur, out of which he had an image of Radhaballabha hewn, and, as it was not to his liking, made it over to the people of Ballabhpur. According to this tradition, the image must be 350 years old, but the present temple is of recent date, not more than 30 or 40 years old. The ruins of an older temple may be seen on the bank of the river. The temple is of no architectural merit; it has one steeple; it owns a small *zamindari*, by the income of which it is maintained.

(*ix*) *Temple of Jagannath at Mohesh*, is said to be about 350 years old. The image of the god Jagannath (Vishnu) is made of *nim* wood. The temple possesses a small *zamindari*, whose income maintains it.

[The information about these two temples is taken from the "List of ancient monuments in Bengal," to which it was contributed by Pandit Hari Mohan Vidyabhushan, Oriental Librarian of the Bengal Asiatic Society.]

(*x*) *Warren Hastings' House.*—The great Governor-General had a favourite country-house at Rishra. After Mr. Hastings went home in 1784, he sold the place. In the *Calcutta Gazette* of 5th August 1784 it is advertised as follows:—"On Thursday, the 2nd of September next, will be sold by public outcry, by Mr. Bondfield, at his Auction Room, if not sold before by private sale, that extensive piece of ground belonging to Warren Hastings, Esq., called Rishera, situated on the western bank of the river, two miles below Serampore, consisting of 136 *beeghas*, 18 of which are *Lackherage* land, or land paying no rent." Writing to his wife, on her voyage home, on 20th November 1784, Hastings says: "I have sold Rishera for double the sum that was paid for it." The price is not mentioned. Unfortunately it is now uncertain which of the buildings at Rishera belonged to Warren Hastings: it now forms part of the buildings of either the Wellington or the Hastings Jute Mill; the latter is named after the Governor-General.

(*xi*) *Henry Martyn's Pagoda*, formerly a temple of Radhaballabh, which was closed because of the encroachments of the river, on the bank of the Hughli, beside the Howrah water-works. These works are in Serampur, but that town gets no benefit from them, having declined to join with Howrah in the scheme when it was first started.

IV.—Bhadreswar Municipality.

Bhadreswar lies on the west bank of the Hughli, between Chandarnagar, which bounds it on the north, and Baidyabati on the south; its eastern boundary

is formed by the Hughli river, its western boundary by the East Indian Railway.

Bhadreswar was constituted a municipality on 1st April 1869. Its area is 3 square miles. There are four wards: I—Bhadreswar; II—Gaurhati (Ghireti); III—Telinipara; IV—Mankandu. In population it stands fourth out of the eight municipalities in the district. Other general information will be found in municipal table No. I.

Population rose steadily but slowly from 1872 to 1891, and then very greatly between 1891 and 1901. In 1872 there were 7,417 inhabitants; in 1881, 9,241; in 1891, 9,639; and in 1901, 15,150. The death-rate of this Municipality has always been very high. During the last eleven years, twice, in 1895 and 1896, Bhadreswar has shown the highest mortality among the 150 municipal towns in Bengal; in 1893 and 1899 it was second; in 1894 fourth; and in 1891 fifth; while the lowest place it has ever held was 26th in 1892. Comparatively to other towns in Bengal, these figures somewhat exaggerate the truth, for during the last ten years the number of deaths registered have taken place among a rapidly rising population, and been calculated on the figures of population shown by the census of 1891. But the actual facts are quite bad enough. The highest actual death-rates during the last ten years have been 63·59, with 613 deaths, in 1894, and 62·66, with 604 deaths, in 1893; the lowest death-rate of the last ten years has been 35·16, with 339 deaths, in 1898. During the last ten years the total number of births registered has been 2,230, of deaths 5,253, far over double the number of births. In other words, the birth-rate of ten years has been only 42·55 per cent. of the death-rate. In four years, 1894 to 1897 inclusive, the death-rate was treble the birth-rate; in five years, 1891, 1892, and 1898 to 1900 inclusive, the death-rate was double the birth-rate; while in only one of the last ten years, in 1893, was the number of births registered over half that of the number of deaths. Making every allowance for a rapidly rising population, and one in which the males greatly outnumber the females, these figures are sufficiently impressive.

The figures of deaths and death-rate for each of the different causes under which deaths are registered, are available for the past eleven years, and are given in the accompanying table. Cholera has prevailed with severity in every year but one of the eleven; the worst years have been 1896, with 102 deaths (10·58 per 1,000); and 1895, with 89 deaths (9·23); the year of least cholera 1898, with only 13 deaths (1·34). Small-pox was rife in three out of the eleven years, 1897 with 29 deaths (3·00); 1896, with 20 deaths (2·07); and 1895, with 14 deaths (1·45); on the other hand, four years, 1890, 1892, 1893, and 1899, show no deaths from small-pox. Malarial fevers of course cause the bulk of the mortality here, as everywhere else, the worst years being 1893 and 1897, in each of which were registered 361 deaths (37·45); the smallest

number being 193 (20·02) in 1892. Dysentery and diarrhœa have also caused a very high mortality, the highest numbers registered being 156 deaths (16·18) in 1894; and 130 (13·48) in 1899; the lowest 40 (4·32) in 1890. In 1902 there has been an outbreak of plague at Bhadreswar, with36 cases and 27 deaths between 20th January and 21st April:—

Death-rate from different causes.

Year.	Cholera.		Small-pox.		Fevers.		Dysentery and Diarrhœa.		Injuries.		Other causes.		Total.		Place on list.
	Deaths.	Ratio per 1,000.	Deaths.	Ratio per 1,000.	Deaths.	Ratio per 1,000.	Deaths.	Ratio per 1,000.	Deaths.	Ratio per 1,000.	Deaths.	Ratio per 1,000.	Deaths.	Ratio per 1,000.	
1876 ...	8	1·07	...	...	202	27·23	33	4·44	4	0·53	1	0·16	248	33·43	
"1877—1889 figures not available."															
1890 ...	28	3·02	...	...	199	21·53	40	4·32	4	0·43	84	9·09	355	38·41	13
1891 ...	73	7·57	2	0·20	272	28·21	76	7·88	7	0·72	115	11·93	545	56·54	5
1892 ...	67	6·95	...	...	193	20·02	65	6·74	5	0·51	80	8·29	410	42·52	26
1893 ...	39	4·04	...	...	361	37·45	113	11·72	6	0·62	85	8·81	604	62·66	2
1894 ...	67	6·95	7	0·72	327	33·92	156	16·18	3	0·31	53	5·49	613	63·59	4
1895 ...	89	9·23	14	1·45	309	32·05	112	11·61	5	0·51	44	4·56	573	59·44	1
1896 ...	102	10·58	20	2·07	272	28·21	123	12·76	6	0·62	39	4·04	562	58·30	1
1897 ...	36	3·73	29	3·00	361	37·45	77	7·98	7	0·72	24	2·48	534	55·39	10
1898 ...	13	1·34	6	0·62	226	23·44	48	4·97	6	0·62	40	4·14	339	35·16	16
1899 ...	44	4·56	...	...	282	29·25	130	13·48	8	0·82	51	5·29	515	53·42	2
1900 ...	76	7·88	8	0·82	299	31·01	121	12·55	15	1·55	39	4·04	558	57·88	10

The Sanitary Commissioner thus describes the town in 1886:—

"*Bhadreswar town.*—The people use the water of the river Hughli, and there are four good drinking-water tanks besides. The drainage is capable of much improvement. Health was good."

On 23rd April 1888, at 8 P. M., a tornado crossed Bhadreswar, which did a great deal of damage, twelve lives being lost.

Roads.—Within the Municipality there are about 8½ miles of *pakka* road, including nearly three miles of the Grand Trunk Road; and about 18½ miles of *kacha* road.

There are two railway stations, on the main line of the East Indian Railway, Mankandu and Bhadreswar.

Bastis.—In Telinipara ward there is a large space covered by *bastis*, chiefly inhabited by the hands employed in the Victoria Jute Mill. A Committee inspected the spot in April 1901, and made various recommendations for the improvement of ventilation, conservancy, and drainage, in these *bastis*.

Water-supply.—Appendix M of the municipal report for 1899-1900 gives the following table respecting water-supply in Bhadreswar:—

Ward	I.	II.	III.	IV.	Total.
Wholesome tanks	27	50	42	33	152
Unwholesome „	78	138	58	38	312
Total ...	105	188	100	71	464
Wholesome wells	1	...	5	...	6
Unwholesome „	...	...	...	...	...
Total ...	1	...	5	...	6
Perenniai sources	64	69	67	40	240
Intermittent „	42	119	38	31	230
Total ...	106	188	105	71	470

I should greatly doubt whether there are really 152 tanks in Bhadreswar which contain wholesome water. Three of the four wards are situated on the bank of the Hughli, and have a supply of good water available from the river; only Mankundu being inland, and that not very far from the river. None of the tanks or wells are public property, and none are specially reserved for drinking purposes.

Conservancy.—There are three public latrines, six night-soil carts, and one trenching-ground, at Kantadanga. The Municipality intend to acquire land for a second trenching-ground, at Bhadreswar.

Drainage.—There is nothing in the way of a drainage system. Telinipara ward drains into the Hughli; the other three wards partly into the Hughli, and partly into the open country to the west.

Slaughter-houses.—None.

Disposal of the dead.—There are three burning-*ghats*, at Telinipara, Bhadreswar, and Ghireti; and two burial-grounds, at Telinipara and Palpara.

Markets.—There are three markets, Telinipara Mill Bazar, Telinipara Babu's Bazar, and Bhadreswarganj. The first is the property of Raja Piari Mohan Mukerji of Uttarpara; the other two belong to the Banerji family of Telinipara.

Melas.—Two *melas* are held in the town—

(*i*) The *Rasjatra*, held at Mankundu, on the occasion of the *Ras* festival, or festival of enjoyment, in the month of *Kartik*. This *puja* lasts for three days, and the average daily attendance is about 10,000.

(*ii*) A *mela* is held at Bhadreswar, which lasts the whole month of *Baisakh*. People visit the shrine of Siva Bhadreswarnath (Siva, the lord of Bhadreswar) in the morning, pour water on the head of the idol, and go away. The average daily attendance is said to be about five hundred, chiefly women; it is largest on

the day of the full moon (*Purnima*); the last day of the month (*Sankranti*); and the third day of the new moon, (*Akhoy Tritiya*).

Lighting.—There are 89 public street lamps.

Manufactures.—The chief manufacture is jute spinning and weaving, in the Victoria Jute Mill. Some common pottery is also made.

Hospitals.—There is an out-patient dispensary.

Education.—There is one Higher English school, with 219 pupils. There are three girls' schools—Telinipara Mission school, an Upper Primary school, maintained by the Serampur Mission, with 40 pupils; and two Lower Primary schools at Dharamtola, with 32 and 15 pupils, respectively. There are also four Lower Primary boys' schools, with from 24 to 60 pupils. There are also three Sanskrit *tols*.

Recreation.—There is nothing special to be mentioned under this head, no clubs nor libraries.

Police.—There is a town outpost of Serampur *thana* at Bhadreswar, also an investigating outpost. The force stationed here consists of two head constables and fourteen constables.

Staff.—The conservancy staff consists of an inspector on Rs. 10 monthly, one *jamadar* on Rs. 8, 33 *mehtars* on Rs. 7, four cart *mehtars* on Rs. 7-8, and four trenchers on Rs. 7. For roads there are four carters on Rs. 8-4, one coolie *jamadar* on Rs. 8, ten coolies on Rs. 7-8, three street sweepers on Rs. 7, and three wheelbarrow men on Rs. 8.

Finance.—Income is derived chiefly from a tax on houses and lands, and from conservancy. The chief heads of expenditure are conservancy and public works. The proportion of expenditure under each of the main heads will be found in municipal table No. V.

Objects of interest.—The only place which can be said to come under this head is Ghireti, where half of the Bengal Army was once quartered. French Ghireti, the seat of the French Governor's country-house, has been described in the history of the French in the History. The proceedings of Council of 21st March 1763 (Long, "Selections," No. 642, p. 311) contain the following note about Ghireti:—

"Agreed and resolved that for the purpose of preserving the men in health and proper discipline, securing the frontier against the irruptions of an enemy, and maintaining the tranquillity of the country, about one half of the army shall be constantly kept at Patna. That the other half be cantoned at Ghyretty, and furnish a guard of sixty Europeans weekly for the duty of the Presidency, to be relieved weekly, the number of the King's and Company's troops exclusive of the Midnapore detachment being at this time nearly equal. These views will be answered by keeping them at these two stations, each corps complete under their proper officers."

The proceedings of 11th October 1762 also note that Captain Green had built a very good wholesome hospital at Ghyretty. Stavorinus, in 1769, notes that at Ghireti "the English have a Military Fort, where often one thousand men, and sometimes more are encamped."

At Ghireti is buried Robert Wilson, of the Bengal Medical Service. He entered as Assistant Surgeon on 16th May 1770, became Surgeon on 24th April 1778, gave up promotion, and died at Ghireti on 9th June 1813.

V.—Baidyabati Municipality.

Baidyabati lies on the west bank of the Hughli, between Bhadreswar on the north, and Serampur on the south. Its eastern boundary is formed partly by the river Hughli, and partly, further south, by the Chatra ward of Serampur, its western boundary being an artificial line, west of the railway, in the fields. Its area is $5\frac{1}{4}$ square miles, thus being larger than any of the other towns in the district, except Hughli and Bansbaria. In population also it has always been third, after Hughli and Serampur. It was constituted a municipality on 1st April 1869. There are four wards: I—Chatra, II—Sheoraphuli, III—Baidyabati, and IV—Champdani. Other general information will be found in municipal table No. I. The name means "The place of physicians."

Population showed a steady increase from 1872 to 1891, a decrease between 1891 and 1901. The number of inhabitants in 1872 was 13,332; by 1881 it had risen to 14,777, by 1891 to 18,380, and at the census of 1901 was 17,174. The death-rate of this Municipality has not been so high as that of some of the other towns in the district. During the last ten years, 1891 to 1900, 3,597 births and 5,982 deaths have been registered, showing an excess of deaths over births by 2,385. Baidyabati has, however, never taken a very high place in death-rate among the towns of the province. During the last twelve years, the highest place it has ever occupied is 32nd in 1893, out of about 150 towns, the lowest 86th in 1897, and 99th in 1899. The figures of mortality from the various causes registered are available for 25 years, 1876 to 1900, and are given in the accompanying table. During these 25 years the highest death-rates registered have been 39·06 per thousand, with 718 deaths, in 1895; and 38·68, with 711 deaths, in 1893; the lowest 11·27, with 166 deaths, in 1887. The lowest death-rate during the last ten years has been 26·60, with 489 deaths, in 1899. Cholera has usually prevailed severely in Baidyabati; the largest number of deaths registered in one year has been 197 (10·71 per 1,000) in 1896; the lowest 10 (0·67) in 1887, and 13 (0·70) in 1898. Small-pox has not as a rule caused many deaths, except in 1890, with 18 deaths (1·22), and 1895, with 11 deaths (0·59). On the other hand, in eight of the last 25 years no deaths from small-pox have been registered, and in six others, including 1894, 1896, and 1899, only one death each year. Malarial fevers, of course, have always caused the highest mortality. The worst years have been 1876, with 305 deaths (22·87); 1877, with 345 deaths (25·72); and 1893, with 411 deaths (22·36, on a much higher population). Bowel-complaints have been very prevalent and very fatal here, as indeed they are everywhere in the

district. The worst years have been 1894, when they reached the very high total of 189 deaths (10·28 per 1,000); 1898, with 132 deaths (7·18); and 1895, with 131 deaths (7·12). The lowest years have been 1887, with 22 deaths (1·49), and 1888, with 23 deaths (1·56). Of the last ten years, the lowest rate is shown in 1899, 67 deaths (3·64). In considering the mortality figures of Baidyabati, it must be remembered that the population for the last ten years has somewhat diminished, so the ratios shown do not exaggerate, as is the case with the rapidly rising populations of Serampur and Bhadreswar, but rather underestimate the truth. On the other hand, there is a large population of mill hands, which always means a great preponderance of males over females, and a low birth-rate. Twice within the last ten years, in 1891 and 1894, the death-rate of Baidyabati has been over double the birth-rate.

Death-rate from different causes.

Year.	Cholera.		Small-pox.		Fevers.		Dysentery and Diarrhœa.		Injuries.		Other causes.		Total.		Place on list.
	Deaths.	Ratio per 1,000.	Deaths.	Ratio per 1,000.	Deaths.	Ratio per 1,000.	Deaths.	Ratio per 1,000.	Deaths.	Ratio per 1,000.	Deaths.	Ratio per 1,000.	Deaths.	Ratio per 1,000.	
1876 ...	58	4·35	...	...	305	22·87	49	3·67	9	0·67	7	0·54	428	32·10	...
1877 ...	11	0·82	1	0·07	343	25·72	33	2·47	4	0·30	29	2·17	421	31·57	...
1878 ...	57	4·27	3	0·22	189	14·17	88	6·60	6	0·45	79	5·92	422	31·65	...
1879 ...	14	1·05	5	0·37	97	7·27	71	5·32	1	0·07	50	3·75	238	17·85	...
1880 ...	37	2·77	...	...	199	14·92	76	5·70	5	0·37	96	7·20	413	30·97	...
1881 ...	48	3·60	2	0·15	156	11·70	74	5·55	3	0·22	91	6·82	374	28·05	...
1882 ...	93	6·31	...	...	136	9·24	43	2·92	3	0·28	85	5·77	360	24·45	...
1883 ...	96	6·52	1	0·06	104	7·06	42	2·85	5	0·33	55	3·73	303	20·58	...
1884 ...	38	2·58	6	0·40	71	4·82	31	2·10	1	0·06	55	3·73	202	13·72	...
1885 ...	44	2·98	2	0·13	118	8·01	53	3·60	6	0·40	56	3·80	279	18·95	...
1886 ...	35	2·37	...	...	108	7·33	34	2·31	6	0·40	47	3·19	230	15·62	...
1887 ...	10	0·67	...	...	90	6·11	22	1·49	...	...	44	2·98	166	11·27	...
1888 ...	44	2·98	...	...	85	5·77	23	1·56	2	0·13	72	4·89	226	15·35	73
1889 ...	49	3·32	1	0·06	108	7·33	54	3·66	6	0·40	93	6·31	311	21·13	62
1890 ...	40	2·71	18	1·22	141	9·57	52	3·53	14	0·95	74	5·02	339	23·03	75
1891 ...	100	5·44	5	0·27	239	13·00	82	4·46	6	0·32	104	5·65	536	29·16	63
1892 ...	93	5·05	...	...	331	18·00	109	5·93	10	0·54	61	3·31	604	32·86	78
1893 ...	51	2·77	...	...	411	22·36	106	5·76	7	0·38	136	7·39	711	38·68	32
1894 ...	41	2·33	1	0·05	310	16·86	189	10·28	10	0·54	104	5·65	655	35·63	68
1895 ...	107	5·82	11	0·59	339	18·44	131	7·12	7	0·38	123	6·69	718	39·06	41
1896 ...	197	10·71	1	0·05	268	14·58	91	4·95	19	1·03	80	4·35	656	35·69	70
1897 ...	58	3·15	13	0·70	265	14·41	123	6·69	34	1·84	64	3·48	557	30·30	86
1898 ...	13	0·70	4	0·21	294	15·99	132	7·18	9	0·48	53	2·88	505	27·47	62
1899 ...	37	2·01	1	0·05	288	15·66	67	3·64	11	0·59	85	4·62	489	26·60	99
1900 ...	135	7·34	3	0·16	267	15·01	57	3·10	9	0·48	71	3·86	551	29·27	...

Roads.—There are 12 miles of metalled and 13¼ miles of *kacha* road in the Municipality. There are two railways stations—Baidyabati and Sheorafuli—the later the junction for the Tarakeswar branch of the East Indian Railway.

Bastis.—There is one large *basti*, at Champdani, inhabited by mill hands.

Water-supply.—The following table, showing the tanks and wells in the town, is taken from Appendix M of the municipal report for 1899-1900 :—

Ward	I.	II.	III.	IV.	Total.
Wholesome tanks	4	2	2	8	16
Unwholesome ,, ...	68	48	68	112	296
Total ...	72	50	70	120	312
Wholesome wells	...	3	...	3	6
Unwholesome ,, ...	...	...	...	...	...
Total ...	...	3	...	3	6
Total sources ...	72	53	70	123	318
Perennial	4	5	2	11	22
Intermittent	68	48	68	112	296

It will be seen that all tanks which do not dry up are entered as wholesome. However, the numbers of wholesome tanks and wells are not so exaggerated here as in most of the other towns in the district, and as Baidyabati lies on the river bank, and no part of the town is far from the river, a good water-supply is available from that source.

Conservancy.—There are three public latrines—the first at Sheorafuli; the second at Puraton Bazar, Baidyabati; and the third at Champdani. Five night-soil carts are in use. There is a trenching-ground, containing four *bighas* and five *kathas* of land, at Satnidanga, west of the town. Part IX is in force.

Drainage.—There is no drainage system. The drains, such as they are, from the eastern part of the town flow into the Hughli; from other parts drains pass westwards, towards the Dhankuni drainage channel.

Slaughter-houses.—There is no regular slaughter-house, but there are two meat-shops—one at Champdani, the other at Sheorafuli.

Disposal of the dead.—There are two burning-*ghats* on the river—the first at Hatisala, the second at Kamarpara Lane. There are four burial grounds—the first at Champdani, the second at Kazipara, the third at Chaumatha, and the fourth at Musalmanpara, near Sheorafuli.

Markets.—There are three markets, all private. The first is at Champdani; the second at Puraton Bazar, Baidyabati; while the third is the great Sheorafuli *Hat*, held on Tuesdays and Saturdays.

Melas.—Three melas are held in the town, none of much importance, the attendance at each being 2,000 to 3,000 daily. They are—

(*i*) The *Maghi-purnima mela*, held on the full-moon day of the month of *Magh*, and lasting altogether for a week, three days before and three after the principal day.

(*ii*) The *Baruni mela*, a bathing festival, held in the month of *Chaitra* usually in March, at the *Nimaitirth Ghat* on the Hughli, lasts, only one day.

(*iii*) The *Sankranti mela*, held on the last day of *Push*, which falls in January, at *Nimaitirth Ghat*.

Lighting.—There are altogether 172 public lamps—12 large and 160 small.

Manufactures.—The chief manufacture of the town is jute, in the Champdani Jute Mill. A little is also done in the way of maufacturing jute and hemp ropes by hand.

Hospitals.—There is a small out-patient dispensary.

Education.—There is one Higher English school, with 127 pupils, in Baidyabati. There are four Upper Primary schools—one at Sheorafuli, and three in Baidyabati. Of the three last, two are girls' schools, one maintained by the Serampur Mission, with 40 pupils, the other private, with 30 pupils. The two for boys have 77 and 57 pupils, respectively. There are also four Lower Primary schools, the number of pupils, varying from 54 to 10. There are also two Sanskrit *tols*.

Recreation.—There are two football clubs, an amateur dramatic club, and a reading club.

Police.—There are two town outposts, of Serampur *thana*, one at Baidyabati, the other at Sheorafuli, with a force of one Sub-Inspector, four head constables, and 28 constables.

Staff.—The conservancy staff consists of an overseer on Rs. 30, *plus* Rs. 15 horse allowance, two *jamadar mehtars* on Rs. 8, five cartmen on Rs. 7, and 38 *mehtars* on Rs. 6; and for road-cleaning, one road *sarkar* on Rs. 14, five cartmen on Rs. 8, four hand-cart coolies on Rs. 7-8, one coolie *sardar* on Rs. 9, one sweeper on Rs. 7-8, and two *doms* on Rs. 6.

Finance.—The bulk of the income is derived from two taxes, that on persons, and that on animals and vehicles, which is chiefly due to the existence of Sheorafuli *Hat*. The chief heads of expenditure are conservancy, roads, and drainage. The proportion of expenditure under each of the chief heads is given in municipal table No. V.

Objects of interest.

Champdani was given by Mir Jafar, Nawab of Bengal, as a *jagir*, or grant of rent-free land, to Colonel Coote, afterwards Sir Eyre Coote, Commander-in-Chief in India.

Sheorafuli Hat is said to be the largest market in Bengal, outside Calcutta. A very large amount of business is done here, especially in jute. Sheorafuli is the seat of a *Raj*, the head of which is known as *Sudra Muni*, or Jewel of the Sudras.

The Sanitary Commissioner, Dr. Lidderdale, thus describes Baidyabati in 1886:—

"The people use the water of the river Hughli, and there are six good drinking-water tanks. The drainage is far from satisfactory. There are several pits containing accumulations of filthy water which should be filled up. The general health was good."

VI.—Kotrang Municipality.

Kotrang is a small town, 2 square miles in extent, on the west bank of the Hughli, and is the sixth, from north to south, of the seven municipalities which lie along the west bank of the river in Hughli district. The whole town is more rural than urban in character. It is bounded on the east by the river Hughli, on the west by the East Indian Railway, on the north by Konnagar ward of Serampur Municipality, and on the south by Uttarpara Municipality. There are two wards, I and II. It was created a municipality on 1st April 1869. It is the lowest in population of the eight municipalities in the district, and the next smallest to Uttarpara in area. Other general information will be found in municipal table No. I.

Population has on the whole diminished during the last thirty years, but a steady fall for twenty years has been followed by a considerable rise in the last decade. At the census of 1872 Kotrang contained 6,811 inhabitants; in 1881, 5,747; in 1891, 5,164; and in 1901, 5,944. The death-rate of this Municipality has always been high. During the last ten years the number of deaths has been 2,368, of births 1,231, showing an excess of deaths over births of 1,137, or in other words, the deaths have nearly doubled the births. Kotrang is not a great manufacturing centre, like Serampur; but there is always a considerable fluctuating population of imported coolies, among whom males always preponderate greatly over females. Figures of deaths and death-rate from the principal causes are available for the past eleven years, 1890–1900. During these years Kotrang once, in 1895, stood second in death-rate among the 150 towns in the province; and thrice it has been third, in 1893, 1896, and 1897; while the lowest position it has held was 82nd in 1891. The highest death-rates actually registered have been 67·00 per 1,000 with 346 deaths, in 1897; 60·41 per 1,000, with 312 deaths, in 1893;

58·48 per 1,000, with 302 deaths, in 1895; and 56·15 per 1,000, with 290 deaths, in 1896; the lowest death-rates 24·70 per 1,000, with 142 deaths, in 1890, and 24·78 per 1,000, with 128 deaths, in 1891. Six times in eleven years the death-rate has doubled the birth-rate, viz., in the five years 1893 to 1897 inclusive, and in 1900 (see municipal table No. II). Cholera has been very destructive in several years, the largest number of deaths having been 86 (16·65 per 1,000) in 1896, 83 (16·07) in 1895, 62 (12·00) in 1897, and 47 (9·10) in 1900; while the lowest is three (0·58) in 1898. Small-pox has not been severe, as a rule, the largest number of deaths in one year having been six (1·16) in 1897; in 1890 there were two (0·34); and in 1891, 1894, and 1895, one each (0·19); while six of the eleven years have been altogether free from small-pox. Fever, of course, causes the great bulk of the mortality. The worst years have been 1893, with 179 deaths (34·66); 1897, with 166 deaths (32·14); and 1896, with 165 deaths (31·95); the lowest years have been 1891, with 62 deaths (12·00); 1890, with 75 deaths (13·05); and 1898, with 100 deaths (19·36). Bowel-complaints are always comparatively fatal in this district. The worst years have been 1897, with 71 deaths (13·74); and 1893, with 59 deaths (11·42); the lowest is 1896 with 16 deaths (3·09).

Death-rate from different causes.

Year.	Cholera.		Small-pox.		Fevers.		Dysentery and Diarrhœa.		Injuries.		Other causes.		Total.		Place on list.
	Deaths.	Ratio per 1,000.	Deaths.	Ratio per 1,000.	Deaths.	Ratio per 1,000.	Deaths.	Ratio per 1,000.	Deaths.	Ratio per 1,000.	Deaths.	Ratio per 1,000.	Deaths.	Ratio per 1,000.	
1876 ...	4	0·58	11	1·61	120	17·61	40	5·87	2	0·29	5	0·76	182	26·72	...
"1877—1889 figures not available."															
1890 ...	19	3·30	2	0·34	75	13·05	21	3·65	3	0·52	22	3·82	142	24·70	66
1891 ...	18	3·48	1	0·19	62	12·00	17	3·29	3	0·58	27	5·22	128	24·78	82
1892 ...	15	2·91	...	...	112	21·68	22	4·26	3	0·58	37	7·16	189	36·59	47
1893 ...	16	3·09	...	...	179	34·66	59	11·42	5	0·96	53	10·26	312	60·41	3
1894 ...	39	7·55	1	0·19	130	25·17	29	5·61	1	0·19	29	5·61	229	44·34	34
1895 ...	83	16·07	1	0·19	144	27·88	36	6·97	6	1·16	32	6·19	302	58·48	2
1896 ...	86	16·65	...	...	165	31·95	16	3·09	1	0·19	22	4·26	290	56·15	3
1897 ...	62	12·00	6	1·16	166	32·14	71	13·74	...	...	41	7·93	346	67·00	3
1898 ...	3	0·58	...	...	100	19·36	22	4·26	4	0·77	41	7·93	170	32·92	25
1899 ...	8	1·54	...	...	132	25·56	44	8·52	7	1·35	6	1·16	197	38·14	33
1900 ...	47	9·10	...	...	120	23·23	22	4·26	2	0·38	14	2·71	205	39·69	...

Roads.—There are four miles of *pakka*, and about 6½ miles of *kacha* road.

Water-supply, from the river, and from tanks. The former may be considered a good supply, and is available for a great part of the town. Appendix M of the municipal report for 1899-1900 states that there are 243 tanks in the town. Of these, 117 are in ward I, 43 being classed as wholesome, and 74 as unwholesome; 126 are in ward II, and of these, 56 are classed as wholesome, and 70 as unwholesome. There are only four wells, all in ward II, and all called wholesome. None of the tanks are public property, and none are reserved for drinking purposes. The four wells, and 99 tanks are perennial; the other 144 tanks dry up, and have therefore been classed as unwholesome. I should be inclined to doubt myself whether all the 99 perennial tanks and the four wells really afford wholesome water.

Conservancy.—Part IX is not in force. There are two public latrines, no night-soil carts, but three scavenging carts. There is a trenching-ground within the Municipality to the west.

Drainage is generally towards the fields in the west. There is nothing in the way of a drainage system.

Slaughter-houses.—None.

Disposal of the dead.—There are no regular and fixed burning-*ghats* but five places on the river bank are used for the purpose. There is one large public burial ground.

Markets.—Three markets are held daily—two in Kotrang proper, and one in Bhadrakhali. They are very small affairs: only small quantities of fish and vegetables are brought for sale every morning.

Melas.—Three *melas* are held in Kotrang, but none are of much importance:—

(*i*) The *Doljatra* (swing festival), held in March. This festival commemorates the legend that Krishna enjoyed Radha in a swing (*dol*), and is usually known as the *Holi*.

(*ii*) The *Charak puja*, or swinging festival, held in April, on the last day of the Bengali year. This festival is described in the account of Tarakeswar, where it is celebrated by large crowds.

(*iii*) The Manikpur *mela*, held on two days at the end of the Bengali month *Push*, about the middle of January. This is a local festival, held in honour of a *Pir*, or saint, of the name of Manik.

Lighting.—The town has 22 public lamps.

Manufactures.—Bricks, *surkhi*, and tiles are made in great quantities. The Calcutta Municipality formerly had its brick-fields in Kotrang, but they are now leased out to private individuals. A little jute rope and string is made by hand.

Hospitals.—None.

Education.—There are only two schools—one Upper Primary, at Kotrang, with 36 pupils; and one Lower Primary, at Bhadrakhali, with 25 pupils.

Police.—There is a town outpost, of Serampur *thana*, with a force of two head constables and eight constables.

Staff.—The conservancy staff consists of one overseer on Rs. 11, one *sardar* coolie on Rs. 8, two *mehtars* on Rs. 8, and eight coolies on Rs. 7-8 per month.

Finance.—The chief source of income is a tax on persons. Conservancy is the largest item of expenditure. The proportion of municipal expenditure under each of the chief heads is given in municipal table No. V.

Objects of Interest.—None.

The Sanitary Commissioner, Dr. Lidderdale, in 1886 describes Kotrang as follows:—

"As there are many brick-fields in this Municipality, the roads are generally metalled with the *débris* of the brick kilns. The drainage is not bad, but is capable of much improvement. There are many pits where foul water stagnates and causes the surrounding localities to be unhealthy. They should be filled up or converted into tanks. The municipal Commissioners complain that they have no power to deal with such nuisances. These powers, with the requisite safeguards, should be granted to them. There are no municipal tanks, but there are about twenty good private drinking tanks. There are eight coolies and two carts for conservancy. There are no public latrines. The well-to-do have private privies of their own, which are cleaned by private *mehters*. The arrangements for the disposal of the dead are satisfactory."

During the fifteen years which have elapsed Kotrang has not changed much, the chief improvement being the construction of two public latrines.

VII.—Uttarpara Municipality.

Uttarpara (the northern quarter) is a small town, covering only half a square mile. It is the most southerly of the seven municipalities in this district, which lie along the west bank of the Hughli. The river forms its eastern boundary, the East Indian Railway that on the west; on the south it is bounded by the Bali *khal*, which separates it from Bali town, in the Howrah district, and on the north by Kotrang Municipality. While much the smallest municipality in the district in area, it was also the smallest in population at the census of 1872 and that of 1881. In 1891 its population was higher than that of Kotrang, and in 1901 than that of Bansbaria also. The town was created a municipality in 1865. It is the seat of the Mukerji family of Utterpara, formerly represented by Raja Jai Krishna Mukerji, and now by his son, Raja Piari Mohan Mukerji, C.S.I. Other general information will be found in municipal table No. I. There are four wards, numbered I, II, III, and IV.

Population has steadily increased during the last thirty years. At the census of 1872 it was 4,389; at that of 1881, 5,307; in 1891, 6,489; and in 1901, 7,036. Uttarpara has not been so unhealthy as some of the other towns in the Hughli district. During the last ten years the excess of

deaths (2,640) over births (1,726) has been 914. The death-rate has never actually doubled the birth-rate in that period, though in 1900, with 146 births and 285 deaths, it came very near to doing so. In 1892, with 235 births and 212 deaths, the birth-rate was actually higher than the death-rate. The highest position taken by Uttarpara, in death-rate, among the 150 towns of Bengal, is 8th in 1898; the lowest 80th in 1892. The highest death-rate, however, registered in the town, during the 23 years for which figures are furnished on the next page, was 47·00, with 305 deaths, in 1897; the lowest 18·35, with 101 deaths, out of a lower population, in 1887. Cholera has usually caused a high death-rate in Uttarpara, far the worst year being 1896, with 91 deaths (14·02 per 1,000); the lowest 1899, with only 7 deaths (1·07). Small-pox has not affected this town badly, except in 1879, with 11 deaths (2·50). For thirteen years, 1881 to 1893, not a single death from small-pox occurred. In the year of the great Calcutta epidemic, 1895, Utterpara escaped entirely: though so near to, and in fact almost a suburb of, Calcutta, no deaths from smallpox occurred. 1896, 1899, and 1900, also show a clean sheet in this respect; but there were five deaths (0·77 per 1,000) from small-pox in 1897, and one each (0·15) in 1894 and 1898. Fevers, of course, cause the greatest death-rate here, as everywhere, the highest mortality being 157 deaths (24·19) in 1893; the lowest 26(4·71) in 1886, and 25 (4·53) in 1887. Bowel-complaints have always caused a high mortality here; the highest rates are 65 deaths (14·80) in 1879; and 94 deaths (14·48 in a much larger population) in 1900. In 1879 the number of deaths from dysentery and diarrhœa (65) was actually higher than from fever (62); and in 1900 not very much lower, 94 against 114.

The Sanitary Commissioner's report for 1886 (p. 127) contains a very flattering description of the town, which runs as follows:—

"Utterpara is a model municipality. The drainage system is all but perfect. The people generally use the water of the Hughli. There are many good drinking-water tanks. The conservancy arrangements are satisfactory. Night-soil is buried at a distance from the Municipality. The Chairman of the Municipality takes very deep interest in it, and he thoroughly understands the principles of sanitation. He deserves thanks from the Sanitary Department. The people, however, have not yet recognised the value of house sanitation, not even the well-to-do who can afford the expense of reform; for here a pit full of filth is allowed to stand, and there a tank evolves malarious effluvia, and the rich owner of these thinks them to be innocuous and will not remove them. The health of the people was good."

It is strange that, in a model municipality, the number of deaths registered in the last ten years, should exceed the number of births by about fifty per cent., and that, too, in a town which is chiefly residential, and not a manufacturing centre, with a great excess of males over females in its population, like Serampur, Baidyabati, and Bhadreswar. It looks as if there was something wrong, either with the model, or with the figures; presumably with the former.

Death-rate from different causes.

Year.	Cholera.		Small-pox.		Fevers.		Dysentery and Diarrhœa.		Injuries.		Other causes.		Total.		Place on list.
	Deaths.	Ratio per 1,000.	Deaths.	Ratio per 1,000.	Deaths.	Ratio per 1,000.	Deaths.	Ratio per 1,000.	Deaths.	Ratio per 1,000.	Deaths.	Ratio per 1,000.	Deaths.	Ratio per 1,000.	
1876 ...	31	7·06	7	1·60	67	15·26	63	14·35	3	0·68	33	7·52	204	46·47	...
1877-1878 figures not available.															
1879 ...	17	3·87	11	2·50	62	14·12	65	14·80	2	0·45	39	8·88	196	44·65	...
1880 ...	20	4·55	4	0·91	51	11·61	42	9·56	9	2·05	22	5·01	148	33·72	...
1881 ...	16	3·61	...	...	45	10·25	44	10·02	1	0·22	32	7·29	138	31·44	...
1882 ...	40	7·25	...	...	40	7·25	31	5·62	2	0·36	47	8·52	160	29·03	...
1883 ...	47	8·53	...	...	40	7·25	32	5·80	4	0·72	48	8·71	171	31·03	...
1884 ...	36	6·53	...	...	28	5·08	19	3·44	1	0·18	46	3·34	130	23·59	...
1885 ...	23	4·17	...	...	43	7·80	41	7·44	3	0·54	46	8·34	156	28·31	...
1886 ...	20	3·62	...	...	26	4·71	28	5·08	3	0·54	32	5·80	109	19·78	...
1887 ...	10	1·81	...	...	25	4·53	32	5·80	...	...	34	6·17	101	18·35	...
1888 ...	40	7·25	...	...	38	6·89	40	7·25	4	0·72	38	6·89	160	29·03	23
1889 ...	38	6·89	...	...	50	9·07	54	9·80	3	0·54	63	11·43	208	37·74	10
1890 ...	30	5·44	...	...	54	9·80	47	8·52	3	0·54	52	9·43	186	33·75	24
1891 ...	38	5·85	...	...	66	10·17	38	5·85	5	0·77	68	10·48	215	33·13	42
1892 ...	23	3·54	...	...	104	16·02	63	9·70	3	0·46	19	2·92	212	32·67	80
1893 ...	30	4·62	...	...	157	24·19	62	9·55	3	0·46	49	7·55	301	46·38	11
1894 ...	28	4·31	1	0·15	124	19·10	58	8·93	2	0·30	66	10·17	279	42·99	40
1895 ...	43	6·62	...	...	134	20·65	39	6·01	5	0·77	41	6·31	262	40·37	32
1896 ...	91	14·02	...	...	88	13·56	32	4·93	1	0·15	44	6·78	256	39·45	44
1897 ...	41	6·31	5	0·77	128	19·72	80	12·32	4	0·61	47	7·24	305	47·00	15
1898 ...	24	3·69	1	0·15	105	16·18	65	10·01	5	0·77	53	8·16	253	38·98	8
1899 ...	7	1·07	...	...	130	20·03	77	11·86	7	1·07	51	7·85	272	41·91	15
1900 ...	26	4·00	...	...	114	17·56	94	14·48	3	0·46	48	7·39	285	43·92	...

Roads.—There are only about six miles of road in the town, about 4½ miles *pakka*, and 1½ miles *kacha*. There are no very bad *bastis*.

Water-supply.—The chief water-supply of the town is drawn from the river Hughli. The municipal report for 1899-1900 gives the following information about tanks and wells:—

Ward	I.	II.	III.	IV.	Total.
Wholesome tanks	29	23	21	16	89
Unwholesome ,, ...	29	21	29	36	115
Total ...	58	44	50	52	204
Wholesome wells	15	15	2	2	34
Unwholesome ,, ...	1	1	...	...	2
Total ...	16	16	2	2	36
Total sources ...	74	60	52	54	240
Perennial	53	45	25	27	150
Intermittent	21	15	27	27	90

The number of tanks (204) is very high for so small an area. I should doubt whether any of the wells or tanks contain really wholesome water.

Conservancy.—Part IX was introduced in 1892, and is in force. There are two public latrines, four night-soil carts, four scavenging carts. There are said to be no well-privies. There is a trenching-ground, west of the railway line, outside municipal limits.

Drainage runs chiefly into tanks. The main drain opens into the Bali *khal*.

Slaughter-houses.—None.

Disposal of the dead.—There is no fixed burning-*ghat*: bodies are burned along the river bank. There is one burial ground, but Musalmans bury their dead for the most part at Bhadrakhali, in Kotrang.

Markets.—A daily market is held in Uttarpara. It is private, the property of Raja Piari Mohan Mukerji.

Melas.—None.

Lighting.—There are 94 public lamps.

Manufactures.—The Bali Bone Mill employs over a hundred hands. A little brick-making and *surkhi*-pounding is also done, and ropes of jute and hemp are made by hand.

Hospitals.—There is a good in-patient hospital.

Education.—Uttarpara College has been described under the heading of education, in Chapter III. There is one Government Higher English school, with 296 pupils; two Middle English schools, with 94 and 87 pupils, respectively; two Upper Primary for boys, with 52 and 28 pupils; two Lower Primary, for boys, with 52 and 25 pupils; and one girls' school, an Upper Primary school, with 74 pupils. There is also a Sanskrit *tol.*

Recreation.—There is a very fine library in Uttarpara, collected by Raja Jai Krishna Mukerji, and made over by him to trustees for the use of the inhabitants. It consists in part of the library got together by the *Harkaru* newspaper in Calcutta during the first half of the nineteenth century.

Police.—There is a town outpost of Serampur *thana* in Uttarpara, also an investigating outpost. The force consists of one head constable and eleven constables.

Staff.—The conservancy staff consists of an overseer on Rs. 28, one *jamadar mehtar* on Rs. 9, eight drain coolies on Rs. 8, four sweepers on Rs. 8, three carters on Rs. 8, and thirty *mehtars* on Rs. 6 to Rs. 8.

Finance.—The greater part of the income is derived from the tax on houses and lands, and the largest item of expenditure is conservancy. The proportion of income spent under each of the chief heads will be found in municipal table No. V.

Objects of interest.—The public library, a handsome building on the river bank.

VIII.—Jahanabad or Arambagh Municipality.

Jahanabad Municipality lies chiefly on the east bank of the Dwarkeswar river, but comprises a small area on the west bank: out of seventeen villages included in the Municipality, two lie on the west bank. This town was made a municipal union in 1875, but only became a full-blown municipality from 1st January 1886. (Bengal Government No. 2510T.M. of 21st October 1885.) It was transferred from the Hughli to the Bardwan district on 1st July 1872, and retransferred to Hughli on 1st October 1879. The Municipality covers an area of 3 square miles; its boundaries are purely artificial. To avoid confusion with the subdivision and town of Jahanabad in Gaya district, the name of the town, *thana*, and subdivision, of which this town is the head-quarters, were changed to Arambagh, "the Garden of Ease," by Government Notification No. 36J.D. of 19th April 1900, published in the *Calcutta Gazette* of 25th April 1900. Other general information will be found in municipal table No. I. New warders' quarters, in connection with the sub-jail, were built in March 1901.

Population has considerably diminished within the last thirty years. In 1872 it was 13,409, but in 1881 had fallen to 10,507, owing to the great epidemic fever, which continued up to about 1877, having first appeared here

in 1868 (see Chapter VI). In 1891 the population had still further diminished to 8,326, but the diminution was only apparent, and was due to the fact that when the town was converted from a municipal union into a full municipality, in 1886, seven villages were removed from the municipal area. As a matter of fact the population of that area had slightly increased between 1881 and 1891. The figures of the census of 1901 show the population as 8,281, a nominal decrease of 45 in the last ten years.

Arambagh has been somewhat less unhealthy than the other towns in the district during the last ten years. Only once in that period has the death-rate doubled the birth-rate, in 1892, when 139 births and 293 deaths were registered; while in 1893, with 304 births and 293 deaths, the births actually outnumber the deaths. This is not very high praise, considering that Arambagh is a small rural town, without manufactures, and not showing any great preponderance of males over females; but among the blind, the one-eyed man is king, and during the last ten years the number of births in Arambagh has been 74·55 per cent. of the deaths, which is a higher ratio than that shown by any other town in the district. During these ten years 3,036 deaths and 2,264 births have been registered in the town, the latter outnumbering the former by 772 (see municipal table No. II).

The number of deaths registered yearly under each of the different heads, and the ratio per 1,000 of each, are given for 24 years in the attached table. The number of deaths registered in the twelve first years is obviously absurd, a very low death-rate being shown, not because deaths did not occur, but because they were not registered, especially in 1879, with 67 deaths (4·99 per 1,000), and 1887, 53 deaths (5·04). I will therefore only consider the figures of the last twelve years, 1889 to 1900. During these years Arambagh takes a much lower place in death-rate among the 150 towns of Bengal than any of the other towns in the district, having been as low as 87th in 1890 and 84th in 1899, while its highest place, in 1895, was 17th. In that year, 364 deaths occurred, or 43·71 per 1,000; while in 1899 there were only 237 deaths (28·46), in 1890, 223 (21·22), and in 1889, 214 (20·36). In 1889 and 1890, however, probably registration was defective. Cholera was worst in 1894, with 47 deaths (5·64), while in 1893 and 1898 only one death in each year from cholera occurred (0·12), and in 1899 only two (0·24). Small-pox caused five deaths in 1895, the great epidemic year, a ratio of 0·60 per 1,000; one each in 1891 and 1900, while the other years were free. Seven deaths from small-pox, however, have occurred during 1901, all in the first five months. The fever mortality was highest in 1895, with 261 deaths (31·34), lowest in 1890 with 172 (16·37), 1893 with 173 (20·77), and 1899 with 175 (21·01). The ratio for 1890 was calculated on a much higher population than that of the other two years. Bowel-complaints were worst in 1891, with 37 deaths (4·44), lowest in 1897, with 6 (0·72).

Death-rate from different causes.

Year.	Cholera.		Small-pox.		Fevers.		Dysentery and Diarrhœa.		Injuries.		Other causes.		Total.		Place on list.
	Deaths.	Ratio per 1,000.	Deaths.	Ratio per 1,000.	Deaths.	Ratio per 1,000.	Deaths.	Ratio per 1,000.	Deaths.	Ratio per 1,000.	Deaths.	Ratio per 1,000.	Deaths.	Ratio per 1,000.	
1877 ...	10	0·74	...	...	133	9·91	7	0·52	4	0·29	15	1·11	169	12·60	...
1878 ...	11	0·82	...	...	125	9·32	11	0·82	4	0·29	5	0·37	156	11·63	...
1879 ...	...	...	...	...	56	4·17	5	0·37	2	0·14	4	0·29	67	4·99	...
1880 ...	1	0·07	...	...	79	5·89	10	0·74	...	...	14	1·04	104	7·75	...
1881 ...	22	1·64	...	...	245	18·27	12	0·89	1	0·07	22	1·64	302	22·52	...
1882 ...	15	1·42	...	...	227	21·60	13	1·23	...	...	12	1·14	267	25·41	...
1883 ...	5	0·47	...	...	177	16·84	6	0·57	5	0·47	17	1·61	210	19·98	...
1884 ...	8	0·76	...	...	96	9·13	8	0·76	1	0·09	9	0·85	122	11·61	..
1885 ...	17	1·61	...	...	152	14·46	13	1·23	1	0·09	12	1·14	195	18·55	...
1886 ...	5	0·47	...	...	99	9·42	4	0·38	2	0·19	15	1·42	125	11·89	...
1887 ...	2	0·19	...	...	42	3·99	8	0·76	...	...	1	0·09	53	5·04	...
1888 ...	5	0·47	...	...	63	5·99	9	0·85	1	0·09	5	0·47	83	7·89	91
1889 ...	11	1·04	...	...	164	15·60	24	2·28	5	0·47	10	0·95	214	20·36	67
1890 ...	10	0·95	...	...	172	16·37	30	2·85	6	0·57	5	0·47	223	21·22	87
1891 ...	17	2·04	1	0·12	231	27·74	37	4·44	3	0·36	1	0·12	290	34·83	36
1892 ...	41	4·92	...	...	191	22·94	11	1·32	3	0·36	47	5·64	293	35·19	60
1893 ...	1	0·12	...	...	173	20·77	25	3·00	4	0·48	86	10·32	289	34·71	43
1894 ...	47	5·64	...	...	235	28·22	12	1·44	9	1·08	51	6·12	354	42·51	42
1895 ...	6	0·72	5	0·60	261	31·34	24	2·88	1	0·12	67	8·04	364	43·71	17
1896 ...	23	2·76	...	...	257	30·86	9	2·28	3	0·36	71	8·52	373	44·79	22
1897 ...	23	2·76	...	...	192	23·06	6	0·72	4	0·48	64	7·68	289	34·71	60
1898 ...	1	0·12	...	...	186	22·33	12	1·44	4	0·48	43	5·16	246	29·54	41
1899 ...	2	0·24	...	...	175	21·01	5	0·60	1	0·12	54	6·48	237	28·46	84
1900 ...	15	1·80	1	0·12	216	25·94	17	2·04	2	0·24	50	6·00	301	36·15	...

Roads.—There are 3½ miles of *pakka*, and 12 of *kacha* road within the Municipality. There are no collections of huts which could be called *bastis*, in the ordinary sense of that term.

Water-supply.—Those parts of the town which are near the Dwarkeswar river use river-water, a fairly good water-supply. The more remote villages

chiefly use tanks, none of which are reserved for drinking purposes. The table in the municipal report for 1899-1900 shows that there are 757 tanks in the town, of which 74 are classified as wholesome and 683 as unwholesome. Many of the latter must be mere pits or puddles, which serve only to breed mosquitoes. I should doubt whether any contain really wholesome water. There are fourteen wells, ten of which are said to contain wholesome water. Three of them belong to the Municipality, but are of little or no use. The wells here are small *kacha* wells, made of earthenware rings. They are little used.

Conservancy.—Part IX was introduced from 1st April 1899. There are three *pakka* public latrines, one of which is in two blocks, for males and females respectively. There are no night-soil carts, and no well-privies. There is a trenching-ground, in the north-east of the town, which was extended by the acquisition of more land in 1900.

Drainage.—The drains are almost all *kacha*. They run eastwards to the open country in that direction, with the exception of a few, on the very bank of the river, which run westwards into the river, and are provided with sluices.

Slaughter-houses.—None.

Disposal of the dead.—There is no regular burning-*ghat* nor burial ground. Bodies are burnt along the bank of the river. Musalmans bury indiscriminately in their own grounds.

Markets.—A market is held daily in Arambagh, and twice weekly, on Thursdays and Sundays, at Naupara, in the north of the town.

Melas.—A small *mela* called *Rasjatra* is held yearly in November, at Basdeopur, one of the villages which are included in the Municipality. It lasts three days, and some 2,000 or 3,000 people attend daily. Another *mela* is held on *Baruni* day, about the end of the March, at Ranjit Rai's tank, south-east of the town; about 5,000 people attend.

Lighting.—There are 29 street lamps.

Manufactures.—A little cotton-weaving,

Hospitals.—There is a good in-patient hospital.

Education.—There is one Higher English school at Arambagh, with 149 pupils, and there is one Middle Vernacular school, at Basudebpur, with 41 pupils. There are also two Upper Primary schools, with 62 and 31 pupils, and seven Lower Primary, the number in which varies from 37 to 14 pupils. All of these are boys' schools; there is no girls' school.

Recreation.—There are two or three football clubs, chiefly among school-boys.

Police.—The town is the head-quarters of Arambagh *thana*. The police force of the town itself consists of one head constable, two constables, and twenty town *chaukidars*.

Staff.—Conservancy is carried out by a *jamadar mehtar*, eight *mehtars*, and seven road-sweepers.

Finance.—The bulk of the income is raised by a tax on persons. The hospital and conservancy are the items on which most money is spent. (See municipal tables Nos. IV and V.)

Objects of interest.—There is not much in this line at Arambagh. There are two ruined indigo factories—one at Parul, in the south-east of the Municipality, and one at Kalipur, on the west of the Dwarkeswar. Close to the former is a ruined temple of Bishālakhi. A little further south is Ranjit Rai's tank, on the road to Arandi, while the Mubarakpur semaphore tower stands on the east bank of the Dwarkeswar, three miles south of the centre of Arambagh.

Non-municipal towns, large villages, and other places of interest in the district.

(1) *Satgaon* is the oldest place in the district by nearly a thousand years, in the sense that it is the only place in the district, except Pandua, whose name is known to us as having existed before the middle of the sixteenth century. Nowadays the town can hardly be said to exist. The early history of the Hughli district is practically that of Satgaon, and is given at more length in the History. In the middle of the sixteenth century Satgaon was decaying, and the Saraswati, on which it stands, was silting up. Since that time it can hardly be said to have a history, but in 1592 it was plundered by the Afghan invaders from Orissa, so must still have been a considerable village, to be worth mention and worth pillage. In the eighteenth century the Dutch merchants of Chinsura are said to have had country-houses at Satgaon, and to have walked out to them from Chinsura, a distance of fully six miles. Early in the nineteenth century the village was still in existence, and celebrated for its manufacture of paper. But as tigers are also said to have been numerous at Satgaon at that time, evidently the greater part of the place must have consisted of jungle-covered ruins.

The name Satgaon means the seven villages; the older form of the name, Saptogram, has exactly the same meaning. The town now practically does not exist: a few poor huts may be seen here and there, among jungle-covered mounds, overgrown with *jharber*, *pipal*, &c., under which lie the remains of the ancient city. Satgaon stood on the east bank of the Saraswati, which is now a very small stream, but has still a belt of low land on each side, a quarter of a mile in total breadth, which is occasionally filled in the rains. The Grand Trunk Road passes through the ruins, and crosses the river just after passing the 31st milestone. On the east of the road, and also on the east of the low land beside the Saraswati, is a large

quadrangular mass of high ground, the soil of which seems to consist almost entirely of broken brick, worn away to powder. This is locally known as the "*Qila*," or fort, and one can imagine that sea-going ships were once able to lie alongside its river wall and discharge their cargoes. Further east are a number of tanks, one of which, known as Jahangir's tank, is of considerable size. On the south and west of the road, just before it crosses the bridge over the Saraswati, and at a distance of only a few yards, are the remains of a mosque, which is described as follows by Professor H. Blochmann, in Vol. 39 of the "Journal of the Asiatic Society of Bengal," part I for 1870, pp. 280-81 (Hunter, "Statistical Account," Vol. III, p. 308):—

"This mosque, which, together with a few tombs near it, is the only remnant of the old capital of Lower Bengal, was built by Sayyid Jamaluddin, son of Sayyid Fakhruddin, who, according to inscriptions on the mosque, had come from Amul, a town on the Caspian Sea. The walls of the mosque are built of small bricks, and are handsomely adorned, inside and outside, with arabesques. The central *mihrab*, or niche, looks very fine; but the upper part of the west wall having fallen down, half the mosque is filled with stones and rubbish, so that it is impossible to see the whole of the niche. The arches and domes are in the later Pathan style. Over each entrance inside there is a crescent. Near the south-east angle of the mosque is an enclosure with three tombs, where Sayyid Fakhruddin, his wife, and his eunuch, are said to be buried. The wall forming the enclosure is in many places broken down. I found two long basalt tablets placed slantingly against the inner side of the north wall. A third square basalt tablet is fixed into the wall; unfortunately it is broken in the middle, and the wall is half pierced to allow the customary lamp to be put into the cavity. These three inscriptions should be removed to a museum. It is impossible to say how they came into the enclosure. When the public buildings in Satgaon and Tribeni decayed, pious hands probably rescued the inscriptions and stored them up in holy places, such as Fakhruddin's enclosure, and Zafar Khan's mosque and tomb, or even fixed them into the walls at the time of repairs, thus converting each of these *astamahs* or tombs into a sort of museum. There is also an inscription on Fakhruddin's tomb, but it is illegible, although it could perhaps be deciphered if the letters were carefully painted."

Since the above was written, thirty years ago, the mosque has fallen still further into ruins. The tombs with their inscriptions may still be seen. A little to the south-west of the mosque the pedestal of a large pillar may be seen.

(2) *Magra* is a large village, standing on the Magra *khal*, between the 33rd and 34th miles of the Grand Trunk Road. It is an important mart, and has an extensive trade, both by rail and river. Magra station is the junction of the East Indian Railway with the Bengal Provincial Railway to Tarakeswar; all trains, except the Panjab and Bombay mails, stop here. At the beginning of the nineteenth century Magra was the seat of the East Indian Company's Commercial Residency of Golagore. There are at Magra a police outpost of Hughli *thana*, a rest-house, a post office, and a small bone-crushing mill.* Tribeni lies about two miles eastwards. Population in 1881, 1,373.

* The bone mill was removed to Bali in March 1902.

(3) *Naya Sarai*, a village in Balagarh *thana*, where the Tribeni-Kalna road crosses the Magra *khal* by a large suspension bridge, described in Chapter IV—Communications. Stavorinus in 1796 describes this place as follows :—

"About half past four we came to the channel of Niasserai, where we went on shore, and up the country. Here we met with pleasant plains of arable and pasture land, intermixed with groves of cocoanut, *suri*, mango, and other trees. The sugarcane was likewise cultivated in many places, and flourished luxuriantly."

He gives a description of crushing cane in a sugar mill. In 1845 Naya Sarai was the site of a *munsifi* and a salt station. It is now an insignificant village.

(4) *Damurda*, a village in Balagarh *thana*, on the west bank of the Hughli, a little north of Naya Sarai. It was formerly noted for gangs of robbers and river *dakaits*. It was the home of a notorious robber, named Biswanath Babu, in the early part of the 19th century. It is now a calling station of the river steamers.

(5) *Balagarh*, on the west bank of the Hughli, eighteen miles above Chinsura, is the head-quarters of the *thana* of that name, and the seat of a municipal union, comprising several populous villages, Chandra, Sripur, &c. Balagarh proper is now over a mile inland. The *thana* is at Chandra, on the river bank; the river steamers call here, and there is a considerable trade in boat-building. There is a dispensary at Sripur, half-way between Chandra and Balagarh. Many Kulin Brahmans live here, and there is a temple of Radha Govind.

(6) *Jirat*, a village two miles south of Balagarh, was once notorious for *dakaits*. There were formerly two Sanskrit *tols* here. It is now a calling place for river steamers.

(7) *Somra*, a large village, with many *pakka* houses, two miles north of Balagarh. Human sacrifices were offered here in 1770. River steamers call here now.

(8) *Guptipara*.—In 1769, as shown in Stavorinus' map, Guptipara was on the east bank of the Hughli.* It is now a large scattered village, entirely on the west bank, about ten miles north of Balagarh, and mostly lying some distance, a mile or more, inland. This village used to be noted for Brahmans, thieves, and monkeys. In 1770 Chirinjit Bhattacharjya, of Guptipara, composed in Sanskrit the work "*Vidyanmodu Tarangini*," which was translated into English in 1832 by Raja Kali Kishan, of Calcutta. It is a treatise on Hindu philosophy. Formerly Guptipara had 15 Sanskrit *tols*, and was a noted seat of Sanskrit learning. The *Rath Jatra mela* is celebrated here in July, and lasts for eight days. On the first day the attendance is about four or five

* Similarly, the town of Nobodwip, Nadiya, or Nuddea, famous as a seat of ancient learning, which gives its name to the Nadiya district, was formerly on the east, but now lies on the west bank.

thousand; on the eighth, or *Ulta Jatra*, about 10,000; on the intervening days very small.

(9) *Pandua* is a large and important village, the head-quarters of the *thana* of that name, about 17 miles north-west of Chinsura. The 42nd mile-stone of the Grand Trunk Road is in the village. Pandua is a station on the East Indian Railway at which all trains stop, except the Bombay and Panjab mails. It is also a Municipal Union. There is a Public Works Department rest-house here.

Pandua is a place with a history, and is, next to Satgaon, the oldest place in the district. It was once the capital of a Hindu Raja, and is famous as the site of a great victory, gained by the Musalmans, under Shah Safi, over the Hindus, about A. D. 1340. The story of the Musalman conquest of Pandua is rather legendary than historical. Though it is certainly a fact that such a conquest did take place, and the conqueror's name was Shah Safi, the details of the story are legendary, the supernatural embellishments being probably a later addition. The story is given in Hunter ("Statistical Account," Vol. VIII, p. 313). Briefly stated, it is as follows: The Hindu Raja of Pandua, on the occasion of the birth of an heir, gave a great feast. One of his officers, a Musalman, gave a feast at the same time, at which he killed a cow, carefully burying the bones. But the bones were dug up by jackals at night, and the people rose in a tumult. The unfortunate child of the Raja was killed, as being the cause of the feast, and hence of the murder of the cow. The Musalman offender escaped to Delhi, and got the assistance of the Emperor, who despatched a large army against the Pandua Raja, and a war resulted, which ended in the complete defeat of the Hindus. The above is an abstract of the legend as told by Bholanath Chandra, in his "Travels of a Hindu," Vol. I, pp. 141–45. Hunter also quotes from an article in the *Calcutta Review*, by the Revd. J. Long, a more probable version of the story, which is to the effect that the Musalman officer slaughtered a cow in celebrating the birth of his own child, that the child killed was his, and that it was to avenge the murder of his child that he sought the assistance of the Delhi Emperor. The writer of an article in the *Calcutta Review* for 1850, on "Early Bengali Literature and Newspapers," adds the supernatural details, which he had himself borrowed from the *Calcutta Asiatic Observer* of 1824. They are to the effect that the Raja of Pandua sought the assistance of the Raja of Munad (Mahnad) against the invaders. At Mahnad there was a tank, called the "*Jhinch Kund*," which had miraculous power of curing the wounded, and restoring the dead, who were placed in the water. Consequently the Musalman assailants could make no impression on the Hindu garrison, as all their killed and wounded were promptly restored to the ranks, fit and well. The Musalman General, however, managed to find out the powers of the tank, and destroyed them by throwing a piece of cow's flesh in

it, which polluted the water, and thereby destroyed its power of working miracles.* He then captured both Pandua and Mahnad. As the latter place is only four miles distant from the former, if the two were under separate rule, they must have been very petty principalities.

The Pandua *minar*, or tower, was built to commemorate the victory of the Musalmans. It is described as follows in the "List of Ancient Monuments":—

"It is a round tower of five stages or storeys, each lessening in diameter, from 60 feet at the base to 15 at the top. The dimensions of the several stages will be best understood by being placed in a tabular form:—

Upper	storey, diameter	12′		above,	15′		below, height		18′
Fourth	„	„	23′	10″	„	26′		„	„	18′
Third	„	„	34′	8″	„	37′	5″	„	„	30′
Second	„	„	47′	6″	„	48′	1″	„	„	25′
Basement	„	„	58′	2″	„	60′		„	„	25′
							Total	...		116′
							Pinnacle	...		9′
							Total height	...		125′

"The outer face of each storey is ornamented with very flat convex flutes. In the centre of the building there is a circular staircase leading to the top. At the base of each successive storey there is a doorway leading out to a narrow terrace on the outside which runs all round. The entrance door of the basement storey is on the west side towards the *masjid*, which is 175 feet distant. On this account it is believed to have been the *Mazina* or *Muazzin's* tower, from the top of which the faithful were called to prayers. There is no inscription on the building, and the people of course refer its erection to the holy saint Safiuddin, whose tomb is close by . . . .The topmost portion tumbled down in the earthquake of 1885."

The tower consists of a solid core of masonry, in the centre of which is an iron rod, said to have been the walking-stick of Shah Safi, the Musalman General. Round this central core there was once a circular staircase, but in the course of ages the steps have all been worn away, and there now remains a rough, sloping ascent. There is no great difficulty in getting to the top, I went up on the 12th December 1900, but it is rather a scramble, and any one doing so would be the better of a light, as it is pitch-dark inside the tower. Round the circular stair is an outer wall of masonry. About ten feet above the ground is a recess, some six feet high by four broad, in the outer wall, which is here about eight feet thick. At the top of the third story the stair opens out into what was once a circular gallery round the tower, but it is now so overgrown with bushes and jungle that it is impossible to go round it. On the top of the fourth story there was once a similar circular gallery, overgrown now with jungle in the same way; there is now only sufficient

* Compare the legend of Dwarbasini, in the History.

space to sit down in the opening of the stair here. Up to the top of the third story the stair is very dark, with only two small loopholes, and full of bats.

This minaret is said to be the oldest masonry building in Bengal, and, as such, it is a great pity that it is not repaired and kept in order by Government, as the lowest story is now partly in ruins, and the cement, with which the brick exterior was formerly faced, has almost all fallen off. There is a *matwali*, and there is a small endowment, but apparently nothing is ever spent on the building. It struck me at once, the first time I saw it, that it was a copy, on a smaller scale and with inferior workmanship, of the Delhi Kutab *minar*. It is, however, thicker in proportion to its height than the Kutab is.

The minaret can be very well seen from the railway, looking out to the north-east, as the train approaches Pandua from the south. It is also a very conspicuous object to any one approaching Pandua from the east; but it is not easily seen in the village itself. It stands about a hundred yards east of the fourth furlong of the 42nd mile of the Grand Trunk Road.

North-west of the minaret is a large brick mosque, completely in ruins, with a row of ruined cloisters. There are also a few roughly carved oblong black stones.

On the west of the Grand Trunk Road, opposite the minaret, is a small whitewashed tomb, said to be that of Shah Safi, *alias* Syad Safi al-din Sultan. I was told that the tomb was kept in repair chiefly by subscribers from Rangoon; that the *matwali* lives at Medina, in Arabia, and draws a small income from the pilgrims, but spends nothing on the buildings.

A large *mela* is held at Pandua, on the 1st of *Magh* (middle of January) and 1st of *Baisakh* (middle of April) every year. The former is much the larger; the attendance is about 10,000, chiefly Musalmans. In 1824, 70 persons were crushed to death in the tower, owing to one man falling, those below trying to get up, those above trying to get down.

West of Pandua is a large tank, said to be forty feet deep, called the *pir pokhar* (saint's tank). It is surrounded by ruined mosques and tombs, which are said to be those of the Musalmans who fell at the capture of Pandua.

It is said that Pandua was once fortified by a wall and a trench, five miles in circumference. Maps of fifty years old show a fortification, a wall or *bund*, completely surrounding the village. I have been out of and into Pandua on all sides, north, east, south, and west, several times, and never seen any traces of this circumvallation; unless a large *bund* running from the railway, a little north of the station, to the Grand Trunk Road, is the remains of it.

Pandua suffered terribly rom the epidemic fever in the sixties. It is stated that 5,222 persons died, out of a population of 6,961. The population is now almost entirely Musalman.

Local tradition calls the Hindu King, defeated by Shah Safi, Pandu, whence the name Pandua. The supposed site of the battle is known as "*Jang maidan*," or battle field, and a tank excavated to celebrate the victory is called "*Fateh Allah*," or God's victory.

(10) *Mahnad*, more properly Mahanath, (the great lord), is a large village, four miles south of Pandua. It is said to have been the capital of another Raja, who assisted the Pandua Raja against the Musalmans; more probably, perhaps, both formed practically one place at that time. The miraculous tank may still be seen, and is known as the "*Jibon Kund*," or "tank of life," but works no miracles nowadays, which so far confirms the legend. Mahnad is now a station of the Free Kirk Rural Mission, which has a small dispensary and a school here. The village lies partly in Pandua and partly in Polba *thana*. There are several large *pakka* houses, and temples of Brahmomoyo and Shiva. In February a *mela* is held here, at the temple of Shiva; it lasts only one day; about 3,000 attend. Mahnad station on the Bengal Provincial Railway is about a mile south of the village. The *mela* is known as the Mahnad *Jath*, an Uriya word for festival. It is held on the *Shivaratri* night, described below in the account of Tarakeswar.

(11) *Bainchi* is a considerable village about five miles north-west of Pandua, and about a mile and a half east of Bainchi station on the East Indian Railway. There are an in-patient dispensary and a Higher English school here, maintained by an endowment left by the late Bihari Lal Mukerji, *zamindar* of the place.

(12) *Bhasthora* is a village in Dhaniakhali *thana*, some five miles north-east of Dhaniakhali village, which contains the remains of a small fort and some Hindu temples. There is also a Sanskrit *tol* here.

(13) *Dhaniakhali* is a large village, which is the head-quarters of the *thana* of the same name. During the epidemic fever of the sixties and seventies a fever dispensary was maintained here in 1869-70, and from 1871 to 1873, when the institution was made permanent. It was closed in 1881. Another dispensary was maintained here from 1894 to 1897, when it was closed. There are now a rest-house, and two stations on the Bengal Provincial Railway.

(14) *Singur*, the head-quarters of the *thana* of that name, is a station on the Tarakeswar branch of the East Indian Railway. It is in the centre of a highly cultivated area, where great quantities of vegetables are grown for the Calcutta market.

(15) *Haripal*, the head-quarters of the *thana* of that name, is also a station on the Tarakeswar branch of the East Indian Railway. It is now a Local Self-Government Union. From about 1790 to 1835 it was the seat of a Commercial Residency. There is a rest-house here.

(16) *Chanditola*, the head-quarters of the *thana* of that name, is also a Local Self-Government Union, and a station on the Howrah-Sheokhala tram line.

(17) *Janai* is a large village, two miles north of Chanditola, and in that *thana*. A short branch of the Howrah-Sheokhala line runs up to it.

(18) *Baksa* is a village near Chanditola, on the Saraswati, where there are twelve temples built in a line on the bank of the river. They are all of the same size, and about sixty feet high. They were built in 1780 by Bhowani Charan Mitra, and dedicated to Shiva, under the name of Isaneswar. Adjoining the temples is a large tank with a fine masonry *ghat*, with seats all round. An annual *mela* is held on the last day of the Bengali year, in April. The attendance may amount to 5,000. The temples are still used as places of worship, but are now in a state of disrepair.

(19) *Kristonagar*, more strictly, Krishnanagar, the head-quarters of the *thana* of that name, is a large village, about 12 miles south of Haripal.

(20) *Rajbalhat* is a large village, in Kristonagar *thana*, on the east bank of the Damudar, which has some river trade. It was, prior to 1790, the seat of the Commercial Residency afterwards transferred, about that date, to Haripal.

(21) *Tarakeswar*, a large village in Haripal *thana*, is the terminus of the Tarakeswar branch of the East Indian Railway on the one hand, and of the Bengal Provincial Railway on the other. There are a rest-house and a police outpost of Haripal *thana* here. Tarakeswar is also the seat of a shrine of Mahadeva, which, though not very old, and but a poor building, is one of the most sacred shrines in the province. The temple stands about 500 yards north of the railway station. It is managed by a *mohant*, who enjoys the revenues of the temple for life. The temple proper was built in the first half of the eighteenth century. It is about 25 feet square, and perhaps thirty feet high, the door faces south, the upper part of the temple is in the form of a four-sided dome. Above the door is a space covered with rough, indistinct carvings of small human figures. North of the temple is a *ghat*, or flight of steps, leading down to a fair-sized tank. The *ghat* was constructed about 1893 by Gangadhar Sen, of Calcutta. South of the temple is a large hall, with marble floors, no side walls, the roof supported by pillars, erected by Chintamoni De, of Howrah. The same gentleman, in 1891 and 1898, paved the whole Tarakeswar bazar with artificial flagstones, the fact being recorded on every fourth or fifth stone. The *mohant* has a good *pakka* house, east of the temple. In 1901 he had a fine tank excavated, about half a mile to the south-west of the railway station.

The legend of the Tarakeswar temple is related under the head of folklore, in the History. Pilgrimage to the temple goes on all the year round,

and the offerings of the devout are said to afford the *mohant* a revenue of over a *lakh* a year, in addition to an income from landed estate of some Rs. 16,000 yearly. There are two special religious festivals held here yearly. The first is the *Shivaratri*, held in the month of February, on the fourteenth day after the full moon in the month of *Phalgun*, a day specially sacred to Shiva. The three essentials of the ceremony are fasting during the day, holding a vigil, and worshipping the *lingam* at night. The religious ceremony lasts only one night, but a great *mela* is held, which lasts three days; the attendance each day being about 20,000. The second great festival is the *Chaitra Sankranti*, held in the last day of the Hindu month of *Chaitra*, which is the last day of the Bengali year, and falls in the month of April. This festival is the famous *Charak Puja*, or swinging festival. Formerly the devotees were swung from a high pole by hooks inserted under the shoulder-blades; but this practice is now prohibited by Government, and the swingers are now suspended by belts. The religious ceremony in this case also lasts only one day, but the accompanying fair or *mela* lasts six days; the attendance is estimated at 15,000 daily.

The maintenance of the temple is said to cost Rs. 5,000 a month. The *mohant* maintains a small private dispensary for the benefit of the pilgrims. There are also two Sanskrit *tols* here.

(22) *Khanakul*, head-quarters of the *thana* of that name, is a large village, on the west bank of the (Dwarkeswar) Kana Nadi. There are an out-patient dispensary and a rest-house here. The latter is about a mile north of the village.

There is also a large temple of Shiva, under the name of Ghanteswar, on the river bank, which is in considerable danger of being cut away by the stream.

(23) *Goghat*, head-quarters of the *thana* of that name, is a small village, five miles west of Arambagh.

(24) *Garh Mandaran and the Bhitargarh.*—Garh Mandaran is a small village, situated in the ruins of an extensive mud fort, about three miles south-west of Goghat, on the left, or north-east, bank of the Amudwara river. This fort is said to have been once the seat of a Hindu Raja, who was expelled by Shah Ismail Ghazi Ghani Lashkar, a Musalman invader from Gaur. The date when this took place is unknown, and in fact next to nothing is known of the history of Garh Mandaran. There is a stone-lined entrance leading into the fort, and inside is a brick-built tomb, said to be that of Shah Ismail.

The *Bhitargarh*, or Inner Fort, stands half a mile further to the south-west, on the right, or south-west bank, of the Amudwara, on the east of the Bardwan-Midnapur road. An earthern ramp, some twenty feet high, and of about the same breadth, surrounds an open space, about half a mile square.

The interior of this space is now cultivated as rice fields. In the centre stands a large mound, about 100 yards square and 30 to 40 feet high, composed of earth and broken brick; old walls may also be seen here and there in the mound, and many large stones. The mass of ruins is now overgrown with jungle. The Amudwara river passes through the northern rampart, flows close under the north-east angle of the inner ruin, and passes out of the enclosure through the eastern ramp, thus affording a perennial water-supply to the inner fort. The river (in February) is about ten yards broad and two feet deep. This old fort is the scene of Bankim Chandar Chatterji's novel "*Durgesh Nandini.*" A religious mendicant, who had his seat near the ruined inner fort, told me that it is now called "Niyatgarh."

(25) *Bali* is a large village, on the west bank of the Dwarkeswar river, six miles south of Arambagh. It was formerly an important seat of the silk trade, and some silk-weaving is still done here. It is now a Local Self-Government Union.

(26) *Badanganj* is a large village, in the extreme west of the district, where there is a police outpost of Goghat *thana*. Formerly it had a considerable trade in silk, and now there is some manufacture of *tassar* silk. There was a dispensary here in 1876-77.

(27) *Shambazar* is another large village in Goghat *thana*, about one mile east of Badanganj. Like that place, it had formerly some trade in silk, and now does some *tassar* silk manufacture. This village was a Municipal Union from 1877 to 1885.

(28) *Kishannagar* is a large village, on the west bank of the (Dwarkeswar) Kana *Nadi*, where the Mayapur-Khanakul road meets the river. It must not be confounded with Kristonagar (No. 19 above), though in both cases the name should really be Krishnanagar. There is a small private out-patient dispensary here, also a large temple of Krishna, under the name of Gopinath (Lord of Cowherdesses). A *hāt* is held at this village every Friday.

CHAPTER VIII.

HOSPITALS AND DISPENSARIES.

List of Dispensaries, Hughli District.

No.	Date of opening.	Name.	Class.	In or out patients.	Remarks.
1	August 1836	Imambarah Hospital, Hughli.	IIIA	Both.	
2	28th January „	Serampur	II	„	
3	March 1851	Uttarpara	I	„ ...	Under Howrah, 1880 to 1886.
4	„ 1856	Dwarbasini	IIIB	Out.	
5	„ 1857	Baidyabati	II	„	
6	„ 1869	Sultangachia	Main ...	Both ...	Struck off Government list, 1st November 1881.
7	5th December 1871	Jahanabad, now Arambagh	II	„ ...	In Burdwan, 1872 to 1879.
8	20th January 1872	Ghatal	II	„ ...	Transferred to Midnapur, 1st July 1872.
9	June „	Bandipur	II	Out ...	Closed by District Board in 1890.
10	July 1873	Rishra	II	„	
11	1st October „	Dhaniakhali	II	„ ...	Closed 17th September 1881, re-opened in 1893 (*vide* No. 18 below.)
12	March 1876	Konnagar	Branch ...	„ ...	Closed June 1886.
13	1st January „	Badanganj	„	„ ...	Closed 1877. While this dispensary was open, it was in Burdwan.
14	May 1878	Bainchi	IIIA	Both.	
15	1st „ 1885	Bhadreswar	II	Out.	
16	1st September 1893	Haripal	II	„ ...	Closed 1897.
17	1st October „	Bansbaria	II	„ ...	Closed 28th February 1894.
18	2nd October „	Khanakul	II	„	
19	1st November „	Dhaniakhali	II	„ ...	Closed 1897 (*vide* No. 11 above).
20	20th „ „	Mandalai	II	„	
21	5th June 1894	Polba	II	„ ...	Closed 5th May 1895.
22	20th „ „	Kamarpukhar	II	„ ...	Closed 16th November 1894, transferred to Balagarh.
23	4th July „	Hughli Female Hospital...	IIIB	Both.	
24	1st December „	Balagarh (Tentulia) ...	II	Out ...	Transferred from Kamarpukhar.

HOSPITALS AND DISPENSARIES.

In this chapter I have given a full account of each of the thirteen dispensaries now working in the district, with notes on those which have existed but have been abolished, and those which are working as private institutions, not under Government supervision. After a list of the various public dispensaries which now exist, or have formerly existed, with the class and date of opening of each, and the date of closing of those which have been abolished, I have considered, in chronological order, each dispensary separately, describing for each (1) history; (2) communications, means of access, and distance from neighbouring dispensaries; (3) buildings; (4) staff; (5) patients; (6) finance. Under head (5), patients, I have drawn up a table for each, giving the numbers and daily average of patients, both outdoor and indoor, for those which receive in-patients, the number of deaths and of operations, for the last twenty years; or, in the case of those which have not been in existence for twenty years, since they were opened. The operations, I may say, include all surgical operations, from the extraction of a tooth upwards, which are shown in the official returns.

Before proceeding to the description of the individual dispensaries, it will be advisable to make some remarks on the administration of medical charity in the district as a whole.

The thirteen dispensaries now working in the district may be classified, according to the means of support of each, as follows:—

(*i*) Maintained entirely by endowments, three—the Imambarah Hospital at Hughli, Bainchi, and Mandalai. The Imambarah Hospital is almost wholly maintained by the *Mohsin* fund, a Fund bequeathed for charitable purposes, though not specially for medical charity. The Imambarah Hospital gets a small portion of its income from subscriptions, the other two have never got any help whatever from any source other than their endowments. The income of Mandalai dispensary is shown in the official returns (statement No. V, Part I, of the annual report on dispensaries) as derived from the District Board. This is quite a mistake, the Board merely manages the dispensary, and the sums which it receives, from the Trust Fund with one hand, it pays to the dispensary with the other.

(*ii*) Maintained partly by endowment, partly by the District Board, one—Hughli Female Hospital. The *Mohsin* Fund contributes Rs. 1,200 a year, and the District Board Rs. 1,200 a year; besides which, small sums are received from the Hughli-Chinsura Municipality and from subscriptions.

(*iii*) Maintained by the District Board, two—Khanakul and Balagarh. These two are maintained by the District Board, the small sums

received by subscriptions merely aiding. The Board also pays almost half the cost of the Hughli Female Hospital, and manages Mandalai, as stated above, and also subsidizes Arambagh to the extent of Rs. 300 a year.

(*iv*) Maintained by Municipalities, five—Serampur, Rishra, Baidyabati, Bhadreswar, and Arambagh. Of these, Serampur receives a large amount from subscriptions, nine-tenths of which comes from Europeans, chiefly from Mill Companies; Baidyabati and Arambagh receive a fair sum from subscriptions; Rishra, which is maintained by Serampur Municipality, a little; Bhadreswar nothing at all; while Arambagh also receives a subsidy of Rs. 25 per month from the District Board.

(*v*) Maintained partly by private charity and partly by Government, two—Uttarpara and Dwarbasini. The former might have been entered as partly by endowment, for land to the value of Rs. 1,800 per annum, given by the Mukerji family of Uttarpara, is the private contribution, fully one-half of the total cost falling upon Government. Dwarbasini is also maintained by the same family, Raja Piari Mohan Mukerji, C.S.I., paying Rs. 40 per month, about three-fourths of the cost, and Government finding the remaining fourth.

I have been informed that another endowed dispensary will soon be opened in the district, at Khanyan, on the East Indian Railway, four miles south-east of Pandua; a large sum having recently been left in trust by the late Sri Narain Kundu, a local *Zamindar*, to maintain a school and dispensary at this place, where neither is in the least needed. Mandalai dispensary is only two and-a-half miles distant.

As regards public medical charity, *i.e.*, medical charity maintained by grants from public funds, the two following tables show the amounts spent in this manner during the past two years by the District Board and by Municipalities respectively :—

Paid from District Board Funds.

	1899.	1900.
	Rs.	Rs.
Hughli Female Hospital	1,200	1,200
Jahanabad	800	275
Khanakul	514	382
Balagarh	404	629
Total ...	2,918	2,486

Of the amount spent by the District Board, one-half goes in the *sadr* station in paying half the cost of maintaining the female hospital in a large and wealthy town, the inhabitants of which absolutely refuse to do anything for medical charity, either by private subscriptions or from municipal funds. At least in 1900 the amount is close upon one-half of the whole expenditure on hospitals; in 1899 it was only two-fifths, owing to a large grant being made to Arambagh towards the building of a new in-patient ward. The amounts paid by the District Board to Khanakul and Balagarh will be much higher in 1901, these dispensaries having been greatly improved.

The income of the District Board in 1899-1900 was Rs. 1,50,042, and its medical expenditure Rs. 8,954; in 1900-1901, income was Rs. 1,40,775, and medical expenditure Rs. 3,992. These sums, it will be seen, do not correspond with the sums given in my table. They include all medical expenditure: in 1899-1900 over Rs. 5,000 was spent on plague expenses, and this amount is here included, as well as the cost of Mandalai dispensary, which, as I have stated, is only nominally paid by the District Board.

The amounts paid by the various Municipalities in the district towards the upkeep of dispensaries during the last two years are as follows:—

Paid from Municipal Funds.

Municipality.	Dispensary.	1899. Rs.	1900. Rs.
Hughli-Chinsura ...	Hughli Female ...	241	187
Serampur	Serampur	3,167	2,311
Ditto	Rishra	891	854
Baidyabati	Baidyabati ...	1,309	1,278
Bhadreswar	Bhadreswar ...	979	1,071
Arambagh	Arambagh ...	1,385	965

The above table shows that four Municipalities—Serampur, Baidyabati, Bhadreswar, and Arambagh—spend considerable sums on the maintenance of dispensaries. Hughli-Chinsura, the *sadr* station, spends practically nothing under this head, and the other three towns, Bansbaria, Kotrang, and Uttarpara, nothing at all. Arambagh, indeed, spends too large a proportion of its income on the dispensary; the figures for 1899, however, are unduly raised by the building of a new in-patient ward.

It is only fair to give another table, setting forth the proportion spent by each municipality of its total expenditure upon objects which come under the head "Medical," as shown in Appendix F of the annual Resolution on the working of Municipalities. I give the figures for two official years, 1898-1899 and 1899-1900, the two latest for which figures are available. Hughli-Chinsura comes out worse than ever in this table; but Bansbaria, Kotrang, and Uttarpara are all shown as incurring a fair amount of medical expenditure. This, however, is chiefly expenditure on

plague prevention; none of the three contribute anything towards the support of any dispensary :—

Medical expenditure of Municipalities.

Name of Municipality.	1898-99.		1899-1900.	
	Total expenditure.	Percentage under head "Medical."	Total expenditure.	Percentage under head "Medical."
	Rs.		Rs.	
Hughli-Chinsura	48,743	0·44	48,978	0·41
Bansbaria	4,206	7·1	5,613	3·4
Serampur	53,136	8·5	54,796	12·6
Bhadreswar	11,155	7·4	16,910	5·5
Baidyabati	18,944	4·9	20,068	7·1
Kotrang	3,575	8·5	3,689	5·06
Uttarpara	13,049	3·7	12,794	3·08
Arambagh	6,371	34·6	6,524	29·8

These figures show some rather curious results, *e.g.*, Kotrang, with a very small income, though it gives nothing to any dispensary, shows the same proportion of medical expenditure in 1898-99 as Serampur, which maintains two.

The following table gives the amount received in subscriptions, from Europeans and from natives respectively, during the last two years, by each of the thirteen dispensaries in the district. As regards the subscriptions from Europeans received by three of the dispensaries, I may say that they are at Hughli and Uttarpara entirely, and at Serampur chiefly, subscriptions from Mill Companies :—

Dispensary subscriptions.

Name of Dispensary.	1899.		1900.	
	Europeans.	Natives.	Europeans.	Natives.
	Rs.	Rs.	Rs.	Rs.
Imambarah Hospital, Hughli ...	313	.....	528	.....
Female Hospital, Hughli ...	.....	225	.....	80
Dwarbasini	.....	480	.....	520
Arambagh	.....	569	.....	285
Uttarpara	265	1,800	240	1,200
Khanakul	.....	.....	.....	50
Balagarh	.....	118	.....	68
Serampur	1,055	142	1,092	90
Baidyabati	.....	.....	.....	177
Rishra	.....	32	.....	24
Bhadreswar	.....	.....	.....	.....
Bainchi	.....	.....	.....	.....
Mandalai	.....	.....	.....	.....

Six hospitals receive an appreciable proportion of their income from subscriptions,—the Imambarah, Dwarbasini, Arambagh, Uttarpara, Serampur, and (in 1900 only) Baidyabati. Of these, all the subscriptions at the Imambarah, and nine-tenths of those at Serampur, are from Europeans (Mill Companies). The subscriptions at Uttarpara and Dwarbasini, the former of which may rather be considered an endowment, come from one family. This leaves only two dispensaries in the district, Arambagh and Baidyabati, in which private subscriptions from natives, exclusive of those from one family, play any appreciable part in the maintenance of the dispensary. And in the latter case, Baidyabati, the subscriptions figure only in one year of the two. The small subscriptions received by Khanakul and Balagarh dispensaries were in each case given by a single individual.

The contrast is most striking between the liberality displayed in the endowment of dispensaries at Bainchi, Mandalai, Uttarpara, as well as at Khanyan, where a new endowed dispensary will probably soon be founded, and the absolute indifference to the needs of medical charity in the way of supporting existing hospitals, or founding new ones where they are greatly required, by means of small subscriptions from well-to-do if not rich subscribers. All the towns contain a number of wealthy men, and large numbers of well-to-do men; and, to judge by the frequency of two-story *pakka* houses throughout the rural tracts, wealth is much in evidence there also. But medical charity on the part of the owners of this wealth is almost universally conspicuous by its absence. The impossibility of realizing even the small subscriptions promised is the rock on which numerous dispensaries have foundered in the past. The first dispensary at Dhaniakhali was closed, twenty years ago, on this account. During the last decade the District Board has opened dispensaries at Polba, Haripal, Dhaniakhali, Khanakul, and Balagarh. The first three were all speedily closed on account of the absence of any local effort at help. The other two would certainly have been closed for the same reason, were it not that the Board determined to keep them on, in spite of the absence of local aid, because it was considered that dispensaries were much required at these places, especially at the remote and inaccessible Khanakul.

A glance at the map of Hughli district will show that the most populous part of the district, the riparian strip from Hughli to Uttarpara, some twenty miles in length, and seldom much over a mile broad, is extremely well provided with dispensaries. In this narrow strip there are no less than seven dispensaries—Hughli, Bhadreswar, Baidyabati, Serampur, Rishra, Uttarpara, and the Hughli Female Hospital, four of the seven receiving in-patients. There are also the *Yunani* and the private dispensary in the Imambarah buildings at Hughli, the French hospital at Chandarnagar, and half-a-dozen dispensaries maintained by mills for their hands; while at least a dozen dispensaries, three of them being large in-patient hospitals, are within easy reach on the other side of the river. The north-west angle of the district is also well provided

with four dispensaries, Balagarh, Bainchi, Mandalai, and Dwarbasini, with a private dispensary at Sultangachi, while the dispensary at Kalna, in Bardwan district, is within a few miles of the border. But the great block of the district which lies between the East Indian Railway and the Damudar is almost without medical aid. In this block there are only three dispensaries of any kind, all small out-patient institutions, and two of them near the East Indian Railway. These three are Dwarbasini, seven miles from the East Indian Railway; Sultangachia, about two miles; and the small institution maintained by the *Mohant* at Tarakeswar. The two last are not under supervision, and, I believe, do very little work. On the other side of the Damudar, in Arambagh subdivision, we have in all four institutions, a good in-patient dispensary at Arambagh itself, and three small out-patient dispensaries in the south of Khanakul thana, all three within six miles, in a line along the (Dwarkeswar) Kana *Nadi*, Khanakul, Kishannagar, and Sikandarpur, the two last not being under supervision.

Soon after I joined this district, in the end of September 1900, I was called upon by the Magistrate to draw up a scheme, showing the medical requirements of the district, and how they should be met, in accordance with the suggestions made in Circular No. 3D., of 31st October 1899, from the Inspector-General of Civil Hospitals. The matter had then been pending for nearly a year, and had apparently been lost sight of. As desired, I drew up a scheme, in which I suggested that the District Board should first improve and put on a proper footing the two dispensaries they maintained at Balagarh and Khanakul, and then proceed to open seven more dispensaries at places where they were required, taking one each year, for the next nine years. When this scheme had been carried out, I considered that the medical requirements of the districts would be fully met.

The programme in its entirety was as follows:—

(1) Reorganisation of Balagarh dispensary.
(2) Ditto Khanakul ditto.
(3) Athpur, in Kristonagar *thana*, new dispensary.
(4) Haripal, new dispensary to be opened.
(5) Dhaniakhali, ditto ditto.
(6) Singur, ditto ditto.
(7) Chanditola, ditto ditto.
(8) Badanganj, ditto ditto.
(9) Polba, ditto ditto.

The District Board accorded a general approval to this scheme, and so far acted upon it as to provide funds for the better maintenance of Balagarh and Khanakul dispensaries, by the supply of a sufficient quantity of medicines and other expenditure; and also for the erection of a new and suitable dispensary building at Balagarh.

The true solution of the dispensary difficulty, it appears to me, lies in the combination of private charity with support from public funds. This was well carried out by the late Mr. H. A. D. Phillips, I.C.S., in Monghyr district. When Mr. Phillips joined that district, in 1893, he undertook, on the part of the District Board, that the Board would open a dispensary in any part of the district, where it considered that a dispensary would be useful, when private charity guaranteed subscriptions to the extent of Rs. 25 *per* month. I was Civil Surgeon of Monghyr for four years, June 1894 to June 1898, and saw a number of new dispensaries, eight in all, opened under this plan, in the five years 1893 to 1898. As it was found that subscriptions in small sums were more readily promised than paid, the terms had to be slightly raised, by requiring a guarantee of Rs. 30 per month from one individual. In one case no less than Rs. 80 per month was provided by private subscription, on condition that an officer of the Assistant Surgeon class was appointed to the new dispensary. In another case the guarantor, at his own expense, erected the dispensary building with all necessary out-buildings. In one case a proposed dispensary was refused, on the ground that it was not necessary at the place proposed, which was only four miles from a large in-patient hospital at the head-quarters of a subdivision.

During the great epidemic fever of 1857 to 1877 a large number of temporary epidemic dispensaries were established in this district from time to time. A list of these, with the dates of opening and closing, has been given in Chapter VI.

In 1868 an itinerant dispensary was established, as an epidemic relief institution, to travel here and there as required. In September 1868 this dispensary was moving backwards and forwards between Dhaniakhali and Haripal, a distance of only ten miles. This dispensary was abolished from 31st December 1868. The establishment of such an itinerant dispensary in every district would be a most useful measure of medical relief; not to travel constantly between any two fixed points, but to work in any place where its services were required, at the discretion of the Magistrate and Civil Surgeon. Such an institution could be sent at short notice to any locality in which an epidemic of cholera broke out, or where fever was more than usually prevalent, and could remain in one spot, or move about, as seemed advisable. The only staff required would be a native doctor and compounder, who could assist in the *sadr* dispensary when not elsewhere wanted; and a servant, who could be engaged locally as required. No buildings would be required, nor any plant, beyond a few boxes, and camp tables and chairs.

I.—The Imambarah Hospital, Hughli.

1. *History.*—This hospital derives its name from the fact that it is maintained, like the Imambarah itself, out of the *Mohsin* Fund, and originally formed one department of the Imambarah. Toynbee states (p. 140), that it was established as an experimental measure in August 1836, and owed its origin to Dr. Thomas Wise, the then Civil Surgeon. For some years previously the inmates of the Imambarah had received medical attendance and medicine at a cost of Rs. 2,280 a year, but nothing had been done for the sick poor of the neighbourhood. A two-storied building in Hughli *Chauk* Bazar was at first hired for use as the hospital, and subsequently a house in Mogultoli Lane, formerly occupied by the *Madrasa*, was taken. It was intended to erect a new building for the hospital, and the Public Works Department were asked to prepare plans for it along with those of the College and Imambarah buildings, but this intention was never carried out. The Board of Revenue sanctioned a sum of Rs. 330 monthly for the expenditure of the hospital, *plus* Rs. 800 per annum for instruments and medicines. The first annual report on the hospital, for 1837, gives 5,024 as the total number treated, of which 3,413 were cured, 1,539 relieved, 33 died, and 39 remained under treatment on 31st December. In the following year, 1838, the number of patients had risen to 7,239, of whom 356 were in-patients. The Civil Surgeon was Superintendent of the hospital, and drew a monthly allowance of Rs. 100, up to 23rd February 1842, when a Sub-Assistant Surgeon Badan Chander Chaudhari, was appointed to the charge of the hospital, and got the sum of Rs. 100 a month, formerly paid to the Civil Surgeon. The latter, however, was still allowed a sum of Rs. 30 per month as "palki allowance," for visiting the hospital. The Government of India ordered the discontinuance of this allowance in 1895 (Government of India, Finance and Commerce Department, No. $\frac{2X}{4053}$ of 23rd August 1895; Bengal Government, Revenue Department, No. 456T.R., of 4th September 1895) from the date when the present incumbent vacated the appointment. Dr. Gregg was then acting as Civil Surgeon of Hughli, Dr. R. L. Dutt was the permanent Civil Surgeon. The latter was transferred to Hughli on 2nd February 1896, and was allowed to draw this allowance (Bengal Government, Revenue Department, No. 88L.R., of 11th January 1897) till his retirement on 31st October 1899, when it was finally stopped. Babu B. C. Chaudhari held the appointment of medical officer of the hospital till his retirement in 1857. He is still alive, and living in Hughli, at the present day (November 1901).

Dr. W. H. B. Ross, in his report dated 28th April 1853, on the Jail, Civil Station, and Hospital, gives a few more particulars. He states that originally there were three medical officers to the dispensary—a *hakim*, a

kobiraj, and a native doctor; and in 1853, at the time of writing, there were still two departments in the hospital, English and Musalman. The latter is now represented by the excellent *Yunani* dispensary in the Imambarah building. Dr. Ross states that the daily average number of patients in 1853 was about 23. He also gives a complete list of the staff in both departments, which was as follows:—

ENGLISH DEPARTMENT.

	Rs.	A.
Superintendent	30	0
Sub-Assistant Surgeon ...	100	0
Writer	8	0
Compounder	10	0
Two assistants, at Rs. 4-8 and Rs. 3-8	8	0
Hindu cook, Rs. 5 ... ... Assistant, Rs. 2	7	0
Musalman cook, Rs. 5 ... Assistant, Rs. 2	7	0
Darwan	5	0
Chuprasi	5	0
Leech-supplier	6	0
Two *mehters* on Rs. 4 ...	8	0
Gardener	3	0
Instrument cleaner ...	1	8
Water-carrier	4	0
Total ...	202	8
House-rent	25	0
Diet	50	0
Bazar medicines	22	0
Contingencies	25	8
Total ...	325	0

MUSALMAN DEPARTMENT.

	Rs.	A.
Hakim	75	0
Two writers (*munshis*) on Rs. 6 each	12	0
Druggist	5	0
Assistant druggist	5	0
Yunani medicines	30	0
Contingencies	8	0
Total ...	135	0
Add cost of English Department	325	0
Total monthly cost of hospital	460	0*

European medicines and instruments, as mentioned above, were paid for by an annual lump sum of Rs. 800. Comparing the above staff with that of the hospital now, in 1901, nearly half a century later, it is curious to see the changes in the price of labour. Educated labour, such as that of the writer and compounder, rightly shows the greatest rise in price. The pay of such servants as *darwans* and *chuprasis*, service which is looked upon by natives as superior work, suitable to a man of good family, and not to be compared to the menial labour of the other servants, yet has risen in price comparatively little, much less in proportion than that of the menial servants.

The appointment of a special leech-supplier seems strange to our modern ideas; but much more strange is the fact that, as mentioned in the report by Dr. Ross, there were then on the hospital staff three mesmerisers. These

*Compare the present expenditure of the hospital, as shown in para. 4, staff, and para. 6, finance, below.

men were paid Rs. 10 a month each by Government, so their salary was not included in the hospital expenditure. The reason of the existence of these men was that Dr. Esdaile, when Civil Surgeon of Hughli, introduced a system of painless operation under the mesmeric influence. Toynbee (pp. 175–77) gives a short account of Esdaile's experiments in mesmerism, contributed by Assistant Surgeon B. C. Chaudhari, who took part in them. He details the following list of operations, performed at the Hughli Imambarah Hospital without pain, between April 1845, when Esdaile first attempted operation under mesmerism, and January 1846, a period of only eight months :—

1.	Arm amputated	1
2.	Brea ditto	1
3.	Tumour extracted from upper jaw ...	1
4.	Scirrhus testium extirpated ...	2
5.	Colis (*sic*) amputated	2
6.	Contracted knees straightened ...	3
7.	Ditto arms ditto ...	3
8.	Operations for cataract	3
9.	Large tumour cut off	1
10.	Operations for hydrocele	7
11.	Ditto for dropsy	2
12.	Actual cautery applied to a sore ...	1
13.	Muriatic acid ditto ...	2
14.	Unhealthy sores pared down ...	7
15.	Abscesses opened	5
16.	Sinus, six inches long, laid open ...	1
17.	Heel flayed	1
18.	End of thumb cut off	1
19.	Teeth extracted	3
20.	Gum cut away	1
21.	Præputium cut off	3
22.	Piles do.	1
23.	Great toe nails cut out by roots ...	5
24.	Seton introduced from ankle to knee	1
25.	Large tumour on leg removed ...	1
26.	Scrotal tumours, weighing from 8 to 80 lbs., removed without pain ...	14
	Total ...	73

A list is also given of medical cases benefited by mesmerism. Most of them were of a painful nature, and many (*e.g.*, inflammation of the eye) were really surgical cases, though no operation was done.

On Dr. Esdaile's reports of the benefit derived from the use of mesmerism as an anæsthetic, Government ordered experiments to be conducted in Calcutta. A Committee was appointed to report upon the success of the measure, composed as follows :—James Atkinson, Inspector-General of Hospitals, Chairman ; E. M. Gordon ; J. Jackson, Surgeon, Native Hospital ; D. Stewart, M.D., Presidency Surgeon ; W. B. O'Shaughnessy, M.D., Secretary ; James Hume ; A. Rogers. A room in the Native Hospital at Calcutta was set apart as a hospital for the purpose, and ten patients selected for trial, of whom sevena were operated upon in mesmeric coma ; the other three could not be brought under the influence. The list of patients experimented on is given as follows :—

1.	Nilmoni	... Tumour	...	Apparently painless.
2.	Nilmoni	... Dressing changed	...	Ditto.
3.	Domun	... Tumour	...	Doubtful.
4.	Jahirudin	... Prepuce removed	...	Ditto.
5.	Ram Chand	... Tumour	...	Ditto.
6.	Haidar Khan	... Amputation of thigh	...	Apparently painless.
7.	Murali Das	... Tumour	...	Ditto.
8.	Haranando Laha	... Tumour, weight 112 lb.	...	Painless.

The Committee, who had not seen the eighth case, reported favourably on the experiment. Only four out of the seven cases watched by the Committee appear to have been completely successful, but it must be remembered that he choice then lay, not between the mesmeric coma and some other anæsthetic, but between mesmerism and no anæsthetic at all. Even as regards the doubtful cases, the result is not altogether unfavourable: there can be no doub as to whether or not a man feels pain, who has a tumour removed without an anæsthetic. If such operations as the removal of scrotal tumours—long, bloody, and, one would imagine, very painful operations—could be performed painlessly under mesmerism (and it appears that this was really the case), then James Esdaile narrowly missed being one of the greatest benefactors of the human race. As it so happened, the discovery of the anæsthetic properties of chloroform by Sir James Simpson in 1847 followed very soon after Esdaile's experiments, and naturally chloroform superseded mesmerism. In addition to the suspicion of quackery which has always been associated with mesmerism, admittedly not every one could cause, and not every one could be put into, the mesmeric trance—disadvantages from which chloroform was free.

The Committee having made a favourable report, an experimental mesmeric hospital was opened in Mott's Lane, Calcutta, in November 1846, and kept up by Government for a year. It was closed on 8th January 1848. The native community of Calcutta applied to Government to keep up the hospital, but were informed that, if they wished it, the hospital might be re-opened and supported by public subscriptions. Accordingly it was re-opened, under the superintendence of Dr. Esdaile, on 1st September 1848, and remained open for another year. On 10th April 1850 Dr. Esdaile was appointed superintendent of Sukea Street dispensary, Calcutta, and mesmerism continued to be practised there till his retirement from the service on 11th October 1853.

The three mesmerisers remained on the staff of the Imambarah Hospital at Hughli until 1863. A report by Dr. James Elliot, the then Civil Surgeon, dated 19th June 1863, notes that these three mesmerisers are still on the hospital staff, nominally; but that two of them, who are well qualified, have recently obtained employment as native doctors, while the third is doing duty as compounder at the Jail. Dr. Elliot suggests that the three appointments as mesmerisers be formally abolished, and that the third man may be formally sanctioned as compounder for the Jail, Civil Station, and College. This was done, and to this day there is a compounder allowed for the Civil Medical Stores at Hughli—an appointment which I have not seen in any other district in

which I have served. This appointment, however, will come to an end with the abolition of the Civil Medical Stores, on 31st March 1902.*

In the early sixties the hospital was moved to a house a little north of the present police-station, in the road which still bears the name of Hospital Road. When the move was made I cannot say: Toynbee gives the date as August 1862, the annual report on dispensaries for 1866 gives it as November 1863. The building then used as a hospital is now occupied by the Free Kirk Mission. An outward visible sign of the hospital once having been here is kept up by the fact that the mortuary for medico-legal *post-mortems* stands a few yards north of the building once used as a hospital.

In July 1866 numbers of famine-stricken people began to pour into Hughli district, from the famine tracts, bringing with them disease, chiefly fevers of a low typhoid type, dysentery, and diarrhœa. Two relief stations were established—one at Hughli and one at Chinsura. A relief hospital was established in July at Jiban Pal's garden, near the railway station. It was moved to the premises of the Imambarah Hospital in August, and closed on 31st December 1866. More on this subject will be found in Chapter XI.

The annual dispensary reports from 1872 to 1878 give some account of a *dhai* class which was maintained in connection with the Imambarah Hospital for five or six years. The report for 1872 states that a *dhai* class has been begun That for 1873 states that the midwifery class at Hughli consists of one head *dhai* and four apprentices, who are said to be taught theoretically and practically. As there was no lying-in ward, it was not clear what practical instruction could be given. It was found impossible to get educated girls, of respectable position, but three young women from the professional *dhai* class and one from the barber class, attended. The young women had been taught to read and write Bengali, and had made considerable progress. The class appeared, to promise well. Six cases of premature and one of difficult labour were treated. In 1874 it is mentioned that the head *dhai* has considerable practice. Three of the pupils had been selected to complete their medical education under Dr. Charles at the Medical College Hospital. Eleven cases of premature and two of difficult labour were treated. The report for 1875 says that four *dhais* and several apprentices were maintained at a cost of Rs 29 per month, paid

* The Civil Medical Stores, kept up at head-quarters of districts and subdivisions, were abolished from 31st March 1902 (Bengal Government, Municipal Department, order No. 393Medl., of 24th January 1902). In lieu thereof, Government now makes a money grant to the local hospital, in return for the supply of medicines free to Government servants. The sums given under this arrangement, in this district, are Rs. 200 a year to the Imambarah Hospital, Hughli, Rs. 50 to the Serampur dispensary, and Rs. 90 to the Arambagh dispensary. At Hughli the boarders in the hostels attached to the Hughli College are also entitled to medicines free of cost; and the grant of Rs. 200 a year includes Rs. 3 per month to the compounder of the Imambarah Hospital for the extra work thus caused.

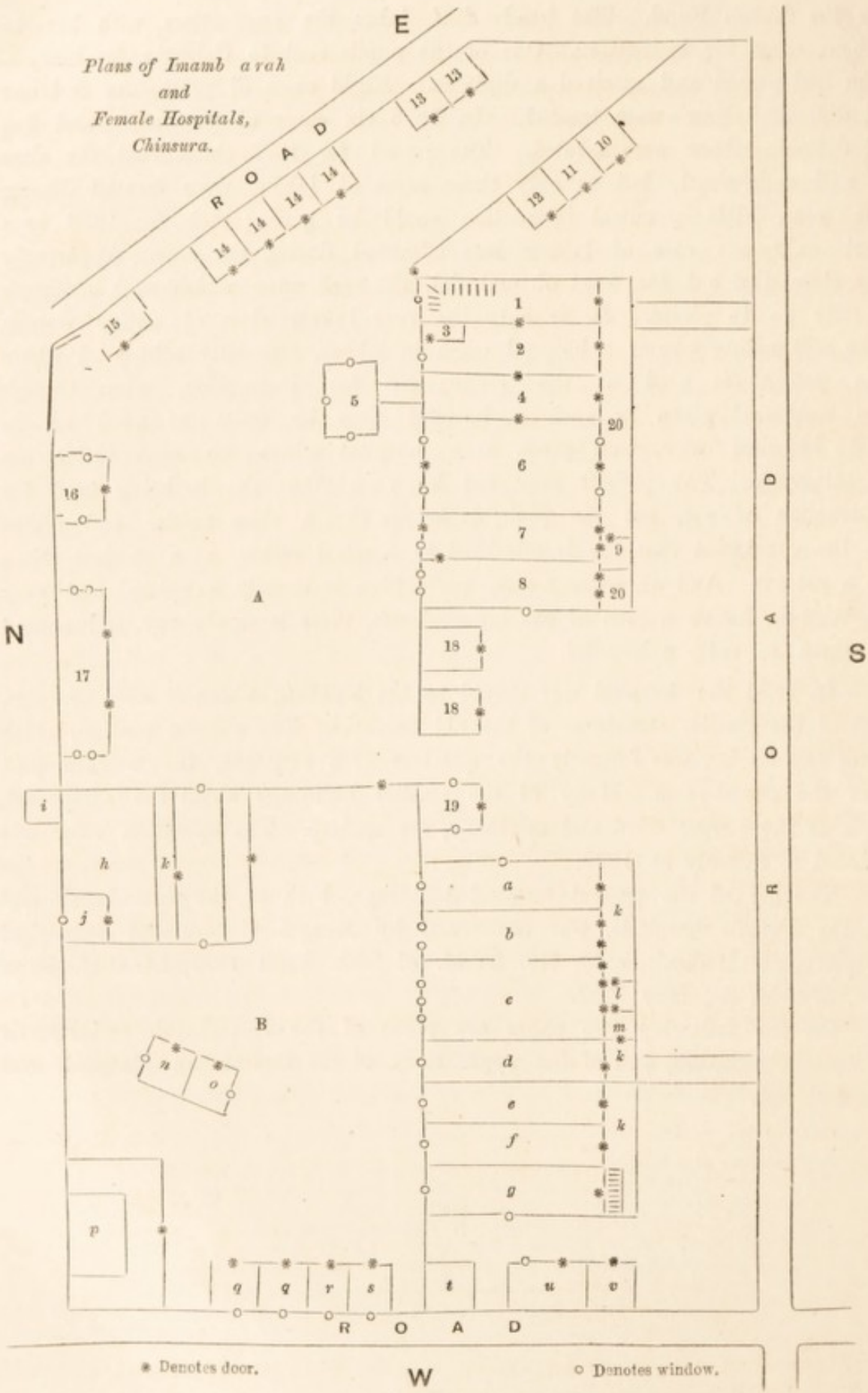
by the *Mohsin* Fund. The head *dhai* takes the apprentices with her to labour cases for instruction. One of the pupils sent to Calcutta for instruction had passed and received a diploma. Eight cases of premature and one of difficult labour were treated. In 1876 six cases of premature and five of difficult labour were treated. The report for 1877 states that the class is still maintained, but as only three cases of labour were treated during the year, little practical instruction could be given; that for 1878 says that only one case of labour was admitted during the year. Apparently the class died out for want of material, the rock upon which such attempts usually go to pieces. It is only the very lowest class of native women who will willingly enter a hospital when in labour, especially a hospital where the patient is used as the *corpus vile* for instruction, even though the treatment given in such a hospital may be quite as good as, in fact identical with, that given at a hospital where no such instruction is attempted. The patient may not know whether she is being used for instruction or not, but she probably knows that a class exists, and jumps to the conclusion that she is admitted to hospital rather as a subject than as a patient. And as, in any case, parturition is usually a normal and easy function in native women of the lower classes, there is rarely any inducement to them to enter a hospital.

In 1894 the hospital was moved to the building which it now occupies, one of the smaller structures of the old barracks. The eastern portion, which is of two stories, was formerly the quarters of a sergeant, the western part was the guard-room. Many of the smaller buildings about the compound, such as the pauper ward and mortuary, are modern. The operation room was erected so recently as 1898.

The use of the present hospital buildings, both of the Imambarah and of the Female hospitals, was sanctioned by Bengal Government Municipal Department (Medical), order No. 2T.M. of 26th April 1893, I.G.C.H. letter No. 4745 of 3rd May 1893.

On the following two pages are plans of the Imambarah and Female Hospitals, Chinsura, and of the upper story of the Imambarah Hospital over its east end.

Plans of Imamb arah and Female Hospitals, Chinsura.



REFERENCES.

Imambarah.

A. Imambara Hospital—

1. Female waiting room.
2. Consulting room.
3. Couch behind screen.
4. Compounding room.
5. Operation room.
6. Surgical ward, 12 beds.
7. Medical ward, 8 beds.
8. Dysentery ward, 8 beds.
9. Dressing room.
10. *Godown.*
11. Hindu kitchen.
12. Musulman kitchen.
13. Servants' kitchens.
14-14. Compounders' and dressers' quarters.
15. Latrine.
16. Mortuary.
17. Pauper ward, 5 beds.
18. Sweepers' quarters.
19. Cholera ward, 2 beds.
20. Veranda.
21. Office.
22. Bath-room.
23. Eye ward.
24. Store-room.
25. Roof of surgical ward.

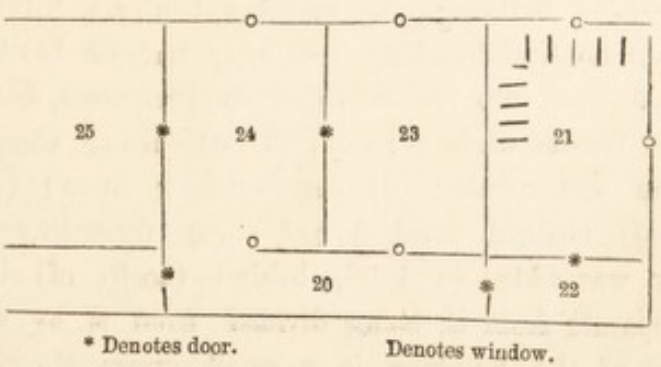
Female Hospital.

B. Female Hospital—

a. Lying-in room.
b. Small ward, 6 beds.
c. Large ward, 12 beds.
d. Examination room.
e. Compounding room.
f. Operation room.
g. Female Hospital Assistant's room.
h. Private ward.
i. Do. latrine.
j. Do. cookroom.
k. Veranda.
l. Waiting room for *purdanashins.*
m. Consulting room.
n. Mortuary.
o. Pauper ward.
p. Latrine.
q. *Godowns.*
r. *Dhai's* quarters.
s. *Mehtarani's* quarters.
t. Latrine for quarters.
u. Kitchen.
v. Nurse's quarters.

[The plan is not drawn to scale and is somewhat too broad from north to south, in proportion to ts length from east to west.]

Plan of upper story of Imambarah Hospital over east end of the Hospital.



* Denotes door. Denotes window.

[The upper story of the Female Hospital is on a somewhat similar plan, but at the west end of the building. It is allotted as quarters to the female Hospital Assistant.]

One great want of the hospital is that no quarters are provided for the Assistant Surgeon in charge. The subject is now under discussion, the provision of such quarters having been strongly recommended by the Inspector-General of Civil Hospitals, at his last inspection in August 1901. In the meantime, an allowance of Rs. 20 per month, as long as quarters are not provided, has been sanctioned in Government of India, Home Department, No. 1832, of 20th September 1900, forwarded by Bengal Government, Muncipal Department (Medical), No. 1866T.M., of 30th September 1900, and Inspector-General of Civil Hospitals' No. 11677, of 26th ~~September~~ 1900. The hospital is recognised as a place for training compounders by Inspector-General of Civil Hospitals' letter No. 358D., of 30th September 1898.

Colonel Hendley, Inspector-General of Civil Hospitals, when inspecting the hospital in December 1900, recommended the provision of what would certainly be a great improvement, viz., an out-patient block, connecting the male and female hospital buildings, and so clearing the out-patients out of both buildings. Such a block should contain separate consulting rooms, waiting, and private examination rooms, for males and females; with one dispensing room and operation room, between the two, common to both. Such an addition to the hospital, however, while effecting a great improvement, would cost a lot of money, and at present the necessary funds are not forthcoming.

The present hospital buildings had been occupied by the Chinsura Post and Telegraph offices for some years before the hospital moved into them.

2. *Communications.*—The situation of the Imambarah Hospital, immediately on the north of the Courts, and a little distance from the river, is fairly central for the town as a whole. It is about two miles from the old Hughli railway station.

The only hospitals in the immediate neighbourhood are the small French hospital at Chandarnagar, about three miles south, and an out-patient dispensary at Naihati, only about a mile and-a-half distant, but on the other side of the Hughli; also a small out-patient dispensary following European methods, and a large *Yunani* out-patient dispensary, in the Imambarah buildings at Hughli.

3. *Buildings.*—The buildings, as mentioned above, belonged to the old barracks. The main hospital building is a long narrow block, running from east to west, and divided into the following compartments, beginning from the east: (1) stair, and female waiting room; (2) consulting room, with a couch behind a screen in one corner; (3) compounding room; (4) large surgical ward, 12 beds; (5) medical ward, 8 beds; (6) dysentery ward, 8 beds. An operation room was added in 1898, behind (north of) the compounding room, but quite separate from it, being divided from it by a broad veranda. At the eastern end of the building is a small upper story, comprising (1) stairs, and landing at head of stairs, occupied by office; (2) a small ward, usually used as an eye-ward, but capable of being fitted up for the occupation

of a European; (3) a bath-room; and (4) a store-room. In the compound are numerous smaller buildings: (1) a cholera ward, with two beds; (2) a pauper ward, with five beds; (3) a mortuary; (4) latrine; (5) cook-rooms; (6) compounders' and dressers' quarters.

4. *Staff* is as follows:—

	Rs.
(1) 1 Assistant Surgeon, on grade pay ...	100—200
(2) 1 Clerk	20
(3, 4) 1 Compounder on Rs. 20; one assistant compounder on Rs. 14	34
(5, 6) 1 Dresser on Rs. 12; one assistant dresser on Rs. 10	22
(7, 8) 1 Hindu cook on Rs. 8; one Musalman cook on Rs. 7	15
(9) 1 *Darwan*	7
(10, 11, 12) 3 Ward coolies on Rs. 7 each	21
(13, 14, 15) 2 Sweepers on Rs. 8, one on Rs. 7	23
(16) 1 *Dom*	7

5. *Patients.*—The number for the past twenty years is given in the following table. The great increase in 1894 is due to the inclusion in the statistics of those of the newly opened Female Hospital, for nearly six months (4th July to the end of the year). From 1st January 1895 the statistics of the Female Hospital are separately shown:—

Year.	In-patients.			Out-patients.		Operations.
	Total treated.	Daily average.	Deaths.	Total treated.	Daily average.	
1881 ...	603	25·28	123	10,213	57·38	387
1882 ...	665	26·95	132	10,183	54·10	474
1883 ...	667	22·32	112	11,951	57·37	589
1884 ...	731	25·66	166	11,524	51·08	620
1885 ...	770	24·73	187	11,035	48·28	600
1886 ...	590	19·99	153	8,943	47·95	462
1887 ...	566	28·08	114	8,225	42·45	466
1888 ...	564	29·24	139	8,389	41·67	361
1889 ...	628	31·81	122	7,822	46·96	393
1890 ...	636	32·22	127	8,205	41·11	504
1891 ...	744	29·43	219	9,160	49·00	383
1892 ...	737	31·88	201	7,826	43·31	540
1893 ...	797	36·36	189	8,666	55·76	668
1894 ...	965	44·97	215	12,378	80·45	1,062
1895 ...	646	29·02	138	10,245	68·64	580
1896 ...	729	29·11	186	10,315	62·57	556
1897 ...	815	31·47	215	8,334	61·24	1,001
1898 ...	532	24·80	131	8,741	75·55	913
1899 ...	638	26·00	106	8,389	64·61	680
1900 ...	642	24·80	177	7,007	43·58	650

Since the Female Hospital has been in existence, almost in the same compound, all female in-patients, and the great majority of female and juvenile out-patients, have been treated there, and naturally the figures of the Imambarah Hospital have fallen off. The figures for the years prior to 1895 should be compared with those of the Imambarah and Female Hospitals combined subsequent to that date.

6. *Finance.*—The following table gives the income and expenditure of the dispensary for the last two years, 1899 and 1900. As regards the amount paid by Government as salary of Medical Officer, this depends entirely upon the grade of the Medical Officer, the dispensary funds paying a fixed contribution (now Rs. 204 per month), whatever his grade, for his services, to Government, which pays him. The amount shown as subscriptions from Europeans consists of subscriptions from the large mills on the other side of the Hughli, which send many cases for treatment. The large amounts shown as contributions from local funds are entirely paid by the *Mohsin* Fund, which contributes practically the entire income of the hospital. It has never received any contribution whatever from the local Municipality, which, far from helping the hospital in any way, taxes its buildings at the ordinary rates paid by holdings in the town. Fractions of a rupee are omitted in the table, the nearest whole number being given :—

Income.	1899.	1900.
	Rs.	Rs.
Cash balance on 1st January	136	116
Medical Officer, paid by Government ...	600	...
Registers and forms	47	36
Diet of police cases	50	17
Total from Government	697	53
From local funds	8,560	7,670
Subscriptions from Europeans	313	528
Miscellaneous receipts	92	80
Total ...	9,798	8,447
Expenditure.		
Medical Officer, paid by Government ...	600	...
Ditto, paid from local funds ...	2,100	1,525
Compounders and dressers	897	877
Menial servants	789	853
Bazar medicines	66	89
European medicines	1,605	1,722
Diet	1,540	1,396
Miscellaneous charges	1,526	1,382
Building and repairs	559	572
Total ...	9,682	8,416
Cash balance on 31st December	116	31
Average cost of each diet	2·9	2·6
Percentage of total cost paid by Government	7·19	0·62

II.—Serampur Dispensary.

1. *History.*—This dispensary was established, chiefly through the exertions of Dr. Marshman, on 28th January 1836, the birthday of the King of Denmark, but was not formally opened till 1st June 1836. It was supported by local subscriptions, with a grant of Rs. 50 per month from the Danish Government. A Captain Mearing left it a legacy of Rs. 2,000, and some further funds were raised by bazars. With these funds a brick house was bought. On the transfer of Serampur to the English, the Government kept up the monthly subscription of Rs. 50 up to 1st June 1881. In 1866 Rs. 300 was subscribed for repairing the building. In 1868 the Municipality began to give a monthly subscription of Rs. 50; and on 20th January 1870 the dispensary was transferred to the control of the Serampur Municipality.

In the annual dispensary report for 1871 (pp. 51-52) Dr. J. Greene, the then Civil Medical Officer of Serampur, gives the following account of the history of this dispensary:—

"This hospital was established by the Danish Government in the year 1836. The first meeting for establishing an hospital was held at the Government House on the 28th January 1836. In looking over the old records I found a printed report of this meeting in English and Bengali, from which the following extracts will be found interesting:—'The necessity of an hospital for the natives, having been long felt at Serampore, His Excellency the Hon'ble Colonel Rehling, on Thursday, January 28th, convened a meeting of the inhabitants, both European and native, at the Government House, to take the subject into consideration, when His Excellency being called to the chair, Dr. Marshman stated that the number of natives who died at Serampore in the year ending December 1833, amounted to between six and seven hundred, and that on the average full five hundred were carried off by disease from year to year, adding that of this number a full tenth, possibly a greater proportion might be saved from death if an hospital were provided in which their various cases might meet with timely and prompt attention; and that the saving of *fifty* human lives from year to year, would repay all the labour and expense required to establish an hospital.'

"'*First resolution.*—That a society be immediately formed with the view of supporting and superintending an hospital for the reception of patients of every age and nation, afflicted with disease of any kind, the leprosy excepted, under the auspices of Her Sacred Majesty Maria Queen of Denmark, of which society all who subscribe even so small a sum as a rupee monthly, shall be considered members.'

"After the hospital was opened I find from the old account book that it was generously supported by the Government and the European community, the Danish Government subscribed *sicca* Rs. 533-5-4 annually, and such entries as the following in the old account book testify to the liberal support given by the European community:—'Amount received being Church collection Rs. 306-8; amount received being donation Serampur ladies' Benevolent Institution Rs. 10.' Donations poured in freely, chiefly through Dr. and Mrs. Marshman, who both gave liberally, one entry in 1844 being 'donation from Dr. Marshman, Rs. 400.'—The ladies also got up fancy sales in aid, the sale proceeds from which were given to the hospital. I find also entered on the 6th November 1844 the following:—'To the Director of sales for the house and ground No. 310 in the Akna Road bought from Juggomohun Gossain July 30th, Rs. 1,525.' This entry no doubt refers to the purchase of the present building. Whilst the above extracts testify to the warm and generous support given

by the European community to this useful institution, an entry here and there points to the want of interest and support evinced by the native community. I regret to say that the native community does very little towards the support of an institution which bestows ungrudgingly such benefits on their countrymen."

The Captain Mearing mentioned above, as having given a legacy of Rs. 2,000 to the dispensary, is buried in the Mission Cemetery, Serampur, where his epitaph describes him as Captain P. Mearing, of the Honourable East India Company's service, Captain of the Ship *Euphrates*, many years a resident of Serampur, died 4th November 1847, aged 75.

2. *Communications.*—The dispensary stands near the river, about a mile from the railway station, and is centrally situated for the town, from north to south.

The nearest dispensaries on the west of the Hughli are Baidyabati, about three miles north, and Rishra, about two miles south. The Bhola Nath Bose dispensary, Barrackpur, the Barrackpur Cantonment dispensary, and the North Barrackpur or Nawabganj dispensary, are also all within about a couple of miles, but on the other side of the river.

3. *Buildings.*—The dispensary is a large *pakka* building, standing in a large compound, comprising six or seven *bighas* of ground. The main building contains one large and four small wards, an operation room, consulting and compounding rooms. There are also a number of smaller separate buildings in the grounds, a pauper hospital, with two wards, for males and females; a contagious ward, a mortuary, kitchen, latrines, servants' quarters, and compounder's room.

4. *Staff* is as follows:—

	Per month. Rs.
1 First grade Civil Hospital Assistant	55
1 Nurse	10
2 Compounders, on Rs. 17 and Rs. 15	32
1 Cook, on Rs. 8—10	9
1 Bearer	7
1 Ward coolie	7
1 *Darwan* and *mali*	7
2 *Mehtars* on Rs. 8 and Rs. 7	15
1 *Mehtarani*	6

The nurse is not a whole-time servant, but only comes for two hours in the morning.

5. *Patients.*—The number for the past twenty years is given in the following table. Both in and out patients are treated. The death-rate has

always been very high, most markedly so in 1897, which shows that a very large proportion of the admissions are paupers, picked up and sent to hospital by the police:—

Years.	In-patients.			Out-patients.		
	Total treated.	Daily average.	Deaths.	Total treated.	Daily average.	Operations
1881	452	13·39	123	4,473	36·60	369
1882	579	17·64	156	4,748	36·36	428
1883	445	16·25	111	4,312	35·91	486
1884	526	17·27	128	4,860	38·84	446
1885	502	13·62	123	4,757	41·10	385
1886	447	11·84	108	4,472	39·79	407
1887	465	12·81	96	4,431	41·30	434
1888	524	14·99	108	4,583	42·70	526
1889	555	16·91	143	4,643	37·87	501
1890	481	14·60	137	4,658	35·36	465
1891	730	20·35	191	4,946	36·85	419
1892	735	26·65	180	4,938	34·54	479
1893	827	28·82	214	5,414	39·09	467
1894	695	24·67	182	5,906	52·69	735
1895	758	28·03	226	6,035	48·28	772
1896	689	26·68	184	6,658	53·68	945
1897	976	33·18	327	6,602	50·04	569
1898	670	26·86	192	6,868	45·76	601
1899	722	27·30	184	7,041	57·23	551
1900	763	30·15	231	6,301	53·22	500

6. *Finance*—The following table gives the income and expenditure of the dispensary for the last two years, 1899 and 1900. Fractions of a rupee are omitted, the nearest whole number being given. Both income and expenditure, in 1899, are largely increased by the amount paid for building and repairs, and the subscriptions thereto. The subscriptions from natives still fully bear out the remarks made by Dr. Greene on this subject thirty years ago. The natives of the large and wealthy town of Serampur

in 1900 contributed less than one-tenth of the amount contributed by Europeans :—

INCOME.

	1899.	1900.
	Rs.	Rs.
Salary of Medical Officer	204	204
Registers and forms	60	44
Diet of police cases	16	176
Total from Government ...	280	424
Municipal funds	3,167	2,312
Subscriptions from Europeans	1,055	1,092
Ditto from natives	142	90
Miscellaneous receipts	1,825	622
Total ...	6,469	4,540

EXPENDITURE.

Medical Officer, paid by Government	204	204
Ditto, paid from local funds	456	456
Nursing establishment	140	68
Compounders and dressers	327	311
Menial servants	655	648
Bazar medicines	86	86
European medicines	185	623
Diet	1,253	1,269
Miscellaneous charges	574	647
Buildings and repairs	1,959	228
Total ...	6,469	4,540
Average cost of diet	2·1	2·1
Percentage of total cost paid by Government	4·32	9·33

III.—UTTARPARA DISPENSARY.

1. *History.*—This dispensary was opened in March 1851. It owes its existence to the liberality of the Mukerji family of Uttarpara, and has had a somewhat chequered history, having finally settled into a quiet and undisturbed existence as a class I dispensary, wholly maintained by Government. The history of the dispensary is given at length in Government Resolution, Municipal Department (Medical), No. 396T.—M., of 30th June 1896, which I reproduce herewith in full, as giving a short summary of the occurrences of the last 45 years :—

"In the year 1849, Babus Joykissen Mukherji and Rajkissen Mukherji, of Uttarpara, offered to place in the hands of Government certain landed property yielding an annual income of Rs. 1,800, with a view to the establishment of a charitable dispensary at that place, at an estimated monthly cost of Rs. 250, and agreed to pay half the expenses of the construction of a building for the

dispensary, which was estimated to cost Rs. 4,000, on the condition that the Government consented (1) to contribute Rs. 100 a month towards the expenses of the dispensary, (2) to pay half the cost of the construction of the building, and (3) to supply English medicines and surgical instruments to the institution free of charge. In consideration of the public spirit and liberality of the donors, the offer was accepted by Government on the terms proposed, and these gentlemen accordingly made over to Government, by a deed of gift, their *patni* rights in the two villages named in the margin [Ranibazar and Moyagram]. By another agreement, these villages were again leased out to them in *darpatni* at an annual rental of Rs. 8,659-11-8, the *patni jama* of Rs. 6,859-11-8 being payable to" [by ?] "Government, which thus derived a regular income of Rs. 1,800 per annum from the transaction.

"2. The estimate of the monthly cost of the dispensary was based on the assumption that the salary of the Medical Officer, which represented the Government contribution, would not exceed Rs. 100 per mensem, the pay of an Assistant Surgeon of the third grade; but in 1853, the third grade Assistant Surgeon who was in charge of the dispensary having become entitled to promotion to the second grade on a salary of Rs. 150 a month, Government decided, for the purpose of avoiding the inconvenience which would have resulted by the transfer of the Medical Officer, that the money contribution of Rs. 100, which represented the pay of the Assistant Surgeon, should be withdrawn, and the service of an Assistant Surgeon given in future to the dispensary free of cost.

"3. The supply of medicines free of charge to the dispensary was discontinued in 1880, in pursuance of the general policy adopted in that year, and in 1882, in accordance with general orders issued by Government, relieving Municipalities of all police charges previously borne by them, on the condition that the money thus set free should be expended on purposes of general municipal utility, including the maintenance of medical and educational institutions, the Municipal Commissioners of Uttarpara were required to take over the management of the dispensary. The Municipal Commissioners, however, represented that the police charges of which they had been relieved amounted to Rs. 1,216 only, while the charge thrown upon them by the withdrawal of Government aid from the dispensary was Rs. 1,800 a year, being the pay of the second grade Assistant Surgeon then in charge of the dispensary, or Rs. 600 more than the amount of which they had been relieved, and on the recommendation of the Commissioner of the Division, Government undertook to pay this amount so long as the second grade Assistant Surgeon held charge of the institution. Subsequently, on a further representation, Government agreed to bear the entire salary of the Assistant Surgeon.

"4. Shortly after this Babu Manohar Mukherji, son of Babu Rajkissen Mukherji, claimed the restitution of the endowment made by his father and Babu Joykissen Mukherji, on the ground that the terms of the agreement under which the endowment was made would be violated by the transfer of the dispensary to the Municipality, and by the discontinance of the supply of European medicines and instruments free of charge.' The question was referred to the Legal Remembrancer, who consulted the Officiating Advocate-General in the matter, and the latter held that neither the transfer of the management of the dispensary to the Municipal Commissioners, nor the discontinuance by Government of the free supply of medicines and instruments, although involving a violation of the terms of the deed, would suffice to extinguish the *patnis* so long as the dispensary was well managed. Babu Manohar Mukherji was accordingly informed that the claim preferred by him was not tenable and could not be admitted.

"5. At the same time, a formal notice, declaring the intention of the Lieutenant-Governor to vest the dispensary in the Commissioners of the Municipality, was published in the *Calcutta Gazette*. Objections were received and considered, and final orders were passed under section 34 of Bengal Act V of 1876, corresponding to section 32 of the present Municipal Act, directing that the dispensary be formally vested in the Municipality. Babu Joykissen Mukherji protested against this order, and was told that the transfer of the dispensary was not a violation of the conditions of the deed of gift, since the control of the properties forming the endowment was not transferred, but remained with Government, which advanced Rs. 150 a month to meet the charges of the dispensary, and recovered

the amount from the *darpatni* rents. In 1886, Babu Joykissen Mukherji repeated his protest, and he was informed, in reply, that the management of the dispensary would be regulated by the rules in force for the management of all charitable hospitals and dispensaries in Bengal. In consideration, however, of the liberal endowment which the petitioner and his brother had combined to provide for the dispensary, it was suggested to the Municipal Commissioners of Uttarpara that they should allow both branches of the petitioner's family to have some voice in its management, and should arrange for them to be fairly represented on any Committee that might be appointed for the management of the institution.

"6. In 1890 further difficulties occurred in connection with the appointment of the Assistant Surgeon, and the whole question regarding the future management of the dispensary was discussed at a conference held under the orders of the then Lieutenant-Governor, Sir Stuart Bayley. At this conference, at which the representatives of both the donors' families and of the Municipality were present, it was decided that the order under which the dispensary had been originally vested in the Municipality should not be disturbed, and that Government would continue the grant of Rs. 1,800 a year received from the donors for the maintenance of the institution, and would also supply the services of an Assistant Surgeon free of cost, and pay the entire salary of this officer according to the grade to which he might from time to time belong. It was also settled that medicines and stores would not be gratuitously given by Government, and that the institution should be regulated by the rules in force for the management of charitable hospitals and dispensaries in Bengal. It was, however, suggested that the arrangement made in 1886, regarding a fair representation of both branches of the donors' family on any committee that might be appointed for the management of the institution, should be allowed to continue, and that, should the amount of the endowment of Rs. 1,800 a year to be paid by Government to the Municipality be found at any time to fall short of the actual expenditure incurred on the dispensary, the deficiency should be met from municipal funds, as the municipality was relieved of police charges in 1884, and had not accepted any corresponding obligation. This arrangement, in which all the members of the conference agreed, has continued up to the present time.

"7. The attention of the Lieutenant-Governor has recently been drawn to the fact that the original transfer of the dispensary to the Municipality, and the withdrawal of free medicines and instruments, constituted a violation of the deed of gift, and has in other respects proved inconvenient. The Advocate-General has again been consulted, and has held that the endowments and funds of the dispensary, being private property held in trust by the Government, could not be transferred to and vested in the Commissioners of the local Municipality by an order under section 34 of Bengal Act, V of 1876, corresponding to section 32 of the present Municipal Act, and that such being the case, the Government would be perfectly justified in withdrawing the orders issued in 1884. The Lieutenant-Governor has accordingly decided to cancel the Notification of 1884, and in view of the history and special character of the dispensary, to treat it for administrative purposes as a State institution. This will enable the dispensary to be supplied free of charge with medicines and instruments from the Government Stores, as originally contemplated in the deed of gift. His Honour directs that the institution shall henceforth be under the control of the Civil Surgeon of Hughli without any Managing Committee. In order, however, to give the family of the founders of the dispensary a voice in its management, the Lieutenant-Governor is pleased to direct that four of them shall be appointed visitors on the nomination of the Commissioner of the Bardwan Division.

"ORDER.—Ordered that a copy of the Resolution be forwarded to the Inspector-General of Civil Hospitals, Bengal, for information, and to the Commissioner of the Bardwan Division, for information and guidance.

"By order of the Lieutenant-Governor of Bengal,

"H. H. RISLEY,

"*Secretary to the Government of Bengal.*"

No. 397T.—M.

"Copy, together with a copy of the Notification referred to above, forwarded to the Inspector-General of Civil Hospitals for information, with the request that he will direct the Civil Surgeon of Hughli to take over the management of the Uttarpara dispensary from the local Municipality.

"By order of the Lieutenant-Governor of Bengal,

"H. H. RISLEY,

"*Secretary to the Government of Bengal.*"

"DARJEELING,

"*The 30th June 1896.*"

The above minute was accompanied by a formal order cancelling the transfer of the management of the dispensary to the Municipality, as follows :—

"Municipal Department, Medical, Darjeeling, the 30th June 1896, Notification No. 400T.—M.—It is hereby notified for general information that the order conveyed in Government letter No. 387T.—M., dated the 29th January 1884, to the Commissioner of the Bardwan Division, directing that the Charitable Dispensary situated within the Uttarpara Municipality be vested in the Municipal Commissioners, is cancelled.

"H. H. RISLEY,

"*Secretary to the Government of Bengal.*"

Some other notes on the history of Uttarpara dispensary may be given from records in the Civil Surgeon's Office. In a letter, No. 918 of 15th March 1875, from the Secretary to the Government of Bengal, to the Commissioner of the Bardwan Division, it is stated that—

"This Government, seeing the necessity of having a Surgeon of some experience at Uttarpara owing to its distance from a *sadr* station, suggested to the Supreme Government that, in lieu of the fixed grant of Rs. 100 per mensem, the services of a Sub-Assistant Surgeon might be permanently attached to the dispensary without reference to his grade or the amount of his pay. This proposal was sanctioned. Under these circumstances, and as the dispensary appears to be useful, the Lieutenant-Governor is pleased to direct, in supersession of previous orders, its continuation on its former footing."

From the above extract, it appears that the services of an Assistant Surgeon were given to this dispensary chiefly on the ground of its distance from a *sadr* station, which made it necessary for Government to continue to bear the cost of an Assistant Surgeon's pay. The distance from the *sadr* station of the district, Hughli, is about 18 miles; but Uttarpara is barely six miles from Serampur, and the same distance from Howrah, with its General Hospital, and the Calcutta Medical College is barely eight miles distant. Uttarpara, moreover, stands on the main line of the East Indian Railway, with a constant service of trains, which reach Howrah in from ten to fifteen minutes. There is hardly a place in the Hughli district, there can be few

places in any district, where the excuse of remoteness and inaccessibility had less validity. No doubt the dispensary was, as it still is, useful. It would be a very bad dispensary of which this could not be said. The question is, whether the usefulness of the dispensary, and the particular claims of the locality, render it advisable that the Government should spend a large sum of public money, at the expense of the tax-payers of the province in general, in maintaining a first-class dispensary at Uttarpara, rather than at any other place.

In 1890 the Uttarpara Municipality were called upon to nominate a Medical Officer of their own choice to the charge of the dispensary. They nominated an Assistant Surgeon in Government service; but finding that they would be called upon to pay the salary of the officer so nominated, withdrew their nomination, and claimed that Government had pledged itself to keep an Assistant Surgeon at Uttarpara at the public cost, by the original deed of gift.

Among other correspondence on the subject of the transfer of the dispensary from the Municipality to Government, in 1896, I found a report, dated 28th December 1895, in which it was stated that the surplus funds of the dispensary were allowed to accumulate in the hands of the Municipality, instead of being invested, according to rule, in Government securities, from 1884 to 1892, by which time they had reached the amount of Rs. 2,809. The Civil Surgeon reported this fact in November 1892 to the Commissioner of the Bardwan Division, who called upon the Municipality to deposit the amount with the Controller-General. In accordance with this demand the Municipality paid up the sum of Rs. 2,192, in April 1893, leaving an amount of Rs. 617, according to their accounts, still owing. This sum, as far as I can make out, was never paid by the Municipality. But, in addition to this sum of Rs. 617, which was admittedly owing to the dispensary then, according to the municipal accounts, a further sum of Rs. 434 was deducted from the dispensary funds to pay a proportion of the banking and auditing charges of the Municipality. It appears, therefore, that in the fourteen years during which it was vested in the local Municipality, so far from having gained anything by this exercise of local self-government, the dispensary was over a thousand rupees out of pocket by the transfer. The only benefit which the dispensary ever got from its connection with the Municipality was that that body, for about three years, paid Rs. 17-8 a month, or half the salary of Rs. 35 paid to a female doctor, who was nominally attached to the dispensary. Her whole salary was paid by the dispensary up to January 1893, when the special Dispensary Committee then in existence refused for the future to pay more than half of her salary, on the ground that her services were chiefly used by private residents of the place, and that she was not required for the dispensary at all. From January 1893 up to July 1896,

when Government again took over the dispensary, half her salary was paid by the Municipality and half by the dispensary. When Government took over the dispensary she was struck off the dispensary staff.

Uttarpara dispensary was under the supervision of the Civil Surgeon of Howrah from 1880 to 1886. Before and after that date it was, and is, under the Civil Surgeon of Hughli, although it is in the Serampur subdivision, which has a separate Civil Medical Officer of its own. Indeed, the supervision of this dispensary is the only duty which the Civil Surgeon of Hughli has to fulfil in the whole Serampur subdivision.

Since its reconstitution in 1896 as a class I dispensary, a Government institution, the dispensary has been happy in having no history, other than that is was badly damaged by the great earthquake of 12th June 1897. The damage then done is only now, in October 1901, being repaired by the Public Works Department.* But the question must force itself upon us, whether the maintenance of this dispensary is worth the money it costs the Government, which pays fully two-thirds of the total cost of the institution. If it were the policy of Government to support a dispensary at the public cost at every place where such an institution would be advantageous, there would be no more to be said on the subject. The dispensary is a good one, well managed, under a skilful Assistant Surgeon, and does good work. But we know that the maintenance of hospitals at the public expense is not the present policy of the Government. This being so, if the Government can afford to spend public money on medical relief at certain places, as exceptions to the general rule, is Uttarpara one of the places which are specially worthy of being the recipients of this medical charity at the expense of the general body of the tax-payers? Certainly it is not. Uttarpara is a very small and, I should think, a wealthy town, a large proportion of the population being well-to-do; it is within six miles of Howrah, eight of the Calcutta Medical College; it is on the main line of rail; and there is another local dispensary, Bali, within a mile. Not to speak of other and poorer districts, there are a dozen places in this district alone where medical charity would be better bestowed. But then we must think of the history and origin of the dispensary. It owes its existence, as stated above, to the Mukerji family of Uttarpara. When it was first opened, in 1849, the endowment then given by them was a most generous offer. Times have changed, and medical policy with them; and it is most unlikely that now, half a century later, Government would undertake to maintain a dispensary, if a similar partial endowment were offered. But this does not alter the fact that Government are bound by their pledges to the family of the donors to maintain the dispensary. The Government

* These repairs were finished by the end of March 1902.

order of 30th June 1896, quoted above, shows clearly that, nearly twenty years ago, the Mukerji family were, when the dispensary was put under the local Municipality, anxious to resume their endowment and to cancel the bargain. It seems to me that it is a great pity that Government did not accept this proposition, and close the dispensary, leaving the local Municipality, if they wished for a dispensary, to maintain one, either at their own cost, or in conjunction with the neighbouring small Municipalities of Bali and Kotrang.

2. *Communications.*—The dispensary stands on the bank of the river Hughli, between the river and the branch of the Grand Trunk Road which runs from Ghireti to Howrah. This is a fairly central situation for the town. It is about a mile, or rather less, from Bally or Bali station on the East Indian Railway.

There are many other hospitals and dispensaries not far off. As mentioned above, the Medical College Hospital, Calcutta, is about eight miles distant; Howrah General Hospital, six miles; Serampur, six miles. The dispensary at Bali is about one mile distant; that at Rishra, three to four. There are two other large hospitals within a few miles, but on the other side of the Hughli—the North Suburban Hospital at Cossipur, and the Sagar Dutt Hospital at Kamarhati.

3. *Buildings.*—The dispensary is a *pakka* two-storied building, standing in a compound of its own. The upper story, which is small, forms the Assistant Surgeon's quarters. The lower story consists of one large central room running the whole length of the building, from east to west, which is used as a male in-patient room, with ten beds; two smaller rooms on the south, used respectively as operation room and female ward, with four beds; two similar rooms on the north, used as eye-ward, with four beds, and duty room, for the member of the staff on duty. On the west is an entrance hall or veranda, part of which is screened off as a waiting room for female patients, on the north is the compounding room, and on the south the consulting room, part of which is screened off, with a couch behind the screen. At the east end of the compound, on the river bank, is a pauper ward, with three rooms, one of which has long been used as a *godown* by the Public Works Department. In the north-east corner are the latrines; along the north of the compound the kitchens and servants' quarters, and two servants' quarters on the south of the compound.

4. *Staff.*—The staff was sanctioned in Bengal Government, Municipal Department (Medical), letter No. 2102Medical, of 15th April 1897, forwarded by the Inspector-General of Civil Hospitals with his letter No. 2839, of 3rd May 1897. This order sanctions a total expenditure of Rs. 215 per month, including Rs. 150 for the Assistant Surgeon, who was then in the

second grade, but has since been promoted. The pay of the *bhisti* has also since been raised one rupee. The staff at present is as follows:—

	Per month. Rs.
1 First grade Assistant Surgeon	200
1 Compounder	15
1 Dresser	10
1 Cook	9
1 Ward servant	7
1 Water-carrier	7
1 Sweeper	8
1 *Mehterani*	6
1 Clerk (allowance)	5
Total ...	267

5. *Patients.*—The number for the past twenty years is given in the following table. The numbers treated are not large, considering the high class of the dispensary, liberally maintained, and under a first-class Assistant Surgeon. They go to show that a dispensary of this class is hardly required so near Calcutta and Howrah. Both in and out patients are treated:—

Year.	In-patients.			Out-patients.		Operations.
	Total treated.	Daily average.	Deaths.	Total treated.	Daily average.	
1881 ...	280	11·31	35	3,252	23·63	381
1882 ...	258	1·35	44	3,601	25·61	377
1883 ...	280	10·91	44	3,534	25·52	388
1884 ...	254	12·05	44	3,618	23·20	450
1885 ...	249	12·04	51	2,987	19·54	339
1886 ...	234	9·74	33	3,236	23·16	425
1887 ...	234	9·68	40	3,037	22·32	344
1888 ...	234	8·10	51	3,302	23·04	375
1889 ...	218	7·24	48	3,382	21·84	442
1890 ...	260	8·76	52	3,581	27·01	425
1891 ...	308	9·34	64	3,897	32·05	460
1892 ...	252	8·91	56	4,258	34·75	399
1893 ...	359	11·73	79	4,365	37·74	366
1894 ...	286	9·55	58	4,501	34·57	395
1895 ...	270	8·92	60	4,665	41·61	395
1896 ...	294	10·07	63	4,888	40·69	330
1897 ...	274	8·93	71	5,110	45·27	359
1898 ...	162	5·08	50	3,438	28·57	272
1899 ...	210	7·38	50	4,878	48·25	277
1900 ...	244	8·18	62	4,650	42·07	257

6. *Finance.*—The following table gives the income and expenditure of the dispensary for the past two years, 1899 and 1900. It will be seen that Government pays by far the largest proportion of the cost of the institution. Fractions under eight annas are omitted, those over eight annas shown as the next highest whole number. The endowment from the Mukerji family is shown as subscriptions from natives. One-third of the rents from the lands for that year had not been realized up to the end of 1900. The subscription from Europeans is given by the Bali Paper Mill. The dispensary has a small invested capital of Rs. 1,500 :—

INCOME.

	1899.	1900.
	Rs.	Rs.
Cash balance on 1st January	3,176	4,702
Salary, Medical Officer	2,700	2,400
Do., inferior staff	790	788
Registers and forms	14	17
European medicines	580	312
Special allowances	76	265
Total from Government	4,160	3,782
Interest on investments	51	51
Subscriptions from Europeans	265	240
Ditto from natives	1,800	1,200
Miscellaneous receipts	19	4
Total ...	9,471	9,979

EXPENDITURE.

Salary, Medical Officer	2,700	2,400
Do., compounders and dressers	359	356
Do., menial servants	432	432
Bazar medicines	18	17
European medicines	580	312
Diet	237	262
Miscellaneous charges	367	356
Buildings and repairs	76	265
Total ...	4,769	4,400
Balance on 31st December	4,702	5,579*
Average cost of diet	0-1-5	0-1-7
Percentage of total cost paid by Government	87·23	85·97

IV.—DWARBASINI DISPENSARY.

1. *History.*—This dispensary was opened in March 1856, and, like Uttarpara, owes its existence to the liberality of the Mukerji family of Uttarpara. It was established by Babu, afterwards Raja, Jai Kishan Mukerji; Government, in accordance with the terms then in force for the establishment of

*This large balance has no real existence, but has simply been absorbed into the general funds of Government, as no separate account for Uttarpara dispensary is kept by the Accountant-General. The Inspector-General of Civil Hospitals has since ordered this balance to be struck off.

dispensaries, supplying the Native Doctor, European medicines, and instruments Jai Kishan Mukerji paying the rest of the expenses. It is still maintained by his son, Raja Piari Mohan Mukerji, C.S.I., of Uttarpara, who contributes Rs. 40 per month, while Government pays Rs. 12-8 per month. The payment of this contribution was sanctioned in Bengal Government, Political Department (Medical), letter No. $1\frac{D}{25}9$ of 9th September 1890. During the great endemic fever years, Dwarbasini was one of the places which suffered most severely, and the existence of a dispensary at the spot was then found very useful. There is a Committee.

2. *Communications.*—About three quarters of a mile from Dwarbasini station, on the Bengal Provincial Railway, eight miles by road from Pandua, and the same distance, by road or rail, from Dhaniakhali.

There is no dispensary in the immediate neighbourhood. The distances of the nearest are—Bainchi, about ten miles; Mandalai, eleven miles; Hughli, about fourteen miles. There is also a private dispensary at Sultangachia, about seven miles distant.

3. *Buildings.*—A small *pakka* building, with two rooms, consulting and compounding room, and two verandas, one along the front, or south side, the other on the east. The latter is screened in and divided into two compartments, one for a female waiting room, the other for a couch behind a screen. The Native Doctor's quarters are on the west of the dispensary.

4. *Staff* is as follows :—

	Per month. Rs.
1 Local Native Doctor	25
1 Compounder	8
1 Servant	6

5. *Patients.*—The number for the past twenty years is given in the following table. Out-patients only are treated. The figures for the second decade show a great increase over those of the first :—

Year.	Total.	Daily Average.	Operations.	Year.	Total.	Daily Average.	Operations.
1881 ...	2,796	21·2	158	1891 ...	2,938	15·83	75
1882 ...	3,000	20·9	165	1892 ...	4,458	27·21	250
1883 ...	3,802	20·5	72	1893 ...	9,557	52·10	521
1884 ...	4,152	21·4	205	1894 ...	9,533	52·10	486
1885 ...	2,839	19·40	99	1895 ...	8,520	43·20	367
1886 ...	3,886	22·20	127	1896 ...	5,631	33·70	266
1887 ...	3,508	19·05	152	1897 ...	5,319	32·60	386
1888 ...	2,971	18·80	142	1898 ...	5,712	35·80	513
1889 ...	2,084	14·87	142	1899 ...	5,676	35·60	303
1890 ...	2,411	15·05	135	1900 ...	6,609	40·70	255

6. *Finance.*—The following table gives the income and expenditure of the dispensary for the last two years. Fractions of a rupee are omitted in the table, the nearest whole number being given. Thirteen months' income and expenditure appears in the figures for 1900. This dispensary has a small and fluctuating sum invested in the Post Office Savings Bank; at the end of 1900 the amount was Rs. 584:—

	1899.	1900.
INCOME.	Rs.	Rs.
Registers and forms	11	8
Special allowances	150	162
Total from Government	161	170
Interest on investments	17	17
Withdrawal of deposits	174	134
Subscriptions from natives	480	520
Total ...	832	841
EXPENDITURE.		
Medical Officer	300	320
Compounder	96	103
Menial servants	72	78
Bazar medicines	4	10
European medicines	133	109
Miscellaneous charges...	86	53
Buildings and repairs	...	3
Invested	141	165
Total ...	832	841
Percentage of total cost paid by Government ...	23·26	25·14

V.—BAIDYABATI DISPENSARY.

1. *History.*—This dispensary was opened in March 1857. The annual dispensary report for 1866 states that a new building was then being erected. Subsequently, the report for 1871 states that the new building was occupied on 6th November 1871, so apparently its construction was not unduly hurried. The dispensary was closed on 28th March 1872, but was re-opened before the end of the year, on 5th November. In 1881 the control of the dispensary was made over to the Municipality. An epidemic fever dispensary was also at work at Baidyabati from 15th July 1869 to 15th February 1870.

2. *Communications.*—The dispensary is on the Strand Road, about one mile from Baidyabati and half a mile from Sheorafuli stations of the East Indian Railway.

The nearest dispensaries on the west of the Hughli are Bhadreswar, about three miles north, and Serampur, about three miles south. The Garulia and Nawabganj dispensaries on the east of the river are also not far off.

3. *Buildings.*—A *pakka* building, forming part of the Municipal Office; consists of a large consulting room, with a compounding room and a female waiting room attached.

4. *Staff* is as follows:—

	Per month. Rs.
1 Local Native Doctor	32
1 Compounder	11
1 Servant	7

5. *Patients.*—The number for the past twenty years is given in the following table. Out-patients only are treated. The figures are large, more so than at some more important dispensaries:—

Year.	Out-patients.		Operations.	Year.	Out-patients.		Operations.
	Total treated.	Daily average.			Total treated.	Daily average.	
1881 ...	3,991	29·39	233	1891 ...	4,894	38·46	475
1882 ...	4,240	34·46	282	1892 ...	4,374	34·57	493
1883 ...	4,175	30·00	285	1893 ...	5,638	49·58	472
1884 ...	4,470	31·95	284	1894 ...	5,374	48·01	431
1885 ...	5,111	39·06	294	1895 ...	5,682	47·54	502
1886 ...	3,464	28·89	266	1896 ...	6,538	51·61	538
1887 ...	3,982	25·29	342	1897 ...	6,034	51·36	469
1888 ...	3,658	28·40	367	1898 ...	6,776	60·70	406
1889 ...	3,769	31·45	306	1899 ...	6,754	65·44	442
1890 ...	3,646	31·99	315	1900 ...	6,811	61·78	371

6. *Finance.*—The following table gives the income and expenditure of the dispensary for the last two years, 1899 and 1900. Fractions of a rupee are omitted, the nearest whole numbers being given. It will be seen that in 1899 the entire cost of maintenance was paid by the Municipality, but in 1900 a fair amount of subscriptions was realized:—

Income.

	1899. Rs.	1900. Rs.
Registers and forms	26	21
Total from Government	26	1
Municipal funds	1,309	1,278
Subscriptions from natives	...	178
Miscellaneous receipts	...	4
Total ...	1,335	1,481

EXPENDITURE.

Medical Officer	...	...	...	400	387
Compounder	...	...	...	129	133
Menial servants	...	...	...	24	84
Bazar medicines	...	...	...	34	29
European medicines	...	...	...	628	227
Miscellaneous charges	...	...	...	99	213
Building and repairs	...	...	...	21	226
		Total	...	1,335	1,299
Balance in hand on 31st December	...	...	...	...	182
Percentage of total cost paid by Government			...	1·95	1·61

VI.—JAHANABAD (NOW ARAMBAGH) DISPENSARY.

1. *History.*—So long ago as 1854 a dispensary of some sort existed at Jahanabad. A letter from Assistant Surgeon H. Baillie, then Civil Surgeon of Hughli, dated 21st January 1854, states that there are four dispensaries in the district, besides Hughli, viz., Serampur, Uttarpara, Jahanabad, and Ghatal. What became of this dispensary I am unable to say. The present institution is thirty years old. A special fever dispensary was opened at Jahanabad in August 1870, and this dispensary was made permanent from 5th December 1871. The dispensary was in Bardwan district from 1st July 1872 to 1st October 1879, when the whole subdivision was in that district. It was transferred to the local Municipality from 1st January 1888 (Bengal Government, Political Department, No. 3830P., of 5th December 1887), the building and land to remain the property of Government, the Municipality to be responsible for keeping up the building. A new separate building for in-patients was added in 1899, the District Board giving Rs. 1,000, and the local Diamond Jubilee Fund Rs. 206, towards its construction. This dispensary receives a fair amount in subscriptions. There is a Committee, appointed by notification of the Commissioner, Bardwan Division, dated 28th December 1900, which has done some work in the way of collecting subscriptions. The number of inspections required yearly was reduced from four to three by letter No. 5475, of 22nd April 1901, from the Inspector-General of Civil Hospitals.

2. *Communications.*—Jahanabad is a place which is always difficult to get at, especially in the rains. The usual way of getting there is to go by train to Tarakeswar, thence ride to Chapadanga, five miles, Mayapur, seven miles, Jahanabad, six miles. There are rest-houses at all four places. Two large rivers have to be forded on the way, the Damudar at Chapadanga, and the Muneswari about four miles further west. Most of the road from Chapadanga to Mayapur is under water in the rains, and is then quite impassable

Even at its best, after being put in order after the rains, it is only just passable for a horse or a bullock-cart, from June to December. In times of high flood a boat can travel from near Tarakeswar to Mayapur; the road from Mayapur to Jahanabad is pretty good. When the old Benares Road, *viâ* Chapadanga and Mayapur, is closed by floods, Arambagh is reached *viâ* Bardwan. The distance is 28 miles, the road mostly *kacha*, and a large unbridged river, the Damudar, has to be crossed close to Bardwan. Another way of reaching Arambagh in the rains is to go from Calcutta to Ranichak, and thence to Ghatal, by steamer, and from Ghatal to Arambagh by *palki;* the distance is 16 miles, and the road usually passable. When the Dwarkeswar is at its highest, in the rains, Arambagh may also be reached by boat from Ranichak or Bandar, the distances being about 24 and 20 miles, respectively.

The nearest dispensary is Ghatal, 16 miles; Khanakul is about 18 miles *viâ* Mayapur; a cross road, from Arambagh to Arandi, on the Mayapur-Khanakul road, saves about one mile. There are two small private dispensaries at Kishannagar and Sikandarpur, distant about 13 miles in each case.

3. *Buildings.*—The original building consisted of two rooms; the larger on the south, divided into two by a railing, one part being used as consulting, the other as compounding room. The smaller room, which was formerly the in-patient ward, is now used as a pauper ward. There is a broad veranda in front, the south end of which is screened off for a female waiting room, the north end for an operation room. The new building for in-patients, opened in 1899, has two wards, one for males, with four beds, the other for females, with two beds. Behind (east of) the dispensary are a kitchen and latrine; to the south are the Assistant Surgeon's quarters. The whole building stands on the east bank of the Dwarkeswar river.

4. *Staff* is as follows:—

	Per month. Rs.
1 Assistant Surgeon	20
1 Compounder	12
1 Servant	7
1 Cook	5
1 Sweeper	3

The Assistant Surgeon receives his grade pay for the medical charge of the subdivision, and twenty rupees for charge of the sub-jail, as well as twenty for the dispensary. The compounder receives two rupees a month house allowance, and the servant one rupee a month for collecting subscription.

5. *Patients.*—The number for the past twenty years is given in the following table. The numbers show an increase of late years, those for 1900 being the highest on record. Both in and out patients are treated, but it was only in 1899 that a decent ward for in-patients was provided:—

Year.	In-patients.			Out-patients.		Operations.
	Total treated.	Daily average.	Deaths.	Total treated.	Daily average.	
1881	55	1·35	9	3,110	16·60	102
1882	62	2·00	15	3,670	31·99	167
1883	...	...	...	2,889	22·03	158
1884	11	0·21	2	2,833	18·75	110
1885	5	0·10	2	2,074	12·96	91
1886	11	0·36	2	2,364	11·90	124
887	...	...	...	2,825	15·40	111
1888	...	...	...	2,713	16·65	140
1889	...	...	...	3,049	16·78	127
1890	...	...	...	2,789	14·23	119
1891	...	...	...	3,841	19·61	147
1892	...	...	...	3,084	15·22	133
1893	9	0·44	3	4,436	40·55	149
1894	21	0·56	3	4,713	40·81	133
1895	44	1·40	5	4,450	38·87	128
1896	56	1·69	3	3,724	28·54	291
1897	77	2·46	10	3,586	30·02	290
1898	54	1·38	7	3,438	28·57	254
1899	58	1·75	2	4,133	33·51	287
1900	51	1·30	8	4,862	42·38	306

6. *Finance.*—The following table gives the income and expenditure of the dispensary for the past two years, 1899 and 1900. Fractions of a rupee are omitted, the nearest whole number being given. The amounts shown as income under local funds are contributed by the District Board. In both year, especially in 1899, the amounts of both income and expenditure are higher than normal, owing to the building of the new in-patient wards, and the contributions received on that account. Normally, this dispensary receives a monthly grant of Rs. 25 from the District Board. It also gets a regular

income of Rs. 300 a year, or thereabouts, from subscriptions, being one of the very few dispensaries in the district which gets anything in this way:—

Income.	1899.	1900.
	Rs.	Rs.
Registers and forms	11	15
Diet of police cases	...	8
Total from Government	11	23
Local funds	800	275
Municipal funds	1,385	965
Subscriptions from natives	569	285
Miscellaneous receipts	...	3
Total ...	2,765	1,551
Expenditure.		
Medical officer	240	240
Compounder	120	138
Menial servants	177	186
Bazar medicines	10	21
European medicines	334	330
Diet	48	59
Miscellaneous charges	273	89
Building and repairs	1,562	488
Total ...	2,764	1,551
Average cost of each diet	2·6	2·7
Percentage of total cost paid by Government	0·4	1·48

VII.—Rishra Dispensary.

1. *History.*—This dispensary was opened in July 1873. In the dispensary report for 1880 is related a somewhat singular episode—the dispensary had to be closed during that year for about a month, as the Hospital Assistant had been sent to jail, and the compounder had absconded. The dispensary was vested in the Municipal Commissioners of Serampur by Government notification of 23rd April 1880. An epidemic dispensary, of which the present institution is practically a continuation, was in existence here from December 1872 to 15th February 1873.

2. *Communications.*—The dispensary is situated on the Grand Trunk Road, opposite the Mohesh-Jagannath *khal*, about a mile and a half from Serampur railway station.

The nearest dispensaries west of the Hughli are Serampur, about two miles north, and Uttarpara, about four miles south.

3. *Buildings.*—A *pakka* building, the property of the dispensary, with one fair-sized room, and a veranda, divided into two compartments, for seeing male and female patients, respectively.

4. *Staff* consists of—

	Per Month. Rs.
1 Local Native Doctor	25
1 Compounder	6
1 Servant	7

5. *Patients.*—The number of patients for the past twenty years is given in the following table. Out-patients only are treated. This is the smallest dispensary in the district:—

Year.	Out-patients.		Operations.	Year.	Out-patients.		Operations.
	Total treated.	Daily average.			Total treated.	Daily average.	
1881 ...	2,716	21·59	146	1891 ...	4,513	27·09	246
1882 ...	2,661	17·32	176	1892 ...	4,150	23·40	711
1883 ...	3,877	20·44	268	1893 ...	5,191	28·65	392
1884 ...	2,491	13·40	229	1894 ...	3,969	28·73	257
1885 ...	3,217	16·36	291	1895 ...	3,111	31·05	212
1886 ...	3,479	15·71	323	1896 ...	2,711	22·58	247
1887 ...	3,267	32·30	296	1897 ...	2,756	22·06	248
1888 ...	2,865	17·60	249	1898 ...	2,475	27·64	247
1889 ...	2,565	18·84	288	1899 ...	4,080	41·05	304
1890 ...	2,351	17·97	190	1900 ...	3,785	35·16	293

6. *Finance.*—The following table gives the income and expenditure for the last two years, 1899 and 1900. Fractions of a rupee are omitted, the nearest whole numbers being given. The table calls for no special remarks. The income is almost entirely contributed by the Serampur Municipality:—

	1899. Rs.	1900. Rs.
Income.		
Registers and forms	17	22
Total from Government...	17	22
Municipal funds	891	854
Subscriptions from natives	32	24
Total ...	940	900
Expenditure.		
Medical Officer	317	320
Compounder	...	70
Menial servants...	86	84
Bazar medicines	15	27
European medicines	348	266
Miscellaneous charges	129	133
Buildings and repairs	45	...
Total ...	940	900
Percentage of total cost paid by Government ...	1·81	2·44

VIII.—The Bihari Lal Mukerji Dispensary, Bainchi.

1. *History.*—This dispensary owes its existence to an endowment founded by the late Babu Bihari Lal Mukerji, *zamindar* of Bainchi, who left a *lakh* and-a-half of rupees to maintain a dispensary and a school at Bainchi. The funds are in Government paper, the Collector being the trustee. The dispensary was opened in May 1878. The funds are paid to the dispensary and school under a trust fund, devised by the Judge, and laid down in his letter No. 2554, of 30th December 1891, by which the sums payable to the school and dispensary respectively are fixed. Both were hard hit by the reduction of the interest on Government paper, in 1894, from four to three and-a-half per cent., and a new scheme had to be devised by the Judge, which is laid down in his letter No. 1445, of 4th June 1895. Under this revised scheme the amount available for the dispensary, which had previously been Rs. 2,700 per annum was reduced to Rs. 2,280 per annum, or Rs. 190 per month. This revised scheme allows the following expenditure to the dispensary:—

Staff monthly.

	Rs.
1 Medical Officer	100
1 Compounder	10
1 Second compounder or dresser ...	10
1 Cook	6
1 Servant	5
1 *Mehtar*	4
Total ...	135
[135 × 12 = 1,620]	—

Dispensary yearly.

	Rs.
Staff	1,620
Bazar medicines	60
Diet	200
European medicines	300
Miscellaneous	100
Total ...	2,280

A sum of Rs. 11,000 had accrued from savings, up to the year 1894, and had been invested, in addition to the original capital of Rs. 1,50,000. The interest of this sum is now set apart for repairs to the school and dispensary buildings, under orders conveyed in Bengal Government No. 1899, of 8th May 1897.

2. *Communications.*—About two miles, by a *kacha* road, very indifferent during the rains, from Bainchi railway station. About 5½ miles from Pandua inspection bungalow, along the Grand Trunk Road for 3¾ miles, then for nearly two miles across rice fields and through the village.

The nearest dispensaries are Mandalai, about 8½ miles, and Dwarbasini about 10 miles.

3. *Buildings.*—The dispensary is housed in a good *pakka* building, which is divided as follows: A large central room, the back part of which is used as a compounding, the front as a consulting room, the two being divided by a wooden railing. On the west is a large ward for males, which can accommodate eight; on the east a smaller ward for females, which can

accommodate four. A veranda runs round the building. A small room, occupying the north-west corner of the veranda, is used as a pauper ward; a similar small room, in the north-east corner, as a private examination room. Part of the veranda of the female ward is screened in as a waiting room for females. Male patients wait in the veranda in front of the consulting room.

4. *Staff* is exactly as given in the Judge's scheme in paragraph No. 1—History, except that the *mehtar* gets six, not four, rupees a month. It was not found possible to get a whole-time *mehtar* on four rupees a month, so two rupees more is paid him out of contingencies.

5. *Patients.*—The number for the past twenty years is given in the following table. Both in and out patients are treated. This dispensary now treats more out-patients than any other in the district:—

Year.	In-patients.			Out-patients.		Operation.
	Total treated.	Daily average.	Deaths.	Total treated.	Daily average.	
1881	...	...	...	3,794	30·26	367
1882	...	...	...	3,561	27·59	409
1883	...	...	...	3,590	25·03	339
1884	53	1·74	8	3,535	26·66	175
1885	51	1·56	7	2,743	23·44	177
1886	70	2·10	18	2,869	19·11	187
1887	59	1·53	13	3,254	24·66	175
1888	92	2·05	9	3,978	26·44	272
1889	133	1·93	22	4,488	24·55	304
1890	139	1·62	15	4,432	22·45	318
1891	158	2·80	34	5,232	26·92	369
1892	142	2·68	25	5,676	28·82	440
1893	225	4·54	36	7,560	38·19	527
1894	190	3·68	33	9,074	43·33	597
1895	209	3·64	20	9,847	46·47	785
1896	264	5·13	28	9,098	45·64	650
1897	376	6·73	66	10,123	50·16	720
1898	276	6·03	39	9,851	49·65	694
1899	223	5·18	24	10,120	50·20	687
1900	305	5.92	39	9,314	45·36	636

6. *Finance.*—The following table gives the income and expenditure of the dispensary for the past two years, 1899 and 1900. Fractions of a rupee are omitted in the table, the nearest whole number being given. The amount shown under local funds is that received from the endowment. The dispensary is spending a little more than the sum it is entitled to receive from these funds. In order to make up the deficiency, the widow of the founder, in 1902, has promised to give Rs. 150 yearly :—

INCOME.

	1899.	1900.
	Rs.	Rs.
Registers and forms	11	14
Total from Government	11	14
From local funds	2,300	2,440
Total ...	2,311	2,454

EXPENDITURE.

Medical Officer	1,200	1,200
Compounder and dresser	240	240
Menial servants	180	180
Bazar medicines	52	57
European medicines	243	352
Diet	230	244
Miscellaneous charges	166	181
Total ...	2,311	2,454
Average cost of each diet	2·0	2·0
Percentage of total cost paid by Government ...	0·47	0·57

IX.—BHADRESWAR DISPENSARY.

1. *History.*—This dispensary was opened by the Bhadreswar Municipality on 1st May 1885, its opening being sanctioned by Bengal Government No. 226 of 20th January 1885.

2. *Communications.*—On the Grand Trank Road, about a mile from the railway station.

The nearest dispensaries on the west of the Hughli are the small French hospital at Chandarnagar, about three miles north, and Baidyabati, about three miles south. The Imambarah Hospital at Hughli and the Serampur Hospital are each about six miles distant, north and south, respectively. The small out-patient dispensaries of Garulia and Nawabganj are also not far off, but on the other side of the river.

3. *Buildings.*—A hired *pakka* house, with two rooms, used as consulting and compounding room, respectively. A female waiting room is screened off. The dispensary, however, will soon be moved into another building.

4. *Staff* consists of—

	Per month.
	Rs.
1 Local Native Doctor	32
1 Compounder	8
1 Servant	6

5. *Patients.*—The following table gives the number of patients for the past sixteen years. Out-patients only are treated:—

Year.	Out-patients.		Operations.	Year.	Out-patients.		Operations.
	Total treated.	Daily average.			Total treated.	Daily average.	
1885	2,766	21·08	139	1893	1,908	20·93	192
1886	2,562	18·74	213	1894	3,545	36·11	236
1887	3,562	24·23	341	1895	4,837	50·26	271
1888	1,935	16·57	127	1896	4,843	46·80	299
1889	2,369	21·63	130	1897	5,277	48·82	296
1890	2,997	24·84	236	1898	3,480	34·35	252
1891	2,358	18·66	227	1899	4,971	43·11	266
1892	1,612	17·28	150	1900	5,174	44·53	271

6. *Finance.*—The following table gives the income and expenditure for the last two years, 1899 and 1900. Fractions of a rupee are omitted, the nearest whole number being given. The entire income comes from Bhadreswar Municipality. The amount of expenditure shown under building represents house-rent:—

	1899.	1900.
Income.		
	Rs.	Rs.
Registers and forms	29	22
Total from Government	29	22
Municipal funds	979	1,071
Total ...	1,008	1,093
Expenditure.		
Medical Officer	396	384
Compounder	72	72
Menial servants	72	71
Bazar medicines	13	13
European medicines	198	236
Miscellaneous charges	137	197
Buildings and repairs	120	120
Total ...	1,008	1,093
Percentage of total cost paid by Government	2·87	2·01

X.—Khanakul Dispensary.

1. *History.*—This dispensary was opened on 2nd October 1893 by the District Board, which entirely maintains it. The number of inspections required yearly was reduced from four to two, by letter No. 5475, of 22nd April 1901, from the Inspector-General of Civil Hospitals. An epidemic fever dispensary was at work at Khanakul on three different occasions—15th July 1869 to 15th February 1870; October to December 1872; and January to November 1873. At the latter date Khanakul *thana*, with its dispensary, was transferred from Hughli to Howrah district. A Committee was appointed, by notification of the Commissioner, Bardwan Division, dated 2nd August 1894, but has never collected subscriptions, nor done any work.

2. *Communications.*—This is the most remote and difficult of access of all the dispensaries in the district. In the cold, or even in the hot weather, it is an easy ride from the Mayapur inspection bungalow on the Old Benares Road, eleven miles off. The road from Mayapur to Khanakul at its best is passable only on foot, on horseback, or in a *palki*. For the route to Mayapur, see account of Arambagh dispensary. It is possible to ride from Khanakul to Chapadanga direct, without passing through Mayapur, in the cold weather, the distance being about 15 to 16 miles, while by road *viâ* Mayapur it is 18 miles. To do this one must ride for six miles up the west bank of the Muneswari or (Dwarkeswar) Kana Nadi, cross this river by a foot-bridge, (passable for a horse, but not for a cart) at Sikandarpur, then go about three miles up the east bank, to the old Haiathpur semaphore tower, then strike across country for the Damudar *bund* on the west bank of that river, five or six miles, then ride up the *bund* to Pursura, one to two miles, or cross the Damudar at Srirampur, and ride up the *bund* on the east bank of the river. Between Haiathpur and the Damudar one has to ford at least three spill-streams of the Muneswari, the water of which, even in the cold weather, may be girth-deep, or even deeper.

In the rains Khanakul may be reached in a boat from Ranichak, on the Rupnarayan, from which it is distant six or eight miles, and, with much difficulty, in a *palki* from Ghatal, 12 miles distant. By the direct road from Khanakul to Arambagh the distance is about 17 miles, or one mile less than the road *viâ* Mayapur.

The nearest dispensaries are Ghatal, 12 miles, and Arambagh, 17 miles. There are, however, two small private dispensaries, not under supervision, at Kishannagar and Sikandarpur, three and six miles north, respectively.

3. *Buildings.*—The dispensary is located in a mud hut on the west of the main street of Khanakul. This hut was put up in 1895, at a cost of Rs. 195. There are two rooms, one about 20 × 10 feet, used both as consulting and compounding room, and a smaller one, 6 × 10 feet, used chiefly as a

store-room. There are small verandas in front and at the back. The former is used as a waiting room for male patients, the latter is divided into two compartments, to provide a female waiting room and a couch behind a screen.

The District Board have undertaken to build a suitable dispensary a Khanakul.

4. *Staff* is as follows:—

	Per month. Rs.
1 Local Native Doctor	25
1 Compounder	8
1 Servant	2

The pay of the local Native Doctor is fixed at Rs. 25, rising to Rs. 30 by annual increments of one rupee. The servant on rupees two, of course, only attends for a short time daily. In 1902 a wholetime servant on Rs. 7 per month has been sanctioned.

5. *Patients.*—The following table gives the number of patients attending for the last eight years. The attendance for 1893 is for three months only. Out-patients only are treated. The figures are not very large, but a dispensary is very necessary here, as Khanakul is one of the most remote and inaccessible places in this part of the province, and there is no other public dispensary within twelve miles:—

Year.	Out-patients.		Operations.
	Total treated.	Daily average.	
1893	526	20·13	30*
1894	3,360	28·75	68
1895	4,463	39·45	214
1896	3,437	25·02	219
1897	2,989	26·72	162
1898	2,577	21·80	187
1899	3,604	30·40	171
1900	3,858	32·68	200

* Three months only.

6. *Finance.*—The following table gives the income and expenditure of the dispensary for the past two years, 1899 and 1900. Fractions of a rupee are omitted, the nearest whole number being given. It will be seen that practically the whole income of the dispensary comes from the District Board. The sums spent in 1899 and 1900 are quite insufficient to maintain

a dispensary suitably; but from 1st April 1901 the Board have allotted Rs. 300 a year for European medicines:—

INCOME.

	1899.	1900.
	Rs.	Rs.
Registers and forms	7	6
Total from Government	7	6
From District Board	515	382
Subscriptions from natives	...	50
Total ...	522	438

EXPENDITURE.

Medical Officer	240	240
Compounder	95	96
Menial servants	24	24
Bazar medicines	9	11
European medicines	134	39
Miscellaneous charges	20	28
Total ...	522	438
Percentage of total cost paid by Government	1·34	1·36

XI.—BHOLA NATH BOSE DISPENSARY, MANDALAI.

1. *History.*—This dispensary was opened on 20th November 1893. Its opening was sanctioned in Bengal Government, Municipal Department, (Medical), No. 240T.M., of 12th September 1891. For about two years the dispensary was located in the school-house at Mandalai, then for a year and-a-half in a hired house in the bazar. The present buildings, which were put up for the dispensary, were occupied on 1st July 1897.

This dispensary owes its origin to the late Dr. Bhola Nath Bose, Civil Medical Officer of Faridpur, who left his whole property to charitable uses. The trust funds are in the hands of the Collector of the 24-Parganas, and maintain the much more important Bhola Nath Bose dispensary at Barrackpur, his birthplace. Out of the income of the trust funds, Rs. 900 a year is set aside for the maintenance of this dispensary at Mandalai, which was his wife's birthplace. The money is paid by the Collector of the 24-Parganas to the District Board of Hughli, which manages the dispensary, through the Civil Surgeon. A Committee was appointed by the Commissioner, Bardwan Division, in a notification dated 6th September 1900, but no member of the Committee has ever made any contribution to the dispensary individually, nor have the Committee as a body ever made any attempt to collect subscriptions.

2. *Communications.*—The dispensary stands on the south side of the Pandua-Inchura road, a *pakka* road, at the east end of Mandalai village, a little to the west of the fourth milestone. It is about four miles from Pandua railway station, three and-a-quarter miles from Pandua inspection bungalow, five and-a-half miles from Inchura inspection bungalow, and about two and-a-half miles, across the fields, from Khanyan railway station. *Palkis* always, and sometimes a *tikka gari*, can be had at Pandua station.

3. *Buildings.*—The dispensary consists of a good *pakka* building, with two rooms. The larger is used as consulting room. It has a female waiting room and a couch screened off it. The smaller is used as compounding room. Male patients wait in a broad veranda in front. The Medical Officer has quarters, a *pakka* building with *kacha* out-houses, on the north-west. Quarters for the compounder are being put up on the west, behind the dispensary.

4. *Staff* is as follows:—

	Per month. Rs.
1 First grade Civil Hospital Assistant	55
1 Compounder	10
1 Servant	6
1 Sweeper	2

The compounder receives Rs. 10 rising to Rs. 15 by biennial increments of one rupee. Pending the completion of his quarters, he has received a lodging allowance of two rupees a month. The sweeper, of course, is not a whole-time servant.

5. *Patients.*—The following table gives the number of patients for the past eight years. Out-patients only are treated. The figures are fairly high, and show a tendency to increase.

Year.	Out-patients.		Operations.
	Total treated.	Daily average.	
1893	752	50·97	15*
1894	3,761	35·45	148
1895	4,295	39·65	186
1896	4,329	38·30	244
1897	4,031	34·11	174
1898	4,481	36·70	244
1899	4,733	40·86	264
1900	5,018	37·64	342

* Six weeks only.

6. *Finance.*—The following table shows the income and expenditure of the dispensary for the past two years, 1899 and 1900. Fractions of a rupee are omitted, the nearest whole number being given. The funds shown as given by the District Board, *i.e.*, practically the whole income of the dispensary, come from the trust fund mentioned under "History." They only pass through the hands of the District Board, which, as a matter of fact, does not give, and never has given, anything towards the dispensary. The trust funds are sufficient for the maintenance of this dispensary, so that the amount spent on medical relief by the Board can be spent to much better purpose in other directions:—

INCOME.

	1899.	1900.
	Rs.	Rs.
Medical Officer, paid by Government	204	204
Registers and forms	8	12
Total from Government	212	216
District Board	814	996
Total ...	1,026	1,212

EXPENDITURE.

Medical Officer, paid by Government ...	204	204
Ditto, paid from local funds	456	456
Compounder	105	114
Menial servants	96	96
Bazar medicines	8	10
European medicines	128	157
Miscellaneous charges	29	38
Building and repairs	...	137
Total ...	1,026	1,212
Percentage of total cost paid by Government ...	20·66	17·82

XII.—THE FEMALE HOSPITAL, HUGHLI.

1. *History.*—This hospital was opened on 4th July 1894. It owes its origin to Sir Charles Elliott, the late Lieutenant-Governor of Bengal, who inspected Hughli on 11th July 1891, and found the building, then used as the Imambarah Hospital, in a very unsatisfactory condition, and by no means suitable for a hospital. He suggested that a female *zanana* hospital should be started at Hughli, by the local branch of the Dufferin Fund, and that both it and the Imambarah Hospital might be accommodated in some of the old military buildings at Chinsura. Accordingly, after much consideration and correspondence, the Imambarah Hospital was moved into the old main guard, and the new Female Hospital got the use of the old canteen, in 1894. The alterations necessary in these buildings were made by the Public

Works Department, at the expense of the funds of the respective hospitals. The alterations to the Imambarah Hospital cost Rs. 1,938, those to the Female Hospital Rs. 1,875. The necessary out-buildings were put up in the hospital compounds, at the expense of the respective funds. Those erected for the Imambarah Hospital cost Rs. 3,447, those for the Female Hospital Rs. 4,702, after dropping one of the two cottage wards which it was proposed at first to erect, by which a saving of Rs. 1,902 was effected. It will thus be seen that, though they got the building for nothing, additions and alterations cost the funds of the Female Hospital no less than Rs. 6,600. Kumar G. N. Deb, who was then Joint-Magistrate of Hughli, collected over Rs. 8,000 for the Female Hospital; some other funds came in, and after paying the cost of the buildings, Rs. 3,500 was left over, and was invested on behalf of the hospital in Government securities. It was originally intended that the hospital should be a *zanana* hospital, for the benefit of *pardanashin* women chiefly, but this intention appears never to have been carried out, the institution having been always under the superintendence of the Civil Surgeon of Hughli, who visits it daily. A few truly *pardanashin* women do attend, and are seen by the female Medical Officer only, but the great majority of the women treated are of a class who would attend a general hospital, for both males and females, without demur or objection. When inspecting Hughli in December 1900, the Inspector-General of Civil Hospitals, Colonel Hendley, ordered that the name should be changed from "Hughli Dufferin Hospital" to "Hughli Female Hospital." It is, in fact, simply the female branch of the Imambarah Hospital.

2. *Communications.*—The hospital stands immediately to the west of the Imambarah Hospital, practically in the same compound, though the two are divided by a wall.

3. *Buildings.*—The main building is almost exactly the same in plan as the Imambarah Hospital, though the arrangement of the rooms is somewhat different. It consist of a long, narrow building, with a broad veranda in front, (south), and is one of the military buildings belonging to the barracks, having originally, I believe, been the canteen, with a sergeant's quarters. Beginning at the east end, nearest the Imambarah Hospital, the first ward, divided from the next by a six-foot screen, was formerly used as a ward for female police cases, who were attended by the Assistant Surgeon, as there is no accommodation for female in-patients in the Imambarah Hospital. When I came to Hughli, I considered that there was no special necessity to reserve a ward for female police cases, as such cases very rarely are sent into hospital; and, should it be necessary to accommodate such a case at any time, she could easily be placed in the general female ward, the Civil Surgeon examining her, and treating her, as far as it might be necessary. This first

ward has since been used as a lying-in ward for the few cases which come into the hospital for that purpose. Next to it comes a large general ward, with eighteen beds, divided in two by an arch. Beyond (west of) this large, ward there are four smaller rooms, of which the first is used as an examination room for females, the second as the compounding room, the third as an operation room, while the fourth and last is occupied by the female Civil Hospital Assistant in charge, who also has the two rooms on the upper story as quarters. In the front veranda three spaces are screened off, as consulting room, waiting room for *pardanashin* women, and general waiting room. There are a number of detached buildings in the compound. In the north-east corner is a small private ward, consisting of one fair-sized room, with front and back verandas, a small compound, kitchen, and latrine, the whole except the front veranda, being enclosed by a wall, so as to afford perfect privacy to a respectable patient. There are also a small pauper ward and mortuary, a latrine for patients, a kitchen, quarters for the *mehtarani*, nurses and *dhai*, and two store-rooms.

4. *Staff* is as follows:—

	Per month. Rs.
1 Female Hospital Assistant	50
1 Compounder	10
1 Nurse	10
1 Hindu cook (female)	7
1 *Dhai*	9
1 Ward coolie (female)	7
1 *Mehtarani*	7
1 Coolie	7
1 Paid apprentice	2

The female Hospital Assistant, or "Lady Doctor," as she is usually called, rather grandiloquently, is a diplomate of the Campbell Medical School, and well up in her special work. The compounder and coolie are the only male members of the staff, female compounders not being available. Up to 31st December 1900 there was also a male dresser: his services were then dispensed with, by order of the Inspector-General of Civil Hospitals. The Musalman cook of the Imambarah Hospital receives a monthly allowance of two rupees, for preparing food for Musalman in-patients of the Female Hospital. The clerical work of the hospital is done by a clerk of the Imambarah hospital, who receives no allowance therefor, though a clerk of the Magistrate's office is paid five rupees a month for keeping the accounts of the local branch of the Dufferin Fund.

5. *Patients.*—The number of patients for the past six years is given in the following table. Both in and out patients are treated. The statistics

for the six months of 1894 during which the female hospital was open were included with those of the Imambarah Hospital:—

Year.	In-patients.			Out-patients.		Operations.
	Total treated.	Daily average.	Deaths.	Total treated.	Daily average.	
1895 ...	256	12·34	53	3,331	33·33	101
1896 ...	259	10·55	58	3,793	34·56	180
1897 ...	282	9·15	69	4,742	40·94	341
1898 ...	201	9·33	27	4,854	42·14	337
1899 ...	231	9·78	46	6,722	48·58	542
1900 ...	249	11·25	50	5,194	44·58	359

6. *Finance.*—The following table gives the income and expenditure for the past two years, 1899 and 1900. Fractions of a rupee are omitted, the nearest whole number being given. The income shown under the head of "Local funds" is contributed in equal parts by the District Board and the Mohsin Fund, each giving Rs. 1,200 a year. The Hughli-Chinsura Municipality, which gives nothing to the Imambarah Hospital, contributes the paltry sum of Rs. 17 per month, besides remitting the tax upon holdings for the building used by the hospital. The amount received as subscriptions is not large, and shows a tendency to fall off. The dispensary has Rs. 3,500 invested capital. It also has a purely nominal Committee, which has never met during the fourteen months I have been in the district*:—

	1899.	1900.
Income.	Rs.	Rs.
Balance in hand, 1st January	242	142
Registers and forms	19	18
Total from Government	19	18
Local funds	2,400	2,400
Municipal funds	241	187
Interest on investments	77	145
Subscriptions from natives	225	80
Total	3,204	2,972
Expenditure.		
Medical Officer	600	600
Nursing establishment	80	96
Compounders and dressers	206	216
Menial servants	333	414
Bazar medicines	41	42
European medicines	478	464
Diet	630	578
Miscellaneous charges	390	465
Buildings and repairs	304	50
Total	3,062	2,925
Balance on hand on 31st December ...	142	47
Average cost of each diet	2·11	2·9
Percentage of total cost paid by Government	0·62	0·61

* A meeting was subsequently held in February 1902.

XIII.—Balagarh (Tentulia) Dispensary.

1. *History.*—The dispensary was opened on 1st December 1894, being transferred from Kamarpukhar, by the District Board, which contributed Rs. 400 per annum, viz., Rs. 240 for a Native Doctor at Rs. 20 per month, Rs. 60 for a compounder at Rs. 5 per month, and Rs. 100 a year for European medicines. The remainder of the expenses of the dispensary was left to local charity, which, with one exception, was non-existent. This exception was *Rai* Soshi Bhusan Mukerji, *Bahadur*, a Professor in the Government College at Lahore. This, gentleman paid for the servant, contingencies, and bazar medicines. The local residents, who benefit by the institution, make no contribution towards its upkeep. On coming to Hughli, I represented to the District Board that the sum allotted was quite insufficient to keep up a dispensary, and, from 1st April 1901, the pay of the Native Doctor was raised from Rs. 20 to Rs. 25; that of the compounder from Rs. 5 (a preposterous amount to pay for what should be skilled service) to Rs. 8 monthly; and the budget allotment for European medicines was raised from Rs. 100 to Rs. 300 a year. Mr. Mukerji having died in 1901, the small amount received from local contributions will probably entirely cease. An epidemic fever dispensary was in existence at Balagarh on three different occasions—first, from 1863 to 30th April 1865; second, from 15th July 1869 to 15th February 1870; and third, from 8th November 1871 to 23rd February 1872.

2. *Communications.*—The easiest way of reaching Balagarh from Hughli is by the daily steamer, from Calcutta to Kalna, which calls at Balagarh, or rather at a place on the river bank called Chandra, where the Balagarh *thana* is situated. The dispensary is situated in Sripur, near Tentulia, about a mile from the *thana* and landing-place. The village of Balagarh proper is about a mile further inland, but all these villages together are loosely called Balagarh. By road Balagarh is about 18 miles from Hughli, the first 8 miles from Hughli being *pakka*, the rest *kacha*. Distances from Hughli are taken from the Courts at Chinsura. From the Inchura rest-house to Balagarh dispensary is about six miles, by a bad *kacha* road. Inspecting officers can put up for the night in an inspection room at the *thana*.

3. *Buildings.*—The present dispensary consists of one small room, *kacha-pakka*, with mat roof, on a *pakka* plinth, about two feet above the level of the ground. Though thus fairly well raised, and on a fairly high piece of ground, the building was flooded six or eight inches deep in the big floods of September 1900. The one room is almost filled by three medicine *almiras*. A small slip of veranda is enclosed as a compounding room. The compounder has barely room to stand in it. The consulting table stands in the veranda, which surrounds three sides of the hut.

The District Board have budgeted Rs. 2,500 to erect a suitable dispensary, with consulting and compounding room, female waiting room, and operation room, in 1902-03. The work had not yet been begun at the end of 1901, but will, I hope, be completed in 1902. The present building stands on the west of the road from Chandra to Balagarh; the new building will be erected on the other side of the road, about a quarter of a mile further south, immediately on the north of a temple of Mahadev. The local *zamindars* have agreed to make over the land to the District Board.

4. *Staff* is as follows:—

	Per month. Rs. A.
1 Local Native Doctor	25 0
1 Compounder	8 0
1 Servant	6 8

The local Native Doctor's pay is fixed at Rs. 25, rising to Rs. 30 by annual increments of one rupee. The compounder's pay will be raised to Rs. 10 rising to Rs. 15, when he succeeds in passing the examination for a license.

5. *Patients.*—The following table gives the number of patients for the past seven years. Out-patients only are treated. The figures are not very high, but show a tendency to increase:—

Year.	Out-patients.		Operations.
	Total treated.	Daily average.	
1894	1,957	53·32	13
1895	2,968	33·86	101
1896	2,107	21·77	52
1897	3,637	33·32	218
1898	4,033	34·30	227
1899	4,563	35·73	272
1900	4,648	38·06	214

6. *Finance.*—The following table shows the income and expenditure of the dispensary for the past two years, 1899 and 1900. Fractions of a rupee are omitted, the nearest whole number being given. Both income and expenditure of the dispensary will be much larger in 1901, the District Board, as stated under "History," having allotted much larger sums to its maintenance

in 1901. The one local supporter having died, practically the whole cost of maintenance of the dispensary falls on the District Board:—

	1899.	1900.
Income.		
	Rs.	Rs.
Registers and forms	8	9
Total from Government	8	9
District Board	404	629
Subscriptions from natives	119	68
Total ...	531	706
Expenditure.		
Medical Officer	240	260
Compounder	60	65
Menial servants	78	82
Bazar medicines	9	6
European medicines	104	212
Miscellaneous charges	28	58
Building and repairs	12	23
Total ...	531	706
Percentage of total cost paid by Government.	1·51	1·27

Short notices may also be given of dispensaries which no longer exist, and of private dispensaries, not under Government supervision. Of the former there have been at least ten, viz., Basuri, Bandipur, Dhaniakhali (twice), Konnagar, Badanganj, Haripal, Bansbaria, Polba, and Kamarpukhar. Of the latter at least seven now exist, viz., Sultangachi, the Imambarah, Tribeni, Mahnad, Tarakeswar, Kishannagar, and Sikandarpur.

Probably there are other private dispensaries, of whose existence I am not aware, more or less at work in the district. Ghatal dispensary was also in Hughli district when it was opened; and three dispensaries in the 24-Parganas, Naihati, Halishahr, and Kenchrapara, were at one time, in their original form, under the supervision of the Civil Surgeon of Hughli.

A.—Dispensaries which no longer exist.

1. *Basuri*, near Dwarhatta. A dispensary, with a Native Doctor in charge, was established here on 15th July 1869, by Babu Balai Das Sarkar, *zamindar* of Piasara. When it was abolished I have been unable to ascertain. It was originally started as an epidemic fever dispensary, and probably came to an end soon after the epidemic fever passed away. It treated out-patients only.

2. *Bandipur*, near Haripal, was opened as an epidemic fever dispensary in June 1872, Babu Nilkamal Mitra paying one-half the expenses, and Government the other half. After the epidemic fever died away, that gentleman maintained it for many years, until October 1886, when he handed it over to the District Board, with an amount of invested capital in the

Savings Bank which on 31st December 1886 came to Rs. 1,037. The Board kept on the dispensary, living on its capital, for three years, and closed it on 31st December 1889, when its capital was exhausted. It provided for out-patients only. In 1896 an attempt was made, but failed, to resuscitate this dispensary by local subscriptions.

3. *Badanganj*, was opened as an epidemic fever dispensary on 30th October 1873, at Government expense. It became partly self-supporting, by local subscriptions, in April 1875. On 1st January 1876 it became a permanent dispensary, but was closed in the following year, 1877, the subscriptions gradually failing. While this dispensary was open, Badanganj was in the Bardwan district. It was an out-patient dispensary.

4. *Dhaniakhali.*—An epidemic fever dispensary was in existence here from 15th July 1869 to 15th February 1870. Another similar dispensary was opened here on 7th November 1871, and continued till 1st October 1873, when it was brought on the permanent list. It continued in existence for eight years, until, owing to want of local interest and local subscriptions, its closure was ordered in Bengal Government, Medical and Municipal Department, No. 1024Medical, of 27th August 1881; and it was closed from 17th September 1881. Subsequently, the District Board opened a second dispensary here on 1st November 1893. This dispensary lasted for four years, until 1897, when it was closed for the usual reason—absence of local support. Both dispensaries treated out-patients only.

5. *Konnagar*, in the southern ward of Serampur Municipality, was established in March 1876 as an out-patient dispensary. Bengal Government (Medical and Municipal Department) Resolution, dated 23rd April 1880, reviewing the dispensaries in the Bardwan Division, ordered it to be made over, in 1880, to the local Municipality, which closed it in June 1881.

6. *Haripal* was opened as an out-patient dispensary by the District Board on 1st September 1893, and was closed in 1897 on account of want of local support. An epidemic fever dispensary had existed at Haripal in 1872-73.

7. *Bansbaria*, was opened, as a temporary experiment, by the local municipality, on 1st October 1893, and closed five months later, on 28th February 1894. It treated out-patients only.

8. *Polba* was opened as an outdoor dispensary by the District Board on 5th June 1894, and, not meeting with local support, was closed on 5th May 1895, after only eleven months' existence.

9. *Kamarpukhar*, three miles west of Goghat. An epidemic fever dispensary was in existence here from 27th September 1872 to 15th March 1875; the place being then in the Bardwan district. The Hughli District Board opened a dispensary for out-patients here on 20th June 1894, but, after barely four months' trial, closed it on 16th November 1894, thinking,

no doubt rightly, that a dispensary would be more useful at Balagarh. It was accordingly transferred to that place, and re-opened there on 1st December 1894.

B.—PRIVATE DISPENSARIES, NOT UNDER GOVERNMENT SUPERVISION.

1. *Sultangachia* was opened in March 1869, being maintained by the Mukerji family of that place, and came on the Government list from that date. It is, or at least was, the most important of all the abolished or the private dispensaries, being the only one in those lists which took in-patients, and also the only one which had an Assistant Surgeon, not a Native Doctor, in medical charge. It was struck off the Government list on 1st November 1881. It is still working after a fashion, but keeps no statistics of any sort. It is situated in the family residence of the Mukerji family, near Sultangachia railway station. Bengal Government, Medical and Municipal Department, order No. 1028Medical of 27th August 1881, directed that it should be removed from the Government list.

2. *The Imambarah* maintains a large and well-equipped *Yunani* dispensary, in charge of a *hakim*, and also a small dispensary in charge of a Native Doctor, for those who prefer European methods of treatment. Both treat out-patients only.

3. *Tarakeswar.*—The *Mohant* maintains a small dispensary for the benefit of the pilgrims and residents. It is housed in a long, low, *pakka* building, close to the level-crossing over the Bengal Provincial Railway. It does little work. An efficient dispensary here would be of much advantage.

4. *Kishannagar*, on the west bank of the Muneswari, between two and three miles north of Khanakul, where the Mayapur-Khanakul road reaches the Muneswari. The *zamindar* maintains a small out-patient dispensary.

5. *Sikandarpur*, on the west bank of the Muneswari, three miles north of Kishannagar. The *zamindar*, *Rai* Khirode Prosad Pal, *Bahadur*, started a small out-patient dispensary here, from 1st February 1901. This gentleman died on 5th December 1901, but, I understand, has provided in his will for the maintenance of Sikandarpur dispensary and school. The dispensary will probably come under Government supervision.

6. *Tribeni*, a small out-patient dispensary, in charge of a Native Doctor, maintained by the Free Kirk Rural Mission. It was opened in 1894. A temporary epidemic fever dispensary was worked at Tribeni on two occasions, from 1863 to 30th April 1865, and from 7th January to 1st April 1873.

7. *Mahnad* has been maintained since 1893 by the Free Kirk Rural Mission, but can hardly be called a dispensary at all, not having any kind of medical man in charge. The Mission maintains a school here, and the Head Master dispenses anti-periodics and other simple medicines. A temporary epidemic fever dispensary was maintained here from 15th July 1869 to 15th April 1870.

8. Each of the big jute and cotton mills also keeps up a dispensary, under a qualified medical man, for the benefit of its employés. While these dispensaries are intended for the use of the mill hands and their families, as a rule all comers are treated at them: no questions are asked as to whether patients who apply for help belong to the mill or not. These dispensaries treat out-patients only.

9. *Ghatal* was in Hughli district up to 1st July 1872. Dr. Baillie, on 21st February 1854, states that a dispensary was then working at Ghatal. When this dispensary was abolished I cannot say. A temporary epidemic fever dispensary was at work at Ghatal from 15th July 1869 to 15th February 1870. The present dispensary was established on 20th January 1872, and on 1st July of the same year was transferred to Midnapur. It is still working, as a class II dispensary, in charge of an Assistant Surgeon, and has accommodation for both in and out patients; but does not concern the Hughli district since 1872.

Kenchrapara, Naihati, and Halishahr dispensaries, though in the 24 Parganas, were, on their first existence, under the supervision of the Civil Surgeon of Hughli, all three being within easy reach of that station.

10. *Kenchrapara* was opened as a temporary epidemic fever dispensary, by Government order No. 1822, of 18th April 1863. It was closed by order of the Commissioner of the (then) Nadiya Division, No. 85, of 22nd January 1867, and transferred to Halishahr. It was retransferred from Halishahr and re-opened at Kenchrapara, on 5th August 1868, but soon afterwards closed on account of want of local support. Since then, the only dispensary at Kenchrapara has been that maintained by the Eastern Bengal State Railway for their staff, which is under the supervision of the Medical Officer of the Eastern Bengal State Railway.

11. *Naihati* was established first as a temporary epidemic fever dispensary. In 1866 it was converted into a regular charitable dispensary, at the request of the local residents, who undertook to raise subscriptions for the purpose. No local support being forthcoming, the dispensary was closed on 5th August 1867. The present institution was opened, as a municipal dispensary, in December 1874.

12. *Halishahr* dispensary was sanctioned by Goverment order No. 3089, dated Simla, 24th October 1865, and the institution was opened in January 1867, by transfer of the Kenchrapara dispensary. The subscriptions promised not being paid, it was again transferred to Kenchrapara on 5th August 1868. The present institution was opened as a municipal dispensary, on 9th December 1887, Surgeon-Major K. P. Gupta, I.M.S., a native of the place, presenting the building, a good *pakka* structure.

[After this chapter was in type, in May 1902, the Hughli-Chinsura Municipality undertook to contribute a large sum towards the building of a new out-patient block for the Imambarah and Female Hospitals.]

CHAPTER IX.

MEDICAL AID.

Vaccination.—Before the introduction of vaccination, inoculation was in common use, as a protective against small-pox, not only among the natives, as it has been up to almost our own times, but also among Europeans. The *Calcutta Gazette* of 4th May 1786 states that the managers of the Orphan Society had decided to have inoculation performed on all the children under their charge, who had not already had small-pox. Surgeon Nasmyth inoculated 53 children, who all recovered; while, out of nine who caught small-pox in the ordinary way, three died. The same publication, in the issue of 15th March 1788, announces that Government erected a hospital for inoculation at Dumdum, in 1787. In that year 101 persons, and in 1788, 72, apparently all soldiers and their families, had been inoculated with success.

Vaccination was introduced into India in the beginning of the nineteenth century. The *Calcutta Gazette* of 2nd December 1802 announces that vaccination has been successfully introduced into Calcutta; and that the Governor-General in Council thanks Dr. James Anderson, Physician-General and first Member of the Medical Board at Madras, and Drs. John Fleming, Russell, Shoolbred, and Hare, for their successful introduction of vaccination. Dr. Russell was appointed Superintendent of Vaccination. [William Russell, M.D., the officer thus appointed, entered the service on 25th June 1797, became Surgeon on 21st July 1808, gave up further promotion in order to remain in Calcutta, and retired on 18th June 1831. He became a Baronet in 1830, and died in 1839.]

The history of vaccination in Hughli district begins with the separation from Calcutta of the Metropolitan Circle of Vaccination. This change was effected on the 4th December 1869, Surgeon F. Powell being appointed Superintendent of the Metropolitan Circle. My notes on the subject are taken from the annual vaccination reports from the year 1869-70 up to date.

Dr. Powell, in the report for 1869-70, makes some interesting remarks on inoculation, and the superstitions therewith connected, as follows:—

"In the course of my inspections of vaccination I came across persons who had recently been inoculated, and from them I learnt something of its results. The people are very shy of showing the inoculated children. Amongst the precautions which custom and religion enjoin on the inoculated, there is one prohibiting the visits of strangers except in perfectly clean garments, and after sundry ablutions and purifications. Even their co-religionists are thus to a great extent

kept away, and the Christian would have great difficulty in obtaining admission to a village. If as a result of inoculation the patient dies, becomes much disfigured, loses an eye, or any other mishap occurs, it is ascribed to some wilful or involuntary neglect of these ceremonial observances, and hence they all strive to keep away. Another, perhaps less powerful, motive is the belief that inoculation has been forbidden, and that they may be punished for practising it, and that I am specially opposed to the practice. I had, however, in March an opportunity of seeing a few. These had been inoculated more than a month before I saw them, and in one village most of them were convalescent, and had but mild attacks of small-pox. One child was, however reported to have died. In another village they had inoculated in one *parah* during the night, the other *parah* was vaccinated some short time after. In the inoculated *parah* two had died from inoculated small-pox. I saw three who were permanently much disfigured as in natural small-pox. Several others were less severely affected; but in consequence of the introduction of small-pox by inoculation, one man previously inoculated had confluent small-pox, and was, when I saw him, in great danger, and a child, considered too young for inoculation, was suffering from small-pox.

"'They had taken the poison with their own hands,' they said, 'and must abide the result.' On enquiry why they did not adopt our English system, they said they did not know of it, did not understand it, they would do so in future; showing no hostility to the practice, but they had acted partly from ignorance, and partly, no doubt, from following in the steps of their forefathers."

The following notes on inoculation in Hughli district are taken from Surgeon-Major R. F. Thompson's report for 1871. As the practice has, I believe, quite died out in this part of the country, it may be of interest to quote them at length. I have never heard of inoculation being performed in this district of late years; and have never seen a native of the district under the age of twenty, who had the well-known inoculation mark on the forearm:—

"In the Bengali year 976, the system of inoculation was introduced by the members of the *Bhata Sabha* (a general meeting of the learned Pundits and eminent physicians of that age), when it was found that the percentage of deaths was less, during an epidemic visitation of the disease, than previous to the introduction of the system.

"The system of inoculation is not conducive to stamping out small-pox, but is an artificial mode of spreading the disease by inserting into the skin a minute portion of the virus found in the vesicles of one suffering from small-pox. The poison thus communicated generally infects the constitution, and in many instances assumes a malignant character, causing the death of the person operated on. Inoculation is attended with danger to the individual and the community, and, even when practised under proper conditions, is destructive to life; and I have known a least five deaths in 1,000. In other cases the deaths have amounted to 20 or 25.

"I have watched with interest the practice of inoculation in Bengal, for the purpose of ascertaining what amount of protection from small-pox is afforded by inoculation, and what its effects are. The operators known as *Acharjyas*, or priests of the Goddess Sitala Devi, move from village to village, and, for seven days prior to inoculation, they offer *puja* to the Goddess. A pitcherful of Ganges water, with a cocoanut and a small mango twig on the top, is placed on the ground, and the persons to be operated on are made to sit in a row, naked. This gathering the natives call *gajan*.

"The inoculation of all the unprotected is carried out at one and the same time, to prevent the association of the inoculated with the unprotected during the period of the affection. The priests sprinkle water from the pitcher on the persons, especially on their arms. They then puncture in the middle of the posterior aspect of the forearm, and put a bit of cotton, soaked in variolous pus, on the wound, moistening it with a few drops of water, and tie a strip of

cloth round the affected part. For the first few days the patients are made to bathe in cold water, and are restricted to cooling diet. Sugarcane, pomegranates, cocoanut-water, water-melon, cucumber, *āmāni* or acidulated rice-water, are prescribed. The use of fish, oil, &c., is prohibited to the family inoculated, the members of which are not permitted to shave or to give any alms to the poor.

"From the fourth to the tenth day after the operation, small vesicles make their appearance in the wounds, and on the different parts on the body, and the patients suffer more or less from fever. The inoculated parts become hard and inflamed. In many instances, the glands in the axilla become swollen and painful, and assume the character of a phlegmon. The fever generally assumes a severe type on the ninth or tenth day, attended with considerable headache, occasional vomiting, alternate heats and chills, great prostration of strength, and, in young children, sometimes convulsive fits which prove fatal. The eruptions, which appear on the body after inoculation, are of varied character. The fever leaves on the sixteenth or seventeenth day, and the pustules pursue the same course as in cases of small-pox."

The report for 1869-70 states that *thanas* Balagarh, Bansbaria, Pandua, Dhaniakhali, Hughli, and Baidyabati, had been protected by vaccination in former years, chiefly 1868-69; Chanditola was thoroughly vaccinated in 1869-70; Haripal, Kristonagar, and Khanakul partially, Jahanabad not yet touched. Work is said to have been much delayed by epidemic fever and by the opposition of the people. In 1870-71 *thanas* Kristonagar and Khanakul were vaccinated. Inoculation was prohibited by Act IV (B.C.) of 1865, which was extended to the Metropolitan Circle in the *Gazette* of 11th October 1871.

In 1871-72 the work of the third sub-circle, which included Hughli, of the Metropolitan Circle, was done almost entirely in Bardwan; very little work was done in Hughli. By an order of 8th July 1871 vaccinators were directed to work in dispensaries as compounders and dressers during the non-working season. The men themselves strongly objected, especially to being employed as dressers, which they said was derogatory to their caste, being mostly high caste men. The order directing them to work as dressers was then withdrawn, and they were employed as compounders only, but even this they objected to. Subsequently one-half of them were granted leave. They were not a success as compounders. Some are said to have worked satisfactorily, others badly, others did no work. The Superintendents of Vaccination also strongly objected to the measure, and in the following year the order was cancelled. That the vaccinators were not qualified to work as compounders, owing to ignorance, does not appear to have been considered.

The report for 1871-72 gives a map of the Metropolitan Circle, showing to what extent vaccination had been carried in each *thana* in the circle. Five *thanas*, Pandua, Bansbaria, Hughli, Baidyabati, and Chanditola, are shown as efficiently vaccinated; four more, Dhaniakhali, Haripal, Kristonagar, and Khanakul, as about half vaccinated; one, Balagarh, as less than half vaccinated; while two, Jahanabad and Ghatal, were untouched.

In 1872-73 Goghat and Jahanabad were vaccinated for the first time, 15,111 cases being operated on in the former and 5,679 in the latter area

In 1873-74 Hughli district was again the scene of work, all the *sadr* and Serampur subdivisions, except Balagarh, being gone over. The vaccination staff suffered greatly from the prevalent epidemic fever. No vaccination was done in the district in 1874-75, except in Hughli and Serampur towns.

In 1875-76 the vaccinators went over parts of Bansbaria and Kristonagar *thanas*. On the occasion of an outbreak of small-pox in Hughli *thana*, at British Chandarnagar and Iswarbagh, a Deputy Superintendent and staff of vaccinators operated on 2,800 cases. In the Jahanabad *thana* inoculators had been taught how to vaccinate, and were earning a living as vaccinators. In 1876-77 vaccination was carried on in the towns only. The report for this year gives the result of a roughly taken vaccination census for various parts of Bengal. In this district enquiries were made at Hughli and in Jahanabad. At Hughli, out of 211 examined, 120 were inoculated, 45 vaccinated, 19 unprotected, while 27 had had small-pox. In Jahanabad 4,422 were examined, of whom no less than 4,147 had been vaccinated, 170 were inoculated, 79 were unprotected, while only 26 had had small-pox. The figures for Jahanabad show a very good result, but it must be remembered that a large staff of vaccinators had worked over the *thana* only three years before.

In 1878-79 paid vaccinators were abolished in the Metropolitan Circle, and only licensed vaccinators were employed—

"The establishment of paid vaccinators was abolished from October last [1878], and licensed vaccinators were substituted, who during the recess received only half-pay, and during the working season gained their livelihood solely from the people, charging them the authorized fee of two annas per head for successful operations."

The Superintendent writes that under the licensed system Superintendents have less control over the vaccinators, as they get no pay; much time also is wasted in trying to realize fees. Dr. Gupta also writes:—

"The self-supporting system of vaccination will never be properly carried out unless the recovery of the small fees which licensed vaccinators are allowed to charge can be easily obtained."

The realization of fees is still as frequent a source of difficulty now, twenty years later, as it was then. It is noted that *ex*-inoculators are carrying on inoculation in various parts of the province under the cloak of a license to vaccinate.

In 1879-80, in Hughli district 15 vaccinators, working under two inspectors, visited 549 villages, vaccinated 14,692 persons, of whom 14,666, or 99·67 per cent., were successfully done. Dr. Gupta writes that there was great difficulty in controlling the licensed vaccinators, who can earn from Rs. 200 to Rs. 400 in the working season. The figures for the year for Hughli district, 14,666 successful cases at two annas each among fifteen vaccinators, work out to about 978 successful cases, or Rs. 122, for each man, a figure a good deal below Dr. Gupta's estimate of their earnings; and this without allowing anything for apprentices. In the year 1900-1901, 20,819 cases were successfully

vaccinated by thirty vaccinators. This works out to 694 successful cases per man, at two annas a case, or about Rs. 86 each, not very high pay for six months' arduous and more or less skilled work. This, too, without allowing anything for apprentices.

At the beginning of 1880-81 the Vaccination Department was placed under the Sanitary Commissioner, by Government of India order No. 150, of 15th March 1880, endorsed by Bengal Government, Medical and Municipal Department, No. 268Medical, of 6th April 1880. Surgeon-Major R. Lidderdale, Sanitary Commissioner, took over the charge of the department from the Surgeon-General, Bengal, on 3rd May 1880. At the same time the Superintendents of Vaccination became Deputy Sanitary Commissioners. In this year a security deposit of Rs. 10 each was required from licensed vaccinators in the Metropolitan Circle. The Compulsory Vaccination Act [Act V (B.C.) of 1880] was extended to the Hughli-Chinsura Municipality from 1st July 1881. In the Hughli district thirteen vaccinators worked in 289 villages, and did 5,689 operations, 9,000 less than in the previous year, the falling-off being due, it is stated, to the prevalence of fever.

In 1881-82 twenty vaccinators did 17,327 vaccinations in the rural areas. In 1882-83 the Compulsory Vaccination Act was extended to Serampur town; 21 vaccinators did 21,431 operations. Opposition in Serampur is said to have died out. In 1883-84 the Compulsory Vaccination Act was introduced into Bansbaria, Bhadreswar, Baidyabati, Kotrang, and Uttarpara towns, from the beginning of the working season. In the district 25 vaccinators operated on 19,353 cases, a number of operations less by 2,000 than those done by four fewer men in the previous year. Dr. Gupta writes:—

"In the Hughli district the people appear to have overcome their prejudices against vaccination and to have learnt its benefits. In Serampur it is only objected to during months of mourning or when a child is born, or when there is sickness. These are considered inauspicious times, but they occur too often."

In 1884-85 twelve vaccinators did 21,649 vaccinations, a larger number than had been done in the previous year by more than double the number of men; and more than was done in the following year, 1885-86, by 27 vaccinators, who operated on 19,683 cases. In 1886-87 thirty men carried out 24,889 vaccinations.

In 1886-87 were issued new rules for licensed vaccinators. The older rules, issued with Bengal Government orders No. 3317T., of 14th October 1875, and No. 2155T., of 1st September 1876, having become obsolete in some respects, new rules were issued in Bengal Government order No. 2288T.M., of 23rd October 1886. The rules are given in full on pages 74-75 of the combined sanitary and vaccination reports for the year. In 1887 the Compulsory Vaccination Act was amended by Act II (B.C.) of 1887. The new provisions are given at pages 78-79 of the same report. On page 81 is given a list of

castes who still practice inoculation. In the Metropolitan Circle these castes are given as follows:—(1) Madhya Sreni Brahman, (2) Utkal Sreni Brahman, (3) Kaistha, (4) Chasadhoba, (5) Barber, (6) Jugi, (7) Chandal, (8) Tewar, (9) Tanti (weaver), (10) Acharjee, (11) Kaibortto, (12) Chhattri, (13) Rajput, (14) Kamar, (15) Teli, (16) Barui, (17) Sadgop.

In 1887-88 thirty-four vaccinators operated on 26,297 cases, in 1888-89 the same number of men did 24,635 cases, and in 1889-90 thirty-one men operated on 23,405 individuals. In 1890-91 twenty-eight men carried out 25,204 vaccinations.

Before the working season of 1892-93 the control of the Vaccination Department in rural areas was transferred from Deputy Sanitary Commissioners to Civil Surgeons. The orders on the subject were issued in Bengal Government, Municipal Department, No. 1185S., of 22nd April 1892 (Inspector-General of Civil Hospitals' Circular No. 13 of 14th May 1892), and Bengal Government, Municipal Department (Sanitation), No. 572T.M., of 28th June 1892 (Inspector-General of Civil Hospitals' Circular No. 23, of 18th July 1892). Since then the Vaccination Department has been left almost entirely in the hands of Civil Surgeons, the co-operation of the Sanitary Department having almost entirely failed, owing to unavoidable causes, shorthandedness of the Department, owing to famine, war, and plague, and the few officers available having been necessarily chiefly employed on plague duty and special enquiries. The change had both advantages and disadvantages. It was undoubtedly an advantage to bring the Department into the regular line of district work, instead of being, as formerly, under special officers trying to supervise an enormous area. On the other hand, few Civil Surgeons can leave their important duties in head-quarter stations for long enough to supervise and inspect satisfactorily the working of the Vaccination Department in the interior of the district, often at long distances from the *sadr* station. On the whole, the amount of work done by the Vaccination Department in this district has been somewhat less than before the change of system, especially in the two years 1895–97.

The first year of vaccination under Civil Surgeons, 1892-93, showed an increase of almost 2,000 vaccinations over the preceding year, 24,638, as opposed to 22,736 in 1891-92. The next year, 1893-94, showed a great drop of over 6,000 to 18,242. The falling-off was ascribed "to the great prevalence of malarial fever among the people, especially among children." In the following year, however, 1894-95, most of the lost ground was recovered, with an increase of over 5,000 operations, the total rising again to 23,613. The Sanitary Commissioner, Dr. Gregg, writes on the first page of his vaccination report for this year:—

"I can confidently say that I have never known the Vaccination Department in Bengal to be in such an efficient state as it is at present."

As regards the numbers shown as vaccinated, he further writes :—

"There cannot also be the slightest doubt that a very much larger number of persons are vaccinated than are shown in the returns."

I have myself had a good deal of experience of vaccination inspection, having once been called upon to explain how I had managed to do so much inspection. I agree with Dr. Gregg that the numbers actually vaccinated are larger than those shown in the returns, but not that they are very much larger. The difference would not, I believe, amount to more than five per cent. In every large village, in which fifty or more children have been vaccinated, in making a careful inspection of the children vaccinated, and comparing them with the vaccinator's vernacular returns, a few children will be brought up for inspection whose names have been accidently omitted from the list. On the much-discussed question of how far the percentage of success shown in the vaccinators returns is correct, I may say that, in my experience it has usually been found not far wrong. Mistakes occur, certainly, and in numbers, as may only be expected from men of the class from which vaccinators are drawn. But the mistakes are due just as often to an underestimate as to an overestimate of the truth.

In 1895-96 the Sanitary Commissioner, writing about the degree of protection afforded to infants in Bengal, states that, in his opinion, it is overestimated. He also states that the "prejudice of the people against the vaccination of very young children is strong and difficult to combat." The people do not actively wish for vaccination. If only those children were vaccinated whose parents actually asked for the operation, the numbers vaccinated would not be one per cent. of what they actually are. The vaccinators have to go about the villages and hunt up children for the purpose. The youngest children, unable to walk, naturally do not come under the notice of the vaccinator so readily as the older ones, who run about and play outside their houses. Even when children in arms are vaccinated, the age of a child of nine or ten months is roughly stated as one year, and so goes down in the returns among the children of one to six years, not among the infants under one year. Personally, I should consider that the number of infants under one year vaccinated is over rather than under the numbers shown in the returns, in the districts with which I am acquainted. The number is, however, very low. In this district it is well under ten per cent. of the numbers available. Most of these, it is true, get vaccinated in later years.

Another remark of the Sanitary Commissioner's in the report for the same year, which I cordially endorse, is that "it is very desirable that the Government and all local authorities should insist on every boy entering a school or young man entering Government or other employ being either vaccinated or revaccinated, as the case may be." To enforce compulsory vaccination throughout the country may be desirable, but certainly is not practicable, with the

means and the staff at our disposal. But it would be easy to insist upon revaccination as a condition of entering a public school, or Government employment.

In 1897-98 the six-point system of vaccination was introduced, and met with fair success, as regards the older children vaccinated, though much objection was raised to increasing the number of points in young children, and, as a matter of fact, this has seldom been done.

The general attitude of the people towards vaccination in this district I should describe as one of passive but rather unwilling acquiescence, with a strong objection to paying the fixed fees. The majority of the people are well aware that they cannot legally be forced to accept vaccination, or to pay the fees, for it is not worth while for the vaccinator to bring a civil suit for the recovery of a fee of two annas, the cost of recovering which would, at best, be greater than the amount recovered, not to speak of the loss of time involved in the prosecution of the suit. The vaccinators, therefore, lose what are, for men in their position, considerable sums, in the way of unrealized fees, for even fees of two annas each rapidly mount up to a large total when counted in dozens or scores. This naturally militates against the succes of the Vaccination Department, and disinclines good men to take service in it. For the vaccinator enters the department in order to make a living, and not in order to confer a benefit on the general community.

The history of small-pox is given in Chapter XII under the head of that disease, where the incidence of small-pox in this district has been fully discussed.

I have constructed three tables of vaccination statistics, to accompany this chapter. The first table gives the number of operations performed by vaccinators in rural areas for the last twenty-two years. It shows that the highest number of operations ever performed in one year was done in 1887-88. The second table gives similar information for the Municipalities in the district The highest number of primary vaccinations was done in 1879-80, the first year in the table, closely followed by 1883-84; but the highest number of total vaccinations was performed in 1894-95, a year of epidemic small-pox, when very large numbers were revaccinated. The third table shows the numbers of inspections performed by Civil Surgeons, District Inspectors, and Sub-Inspectors, from the year 1892-93, when vaccination was first made over to Civil Surgeons, up to date. The most noteworthy point in this table is the rapid rise in the amount of inspection done by Civil Surgeons, not only in Hughli district, but in the province as a whole. In the first year, the Civil Surgeon of Hughli inspected 1,547 cases; and this comparatively small number places Hughli nineteenth, as regards the amount of inspection done, out of the 47 districts in the province. In the second year, the amount of inspection done in Hughli was almost doubled, 3,036; but the increase all

round had been much the same, and Hughli still stands nineteenth. In 1900-01 the inspections had risen to 5,072, but Hughli stands only seventeenth in order, only two places higher than it had been in 1892-93, eight years before, with less than one-third of the work. In the last year in the table, 1900-1901, the amount of inspection done, both villages and cases, is larger than in any of the preceding eight years:—

VACCINATION, HUGHLI DISTRICT.

Rural areas.

YEAR.	PRIMARY VACCINATION.			REVACCINATION.			TOTAL VACCINATION.			Number of vaccinators.
	Total vaccinated.	Successful.	Percentage of success.	Total vaccinated.	Successful.	Percentage of success.	Male.	Female.	Total.	
1879-80 ...	14,645	14,619	99·82	47	47	100	7,700	6,992	14,692	15
1880-81 ...	5,685	5,673	99·78	4	4	100	2,985	2,704	5,689	13
1881-82 ...	17,339	17,279	99·65	9	7	77·77	9,012	8,315	17,327*	20
1882-83 ...	21,273	21,254	99·99	158	150	94·93	10,975	10,456	21,431	21
1883-84 ...	19,324	19,318	99·96	29	4	13·79	9,825	9,528	19,353	25
1884-85 ...	21,594	21,559	99·83	55	14	25·45	11,210	10,439	21,649	12
1885-86 ...	19,662	19,641	99·91	21	14	66·66	10,045	9,638	19,683	27
1886-87 ...	24,889	24,874	99·93	...	...	...	12,813	12,076	24,889	30
1887-88 ...	26,284	26,259	99·90	13	11	84·61	13,550	12,747	26,297	34
1888-89 ...	24,635	24,608	99·89	...	...	...	12,470	12,165	24,635	34
1889-90 ...	23,405	23,383	99·90	...	...	...	12,067	11,338	23,405	31
1890-91 ...	25,204	25,170	99·86	...	...	...	12,839	12,365	25,204	28
1891-92 ...	22,736	22,716	99·91	...	...	...	11,457	11,279	22,736	30
1892-93 ...	24,638	24,601	99·87	13	10	76·92	12,424	12,227	24,651	32
1893-94 ...	18,242	18,179	99·76	11	10	90·90	9,411	8,842	18,253	35
1894-95 ...	23,613	23,489	99·65	52	41	80·39	12,150	11,515	23,665	29
1895-96 ...	17,277	17,088	99·16	70	46	65·71	8,921	8,426	17,347	29
1896-97 ...	17,731	17,644	99·55	55	39	70·90	9,162	8,624	17,786	29
1897-98 ...	21,484	21,401	99·71	15	1	6·66	10,937	10,562	21,499	30
1898-99 ...	19,014	18,911	99·45	92	45	48·91	9,728	9,378	19,106	30
1899-1900 ...	19,632	19,462	99·13	10	8	80·00	10,039	9,603	19,642	30
1900-1901 ...	20,819	20,492	98·43	404	256	63·36	10,855	10,338	21,223	30

* A slight discrepancy in figures.

Vaccination, Hughli District.

Municipalities.

Year.	Primary vaccination.			Revaccination.			Total vaccination.			Number of vaccinators.
	Total vaccinated.	Successful.	Percentage of success.	Total vaccinated.	Successful.	Percentage of success.	Male.	Female.	Total.	
1879-80 ...	4,530	3,189	70·39	124	61	49·19	...	...	4,654	5
1880-81 ...	3,073	2,599	84·59	167	135	80·83	1,954	1,286	3,240	4
1881-82 ...	2,578	2,224	86·26	77	64	83·11	1,565	1,091	2,656	5
1882-83 ...	2,991	2,834	94·75	135	127	94·07	1,812	1,314	3,126	5
1883-84 ...	4,427	4,098	92·55	103	30	29·12	2,582	1,948	4,530	6
1884-85 ...	4,004	3,524	91·01	82	30	36·58	2,308	1,778	4,086	10
1885-86 ...	3,901	3,654	94·51	59	34	60·71	2,258	1,702	3,960	10
1886-87 ...	2,778	2,647	95·76	6	3	50·00	1,588	1,196	2,784	10
1887-88 ...	3,191	3,012	96·41	35	11	31·42	1,878	1,348	3,226	9
1888-89 ...	2,962	2,817	96·53	41	8	19·51	1,619	1,384	3,003	10
1889-90 ...	3,068	2,914	96·68	141	93	65·95	1,762	1,447	3,209	10
1890-91 ...	2,433	2,343	97·26	76	32	42·10	1,403	1,106	2,509	10
1891-92 ...	2,708	2,514	95·48*	62	31	50·00	1,477	1,293	2,770	10
1892-93 ...	2,886	2,729	96·77	63	24	38·70	1,592	1,357	2,949	13
1893-94 ...	2,242	2,184	97·76	66	40	60·60	1,248	1,060	2,308	12
1894-95 ...	3,911	3,846	98·56	899	450	50·27	2,852	1,958	4,810	10
1895-96 ...	3,302	3,219	97·90	692	248	35·83	2,483	1,511	3,994	10
1896-97 ...	3,508	3,422	97·54	895	332	37·13	2,854	1,549	4,403	10
1897-98 ...	2,740	2,696	98·39	533	236	44·27	2,070	1,203	3,273	9
1898-99 ...	2,799	2,745	98·07	711	258	36·28	2,344	1,166	3,510	11
1899-1900 ...	2,800	2,758	98·50	851	295	34·66	2,392	1,259	3,651	10
1900-1901 ...	3,890	3,017	97·66	1,021	451	44·16	2,629	1,481	4,110	9

* Should be 92·83.

Vaccination inspection, Hughli District.

Year.	Civil Surgeon.				District Inspector.			Sub-Inspectors.		
	Villages inspected.	Cases inspected.	Proportion.(*a*)	Order.(*b*)	Villages inspected.	Cases inspected.	Proportion.(*a*)	Villages inspected.	Cases inspected.	Proportion.(*a*)
1892-93 ...	35	1,547	5·60	19	448	12,373	44·82	941	23,361	84·64
1893-94 ...	121	3,036	14·76	19	628	14,829	72·12	650	15,164	73·75
1894-95 ...	110	3,101	10·89	27	358	10,495	36·85	800	19,295	67·76
1895-96 ...	110	4,294	20·12	15	431	10,316	48·33	692	17,450	81·76
1896-97 ...	94	4,047	18·23	20	444	12,375	55·77	654	17,960	80·94
1897-98 ...	95	3,347	13·51	29	385	12,051	48·64	662	18,003	72·67
1898-99 ...	122	4,204	18·58	18	271	8,470	37·45	630	18,226	80·58
1899-1900 ...	89	4,052	17·39	17	357	7,458	32·01	964	17,599	75·55
1900-1901 ...	149	5,072	20·02	17	290	7,804	30·80	912	17,701	69·87

(*a*) Percentage of cases inspected to cases vaccinated in jurisdiction.

(*b*) As regards number of cases inspected, out of 47 districts in Bengal, up to 1893-94; 48 districts from 1894-95 onwards.

These notes on vaccination in the past may be concluded by giving a list of the officers who held the post of Superintendent of Vaccination, Metropolitan Circle, during the twenty-three years vaccination in Hughli district was under the superintendence of these officers:—

F. Powell	...	4th December	1869	... May	1872
H. Cayley	...	May	1872	... 26th October	1872
K. P. Gupta	...	26th October	1872	... 19th May	1884
K. D. Ghose	...	19th May	1884	... 21st May	1885
K. P. Gupta	...	21st May	1885	... 20th November	1885
J. C. Ghose	...	21st November	1885	... 30th November	1885
J. ffrench-Mullen	...	1st December	1885	... 7th July	1886
J. C Ghose	...	8th July	1886	... 25th November	1886
K. P. Gupta	...	25th November	1886	... 3rd August	1891

It will be seen that the Metropolitan Circle was under Dr. K. P. Gupta for nearly twenty years.

In 1893-94 the Government Resolution on the working of the department, as set forth in the Sanitary Commissioner's annual report, makes the following scathing remarks:—

"Vaccination is perhaps the least successful of all the departments, and the Lieutenant-Governor regrets to observe that there is in this report no indication of any consciousness of this failure—and no hint of any special efforts by the Sanitary Commissioner to ascertain and remedy its causes."

It was apparently in answer to these remarks that Dr. Gregg, in the following year's report, writes :—

"I can confidently say that I have never known the Vaccination Department in Bengal to be in such an efficient state as it is at present."

It is true that both opinions may be correct: the department might be the most inefficient department in the province, and yet be less inefficient than it had been in previous years. As to whether the department was then better than it had been in former years, I am not in a position to offer any opinion ; but that it was, and still is, the least successful department in the province, is likely enough ; though here, again, I am not in a position to judge of the working of most other departments. Granting that it is the least successful department, the reason is obvious enough—in no other department is the manufacture of bricks without straw expected to anything like the same extent. The vaccination staff of a district consists of the Civil Surgeon, a District Inspector, one Sub-Inspector for each subdivision, and a varying number of vaccinators. The Civil Surgeon is to a great extent tied down to the *sadr* station, by his duties in the jail and hospital there, as well as other work ; for instance, he can hardly leave the station for longer than a few hours at a time if he has a patient seriously ill. He has, it is true, to inspect dispensaries, but this inspection confines him to certain routes and certain places ; to exercise a general control over the vaccinators scattered over the whole area of the district by personal supervision is an utter impossibility. It is much if he can manage to see some small part of each vaccinator's work during the course of the working season ; so much, in fact, that few if any Civil Surgeons can achieve even this small modicum of supervision. The subordinate inspecting staff vary greatly, some are good men, more are not. It can hardly be expected that both zeal and intelligence can be got, in any great degree, from a service whose maximum attainable pay is Rs. 40 per month. The vaccinators are men of comparatively low class, who work, like other people, in order to make a living for themselves, and succeed in making a bare living during the six months of the working season by dint of hard work. The difficulty of realizing fees considerably decreases their earnings ; all, I think, lose some part of their earnings by the impossibility of enforcing payment, in some cases only a small, in others a considerable proportion. Two facts especially tell against the success of the department. The first is that, in the intensely malarious districts of Lower Bengal, such as Hughli, the first three months of the vaccination season, which lasts from October to March, are the months of greatest fever prevalence. Parents who might not object, in the abstract, to having their children vaccinated, are naturally unwilling to have the operation done on children who are suffering from or debilitated by fever. During these months there is a very high fever mortality, and it must happen that a certain number of children die of fever

after being vaccinated. *Post hoc* is not *propter hoc*, and in these cases the fever which proves fatal is malarial, and in no way due to vaccination. But it can hardly be expected that the parents of the sufferers should recognise this fact, especially if the operation of vaccination is followed, as it often is, by slight fever. The second obstacle to vaccination is the fact that the people in general know that the operation is not compulsory, and that they cannot be forced either to accept vaccination, or to pay the recognised fees. Cases are frequently cropping up in which one or two persons in a village object to vaccination, and urge others, who of themselves would make no objection, not to permit their children to be operated upon. These others then say that if the children of the first objector are vaccinated, they will consent to their children being done also. But there are no means of insisting upon vaccination. Every one has a legal right, in rural areas, to refuse to submit his children to be vaccinated, and to urge others to do the same. The consequence is that all the children of this village remain unvaccinated, and form a focus for small-pox, if the disease should once be introduced. Of course the logical result of this argument is that vaccination should be made compulsory throughout rural areas. But I for one am not of opinion that the country is yet ripe for this measure. I consider that the general introduction of compulsory vaccination would do more harm than good, owing to the amount of opportunities for oppression which it would throw into the hands of imperfectly supervised native subordinates.

The argument has been put forward that, if vaccination were really as successful as its supporters claim, the people of Bengal are quite intelligent enough to recognise the fact that it is a protection against that disease, and to seek this protection of their own accord. To me it seems a sufficient answer to this argument that a large number of people in England, who are surely as intelligent as those of Bengal, are not convinced by it. Contrast the circumstances under which the operation is done in the two countries. In Bengal it is performed by a half-educated and little supervised vaccinator, and has to be paid for by the individual. In England every one is entitled, at the public expense, to the services of a qualified medical man, as vaccinator. Nor can it be said that in England it is only the lowest classes or those of inferior intelligence who are opponents of vaccination, when this party has reckoned among its numbers, within recent years, a Cabinet Minister and a Judge. Further, it is hardly safe to base any argument upon the intelligence of a people who are so grossly ignorant, and so wedded to superstition, as the peasantry of Bengal. Surely a people who can believe, as they do sometimes undoubtedly believe, that every great bridge which is built in the country is founded upon human sacrifice, will, when the mood takes them, believe anything! When small-pox is epidemic the educated classes frequently do

seek, of their own accord, the protection of vaccination for their children, and revaccination for themselves. But at ordinary times they, and the lower classes at all times, are, at best, indifferent on the subject.

Inoculation has now, to the best of my belief, quite died out. I have certainly never heard of its being now practised in this district; nor, indeed, in any other district in which I have served. That it was very general half a century ago, and even less, is of course obvious. The great majority of prisoners over forty years of age admitted to jail bear marks of inoculation in their forearms. The mortality from inoculation must, as a rule, have been low, otherwise it would not have been so widely practised.* In the annual dispensary report for 1869, however, is contained a report on inoculation in Bengal, as Appendix I, which gives some startling figures:—

"Instances have been published by Government in which the percentage" (of mortality) "has reached a very high figure. Dr. Sheridan, Civil Surgeon of Serampore, reported that one inoculator admitted that during the season he had operated on 400 individuals, of whom 200, or 50 per cent. died; in the case reported by Pundit Goury Sunker Bhuttacharjee of 1,000 people who had been inoculated at Hughli in 1850, the mortality was 30 per cent."

such cases as the above must have been quite exceptional, in other cases quoted in the same report the mortality was as low as 0·50 per cent. The Metropolitan Circle of vaccination was at this date working in four *thanas* of the Hughli district, Chanditola, Haripal, Kristonagar and Khanakul; and even then, over thirty years ago, no case of inoculation was known to have taken place in these *thanas*, though the operation was not at that date forbidden by law.

No case of unlicensed vaccination has come to my knowledge in this district; though there is no legal bar to any one performing the operation, and taking fees for so doing, unless he gives himself out as a licensed vaccinator, in which case he can be prosecuted for personating a public servant.

Sanitation in the various Municipalities has been described in detail, under each town separately, in Chapter VII. Without exception, sanitation on towns leaves much to be desired.

Outside the Municipalities sanitation is conspicuous by its absence. The only scheme which might be considered to come under the head of a district sanitary project, is that for flushing and ensuring a flow of water through the Kana *Nadi* and Saraswati, described in Chapter VI, in the account of the great epidemic fever, as carried out more or less imperfectly between 1874 and 1879, and completed by the Eden Canal system, opened in December 1881, as related in the description of these canals in Chapter I.

* I think the writer underestimates the mortality from inoculation. In addition to the death-rate amongst those who so underwent the operation, it must not be forgotten that small-pox was maintained and spread by the practice. The discomfort and suffering attending the procedure also must be taken into consideration.—T. H. H.

Epidemics.—The great fever epidemic of 1857 to 1877 has been described at considerable length in Chapter VI. Epidemics of cholera and small-pox have also been related, under the head of those diseases, in Chapter XII.

Special hospitals.—A Lock Hospital for venereal disease existed at Hughli in the sixties, and was under the charge of the Civil Surgeon. It was closed on 31st December 1870, by Government order No. 5554 of 21st December 1870. I find that the Municipality, which has practically never done anything in the way of medical provision, agreed, on 16th January 1893, to build a hospital for cholera and other contagious diseases, on the outskirts of the town, in connection with the scheme then under consideration for moving the Imambarah Hospital from its old quarters, near the *thana*, into the guard-room, which it at present occupies. Nothing, however appears to have ever been done in the matter, which gradually dropped out of sight. In 1899 two mat sheds were put up, near the *post-mortem* house, for the reception of plague patients. They were never used for this purpose; but, during the cholera epidemic in the town in April and May 1900, were used for the reception of cholera patients. They were blown down in a storm in April 1901, and the remains were removed, the huts not being rebuilt. Both the Imambarah Hospital at Hughli and Serampur dispensary possess contagious wards.

There is a cholera camping ground in the immediate vicinity of Hughli, in the shape of a piece of ground, the right of occupying which has been leased by Government for the jail. It is situated on the west side of the Grand Trunk Road, a little north of the 28th milestone, and about a quarter of a mile west of Bandel House. Since the Military Police were moved from that place to Chinsura, it has been suggested that the southern part of the compound of Bandel House, a very much more suitable site than the present one, might be reserved for occupation when required as a jail cholera camp, and the question is now under consideration.

Medical aid available.—The district simply swarms with medical practitioners of all classes, especially in the towns, from the graduate of the Calcutta Medical College to the unadulterated quack. There are in Hughli town at least half-a-dozen skilled and competent practitioners, educated in the Medical College, and many more in the district. The numbers and names are, however, constantly changing from year to year, as men die or remove elsewhere, and new men take their places. The practitioners of the district may be divided into the following classes:—(1) Graduates and licentiates of the Calcutta Medical College; (2) diplomates of the Campbell Vernacular Medical School at Sealdah; (3) diplomates of the two irregular Medical Schools in Calcutta; (4) students of these different schools, who have gone through some medical study, but have failed to qualify; (5) *hakims* or practitioners of the *Yunani* or Musalman system of medicine; (6) *kobirajes* or

baids, practitioners of the Hindu system of medicine; (7) compounders, who have picked up some smattering of medical knowledge while serving in dispensaries, public or private; (8) quacks, utterly without any medical knowledge whatever.

The Hindu system of medicine is, in Bengal, to all intents and purposes dead and gone. Whatever interest it may have as a subject of antiquarian study, it has none as a living science. Most of those who profess to practise this system are simply quacks, as ignorant of the principles of the science they profess to practise as of the European medical art. More than half a century ago Dr. Wise wrote that this system of medicine was gradually dying out, and its progress since then has been one of steady deterioration. Dr. T. A. Wise, for several years Civil Surgeon of Hughli, wrote a volume of 430 pages, entitled a "Commentary on the Hindu System of Medicine," which was published in Calcutta in 1845. On the subject of the decay of this system he writes (preface, pp. iv-v):—

"Another cause, which produced the neglect of the Hindu Medical Science on the part of the Muhammadan conquerors of Hindustan, is that they were so prepossessed in favour of their own system of medicine, as to have little respect for that of a vanquished people. More lately, the diffusion of the European system of medicine operated as a discouragement to the study of the Sanskrit works; and the prejudice against the national system grew stronger, as the ancient medical works became more inaccessible from their rarity, and imperfect copies were substituted, as the ignorance of the people increased. The expense of drugs was also considerable, and the difficulty of procuring them genuine became greater, as they were less sought after and appreciated, which led to the introduction of inferior substitutes. Thus confidence in these medical prescriptions diminished still more; and the consequence of such neglect was, to increase the prejudice against the ancient science even among the Hindus, and to lead to the substitution of superstition and quackery. The system of *Bhutaredya*, which included the offering up of certain prayers and incantations, was introduced, as well as the worshipping of village gods, for the cure of diseases, as proper medical assistance became more difficult, to meet the pressing wants of the people. The native practice of medicine may now be said to be in this lamentable state of depression over all Hindustan, but, it was far otherwise, as cultivated by the ancient Hindus. A very few practitioners may still be found in the neighbourhood of cities, in the service of rich individuals in whose families the ancient treatises of their forefathers are studied, and transmitted from generation to generation. I have had the happiness of knowing such a family of hereditary physicians, rich, independent, and much respected."

[*Foot-note by Dr. Wise.*—"After some enquiry I find that there are not more than four or five persons, in this part of India, who are acquainted with the Hindu Medical *Shastras*."]

The few who may be interested in the subject of Hindu Medical Science will find a mine of information on the subject in Dr. Wise's book. I propose to give a few notes on the more important heads discussed. The offspring of a Brahman with the daughter of a Vaisya, was called *Ambasta*, or, more commonly, *Baidya*; and it is stated in Menu, that their profession is medicine (p. xiii). The *Ayur Veda* is the most ancient system of medicine, and is of the highest authority. The age in which it was written is not known, and only fragments of the manuscript are now procurable. The second work, called *Ayugranta*, is said to have been written by Siva in the *Treta Yuga*. Part

of this work is said to be recorded in some of the *Tantras*. The nature of medicines and diseases is treated of in some of the *Puranas*, particularly in the *Ugni Puran* (pp. xv-xvi). The *Ayur Veda* is said to have consisted of one thousand sections, of a hundred stanzas each, or a *lakh* of verses. Brahma is said to have abridged it, and divided it into eight parts or *tantras*. It contained also a description of the structure of the human body obtained from dissection (pp. 2-4). The works of Charaka and Susruta are abridgments of the *Ayur Veda*. The latter is the oldest book in medicine which the Hindus now possess (p. 8). The former author is the better on medical, the latter on surgical subjects (p. 10). The teaching of medicine is now conducted by teachers, who instruct three or four pupils, in many cases their own relations, who continue for five or six years, reading the *Shastras*, seeing the preparation of medicines, and their employment for the cure of the sick (p. 12). There are four circumstances required for the cure of a disease—first, a physician; second, a disease which is known; third, a reasonable patient; fourth, medicines, instruments, and attendants (p. 16). The body consists of three "humours"—air, bile, and phlegm (p. 42); and seven essential part chyle, blood, flesh, fat, bone, marrow, and semen (p. 49). The navel is the origin of all the vessels, and is the chief seat of life. There are forty principal vessels, of which ten respectively carry air, bile, phlegm, and blood (pp. 60-61). All the Rishis are said to have recommended the dissection of the human body, as proper and necessary (p. 68). [They do not seem to have made much out of their anatomical studies.] Life consists in the combination of the soul, the mind, the five senses, and the three qualities of goodness, passion, and inertness (p. 74).

There are three ages,—childhood, from the 1st to the 15th year; manhood 16 to 70, and decrepitude over 70 (p. 79). The male sex arrive at their perfection at 25, the female at 16. Death is the separation of the soul from the body, and may take place in 101 different ways, one of which is death from natural causes, at the time appointed, which is the age of one hundred years (p. 80). There are three means of treatment,—Hygeology or regimen, Materia Medica and Pharmacy, and Surgery (p. 83). Six seasons are recognised, of two months each; these, beginning with the month of *Magh*, are as follows, the cold, spring, hot, rainy, moist, and cold seasons. Like our year, the Hindu year both begins and ends with a cold season (pp. 86–88). There are five principal actions of medicines,– (1) diaphoretics; (2) emetics; (3) purgatives, including enemata and urethral injections; (4) errhines (fumes to cause sneezing, and so to clear the nose and the head); (5) stimulants (p. 139). To these, however, four others are added in the descriptive text, emmenagognes, diuretics, astringents, alteratives. "At a very remote period in their history, Hindu practitioners were accustomed to perform lithotomy, the extraction of the dead fœtus, *paracentesis thoracis* and *abdominis*, &c. This

proves the extent of their practical knowledge, and the energy and boldness in executing hazardous operations which distinguished their ancient surgeons, and forms such a remarkable contrast to the present ignorant and timorous surgeons of Bengal" (P 157).

The *Yunani* or Musalman system of medicine is now, I believe, little practised in this district. There is a large and well-equipped *Yunani* dispensary in the Imambara buildings at Hughli, under the charge of a skilled practitioner of the system from Lucknow, which is much resorted to by the Musalmans of Hughli town.

Religious treatment of disease, by charms and by various observances enjoined by priests, is now not much in evidence, except at the Tarakeswar temple. I have, however, occasionally seen patients who told me that they had undergone a course of this sort, previous to seeking relief from European medicine. The various gods and deities who are supposed to preside over special diseases have been described in the History.

Couching for cataract is, I believe, not much practised in this district, though I have seen several cases in which sight has been first restored by this operation, and subsequently again lost owing to consequent inflammation. The operation is easy of performance, and usually gives an excellent result at once, the opaque lens which stood in the way of vision being pushed out of the way, the patient can see again at once, and naturally is much pleased with the operation. In many cases, however, probably in most cases, subsequent inflammation causes loss of the eye, closure of the pupil, or at best great deterioration of vision. It may be said, though, that it is only the failures of the method which come under observation; those whose sight remains good have no need to seek further relief. No doubt there is truth in this, and in some cases the result of the operation is permanently good, and fair vision is restored.

I may note here that the only time I have ever personally come in contact with a native travelling operator for cataract, the man was not couching the lens, but performing Graefe's operation. This was at Kishanganj, in the Purnea district, about ten years ago. When inspecting the dispensary there I was told that a travelling cataract operator had recently come into the town, and was operating on a good many cases. I got hold of the man, and saw him extract the lens from one of his patients. He was a Panjabi, and told me that he had been taught to operate by his father, though neither he nor his father had had any medical education. He had a set of ordinary cataract instruments, a few knives, forceps, &c., and did an ordinary linear extraction, without any anæsthetic. The instruments appeared clean, and the operation was skilfully done. I asked him what was his percentage of failure, and he told me that about one in ten failed.

The only rational treatment of disease by the people themselves which comes prominently under notice is the use of the actual cautery for enlargement of the spleen. This is a very common form of treatment throughout the district, as might be expected in a very malarious district, where hypertrophy of the spleen is one of the most common diseases. A rounded knob of iron, from half an inch to an inch in diameter, heated in the fire, is applied to the prominent swelling in the abdomen, sometimes in a dozen different places. The results are in some cases very good, judging from the fact that I have seen individuals with numerous marks of the cautery on their abdomens, and spleens which, when I saw them, had regained their natural size. I have also known cupping to be done by *napits* or barbers.

Another form in which counter-irritation is employed for rheumatism, swelling of joints, and other diseases, is by the application of what is called a *gul*. A small ulcer is artificially made, and a round button of wood or metal is laid upon it, and tightly fastened on with a bandage, to prevent the ulcer from healing, and thus keep up counter-irritation. The situations on which I have usually seen this method employed are on the front or outer side of the upper arm, and on the leg, just below the knee.

Another method of treatment, employed by native practitioners in the treatment of enlarged spleen, is to pierce the organ in several places with a long fine needle. This method is said to give good results in cases of large indurated spleen. I have notes of a case (at Dakka) in which death was caused by this method, the spleen thus treated being, unfortunately, soft and extremely vascular, as well as enlarged.

A couple of years ago, a youth who had been an apprentice compounder in the Imambarah Hospital, Hughli, but had been dismissed, placarded the town with printed hand-bills, advertising an infallible cure for spleen. On being questioned on the subject, he admitted that his infallible cure was an ordinary spleen prescription, commonly used in the hospital, of which he had taken a copy during his apprenticeship. *Populus vult decipi, decipiatur*. It is possible that some good was done by the sale to the public of this medicine, which they could have got for nothing at the hospital.

The fondness of the Bengali for quack medicines may be seen from the numerous advertisements of such preparations in all vernacular almanacs, newspapers, &c.

Stavorinus (pp. 451-52) has some notes on the practice of medicine among the natives, as observed by him at Chinsura in 1769-70, as follows:—

"The practitioners of medicine, among the Bengalese, are all of the Brahmin caste. They are held in great esteem on account of the art they profess, but their knowledge of it seemed to me to be very imperfect. They inherit from their ancestors, who have equally been physicians, a number of recipes for remedies for all sorts of diseases, which they have found, by long experience, to be of benefit; and when they hit upon the true nature of the disorder,

they seldom fail in the cure. But upon any uncommon appearances, they are confounded, and know not what to do, of which I have known several instances.

"They have not the least knowledge of anatomy, because their religion does not permit them to shed blood, or to open a body.

"When they feel the pulse, they do it with a kind of drumming motion of the fingers.

"They say that all distempers arise from one of three causes, namely, heat, cold or bile.

"Their medicines are mostly such as are produced in the country. Amongst others, they make use of a kind of little artificial stone, that is manufactured at Goa, and possesses a strong aromatic scent. They give the scrapings of this in a little water, mixed with sugar, to their patients. They employ sugar with almost all their medicines; insomuch that, when a physician is sent for, he always brings sugar with him."

In the annual sanitary report for 1886 the Sanitary Commissioner Dr. Lidderdale, gives the following notes upon the personal and domestic habits of the people, apparently with special reference to the Metropolitan Circle of Vaccination, the districts, including Hughli, immediately surrounding Calcutta :—

"The Hindus, with the exception of the lowest castes, are cleanly in their habits. They rise betimes, smoke tobacco, which helps the bowels to act, go out with a *lota* in hand and defœcate in the nearest convenient spot, and then return, brush their teeth with twigs, and bathe, as a good Hindu never eats without making his daily ablution. They are very scrupulous in keeping the interior of their houses and rooms clean, though cess-pools are found in the yards. Cowdung, which is regarded as a general antiseptic and purifier, is freely used in *leeping* the floors of mud, and even of masonry houses, sometimes making them damp when the process is pushed too far. This is bad, as the people in villages generally sleep on the ground floor. The Hindu men bathe and wash their clothes once and the women twice. They change their clothes if defiled in any way, such as by touch of cooked food, or in obeying the calls of nature which impregnate the clothes with foul smell arising from the excretion. The diet and food of the Hindus are prescribed in the *Shastras*. Vegetables vary according to the day of the moon, and fish is prohibited, and fasts, more or less entire, enjoined at new and full moon to adult men. Two meals—first at midday and second late at night, both heavy—are to be taken. The case of Hindu widows is well known and need not be dwelt on here. A religious sanction or prohibition is attached to everything a Hindu may do in order to make it binding on his conscience, so that he does everything religiously. The Hindu lying-in room is mostly ill-chosen. It is either a newly—made room with damp earthen floor and with leaf walls and roof, or the most dark and ill-ventilated room in the house, and a roaring hot fire is kept up day and night in it. The parturient mother is drugged with large boluses made of powdered black pepper and *ghi* and fed with beaten rice (*chura* fried), and all liquids are withheld. On the fourth or fifth day she is allowed some rice and vegetables, but no fish during the whole lying-in time, which is over on the 21st day, or in three weeks. The child is smeared with mustard oil, and exposed to the sun to harden it, the oil being supposed to act like flannel. The lying-in period is supposed to be infectious, so beggars do not get any alms, and dirty clothes are not sent to the wash. The same restrictions are observed when a death occurs in a house, with the addition that no shaving or cutting of hair by the barber is allowed during the whole time of mourning. These restrictions are very sensible, and help to localize any contagious disease. The period of mourning varies with the castes,—10 days for Brahmins, 15 days for Baidyas, and 30 days for Sudras, showing the Brahmin lawgivers had been guided by selfish motives, as all deaths are equally contagious, if at all. Low-caste Hindus and Mahomedans, as a class, are not so clean in their personal habits from a Hindu point of view. They do not regard contact with cooked food as defilement. Again, three or more persons will eat out of the same plate. They do not go in for *leeping*, washing, and scrubbing like the Hindus. They do not observe any restrictions at births and deaths, neither do they go in for frequent washings and

ablutions. Otherwise there is not much difference between the two classes. People in villages sleep on the ground floor with only a mat for their bedding. They go about bareheaded and barefooted, with a cloth covering the lower part of the body. Women wear their *saris* so as to cover the whole body, but both men and women are thinly and insufficiently clad, and liable to suffer from cold and inflammation in severe and inclement weather. The surroundings of a home are not clean, as manure pits, rubbish of all sorts, and night-soil are frequently to be met with."

From internal evidence I should judge that the above remarks were contributed to the report, not by the Sanitary Commissioner himself, but by one of the subordinates in his office. If so, what the notes lose in style and expression they probably gain in more intimate knowledge of the subject.

Indigenous drugs.—The annual dispensary report for 1866 contains a list of indigenous drugs then used in the Imambarah Hospital, compiled by Dr. R. F. Thompson, the then Civil Surgeon. I quote the list, as follows, retaining the original spelling :—

No.	Native names.	Classical names.	Medicinal properties.
1	Gool khari ...	Althea officinalis ...	Demulcent.
2	Bel	Aegle Marmelos ...	Astringent, stomachic.
3	Sutmooli ...	Asparagus sarmentosus ...	Demulcent.
4	Buka ...	Agate grandiflora ...	Purgative, bitter tonic.
5	Mussuber ...	Aloe Indica ...	Purgative.
6	Dadmaree ...	Ammonia vesicatoria ...	Vesicant and rubefacient.
7	Soya	Anethum Sowa ...	Stimulant, carminative.
8	Alachee ...	Amomum cardamomum...	Stimulant, aromatic.
9	Atees ...	Aconitum hyterophyllum	Bitter tonic, antiperiodic.
10	Neem ...	Azadirachta Indica ...	Ditto.
11	Chyretta ...	Agathotes chyretta ...	Ditto.
12	Baboon phool ...	Anthemis nobilis ...	Ditto and antiperiodic.
13	Kalamegh ...	Andrographys paniculata	Bitter astringent.
14	Babool ...	Acacia vera ...	Astringent.
15	Khuer ...	Acacia catechue ...	Ditto.
16	Russot ...	Berberis Lycium ...	Diaphoretic, purgative.
17	Gundabiroza ...	Boswellia thurifera ...	Used for making ointment.
18	Polash ...	Butea frondosa ...	Astringent tonic.
19	Googul ...	Commephora Madagascarensis.	Antispasmodic, stimulant.
20	Lavanga ...	Caryophyllus aromaticus	Stimulant, aromatic.

No.	Native names.	Classical names.	Medicinal properties.
21	Kalajeera ...	Carum nigrum ...	Stimulant, aromatic.
22	Dhunia ...	Corindrum sativum ...	Carminative.
23	Amada ...	Curcuma Amada ...	Ditto.
24	Gunja, shidhee and churus.	Cannabis sativa ...	Narcotic, antispasmodic.
25	Nalta phull ...	Cæsalpania Bonducella ...	Bitter tonic, astringent.
26	Kulteera ...	Cochlospermum gossypium	Demulcent.
27	Chaulmoogra ...	Chaulmoogra odorata ...	Alterative.
28	Beheedana ...	Cydonia vulgaris ...	Diluent, demulcent.
29	Akund ...	Calatropis Gigantea ...	Diaphoretic, emetic.
30	Sondallee ...	Cassia fistula ...	Purgative.
31	Dadmurdon ...	Cassia alata... ...	In ringworm.
32	Sunna mookhee ...	Cassia elongata ...	Purgative.
33	Neemooka ...	Cessampelas hexandria ...	Diuretic, astringent.
34	Gulluncha ...	Coculus cordifolius ...	Tonic, alterative.
35	Lall murich ...	Capsicum annum ...	Sialogogue, stimulant.
36	Kumla ...	Citrus aurantium ...	Refrigerant.
37	Batavi neboo ...	Citrus decumana ...	Ditto, antispasmodic.
38	Gajur ...	Dancus carota ...	Emollient poultice.
39	Dhatoorah ...	Datura stramonium ...	Expectorant, narcotic.
40	Gab	Diospyros embryopteris ...	Astringent.
41	Amla ...	Emblica officinalis ...	Laxative, astringent.
42	Ayapana ...	Eupatorium ayapana ...	Diaphoretic, astringent.
43	Khetpapra ...	Fumaria officinalis ...	Tonic and diuretic.
44	Justi mudoo ...	Glycyrrhiza Glabra ...	.....
45	Ununtamool ...	Hemidesmus Indicus ...	Alterative, diuretic.
46	Jub	Hardeum hexastichon ...	Demulcent, ditto.
47	Ajowain khorasaun	Hyosciamus niger ...	Narcotic.
48	Kaladana ...	Ipomea cerulæ ...	Purgative.
49	Teeree ...	Ipomea turpethum ...	Ditto.
50	Darchinee ...	Laurus cinnamonum ...	Stimulant, antispasmodic.
51	Kurpoor ...	Laurus camphora ...	Ditto ditto.
52	Keruli ...	Laffa amara ...	Purgative.
53	Mushina ...	Linum usitatissimum ...	Emollient.

No.	Native names.	Classical names.	Medicinal properties.
54	Mrigonabhee ...	Muschus moschiferus ...	Stimulant, antispasmodic.
55	Kya pute ...	Melaleuca cajepute ...	Stimulant.
56	Jia phull ...	Myristica officinalis ...	Ditto.
57	Tumbacoo ...	Nicotiana tabacum ...	Narcotic.
58	Jata Mansi ...	Nardostachys jatamansi...	Stimulant and antispasmodic.
59	Babooi tulsi ...	Occymum pilosum ...	Demulcent expectorant.
60	Kala tulsi ...	Occymum basilicum ...	Ditto ditto
61	Chawl ...	Oryza sativa ...	Demulcent.
62	Postdharee ...	Papaver somniferum ...	Anodyne narcotic.
63	Gokheroo ...	Podalium murex ...	Demulcent.
64	Darim ...	Punica granata ...	Astringent, anthelmintic.
65	Gundhabadallee ...	Pœderia fœtida ...	Emetic, bitter astringent.
66	Pepool ...	Piper longum ...	Stimulant.
67	Kabab chinee ...	Piper cubeba ...	Cooling diuretic.
68	Kea phool ...	Pendanus odoratissimus...	Stimulant, carminative.
69	Mohorri ...	Punphenella anisum ...	Ditto ditto.
70	Lall chittra ...	Plumbago rosea ...	Vesicant.
71	Jowain ...	Ptychotis ajowain ...	Stimulant, antiflatulent.
72	Isufgool ...	Plantago Isphagula ...	Demulcent.
73	Majoophull ...	Quercus infectoria ...	Astringent.
74	Muenphull ...	Randia duncetorem ...	Emetic, purgative.
75	Rew chinee ...	Rheum	Purgative.
76	Shurisha ...	Sinapis	Rubefacient, emetic.
77	Koochilla ...	Strychnos nux vomica ...	Tonic, aphrodisiac.
78	Tentool ...	Tamarindus Indicus ...	Laxative, demulcent.
79	Zangee huritokee...	Terminalia chebula ...	Purgative, astringent externally.
80	Huritokee ...	Terminalis citrina ...	Gentle purgative.
81	Bohera ...	Terminalia bellerica ...	Astringent tonic.
82	Banopsha ...	Viola odorata ...	Emetic, diaphoretic, febrifuge.
83	Nissinda ...	Vitex trifolia ...	Emollient, poultice.
84	Koorchee ...	Wrightia antidysenterica	Astringent.
85	Adah ...	Zingiber officinale ...	Diaphoretic, antiflatuent.

There are many names, especially native names, in the above list, which I should have spelt differently, had I been compiling the list myself. Nor should I have considered it necessary to enter rice as a bazar medicine, nor even carrots, although poultices are made of them.

For the following lengthy list of indigenous drugs, now procurable in the bazars of Hughli district, I am indebted to Assistant Surgeon Guru Nath Sen, of Uttarpara dispensary, a well-read officer, who has devoted much study to this subject:—

No.	Official name.	Local vernacular name.	Therapeutic action.	Where procurable.
		I.—Inorganic Kingdom.		
		A.—Non-metallic.		
1	Acidum Arseniosum ...	Senko ...	Alterative, tonic, and antiperiodic	Spice shops.
2	Ammonii Chloridum...	Nisādal ...	Loca' refrigerant, hepatic stimulant, diuretic, expectorant.	Ditto.
3	Arsenicum Bisulphuretum (realgar).	Manchhāl ...	Alterative, tonic, and antiperiodic	Ditto.
4	Arsenicum Sulphuretum (orpiment).	Haritāl ...	Depilatory, alterative, tonic, and antiperiodic.	Ditto.
5	Sulphur ...	Gandhak ...	Laxative, alterative, cutaneous stimulant.	Ditto.
		B.—Metallic.		
6	Alumen ...	Phatkiri ...	Astringent, styptic	Ditto.
7	Antimonium Tersulphuretum.	Rasānjana ...	Counterirritant	Ditto.
8	Calcii Carbonas ...	Chun ...	Antacid, caustic	Bazar shops.
9	Creta ...	Khari ...	Antacid, astringent	Spice shops.
10	Cupri Sulphas ...	Tunte ...	Caustic, emetic, astringent, alterative.	Ditto.
11	Ferrum Bisulphidum (iron pyrites).	Svarnamākshika ...	Alterative, tonic, aphrodisiac ...	Ditto.
12	Ferri Sulphas ...	Hirākasa ...	Astringent, tonic	Ditto.
13	Hydrargyrum ...	Pārā ...	Alterative, cholagogue, sedative, anti-inflammatory.	Ditto.
14	Hydrargyri Perchloridum.	Rasakārpur ...	Alterative, anti-inflammatory ...	Ditto.
15	Hydrargyrum Persulphuretum (cinnabar).	Hingul ...	Ditto	Ditto.
16	Plumbi Carbonas (white lead).	Safedā ...	Astringent (external)	Ditto.
17	Plumbi Oxidum (litharge).	Mudrāsankha ...	Ditto	Ditto.

No.	Official name.	Local vernacular name.	Therapeutic action.	Where procurable.
		I.—Inorganic Kingdom—*concluded.*		
		A.—Non-metallic—concluded.		
18	Plumbi Oxidum rubrum (minium).	Sindur ...	Vermicide	Spice shops.
19	Plumbi Sulphidum (galena).	Surnia ...	Alterative, astringent	Ditto.
20	Potassii Nitras ...	Sorā ...	Diuretic, diaphoretic, febrifuge ...	Ditto,
21	Sodæ Biboras ...	Shāgā ...	Antacid, stomachic, emmenagogue, anticatarrhal.	Ditto.
22	Sodii Carbonas ...	Soda (goes by English name).	Antacid	Ditto.
23	Sodii Chloridum ...	(1) Lavan (pure salt). (2) Sanchal (impure salt). (3) Bit salt (impure salt). (4) Karkacha (impure sea-salt). (4) Sāmbhari (lake salt).	Stimulant, emetic, stomachic, carminative, and laxative.	Bazar shops and spice shops.
24	Zinci Carbonas (Calamine).	Khapar ...	Astringent and emetic ...	Spice shops.
		II.—Organic Kingdom.		
		A.—Animal Products.		
25	Cera (wax) ...	Mom ...	Used for making ointments ...	Spice shops.
26	Hirudo (leech) ...	Jonk ...	Depletive and counter-irritant ...	Tanks and marshes.
27	Mel (honey) ...	Madhu ...	Demulcent, laxative, and nutritive	Spice shops.
28	Coccus cacti (cochineal).	Krimdānā ...	Colouring agent	Ditto.
		B.—Vegetable Products.		
29	Abies Webbiana ...	Tālispatra ...	Leaves; stomachic, carminative, and expectorant.	Ditto.
30	Abroma Angusta ...	Ulatkamal ...	Roots and bark; emmenagogue and uterine tonic.	Grows wild.
31	Abrus Precatorius ...	Kunch (seeds) ...	Root, bitter and stomachic tonic; seeds, irritant and poisonous.	Ditto and spice shops.
32	Acacia Arabica ...	Bāblā gond (gum)	Bark, astringent; gum, demulcent and astringent.	Grows wild.
33	Acacia Catechu ...	Khaer (extract) ...	Astringent, stomachic, and pectoral	Spice shops.
34	Acacia Farnesiana ...	Guya bāblā ...	Bark and gum; bitter and astringent.	Grows wild.

No.	Official name.	Local vernacular name.	Therapeutic action.	Where procurable.
		II.—Organic Kingdom—*continued.*		
		B.—Vegetable Products—continued.		
35	Acalypha Indica ...	Muktājhuri ...	Leaves; expectorant, emetic, anthelmintic, laxative.	Grows wild.
36	Achyranthes Aspera ...	Āpāng ...	Leaves; stomachic and astringent	Wild and cultivated.
37	Aconitum Ferox ...	Kāthbish ...	Root; narcotic, sedative, and antiperiodic.	Spice shops.
38	Aconitum Heterophyllum.	Ātish ...	Root; bitter, stomachic, antipyretic, and antiperiodic.	Ditto.
39	Acorus Calamus ...	Bach ...	Rhizome; pungent, aromatic, stimulant, expectorant, and antispasmodic.	Ditto.
40	Adhatoda Vasica ...	Vāsaka ...	Leaves, flower, and roots; aromatic, expectorant, febrifuge, and antispasmodic.	Wild.
41	Adina Cordifolia ...	Keli-kadamba ...	Bark; astringent and antiperiodic	Cultivated in gardens.
42	Aegle Marmelos ...	Bel	Leaves, diuretic, laxative, and febrifuge; unripe fruit, astringent and stomachic; ripe fruit, aromatic and cooling laxative; root-bark, astringent and febrifuge.	Wild and cultivated.
43	Aglaia Roxburghiana	Priyangu ...	Bitter tonic and alterative ...	Spice shops
44	Albizzia Lebbek (Sirissa).	Sirish	Bark, bitter, astringent, expectorant; seeds, astringent.	Wild and cultivated.
45	Alhagi Maurorum ...	Durālavā ...	Laxative, diuretic, and expectorant	Wild.
46	Allium Cepa ...	Piyāj	Bulb; pungent, aromatic, diuretic, and aphrodisiac.	Bazar shops.
47	Allium Sativum ...	Rasun	Bulb; carminative, stomachic, diuretic, and emmenagogue	Ditto.
48	Alocasia Indica ...	Mankachu ...	Rhizome; diuretic ...	Cultivated.
49	Aloe Vera (Indian Aloe).	Ghritākumāri; Musabbar.	Carminative and laxative ...	Ditto, and spice shops.
50	Alstonia Scholaris ...	Chhātim ...	Bark; bitter, astringent, and antiperiodic.	Wild and spice shops.
51	Alternanthera Sessile	Sānchi... ...	Bitter, stomachic, and antibilious...	Wild.
52	Albinga Excelsa (liquid storax).	Silāras	Stimulant, pectoral, and resolvent...	Shops.
53	Amarantus Oleraceus	Natiyā sāg ...	Laxative and antibilious ...	Cultivated as potherb.
54	Amarantus Polygamus	Chāmpā natiyā ...	Stomachic, diuretic, and laxative...	Ditto.
55	Amarantus Spinosus...	Kāntā Natiyā ...	Ditto ditto ...	Ditto.
56	Ammomum Sabulatum	Bara elāch ...	Aromatic, atimulant, carminative, and stomachic.	Ditto.

No.	Official name.	Local vernacular name.	Therapeutic action.	Where procurable.
		II.—Organic Kingdom—*continued.*		
		B.—Vegetable Products—continued		
57	Amorphophyllus Campanulatus.	Ol ...	Acrid and stomachic ...	Wild and cultivated.
58	Anacyclus Pyrethrum	Ākarkarā ...	Pungent, stimulant, diuretic, and sialogogue.	Spice shops.
59	Ananasa Sativa ...	Anānus ...	Leaf-juice, anthelmintic; fruit, antiscorbutic.	Cultivated.
60	Andrographia Paniculata (creat).	Kālmegh ...	Laxative, stomachic, carminative, anthelmintic, and febrifuge.	Wild.
61	Andropogon Citras ...	Gandha trina ...	Aromatic, bitter, carminative, stomachic, and antispasmodic.	Cultivated in gardens.
62	Andropogon Muricatus (khuskhus).	Benāmul ...	Root; aromatic, diuretic, diaphoretic, refrigerant, and antispasmodic.	Wild and spice shops.
63	Anona Squamosa ...	Ātā ...	Bark, astringent and tonic; leaves and unripe fruit, insecticide.	Cultivated.
64	Anthocephalus Cadumba.	Kadam ...	Bark, astringent, antiperiodic, galactogogue, and aphrodisiac.	Wild.
65	Apium Graveoleus ...	Rādhani ...	Seeds, pungent, stimulant, stomachic, and emmenagogue; root, diuretic and alterative.	Spice shops.
66	Aquilaria Agallocha ...	Agura chandan ...	Wood; aromatic and stimulant ...	Ditto.
67	Arachis Hypogaea ...	Chiner bādām ...	Fruit; laxative ...	Bazar.
68	Areca Catechu ...	Supāri ...	Nut; astringent and anthelmintic	Spice shops.
69	Argamona Mexicana...	Siāl kāntā ...	Juice, alterative, diuretic, and cholagogue; fruit, narcotic.	Wild.
70	Aristolochia Indica ...	Isarmul ...	Stomachic, emmenagogue, abortifacient, and antidote to snake-bite.	Wild and cultivated.
71	Artocarpus Integrifolia	Kāntāl ...	Unripe fruit, astringent; seeds, diuretic and astringent.	Cultivated.
72	Asparagus Racemosus	Satamuli ...	Tubers; tonic, aphrodisiac, galaktogogue, and diuretic.	Wild and spice shops.
73	Baliospermum Montanum.	Danti ...	Seeds; drastic purgative ...	Spice shops.
74	Balsamodendrum Mukul.	Guggul ...	Gum-resin; pungent, stimulant, aromatic, demulcent, aphrodisiac, and alternative.	Ditto.
75	Balsamodendrum Myrrha.	Gandhabol ...	Stimulant and stomachic ...	Ditto.
76	Bambuca Arundinacea	Bāns (bamboo) ...	Young shoots and leaves, aperient and cholagogue; root, diuretic.	Cultivated.
77	Basella Alba and Rubra.	Poi-sāg ...	Demulcent and aperient ...	Ditto and wild.

No.	Official name.	Local vernacular name.	Therapeutic action.	Where procurable.
		II.—Organic Kingdom—*continued.*		
		B.—Vegetable Products—continued.		
78	Benincasa Cerifera ...	Kumra ...	Nutritive, diuretic, and styptic ...	Cultivated.
79	Berberis Aristata ...	Dāru-haridra ...	Diaphoretic, antipyretic, and antiperiodic.	Spice shops.
80	Betula Bhojpatra ...	Bhujjipatra ...	Bark; stimulant and tonic ...	Ditto.
81	Bœrhavia Diffusa ...	Punarnavā ...	Diuretic and stomachic ...	Wild.
82	Bombax Malabaricum	Simul. (Gum mochras).	Bark and gum; astringent, demulcent, and aphrodisiac.	Wild and spice shops.
83	Borassus Flabelliformis	Fermented juice (tāri).	Diuretic, stimulant, and narcotic ...	Licensed shops.
84	Boswellia Sarata ...	Gum-resin (Gandhabiroja).	Expectorant, diaphoretic, febrifuge, and detergent.	Spice shops.
85	Brassica Juncea and Nigra.	Rāi (mustard) ...	Stimulant, stomachic, and emetic ...	Ditto.
86	Bryophyllum Calycinum.	Pātarkuchi ...	Astringent and antiseptic ...	Wild.
87	Butea Frondosa ...	Palāsa (Dhāk) ...	Bark, astringent, stomachic, and aphrodisiac; flowers, diuretic, aphrodisiac, and depurative; seeds, anthelmintic and laxative; gum, astringent (known as Bengal kino).	Wild; seeds in spice shops.
88	Cæsalpinea Bonducella	Nātā-karanja ...	Nut; antipyretic, antiperiodic, anthelmintic, and styptic.	Spice shops.
89	Ditto Pulcherrima	Krishna-chura ...	Powerful emmenagogue ...	Cultivated as garden flower.
90	Ditto Sapan ...	Bakam-kāstha ...	Wood; astringent and emmenagogue	Spice shops.
91	Cajanus Indica ...	Arhar or Rahar ...	Pulse; astringent, nutritive, and antigalaktogogue.	Bazar shops.
92	Calatropis Gigantea ... Ditto Procera ...	Ākanda ...	Leaves, antiperiodic; flowers, antiperiodic, astringent, expectorant, and anthelmintic; milky juice, diuretic, purgative, emetic, and anthelmintic; root-bark resembles ipecacuanha in action (useful in dysentery).	Wild.
93	Cannabis Indica ...	Leaves, bhāng or sidhi; flowering tops, ganja.	Astringent, stomachic, narcotic, and antiperiodic.	Licensed shops.
94	Capsicum Annum ...	Lanka-marich ...	Stimulant, tonic, stomachic, antiperiodic, and rubefacient.	Spice shops.
95	Carica Papaya ...	Pepe ...	Milky juice and fruit; solvent, stomachic, carminative and anthelmintic.	Cultivated.
96	Carthamum Tinctoria	Kusum phul (safflower).	Stimulant, laxative, and stomachic	Spice shops.

No.	Official name.	Local vernacular name.	Therapeutic action.	Where procurable.
		II.—Organic Kingdom—*continued.*		
		B.—Vegetable Products—continued.		
97	Carum Carui ...	Sājira ...	Aromatic, diuretic, stomachic, carminative, and anthelmintic.	Spice shops.
98	Carum Copticum ...	Yoyān	Aromatic, stimulant, stomachic, and carminative.	Ditto.
99	Carum Roxburghianum	Rādhani ...	Aromatic, stimulant, stomachic, astringent, and aphrodisiac.	Ditto.
100	Caryophyllus Aromaticus.	Lavanga ...	Aromatic, stimulant, stomachic, and carminative.	Ditto.
101	Casia Fistula ...	Bora Sondāl, Bānarlari.	Leaves, laxative; pulp of fruit, stomachic and cathartic.	Ditto.
102	Do. Lanceolata ...	Sonāmukhi ...	Leaves; cathartic (called Indian senna).	Ditto.
103	Do. Sophora ...	Kālkāsandā ...	Stimulant, stomachic, and expectorant.	Wild.
104	Cedras Deodara ...	Devadāru ...	Wood; aromatic, diuretic, diaphoretic, and carminative.	Spice shops.
105	Celsia Coromandelina	Koksim ...	Leaves; astringent and sedative ...	Wild.
106	Cephalandra Indica ...	Telākuchā ...	Leaves, fruit, and tap-root; diminish the secretion of kidney, and useful in diabetes.	Do.
107	Chenopodium Album...	Bethuā sāg ...	Stomachic and laxative ...	Cultivated as potherb.
108	Cinnamomum Camphora	Karpur ...	Stimulant, carminative, and aphrodisiac.	Spice shops.
109	Ditto Tamala	Tejpatra ...	Leaves; aromatic, diuretic, and carminative.	Ditto.
110	Ditto Zeylanicum.	Dāruchini ...	Bark; aromatic and carminative ...	Ditto.
111	Cissamplos Hexandra	Pāthā, Akanādi ...	Stomachic, alterative, and diuretic	Ditto.
112	Citrus Aurantium ...	Kamalā-nebu ...	Aromatic, stimulant, and carminative.	Bazar.
113	Do. Acida ...	Jamir, Gorānebu ...	Stomachic and refrigerant ...	Do.
114	Ditto Bergamia ...	Pāti-nebu ...	Aromatic and antiscorbutic ...	Do.
115	Ditto Vulgaris ...	Kāgji-nebu ...	Aromatic, refrigerant, and antiscorbutic.	Do.
116	Clerodendron Infortunatum.	Bhāut, Ghetu ...	Bitter tonic, febrifuge, and anthelmintic.	Wild.
117	Clerodendron Siphonanthus.	Vāmanhāti ...	Stomachic, astringent, and antispasmodic	Wild and spice shops.
118	Clitorea Ternatea ...	Aparājita ...	Root and seeds, cathartic and diuretic; leaves, demulcent.	Cultivated as garden flower.

No.	Official name.	Local vernacular name.	Therapeutic action.	Where procurable.
		II.—Organic Kingdom—*continued.*		
		B.—Vegetable Products—continued.		
119	Cocos Nucifera ...	Narikal-tel (cocoa-nut oil).	Demulcent and nutritive ...	Bazar shops.
120	Coleus Aromaticus ...	Himsāgar ...	Aromatic, carminative, diuretic, and laxative.	Cultivated in gardens.
121	Corchorus Capsularis	Nālitapāta (jute) ...	Leaves, bitter tonic, febrifuge, and antiperiodic.	Cultivated, and spice shops.
122	Coriandrum Sativum	Dhania ...	Aromatic, stomachic, carminative, diuretic, and diaphoretic.	Spice shops.
123	Crocus Sativa ...	Jāfrān (saffron) ...	Aromatic, stimulant, diuretic, and emmenagogue.	Ditto.
124	Croton Tiglium ...	Jaypāl ...	Seeds; drastic purgative ...	Ditto.
125	Cucumis Momordica ...	Phuti ...	Fruit, laxative; seeds, diuretic ...	Cultivated.
126	Ditto Sativa ...	Sasā ...	Fruit and seeds; diuretic ...	Ditto.
127	Ditto Utilissimus ...	Kānkur ...	Fruit and seeds; cooling and diuretic	Ditto.
128	Cucurbita Pepo ...	Gimi-kumrā ...	Seeds, anthelmintic (useful for tape-worm).	Ditto.
129	Cuminum Cyminum...	Jira ...	Aromatic, stimulant, carminative, and aphrodisiac.	Spice shops.
130	Curcuma Amada ...	Amādā ...	Aromatic	Cultivated.
131	Ditto Longa ...	Halud ...	Aromatic, carminative, cardiac tonic, and alterative.	Spice shops.
132	Ditto Zerembet ...	Mahābhari bach ...	Aromatic, stimulant, and anticatarrhal.	Ditto.
133	Cydonia Vulgaris ...	Behidāna ...	Demulcent and refrigerant ...	Ditto.
134	Cynodon Dactylon ...	Durva ...	Diuretic, refrigerant, and styptic ...	Wild.
135	Cyperus Pertinius ...	Nāgar mutha ...	Bulb; stomachic, astringent, diuretic, and febrifuge.	Wild and spice shops.
136	Ditto Rotundus ...	Mutha ...	Astringent, stomachic, diuretic, and diaphoretic.	Wild.
137	Datura Stramonium ...	Dhatura ...	Anodyne, antispasmodic, and narcotic.	Wild and cultivated, as garden flower.
138	Desmodium Gangeticum.	Sālpani or Chhalāni	Tonic, alterative, febrifuge, anticatarrhal, and aphrodisiac.	Spice shops.
139	Dillenia Indica ...	Chālta ...	Leaves and bark, astringent; fruit laxative.	Wild.
140	Diospyros Embryopteris.	Gāva ...	Bark and unripe fruit; astringent...	Do.
141	Dipterocarpus Turbinatus.	Garjan-tel (oleoresin)	Diuretic and anthelmintic ...	Spice shops.

No.	Official name.	Local vernacular name.	Therapeutic action.	Where procurable.
		II.—Organic Kingdom—*continued.*		
		B.—Vegetable Products—continued.		
142	Dolichos Bulbosus ...	Sānkāla ...	Tubers, diuretic, laxative and refrigerant; seeds, narcotic.	Cultivated.
143	Ditto Gladiatus ...	Sim ...	Leaves, laxative	Ditto.
144	Ditto Sivensis ...	Varvati ...	Seeds; diuretic, laxative, and galactogogue.	Ditto.
145	Eclipta Alba ...	Kesute ...	Root; emetic and purgative (substitute for taraxacum).	Wild.
146	Elettaria Cardamomum	Chhota elāchi ...	Aromatic and carminative ...	Spice shops.
147	Embelia Ribes ...	Viranga ...	Seeds; stomachic, carminative, and anthelmintic.	Ditto.
148	Enhydra Fluctuans ...	Heloncha ...	Bitter, laxative, and antibilious ...	Wild in tanks.
149	Entada Scandens ...	Gilla ...	Seeds; emetic, febrifuge, and tonic	Spice shops.
150	Ervum Lens ...	Masur (lentil) ...	Nutritive, astringent, and detergent	Bazar shops.
151	Erythrina Indica ...	Palte-māndār ...	Bark; stomachic, anthelmintic, and febrifuge.	Wild.
152	Eugenia Jambolana ...	Kālajām ...	Leaves and bark, astringent and anthelmintic; seeds check conversion of starch into sugar; useful in diabetes.	Wild and cultivated.
153	Eulopia Campestris ...	Sālam-michhri ...	Nutritive	Spice shops.
154	Eupatorum Ayapana...	Āyāpāna ...	Aromatic, astringent, and diaphoretic	Wild and cultivated.
155	Euphorbia Antiquorum	Tekāntā-sij ...	Milky juice; acrid, corrosive, and drastic purgative.	Wild.
156	Ditto Neriifolia...	Mansa-sij ...	Milky juice; acrid, rubefacient, and drastic purgative.	Do.
157	Ditto Tirucalli ...	Lanka-sij ...	Milky juice; emetic and cathartic	Do.
158	Ditto Thymifolia	Kshirni or kshirini	Aromatic, astringent, and anthelmintic.	Do.
159	Feronia Elephantum...	Kayel-vela ...	Fruit, aromatic, astringent, and antiscorbutic; leaves, aromatic and carminative; gum, demulcent, (substitute for gum-arabic).	Do.
160	Ferula Narthex ...	Hing ...	Stimulant, carminative, expectorant, and anthelmintic.	Spice shops.
161	Ficus Bengalensis ...	Vata (Banyan) ...	Bark; astringent and refrigerant...	Wild.
162	Do. Glomerata ...	Yajnadumur ...	Bark; astringent and galactogague	Spice shops.
163	Do. Infectoria ...	Pākur	Antispasmodic	Ditto.
164	Do. Religiosa ...	Aswathā (Pipal) ...	Bark astringent; leaves and young shoots, purgative; fruit; cooling and laxative.	Ditto and wild.

No.	Official name.	Local vernacular name.	Therapeutic action.	Where procurable.
		II.—Organic Kingdom—*continued.*		
		B.—Vegetable Products—continued.		
165	Fœniculum Vulgare	Mauri	Aromatic, refrigerant, and aphrodisiac.	Spice shops.
166	Glycine Labialis ...	Māshāni ...	Astringent, nutritive, tonic, and aphrodisiac.	Ditto.
167	Glycyrrhiza Glabra ...	Yasthimadhu ...	Demulcent, laxative, and aphrodisiac	Ditto.
168	Gossypium Herbaceum	Kāpāsa ...	Root-bark, demulcent, diuretic, and emmenagogue; leaves, astringent, tonic, and febrifuge; seeds, demulcent.	Wild.
169	Grewia Asiatica ...	Phalsa ...	Bark, demulcent and astringent; fruit, astringent and antibilious.	Wild and cultivated.
170	Gynocardia Odorata ...	Chalmugra tel (oil)	Alterative and expectorant ...	Spice shops.
171	Heliotropium Indicum	Hāti-sura ...	Juice of leaves, acrid and stimulant	Wild.
172	Hemidesmus Indiens	Anantamul ...	Alterative, diuretic, diaphoretic, and tonic.	Spice shops.
173	Herpestris Moniaria...	Brahmi-sāg ...	Aperient and alterative	Wild.
174	Hibiscus Esculentus	Dheurus ...	Capsule; demulcent, laxative, and diuretic.	Cultivated.
175	Ditto Rosa Sinensis	Javā	Flowers, demulcent, refrigerant, and emetic; leaves, emollient and aperient	Cultivated as garden flower.
176	Ditto Mutabilis ...	Sthalpadma ...	Bark; bitter, astringent, and antispasmodic.	Ditto.
177	Hiptaya Madhablata	Mādhabilata ...	Leaves; bitter, tonic, and cooling...	Ditto.
178	Holerrhena Antidysenterica.	Kurchi (seed, indrayava).	Bark and seeds; astringent, febrifuge, and anthelmintic. (Also known as Wrightia Antidysenterica.)	Spice shops.
179	Hordeum Hexastichum	Yava	Nutritive, demulcent, and astringent	Ditto.
180	Hydroctyle Asiatica ...	Thulkuri ...	Alterative, aperient, and antispasmodic.	Wild.
181	Hygrophyla Spinosa...	Kuliākhārā ...	Demulcent and diuretic ...	Do.
182	Hyoscyamus Niger ...	Khorāsāni-joyān ...	Seeds; stomachic, astringent, and aphrodisiac.	Spice shops.
183	Ichnocarpus Frutescens	Syāmā-lota ...	Tonic, alterative, diuretic, diaphoretic, and aphrodisiac.	Wild.
184	Iperata Cylindrica ...	Ulukhar ...	Root; demulcent and diuretic ...	Do.
185	Indigofera Tinctoria	Nil	Antiseptic	Spice shops.
186	Ipomaea Batatas ...	Sākarkanda ālu ...	Tubers; nutritive and laxative ...	Cultivated.
187	Ditto Turpenthum	Teuri	Rootbark; anthelmintic, carminative, and purgative.	Spice shops.

No.	Official name.	Local vernacular name.	Therapeutic action.	Where procurable.
		II.—Organic Kingdom—*continued.*		
		B.—Vegetable Products—continued.		
188	Jasmina Grandiflora	Jati	Diuretic, anthelmintic, emmenagogue and deobstruent.	Cultivated as garden flower.
189	Ditto Auriculata ...	Juin	Bitter and antibilious	Ditto.
190	Ditto Sambac ...	Velaphul ...	Bitter and lactifuge	Ditto.
191	Jatropha Curcas ...	Gāb-bherenda ...	Milky juice; detergent and styptic	Wild.
192	Ditto Glandulifera	Lāl-bherenda ...	Seed oil; purgative	Do.
193	Juglans Regia ...	Ākhrot ...	Kernel; demulcent, and laxative ...	Spice shops.
194	Kyllinga Monocephala	Nirvishi ...	Root; promotes healing of sinus ...	Wild.
195	Lageneria Vulgaris ...	Lān ...	Pulp; diuretic, refrigerant, and aphrodisiac.	Cultivated.
196	Lallemantia Royleana	Torkmalonga ...	Seeds; demulcent and astringent ...	Spice shops
197	Lathyrus Sativa ...	Khesāri ...	Pulse; astringent and deobstruent ...	Bazar shops.
198	Lawsonia Alba ...	Mehedi ...	Leaves; astringent, alterative, and antiseptic.	Cultivated as hedge plant.
199	Lypidium Sativum ...	Hālim ...	Seeds; demulcent, diuretic, carminative, and alterative.	Cultivated.
200	Linum Usitatissimum	Masina ...	Seeds; demulcent ...	Spice shops.
201	Luffa Acutangula ...	Jhinga ...	Seeds; purgative and emetic ...	Cultivated.
202	Do. Aegyptica ...	Dhundul ...	Seeds; purgative aud emetic ...	Ditto.
203	Do. Echinata ...	Jit Kānkrol ...	Bitter tonic	Wild.
204	Mangifera Indica ...	Ām (mango) ...	Bark, astringent; kernel, astringent and anthelmintic.	Cultivated.
205	Ditto Sylvatica...	Jalpāi ...	Bark and unripe fruit; astringent...	Ditto and wild.
206	Marselia Quadrifolia...	Susni-sāg ...	Astringent, stomachic, and aphrodisiac.	Wild in tanks.
207	Maranta Arundinacea	Tikhur ...	Demulcent and refrigerant ...	Spice shops.
208	Melalenca lenkodendron	Kajupati or Elachi	Oil; carminative, diaphoretic, stimulant, antispasmodic.	Ditto.
209	Melia Azadirachta ...	Nim ...	Bark; astringent, tonic, and antiperiodic; leaves, bitter, anthelmintic, and antiseptic; fruit, antiperiodic and antiseptic.	Wild.
210	Mentha Sativa ...	Padīna (mint) ...	Aromatic and carminative ...	Cultivated as potherb.
211	Mesna Ferrea ...	Nāgeswar ...	Flowers; aromatic, astringent, and stimulant.	Spice shops.
212	Michelia Champata ...	Chāmpā ...	Bark; bitter, aromatic, and antiperiodic.	Cultivated and wild.

No.	Official name.	Local vernacular name.	Therapeutic action.	Where procurable.
		II.—Organic Kingdom—*continued.* *B.—Vegetable Products*—continued.		
213	Mimosa Pudica ...	Lajjavati ...	Diuretic and alterative ...	Wild.
214	Mimusops Elengi ...	Vakula ...	Bark and unripe fruit ; astringent	Wild and cultivated.
215	Mirabilis Jalapa ...	Krishna keli ...	Root; purgative ...	Cultivated as garden flower.
216	Mollugo Hirta ...	Gima-sāg ...	Stomachic and aperient ...	Wild.
217	Momordica Charanti...	Uchchhe and karalla	Leaves and fruit; anthelmintic, stomachic, and laxative.	Cultivated.
218	Monuga Pterygosperma	Sajina ...	Flowers and leaves, stomachic and anthelmintic; root-bark, aromatic, diuretic, and antilithic; gum, anodyne and abortifacient.	Cultivated and wild.
219	Morus Indica ...	Jud ...	Fruit ; aromatic and laxative ...	Cultivated.
220	Mucuna Prurians ...	Ālkusi ...	Root, vermifuge and tonic; seeds, aphrodisiac.	Wild.
221	Murraya Exotica ...	Ekāngi ...	Aromatic and refrigerant ...	Spice shops.
222	Musa Paradisiaca ...	Kala ...	Root, stomachic and astringent; ripe fruit, nutritive and antiscorbutic.	Cultivated.
223	Myrica Sapida ...	Katchāl ...	Bark; aromatic, astringent, and carminative.	Spice shops.
224	Myristica Moschata ...	Jaiphul, nutmeg; jaitri, mace.	Carminative and stimulant ...	Ditto.
225	Nardostachys Jatamansi.	Jātamānsi ...	Rhizome; aromatic, diuretic, and antispasmodic.	Ditto.
226	Nerium Odorum ...	Karavi (Oleander)	Root; abortifacient, alterative, and tonic.	Cutivated as garden flower.
227	Nicotina Tabacum ...	Tāmāk ...	Sedative and antispasmodic ...	Bazar shops.
228	Nigella Sativa ...	Kāla-jira ...	Carminative, aromatic, anthelmintic, diuretic, and galaktogogue.	Spice shops.
229	Nyctanthes Arbortristis.	Siuli or Sephālika	Leaves; expectorant, febrifuge, and laxative.	Cutivated as garden flower.
230	Nymphaea Lotus ...	Sāluk ...	Filaments; demulcent, refrigerant, and astringent.	In tanks and marshes.
231	Ocimium Basilicum ...	Bābni-tulsi ...	Leaves, anthelmintic and stomachic; seeds, demulcent, diuretic, and astringent.	Cultivated, and spice shops.
232	Ditto Gratissimum	Rani-tulsi ...	Ditto ditto ...	Wild.
233	Ditto Sanctum ...	Tulsi ...	Leaves; aromatic and expectorant	Wild and cultivated.
234	Odina Nodier ...	Jiyal ...	Bark and gum; astringent ...	Ditto.

No.	Official name.	Local vernacular name.	Therapeutic action.	Where procurable.
		II.—Organic Kingdom—*continued.*		
		B.—Vegetable Products—continued.		
235	Oldenlandia Biflora ...	Kshet-papra ...	Febrifuge and alterative ...	Wild.
236	Oroxylum Indicum (or Calosanthes I).	Nāsonā ...	Root-bark; astringent, tonic, and diaphoretic.	Do.
237	Oryza Sativa ...	Dhān, paddy; chāwal, rice.	Demulcent, nutritive, and astringent	Bazar shops.
238	Oxalis Corniculata ...	Āmrul sāg ...	Stomachic, refrigerant, and antiscorbutic.	Wild.
239	Pæderia Fœtida ...	Gāndāl ...	Bitter, laxative, and analgesis ...	Do.
240	Pandanus Odoratissimus.	Keyā ...	Flower; aromatic and antispasmodic	Wild and cultivated.
241	Papaver Somniferum	Pasta, seeds ... afim, opium ...	Astringent ... ... Sedative, anodyne, astringent, diaphoretic, and hypnotic.	Spice shops. Licensed shops.
242	Pavonia Odorata ...	Bālā	Aromatic, stomachic, and astringent	Spice shops.
243	Peucedana Graveolens,	Sulpha ...	Aromatic and carminative ...	Ditto.
244	Phaseolus Roxburghii,	Māskalāi ...	Pulse; demulcent, diuretic, laxative, and galaktogogue.	Bazar shops.
245	Phœnix Dactylifera...	Khajjur (date) ...	Ripe fruit; demulcent, laxative, and nutritive.	Ditto.
246	Phyllanthus Emblyca	Āmloki ...	Fruit; refrigerant, laxative, diuretic, astringent, and alterative.	Wild and spice shops.
247	Ditto Distichus,	Noāri ...	Fruit; acid, astringent, and aromatic.	Wild.
248	Picrorrhiza Kuroa ...	Katki ...	Rhizome; bitter, stomachic, and cathartic.	Spice shops.
249	Pimpinella Anisum ...	Metha-jirā ...	Aromatic, stomachic, and carminative.	Ditto.
250	Pinus Longifolia ...	Oleoresin, gandha biroja.	Stimulant, expectorant, diuretic, and demulcent.	Ditto.
251	Piper Betle ...	Pān	Aromatic, carminative, and laxative	Bazar shops.
252	Do. Cubeba ...	Kāvao-chini ...	Aromatic, carminative, and stimulant to the mucous membrane of the respiratory and genito-urinary tracts.	Spice shops.
253	Do. Longum ...	Pipul ...	Stomachic, carminative, and stimulant.	Ditto
254	Do. Nigrum ...	Gol-marich ...	Ditto ditto ...	Ditto.
255	Pistachia Khinjak (Indian Mastich).	Rumi mastaki ...	Diuretic, stimulant, and astringent	Ditto.
256	Do. Vera ...	Pesta	Demulcent, aphrodisiac, and nutritive.	Ditto.

No.	Official name.	Local vernacular name.	Therapeutic action.	Where procurable.
		II.—Organic Kingdom—*continued.*		
		B—Vegetable Products—continued.		
257	Pistia Stratiotes ...	Tokā pānā ...	Laxative and demulcent ...	In tanks.
258	Plantago Isphagula ...	Isapgul ...	Demulcent and astringent ...	Spice shops.
259	Plumbago Rosea ...	Rang-chitra ...	Root; vesicant	Wild and cultivated.
260	Ditto Zeylanica ...	Chita ...	Root; acrid, stimulant, and vesicant	Ditto.
261	Polyanthus Tuberosa	Rajanigandha ...	Bulb; demulcent	Cultivated as garden flower.
262	Pongamia Glabra ...	Darkaranja ...	Diuretic, anthelmintic, and laxative	Wild.
263	Portulacea Oleracea ...	Loni-sāg ...	Diuretic and laxative	Do.
264	Premna Integrifolia	Ganiāri ...	Bitter, stomachic, and carminative	Do.
265	Prunus Amygdalus ...	Bādām (almond) ...	Nut, demulcent and aphrodisiac; oil, demulcent.	Spice shops.
266	Do. Puddum ...	Padmakāstha ...	Refrigerant and stomachic ...	Ditto.
267	Do. Bokharensis ...	Ālu-Bukhāra ...	Aperient and refrigerent ...	Ditto.
268	Psidium Guyava ...	Piyārā	Leaves and young fruit; astringent	Wild and cultivated.
269	Psoralea Corylifolia ...	Hākuchvij ...	Seeds; stomachic, laxative, anthelmintic, and alterative.	Spice shops.
270	Pterocarpus Santalinus	Rakla chandan (sandalwood.)	Wood; demulcent, astringent, and aphrodisiac.	Ditto.
271	Ditto Tuberifolium	Kanak chāmpa ...	Bark; bitter and expectorant ...	Cultivated.
272	Punica Granatum ...	Dālim	Root-bark, anthelmintic; rind of fruit, astringent.	Ditto.
273	Quercus Infectoria ...	Mājuphal ...	Galls; astringent	Spice shops.
274	Raphanus Sativus ...	Mula (radish) ...	Seeds and roots; diuretic, lithotriptic, and laxative.	Cultivated.
275	Rheum Emodi ...	Ren-chini ...	Root; purgative and stomachic ...	Spice shops.
276	Rhus Succedanea ...	Kākrā sringi ...	Galls; astringent, expectorant, and tonic.	Ditto.
277	Ricinus Communis ...	Bherenda (castor oil)	Leaves, galaktogogue; root, anodyne and stomachic; oil, purgative.	Wild and cultivated.
278	Rosa Centifolia ...	Golāp; confection, golkond.	Petals and confection, laxative ...	Cultivated, and spice shops.
279	Rubia Cordifolia ...	Manjishtha ...	Root; astringent and deobstruent	Spice shops.
280	Rumex Vesicarius ...	Chukā-pālang ...	Laxative, carminative, and diuretic	Cultivated as potherb.
281	Saccharum Mara ...	Sara	Root, demulcent, aphrodisiac, and tonic.	Wild.

No.	Official name.	Local vernacular name.	Therapeutic action.	Where procurable.
		II.—Organic Kingdom—*continued.*		
		B.—Vegetable Products—continued.		
282	Saccharum Officinarium (and its products).	Ikshu (sugarcane); gur, misri, and chini (sugar).	Refrigerant and nutritive ...	Cultivated and shops.
283	Saccharum Spontaneum	Kese	Root; laxative, diuretic, and tonic	Wild.
284	Sanserviria Zeylanica	Murva	Root; stimulant, laxative, refrigerant, and cardiac tonic.	Spice shops.
285	Santalum Album	Svetchandan ...	Wood; diaphoretic, astringent, and demulcent.	Ditto.
286	Sapindus Trifoliatus	Ritha	Pericarp of fruit; demulcent, emetic, expectorant, and alterative.	Ditto.
287	Saraca Indica ...	Asok	Root-bark; bitter, astringent, and alterative.	Wild and cultivated.
288	Sansarea Lappa ...	Kur, Pāchaka ...	Aromatic, diuretic, emmenagogue, and anthelmintic.	Spice shops.
289	Scindapsus Officinalis	Gaja pippali ...	Aromatic, carminative, diuretic, and stimulant.	Ditto.
290	Scirpus Kysoor ...	Kesura	Tubers; refrigerant and astringent	Bazar shops.
291	Semicarpus Anacardium.	Bhela ...	Nervine tonic, aphrodisiac, and vesicant.	Spice shops.
292	Sesamum Indicum ...	Til ...	Seeds, demulcent and laxative; oil, demulcent and anthelmintic.	Ditto.
293	Sesbenia Deuleata ...	Danche ...	Leaves, absorbent; seeds, emmenagogue.	Cultivated.
294	Ditto Ægyptica ...	Janti ...	Ditto ditto	Cultivated as garden flower.
295	Ditto Grandiflora...	Vaka ...	Bark, astringent and antiperiodic; leaves, aperient.	Ditto.
296	Shorea Robusta ...	Resin, dhuna ...	Astringent and anthelmintic ...	Spice shops.
297	Sida Cordifolia ...	Svet berela ...	Astringent, diuretic, diaphoretic, and nervine tonic.	Ditto.
298	Solanum Indicum ...	Vrihati ...	Root; astringent, expectorant, and febrifuge.	Wild.
299	Ditto Esculentum	Vegun ...	Leaves; anodyne and narcotic ...	Cultivated.
300	Ditto Nigrum ...	Kākmāchi ...	Berries; alterative, aphrodisiac, and nervine tonic.	Spice shops.
301	Ditto Xanthocarpum.	Kantikāri ...	Root; expectorant, diuretic, and laxative.	Wild.
302	Somida Febrifuga ...	Rohan or Rohra ...	Bark; astringent, antiperiodic, and tonic.	Do.
303	Sonchus Arvensis ...	Vana-pālang ...	Juice; sedative, anodyne, antispasmodic, and diuretic.	Do.

No.	Official name.	Local vernacular name.	Therapeutic action.	Where procurable.
		II.—Organic Kingdom—*continued.*		
		B.—Vegetable Products—continued.		
304	Spinacia Oleracea ...	Pālang-sāg ...	Laxative and antibilious ...	Cultivated as potherb.
305	Spondius Mangifera ...	Āmra ...	Bark and leaves; astringent ...	Wild and cultivated.
306	Streblus Asper ...	Seora ...	Bark and leaves, bitter tonic; seeds, astringent.	Wild.
307	Strychnos Nux Vomica	Kuchila ...	Seeds; bitter and nervine tonic ...	Spice shops.
308	Ditto Potatorum	Nirmmali ...	Seeds; used for clearing water, and as cooling application in ophthalmia.	Ditto.
309	Swertia Chireta ...	Chirāta ...	Bitter, stomachic, tonic, and febrifuge.	Ditto.
310	Symplocos Racemosa	Lod ...	Bark; astringent	Ditto.
311	Tagates Erecta ...	Gendha ...	Flowers; blood-purifier ...	Cultivated as garden flower.
312	Tamarindus Indicus	Tentul ...	Pulp, refrigerant and laxative; tender leaves, astringent.	Wild.
313	Tamarix Gallica ...	Jhan ...	Galls; astringent	Do.
314	Tectona Grandis ...	Segun ...	Bark, astringent; flowers, diuretic	Cultivated.
315	Terminalia Arjuna ...	Arjun ...	Bark; astringent, styptic, and febrifuge.	Wild and spice shops.
316	Ditto Celerica	Bohera ...	Fruit; astringent and cooling ...	Spice shops.
317	Ditto Catapa ...	Bāngla bādām ...	Bark; astringent	Cultivated.
318	Ditto Chebula	Haritaki ...	Fruit; laxative, astringent, and alterative.	Spice shops.
319	Thevetia Neriifolia ...	Kalkephul (yellow oleander).	Kernel of fruit, a strong narcotico-irritant poison; bark, cathartic and febrifuge.	Cultivated as garden flower.
320	Tinospora Cordifolia	Gulancha ...	Bitter; stomachic, antiperiodic, and alterative.	Wild and spice shops.
321	Tragia Involucrata ...	Vichhati ...	Root; laxative, carminative, and alterative.	Wild.
322	Trapa Bispinosa ...	Pāniphal ...	Fruit; astringent and refrigerant ...	Tanks and bazar
323	Tribulus Terrestris ...	Gokshura ...	Fruit; diuretic, tonic, alterative, and nutritive.	Spice shops.
324	Tricosanthes Dioica ...	Patla ...	Bitter tonic, stomachic, and alterative.	Cultivated.
325	Ditto Palmata	Mākāl ...	Fruit-pulp; bitter and purgative...	Wild.
326	Trigonella Corniculata	Prinsāg ...	Cooling and febrifuge ...	Cultivated.

No.	Official name.	Local vernacular name.	Therapeutic action.	Where procurable.
		II.—Organic Kingdom—*concluded.*		
		B.—Vegetable Products—concluded.		
327	Trigonella Fœnum Græcum.	Meti ...	Aromatic, stomachic, carminative, diuretic, and emmenagogue.	Spice shops.
328	Triticum Vulgare ...	Gam (wheat) ...	Demulcent, nutritive, laxative, and aphrodisiac.	Bazar shops.
329	Uncaria Gambir (pale catechu).	Papri-khayer ...	Astringent	Spice shops.
330	Uraria Lagopoides ...	Prisniparni; chākule.	Alterative, aperient, and aphrodisiac	Wild.
331	Vanda Roxburghii ...	Rāsnā ...	Root; aromatic and stimulant ...	Do.
332	Vernonia Anthelmintica	Somrāj ...	Seeds; anthelmintic and diuretic...	Spice shops.
333	Vitex Negundo ...	Nisinda ...	Root, carminative, aromatic, expectorant, and febrifuge; leaves, stomachic, aromatic, and anthelmintic.	Wild.
334	Do. Vinifera ...	Kishmish and Meneka.	Pectoral, laxative, refrigerant, and diuretic.	Spice shops.
335	Wedelia Calandulacea	Bhimrāja ...	Leaves; stimulant, stomachic, and alterative.	Wild.
336	Withania Somnifera ...	Asvagandha ...	Root; stimulant, tonic, alterative, and aphrodisiac.	Do.
337	Woodfordia Floribunda	Dhātaki or Dhāiphul.	Astringent, stimulant, and anthelmintic.	Do.
338	Xanthoxylon Alatum	Jāmbul ...	Seeds; stimulant, aromatic, anthelmintic.	Spice shops.
339	Zingiber Officinalis ...	Ādā (ginger) ...	Aromatic, stomachic, and carminative.	Ditto.
340	Zizyphus Jujuba ...	Kul ...	Pectoral and laxative	Cultivated.

The list is a very long one. Many of them, however, might rather be classified as vegetables or as fruits than as medicines; and such therapeutic actions as stomachic, carminative, demulcent, aromatic, pungent, alterative, mean little. No fewer than twenty-one drugs, including wheat, are classified as aphrodisiacs. I should much doubt whether any of them really have this property. Certainly it must come as a surprise to most people to hear that wheat is supposed in Bengal to have this effect.

Midwives and Parturition.—Midwives in this district are either Haris or Mochis by caste, the great majority being Haris; Mochis attend chiefly on their own caste-fellows. Musalman women do not take up this profession in the Hughli district. Their occupation is usually hereditary; a *dhai* or midwife trains up her daughter to follow in her footsteps; if she has no daughter, she

trains up a young female relative or caste-fellow. The training consists simply in the younger woman watching the proceedings of the older one in a few cases. They are usually attached to particular families or villages, but if a woman gets a reputation as being a skilled *dhai*, she may be sent for to attend cases at a considerable distance from her home. As a rule, they are ignorant, and know little or nothing about the management of labour They are seldom required to take a part in conducting the actual labour, as there is a superstition that the presence of a *dhai* prolongs labour. Usually their first duty is to cut the cord. But, should a *dhai* be called in to a case of difficult labour, her only idea of expediting delivery is to make traction on any presenting part of which she can get hold; when this fails the case is left to nature, or, if the circumstances of the patient allow, she may be advised to call in a medical practitioner.

Usually the *dhai's* work does not begin till labour is completed, when she is called upon to cut the cord, a piece of work which is considered very degrading by any high caste Hindu. If her services are required earlier, the midwife examines the patient, and is usually able to judge of the degree to which dilatation of the os has gone on. To make such examinations she lubricates her hands with cocoanut oil. She assists the patient by rubbing the abdomen and external genitals with mustard oil, and makes her change her position from time to time.

When the time comes for cutting the cord, a new cotton thread is tied around it, about four fingers' breadth from the umbilicus. A few blades of *dub* grass are placed parallel with the cord and tied with it. Both thread and grass have previously been washed in a solution of turmeric. The cord is then divided on the placental side of the knot with a thin bamboo splinter. Nothing is done in the way of tying the cord at the placental end; should there be much bleeding, it is covered with a fine powder made of burnt cowdung. The *dhai* then washes the patient, and puts a binder on her. In many cases this constitutes the whole of the *dhai's* work, her attendance is over. In other cases she remains in attendance on the patient throughout the puerperium.

The fees paid to a *dhai* are not large. In country villages the lower classes pay four annas for cutting the cord of a male child, and two annas for a female child; a meal of rice and vegetables is also given. The higher classes pay somewhat more, but the fee never exceeds three rupees in cash, with a piece of cloth and a brass utensil, such as a *ghara* or *thali*. In towns the fee paid is somewhat higher, and varies from eight annas to two rupees, or in case of a first delivery, even four rupees, in the case of a girl; one to five rupees, or in a first case even eight rupees, in the case of a boy.

When a woman approaches the time of her delivery, an out-house or detached room is prepared for her; and, when labour begins, she retires to this

room with the *dhai* and a maid-servant. All castes, Hindu and Musalman, high and low, follow this practice. After the birth of the child various rites are performed. A fire is kept smouldering at the door of the lying-in room for six days in the hot season, for twenty-one days in the cold weather. An oil lamp is placed in the room and must never be allowed to go out, a special attendant being always on the watch to trim it, as darkness favours the entrance of evil spirits. A horse-shoe is kept among the patient's bedding, as iron also is distasteful to devils, and an earthen vessel, on which the name of God is written, is hung over the door. No one must leave the room before midday, and the infant's clothes must not be washed or dried anywhere but inside the lying-in room. Should the husband, or a male doctor, enter the room, his clothes must be fumigated with the smoke of mustard seed, and, as soon as he has left, any food, milk, or drinking-water in the room must be thrown away.

The *dhai* anoints the infant's body with oil daily, and at long intervals washes it with warm water. The mother is obliged to fast the whole of the first day, and is not allowed to take rice till the fourth day. On the sixth day the barber and washerman are sent for; the former pares the nails of mother and infant, the latter removes the puerperal garments. It is because he washes these garments that the *dhobi* caste is held unclean. On the 9th day the mother is allowed to have a bath. She, however, remains impure for some time longer, among Hindus for 21 days in all in the case of a son, and for thirty days in the case of a daughter; among Musalmans for forty days.

There is a popular superstition among Hindus that on the sixth night the Creator settles the infant's fate in its future life; and for his convenience a palm leaf, an inkpot, and a reed pen, are kept ready in the lying-in room on that night.

Marriage customs.—Among Hindus the following months are considered favourable for marriage on astrological grounds:—*Baisakh*, *Jaistha*, *Asarh*, *Sravan*, *Agrahayan*, *Magh*, and *Phalgun*. Cohabitation begins at the commencement of puberty, and is fixed with relation to this fact. There is no fixed period after the marriage ceremony, nor is it determined by astrological observations. A second ceremony, called "*Puno Bivaho*" or second marriage, takes place, after which cohabitation is allowed.

Among Musalmans, eight months are auspicious for marriage, viz., *Rajab*, *Shavan*, *Id*, *Bakrid*, the two *Rabis*, and the two *Jamads*. These months are considered favourable on religious grounds. Most Musalmans do not marry during *Ramzan* or *Muharram*, but Wahabis marry at any time. Musalmans usually do not marry so early as Hindus; they have usually reached the age of puberty at marriage, and commence cohabitation at once.

Veterinary medicine.—During 1900 the District Board appointed a veterinary assistant for service in the district, the officer appointed having

been educated at the Belgachia Veterinary College, with a district scholarship. During the twelve months from April 1900 to March 1901 this officer treated 452 cases of rinderpest in 48 villages, all in the *sadr* subdivision. Of these 452 cases, 131 died and 321 recovered. No cases of anthrax, foot-and-mouth disease, pleuro-pneumonia, glanders, or charbon, were treated during the year; but a case of glanders was detected in a hackney-carriage pony in Chinsura in 1901. I believe that foot-and-mouth disease also occurs in the district, though less common than rinderpest.

CHAPTER X.

OTHER INSTITUTIONS—JAIL, POLICE, MEDICO-LEGAL.

THE following notes on the history of the jail prior to 1845 are extracted from Toynbee (pp. 53 to 59).

In 1796 the jail is described by the Judge on Circuit as follows :—

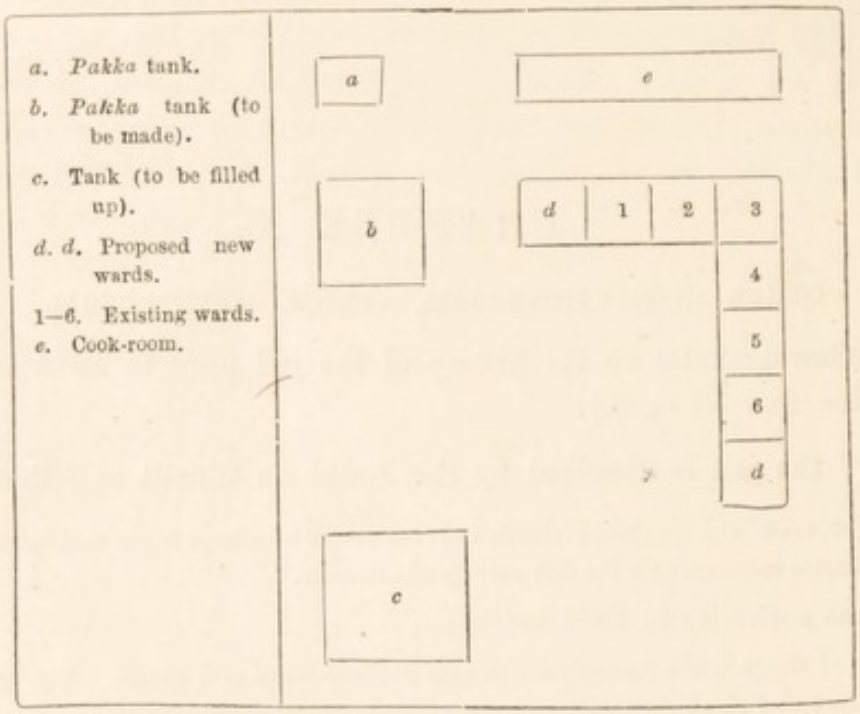
"Built of mats and bamboos; situated in the centre of a large bazar, and neither secure from fire nor in any degree calculated for the safe custody of prisoners."

The same authority in 1806 writes :—

"The jail of Hooghly was formerly the private dwelling-house of a native. The situation is not good, but on the whole I think the building answers the purpose tolerably well."

There is now no record as to where these two first jails were situated. The latter appears to have been rented at Rs. 100 per month, and to have been able to hold 300 to 350 prisoners, with 100 more, when required, in huts outside the building. In 1814 Government sanctioned the construction of a new jail, containing six wards, each 50 × 31 feet, to hold 600 prisoners; to be built at a cost of Rs. 69,580. In May 1814 Captain Cave arrived in Hughli, to select a site, and to superintend the erection of the building. He selected the site where the present jail now stands, as being both generally convenient and above flood level. The main building was finished in 1816, and the hospital in 1817. The total area taken up was 18 *bighas*, $2\frac{3}{4}$ *kathas*, part of which was within the limits of the old Musalman and Portuguese Forts, and as such already Government property. For 15 brick and 233 thatched houses Rs. 7,863 was paid as compensation; for 10 *bighas*, 11 *kathas*, 13 *chitaks* of rent-free land Rs. 1,482; and for 5 *bighas*, 2 *kathas*, 9 *chitaks* of *mal* land the abatement of revenue allowed was Rs. 30. Comparing the rates paid for rent-free land in 1815 with those paid in 1885 for similar land taken up for the Jubilee Bridge over the Hughli, the rates of 1815 averaged Rs. 140, those of 1885 Rs. 432, per *bigha*. As early as 1831 reference is made to a pump by which water was daily pumped up from the river for the use of the prisoners. The rooms over the gate, which now form the Jailor's quarters, were formerly used as store-rooms. Two stagnant tanks, which were afterwards filled up, were blamed for the excessive mortality of the jail in the first half of the nineteenth century.

The following rough sketch of the jail, as it was in 1845, is reproduced by Toynbee from the records :—



The sketch does not give any walls, nor does it show the points of the compass. The then existing wards, 1 to 6, appear to be those numbered 3, 4, 5, 6, in the present jail. The tanks have long since disappeared.

The average number of prisoners in the jail between 1830 and 1845 was 353. In 1830 they were classified as (1) under trial; (2) with irons; (3) without irons. In 1845 the classification was ward 1, non-labouring; 2, in default of security; 3, sentenced by Judge; 4, sentenced by Judge and by *Nizamat Adalat* (High Court); 5, sentenced by Magistrate; 6, under trial. The Magistrate, to whom, under the superintendence of the Judge, the management of the jail was made over by Act XVIII of 1844, wished for two additional wards (*d–d*), to improve the classification.

On 1st January 1820 the jail establishment was as follows :—

	Rs.
1 Jailor	25
1 *Naib* Jailor	15
12 *Barkandazes* (warders) on Rs. 4 each	48
6 Ditto for civil jail on Rs. 4 each	24
Total monthly cost ...	112

Discipline was very lax. In 1835 the Magistrate states that the Jailor, *barkandazes*, and prisoners, all hobnobbed together on terms of perfect equality, and recommends that a European on Rs. 200 per month be appointed Jailor, as he did not consider a native fit for the post. Certainly a native on Rs. 25

per month could hardly be considered fit for it. The following is given as the yearly cost of establishment on 1st January 1838 :—

	Rs.
Fixed establishment, including Civil Surgeon's allowance ...	8,916
Extra ditto	1,389
Diet and expenses of prisoners (daily average 372)	6,187
Contingencies and repairs	351
Total yearly cost ...	16,843

Up to 1795 prisoners were not allowed to smoke, but the restriction wa then withdrawn, as being prejudicial to their health, and they were allowed to purchase tobacco if they chose. In 1805 each prisoner's allowance was fixed at three *pice* per day. In 1831 it was fixed at $\frac{5}{8}$ *anna* per day, the Magistrate having power to increase it to $\frac{3}{4}$ *anna*, or reduce it to half an anna, at his discretion. This system lasted up to the year 1835, each prisoner receiving a daily allowance in money, and purchasing with it what he chose from the jail *modi*, or contractor for food. Mr. E. A. Samuells, who was Magistrate in 1835 and subsequent years, was an officer whose views on jail management were much in advance of his time, for he recommended systems of reconviction registers, task-work, and better classification of prisoners, all of which were subsequently carried out. He considered that prisoners could feed themselves better on their diet allowance than ordinary labourers could do; but strongly advocated giving rations instead of money, which, he said, "would at least do away with the scene of uproar and confusion which takes place at the *modi's* shop, inside the jail, on the return of the prisoners from their daily tasks—a scene disgraceful in the extreme. It would also put a stop to the petty pilferings of the Jailor and his subordinates; and as the prisoners would *not* prefer it, it would have the advantage of being an additional deterrent."

The ration system was introduced in Hughli Jail on 1st January 1836. The rations, which were at first given uncooked, were $\frac{3}{4}$ *seer* rice, $\frac{1}{8}$ *seer* dal. $\frac{1}{2}$ *chitak* each of *ghi* and salt, 10 *gandas* worth of vegetables, 20 *gandas* worth of firewood, with 5 or 6 *chilams* (pipefuls) of tobacco, and leaves to eat off. The prisoners formed messes among themselves, and thus made these rations go further than they would otherwise have done. The case of one up-country prisoner is mentioned as hard, as, being the only man of his class in the jail, he had to mess alone, and consequently only got a full meal once in every three or four days. *Tempora mutantur*, and now fully one-half of the prisoners received into the Hughli Jail from Serampur and Howrah are up-country men, chiefly mill hands. The rations were supplied by a contractor, who obtained daily from the Jailor a list of the labouring and non-labouring prisoners, and on presenting this at the Treasury was paid the amount due at a fixed scale. He then returned to the jail, and was supposed to weigh out each ration before the Jailor. When the prisoners returned from their work on the

roads, or elsewhere, they were marched inside and made to sit in a row, going up one by one to get their rations. Under this system the prisoners are said to have been "very happy and contented." The monthly cost of each prisoner for diet was Re. 1-6-11. In November 1841 the system of cooked was substituted for that of raw rations, the Jailor supplying the food. There were 14 messes, with a cook to each, the food being supplied on plaintain leaves. The prisoners are said to have been indifferent to the change. In 1842 the Magistrate proposed to supply the food by contract instead of through the Jailor.

In the early days of our rule, prisoners were sentenced to various punishments, under the Musalman criminal law, which our judicial officers administered, which to our modern eyes seem either barbarous or absurd. Life-convicts were branded on the forehead, with their name, crime, date of sentence, and name of the sentencing Court. It must have been hard to get all that legibly into a man's forehead! Whipping was commonly inflicted first with a *kora* or scourge, then from 1794 to 1796 with the "cat," after which the *kora* again came into use, until it was superseded by the modern cane or rattan. Up to 1810 executions were carried out at head-quarters. In that year it was ordered that they should take place at the scene of the murder, but this practice was not long in force. The corpses of those hanged were exposed to public view in gibbets, or "hung in chains," up till 1833. Another curious punishment was that of "*Tashir*" or public exposure, the culprit being led through the town mounted on an ass. This punishment, and that of branding, were abolished by Act II of 1849.

All prisoners sentenced to labour were, unless physically unfit, employed in gangs on the public roads. They worked in irons, and at night were secured in tents or huts by a chain passed through the rings of their fetters, and fastened outside by a padlock. In 1817 Sunday was first allowed as a day of rest, also certain native festivals, which are no longer recognized in jails. Up to 1836 labour on the roads was the only work on which prisoners were employed. The recommendations of the Convict Labour Committee, which sat in Calcutta in 1836, brought about a complete change in the mode of employing prisoners, and thenceforth intramural manufactures took the place of outdoor labour on the roads as a general rule. In special cases, however, outdoor labour went on to a much later date. It was revived to some extent in 1891, for a few years. Here, at Hughli, a large amount of convict labour was employed on the making of the Jubilee Bridge, in 1885-87. Many Magistrates were greatly opposed to the change, but Mr. Samuells, at Hughli, was strongly in favour of it. He writes :—

"The convicts prefer the liberty of road-work to the dull monotony of the interior of the jail, except when sent to Bardwan to work under the Executive Engineer, which they dread. There was little or no discipline on the roads, and the prisoners begged many articles of food, &c., from passers-by. The exposure of convicts is attended with no good result upon the morals of the community, and it is always dangerous to familiarize men with the everyday sight of punishment. If left entirely to the imagination, the sufferings of the convict will generally be considered much more severe than they really are. Publicity only tends to dispel the illusion."

The first manufacture introduced into the Hughli Jail was that of paper, started in July 1841, after the manner of the native papermakers of Pandua and Satgaon. The paper made was inferior to that made privately; however, it gave a sufficient profit to enable the Magistrate in 1844 to purchase four looms, and start the manufacture of cloth. The Jailor got 35 per cent. commission on the net profits of manufacture.

The Judge on Circuit in 1807 condemns the existing jail as "not a fit place for the existence of human beings." This was the second of the two early jails which, as quoted above, the same authority had in the preceding year, 1806, described as "answering the purpose tolerably well." Presumably a different officer served as Judge on Circuit in the two years, 1806 and 1807. The mortality, however, had been enormous at this period; between January 1806 and July 1807, no less than 270 deaths had occurred, in a daily average of 462 prisoners. The prisoners who worked on the roads, far from the jail, had no native doctor nor other medical assistance, and, when no longer fit for labour, were sent back to the jail, in many cases only to die. Fever and dysentery were the most fatal diseases. A great deal of the "grevious illness notorious in this jail" was ascribed to the existence of a large tank inside the jail, containing impure and stagnant water, and used as a "receptacle for filth, rotten hemp, and paper rags." This tank was filled up with earth in 1845. Both the ordinary wards and the hospital were often much overcrowded. Toynbee gives the following statistics of the death-rate for some of the years between 1813 and 1845. Some rates, especially those of 1820 and 1830, compare favourably with the rates of the present day:—

Year.	Daily average.	Number of deaths.	Ratio per 1,000.
1813	473	34	71·88
1818	538	19	35·31
1819	545	16	29·35
1820	261	3	11·49
1826	299	26	86·95
1828	352	25	71·02
1829	432	12	27·77
1830	359	8	22·28
1831	388	16	41·23
1832	380	18	47·36
1833	448	33	73·66
1834	362	39	107·73
1845	458	13	28·41

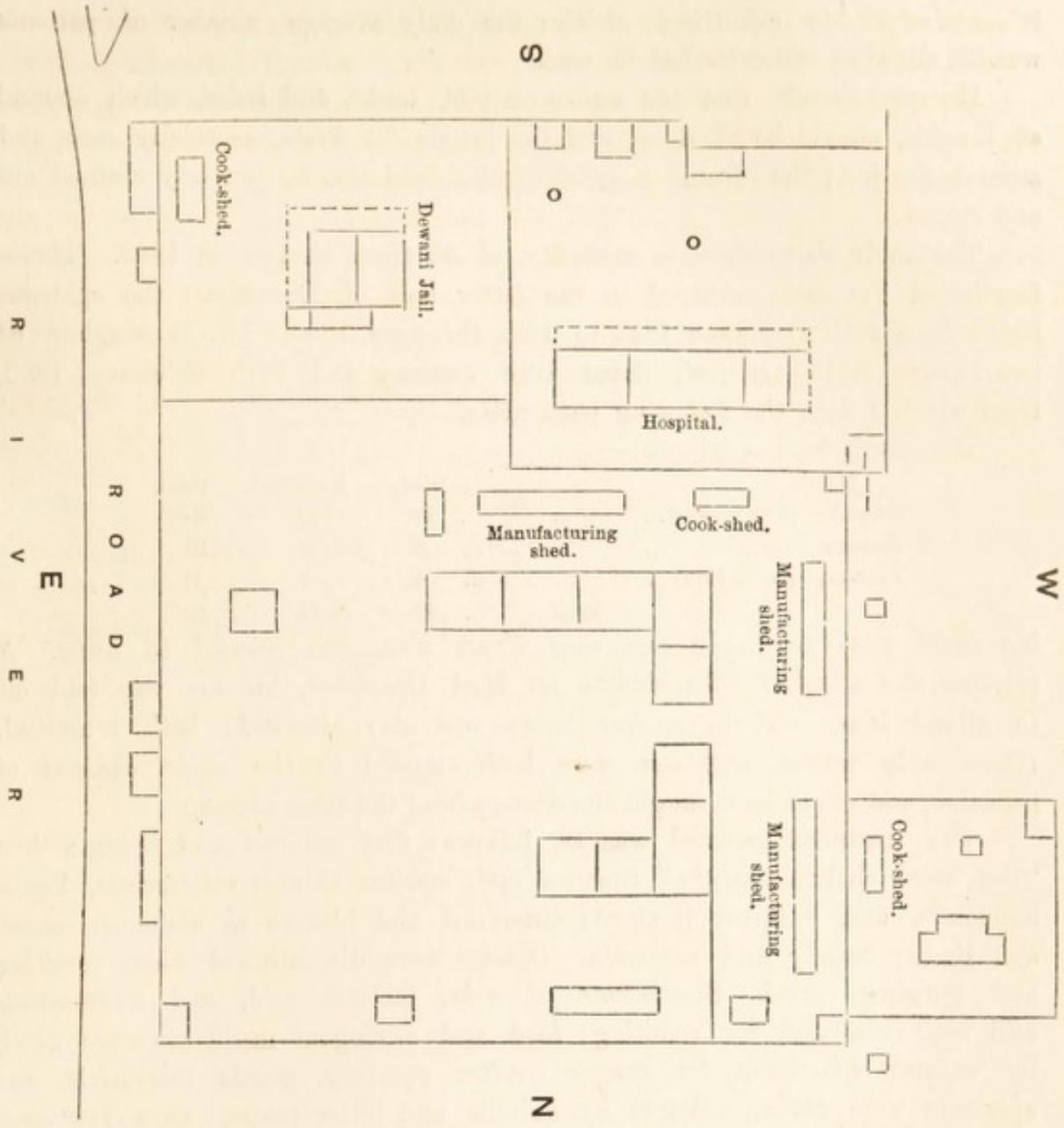
For the history of the jail, subsequent to 1845, I am dependent on several long reports, by Drs. W. H. B. Ross and H. Baillie, in 1852, 1853, 1854; a number of miscellaneous old papers, dated between 1850 and 1870; the jail reports for 1856; and a complete set of reports of the Jail Department, for 37 years, 1864 to 1900, all of which I have gone through.

In 1851 Dr. Ross states that the great prevalence of fevers in the Hughli Jail is due to the dampness of the floors. A long report on the health of the jail, by Assistant Surgeon W. H. B. Ross, dated 5th April 1852, gives the following information as to the strength and mortality of the jail, for the nine years, 1844–52. [The figures for 1852 must have been added to this report after the end of the year, those of cholera deaths I have myself added from another table, compiled by Dr. Ross in 1853, but omitted in this report as being much the same as that given in 1852.]:—

Year.	Admissions to jail.	Daily average strength.	Admissions to hospital.	Total deaths.	Cholera deaths.	Percentage—		
						Sickness to strength.	Deaths to sickness.	Deaths to strength.
1844 ...	4,501	375	949	28	?	21·083	2·95	7·27
1845 ...	6,679	556	2,037	70	?	30·408	3·38	12·58
1846 ...	5,935	498	1,683	68	?	28·35	4·04	13·6
1847 ...	4,756	396	1,196	46	?	25·14	3·55	11·0
1848 ...	4,718	399	859	16	6	18·02	1·16	4·04
1849 ...	7,223	602	1,285	46	9	17·99	3·67	7·6
1850 ...	6,346	502	1,050	42	5	16·54	4·00	7·5
1851 ...	5,928	493	929	47	8	15·67	5·059	9·5
1852 ...	5,571	464	755	70	38	13·55	10·59	15·08

Dr. Ross states that, during the last four years, improvements have been made by the filling-up of the large tank, the construction of *pakka* drains, and the relaying of the floors of the wards with a composition of *kankar* and *surkhi* instead of tiles. Two improvements are still much required—improvement of ventilation, and the construction of latrines at some distance from the sleeping wards.

As regards the size of the jail, he states that the general jail contains six wards, each 50 feet long, 32 broad, and 12 high. Each ward contains 19,200 cubic feet of air, and holds 48 prisoners, thus allowing 320 cubic feet per prisoner.



Plan of Hooghly Jail, 1864.

Date of erection, 1816–1825.
Cost of erection, Rs. 72,221.

In 1825—
Square feet available for prisoners, 13,171.
Calculated to contain 659.

The *Diwani* (Civil) Jail is 32 feet long, 32 broad, and 12 high; it contains 12,288 cubic feet of air, and accommodates 48 prisoners, allowing 256 cubic feet of air per prisoner. The Female Jail consists of three small wards, which collectively contain 8,056 cubic feet, and accommodate 19 prisoners, at 424 cubic feet per prisoner. The hospital contains three wards, one of which is used as a dispensary, and one for lunatics. The centre ward only is used as a hospital, it is 80½ feet long, 20 feet broad, and 14 high;

it contains 22,540 cubic feet of air; the daily average number of patients was 33, allowing 680 cubic feet for each.

He recommends that the numerous pits, tanks, and holes, which abound at Hughli, should be filled up, and the jungle cut down, especially near and around the jail; the drains near the jail should also be properly cleaned out and sloped.

The table above shows a mortality of 38 from cholera in 1852. Three-fourths of the cases occurred in the latter half of December; the epidemic lasted from 19th December 1852 to 19th February 1853. Dr. Ross submitted two reports on the subject, dated 10th January and 20th February 1853, from which I take the following particulars.

The results were as follows:—

Month.	Died.	Recovered.	Total.
December (19th to 31st)...	27	17	44
January	8	9	17
February (1st to 19th)	4	7	11
Total ...	39	33	72

No cause was traced. In one case direct contagion seemed to occur. A prisoner was attacked with cholera on 23rd December, his son was told off to attend him, and in a few hours was also attacked; both recovered. (Presumably father and son were both exposed to the same chances of infection, and might have caught the disease from the same source.)

The treatment pursued was as follows: first calomel and opium; then "the usual cholera mixture," tinctura opii, spiritus ætheris sulphuricus, liquor ammoniæ, and camphor mixture; sinapisms and blisters to abdomen, chest, and limbs; brandy and ammonia. Opiates were discontinued when vomiting and purging ceased. Bicarbonate of soda, tartaric acid, and hydrocyanic acid were prescribed for vomiting; food and astringent medicines were given by enema; chloroform for cramps. After recovery, gentle mercurials and aperients were given, followed by quinine and bitter tonics. In a few cases the motions became of a red colour, but continued watery.

In a report on the civil station and jail, dated 28th April 1853, Dr. Ross states that a Medical Committee assembled at Hughli on 8th May 1852, to consider the sanitary state of the jail, and reported as follows:—

(*i*) That the wards should have their roofs raised five feet.

(*ii*) That numerous apertures should be made in the walls of the wards for ventilation.

(*iii*) That the latrines should be removed to some distance from the wards, with a well-ventilated passage leading into each from the ward, closed towards the ward by a spring door.

(*iv*) That venetians should be substituted for the solid wooden doors and windows, which, when closed, absolutely obstruct ventilation.

None of these changes, he writes, have yet been carried out.

In another report, dated 30th April 1853, only two days later, Dr. Ross gives a statement of the diet given in 1851 and 1852, which was as follows the amounts being those given daily to each prisoner:—

Article.	1851.	1852.
Rice	13 chitaks.	12 chitaks.
Dal	2 „	3 „
Salt	½ „	¼ „
Mustard oil ...	⅛ „	¼ „
Spices	¼ „	¼ „
Fish	6 „	4 „
Vegetables ...	2 „	2 „
Tobacco	¼ „	¼ „
Firewood	1½ seers.	1¼ seers.
Plantain leaves ...	2 pieces.	2 pieces.

The clothing issued in 1852 consisted of white calico cloth for *chadar* and *dhoti*, issued twice, on 30th June and 29th December; and blankets, issued on 17th October.

The rules for work, feeding, &c., were as follows:—

4	A.M.	... Commence to cook morning meal.
6	„	... Morning meal.
7	„	... Leave jail for work.
7-30	„	... Begin work.
12 to 1	P.M.	... Rest.
1	„	... Resume work.
4	„	... Leave off work, return to jail, cook and eat evening meal.
6-45	P.M.	... Lock-up.

To our modern ideas, it seems that, half a century ago, a Bengal jail was, what Sir George Campbell afterwards called it, a perfect Liberty Hall. The prisoners received their rations raw, cooked them for themselves, wore ordinary dress, not prison clothing, and enjoyed the use of tobacco. In fact, the necessity for doing a certain amount of work, the inability to leave Hughli, and the deprivation of female society, seem to have been the only things to remind them that they were convicts in a jail, and not guests of the State, maintained free as a reward for good conduct. The waste of time involved in each prisoner cooking his own food must also have been enormous.

Assistant Surgeon H. Baillie, in a report on the jail and civil station, dated 7th October 1854, states that the Medical Committee of 8th May 1852 attributed the unhealthiness of the jail to three causes:—

(*i*) Overcrowding and insufficient air-space.

(*ii*) Proximity of night latrines to wards.

(*iii*) Existence in jail of a large tank of stagnant water.

As regards (*i*), he states that a new ward for under-trial prisoners was being erected, and was expected to be ready by the end of the year; about (*ii*)

nothing had been done; with respect to (*iii*) the tank had been partly filled up, but the work had come to a standstill during the rains, the *chur* from which sand was taken to fill up the tank being covered by the river.

Toynbee's plan of the jail in 1845 shows three tanks, one of which was still to be made, while one was then to be filled up. Dr. Ross in 1852 reported that the larger tank had then been filled up. The tank which was being filled in 1854 must have been the second and smaller one. As far as I know, the third tank was never made.

Dr. Baillie states that the mortality and sickness among prisoners brought from a distance is no greater than among residents of the locality, except perhaps among those from Jahanabad. An enquiry into the habits of the prisoners as regards stimulants revealed the fact that, out of 385 prisoners in the jail, 39 stated that they were in the habit of taking opium (probably the real number was greater, as some were afraid to admit the fact), 381 tobacco, and only four took neither. Many of those who took opium stated that they also frequently consumed *bhang* or *arrack*. The deprivation of all stimulants, Dr. Baillie suggests, may be a source of disease. The issue of tobacco was stopped in 1854, and its use forbidden.

Dr. F. J. Mouat, Inspector-General of Jails, gives a short description of the Hughli Jail in his annual report for 1856. The jail, he says, was visited several times during the year. He writes:—

"Its internal arrangements are excellent, its manufacture flourishing, its discipline strict, and in some other particulars it approaches more nearly to the standard of Alipur than any other jail in Lower Bengal. It was built in 1816 at an outlay of Rs. 85,803. The criminal jail then contained 9,600 square feet, and the *dewanny* jail 1,051, available for the accommodation of prisoners, of whom it was calculated to be able to contain 608. The *dewanny* jail, female ward, and hospital, are all in separate compounds. The latter contains two wards, 82 and 52×22 feet, with a small compounding shop. In the various compounds were three tanks, which have all been filled up. The ventilation of the old criminal wards was defective, and the drainage and sewerage of the jail generally bad. Spacious, well-ventilated new wards are in course of erection, a special ward for the Dacoity Commissioner's prisoners has been erected, the jail compound is subdivided by palisades as at Alipore, and excellent new work-sheds have been built."

The number of prisoners in jail on 30th April 1856 was 463,—445 males and 18 females,—sentenced as follows:—

	Males.	Females.
Imprisoned for life		10
„ for more than two years	238	3
„ from one to two years	22	...
„ one year and under	78	4
Security prisoners, under-trials (86), &c. ...	107	1
Total ...	445	18

The behaviour of the prisoners was on the whole good. Three escaped—two from outdoor labour and one from the hospital; the last was recaptured.

Manufactures showed a vast improvement, the staple manufacture being gunny. The results show by far the most substantial and creditable advance of any jail in the province. The manufacturing prisoners already pay more than the cost of their maintenance and guarding. The results of the last two years were as follows:—

	1854-55.	1855-56.
Number of prisoners employed in manufactures	107	108
Net profits realized	Rs. 2,097-5-6	Rs. 5,813-14-7
Average earnings per head ...	„ 19-9-7	„ 53-13-8

The jail has been very unhealthy for the past ten years, during which the average mortality has been 10·62 per cent., 3·92 from cholera, and 6·70 from other diseases. This large mortality "has been due to imperfect ventilation, defective drainage, and bad sewerage. Phthisis, which had previously been overlooked, was also mentioned by Dr. Baillie to be among the causes of mortality. It has also, I have much reason to suspect, been overlooked in many other jails."

The same report mentions that the Howrah Jail, which had only been open four years, had been reduced to the status of a simple lock-up from 31st October 1855, the long-term prisoners being transferred to Alipur, and the short-term ones to Hughli. The chief wards of this jail were old powder magazines, with holes broken in their walls.

The report for 1856 gives a table of vital statistics for the past ten years, which I have reproduced.

The strength of the jail guard was reduced in 1856. A report by the Magistrate, dated 20th March 1856, gives the strength as—

	Per month.
	Rs.
1 *Jamadar* on Rs. 15	15
2 *Naib jamadars* on Rs. 8 each	16
3 *Dafadars* on Rs. 6 each	18
77 *Barkandazes* on Rs. 4 each	308
Total ...	357

The *jamadar's* pay was reduced from Rs. 15 to Rs. 10, and the services of one *naib jamadar* and one *dafadar* dispensed with, reducing the monthly cost to Rs. 338. The Jailor at this time was a European, Mr. Dobson, who drew Rs. 75 per month. Of the 77 *barkandazes*, four each were employed at the lock-ups at Serampur and Jahanabad. The Magistrate proposed reducing the number of *barkandazes* from 77 to 60.

The following were the contract rates for food in 1856. I have added those for 1900, for the sake of comparison; 1900 was a fair average

year, in which prices were normal, neither high nor low. It will be seen that during the 44 years which had elapsed, the prices of all cereals, of spices, meat, fish, and mustard oil, had greatly risen; that of firewood slightly risen; that of vegetables remains the same; salt alone has slightly fallen in price:—

Article.	Price in 1856. Rs. A.	Price in 1900. Rs. A.
Rice per maund ...	1 11	3 4
Arhar dal „ ...	3 0	7 8
Kalai „ „ ...	2 0	5 0
Salt „ ...	4 0	3 11
Mustard oil „ ...	12 0	17 8
Flour „ ...	3 12	7 8
Fish „ ...	8 0	12 8
Meat „ ...	8 0	10 0 beef. 15 0 mutton. 17 8 goat.
Masala (spices) „ ...	5 8	10 0 (average).
Vegetables „ ...	1 8	1 8
Firewood per 100 maunds	22 0	25 0

In 1856 and 1857 frequent complaints are made by the Hughli Jail officers of the condition of prisoners transferred from other jails for labour at Hughli. The central jail system was not introduced for many years after this date, Alipur being the only jail in the province which might then be considered a central jail; but the Hughli Jail was to all intent and purposes a central jail, without the name. It had a large, flourishing, and *paying* industry in the manufacture of gunny, jute mills not being so common then as they are now. Hughli has always been a small district, and the supply of home-made criminals not nearly sufficient to fill the jail, and to carry on the jail manufactures. It was therefore necessary to transfer large gangs of prisoners from other jails, for labour at Hughli, just as long-term prisoners are now transferred to central jails; and complaints are constant that Superintendents of other jails seized the opportunity of transferring prisoners to Hughli to get rid of the weak and sickly out of their own jails, so as to lower their death-rate. Certainly, if the Hughli reports are true, the jail officials here had good reason to complain; and the facts given seem plain enough. Continual complaints are made in 1856 and 1857 of the bad physical condition of prisoners received from other jails; in 1856 large gangs of weakly prisoners were transferred from Bhagalpur, Monghyr, and Murshidabad, for labour at Hughli, and died in numbers soon after their admission here. Out of a batch sent from Barasat in April 1857, one was so sickly as to be unable to walk, and was sent in a *dhuli*. Out of eighty prisoners received from Bardwan in April 1857, three were blind

two had incurable disease, and the rest were aged and infirm, several being actually taken out of hospital at Bardwan for transfer. Again, in March 1861, the Superintendent complains that fifty prisoners sent from Midnapur were all sickly and old. Be it remembered that these prisoners were transferred, not as they might be nowadays, on account of overcrowding in their own jails, but as hard-labour prisoners for manufacturing purposes. Nowadays, in this year of grace 1901, large gangs of prisoners from other districts are not wanted at Hughli; but they are sent here all the same. They are not now, however, sent as hard-labour prisoners, but on account of unavoidable overcrowding in their own jails. The practice of seizing the opportunity of the transfer of a batch of prisoners to get rid of weakly long-term convicts is not yet extinct: out of a batch of twenty long-term men sent from Faridpur in February 1901, not a single one was in good health. On the other hand, out of eighty prisoners received from Jessore from June to August 1901, not more than two were unfit for transfer; and out of thirty received from Comilla in October 1901, not a single one.

I found a number of notes giving the deaths from various causes monthly in 1856. They are unfortunately not complete, but I think are worth reproducing, along with various other medical notes of the years 1856 to 1861.

In August 1856, 18 deaths occurred—1 from small-pox, 3 from cholera, 3 from phthisis, and 11 from bowel-complaint.

In September 1856, there were 24 deaths—12 from diarrhœa, 4 from cholera, 5 from dysentery, 2 from phthisis, and 1 from pneumonia. Fourteen out of the 24 were among the prisoners received in bad health from Murshidabad and Monghyr.

In October 1856, 15 deaths took place—8 from diarrhœa, 3 from dysentery, 2 from fever, 1 each from phthisis and pneumonia.

In November 1856, there were 8 deaths; the causes are not given, but it is noted that all were among prisoners transferred from other districts. Not a single death took place among the Hughli and Howrah prisoners.

In December 1856, 6 deaths took place—4 from diarrhœa, 1 each from dysentery and remittent fever.

In September 1856, there were 625 prisoners in jail, of whom 83 were in hospital. In this month, fifty sick prisoners were transferred to Raniganj for change of air, and accommodated in military huts there; they were brought back in January 1857, much the better of the change.

In 1856-57 drains were constructed; there was then one work-shed in the jail. In 1857 were built four additional wards (wards No. 8 to No. 11 of the present jail), three work-sheds, a cook-shed, and a *godown* for stores.

In October 1857 the number of prisoners fluctuated between 780 and 840; there were 24 deaths—14 from diarrhœa, 7 from dysentery, 1 each from fever

phthisis, and anasarca; between 1st and 4th November nine deaths occurred—4 from phthisis, 3 from dysentery, 1 each from fever and diarrhœa.

In 1858 the Medical Officer and Superintendent recommended the vaccination of every prisoner admitted. In February 1860 there was a severe outbreak of cholera in the jail. In February 1861, out of nearly 700 prisoners in the jail, only 21 were in hospital. From May 1860 to November 1861, there were 106 deaths from bowel-complaints, including 26 under-trial prisoners. In 1861, 8,576 prisoners were admitted to jail, of whom 129 died—81 from bowel complaint, 30 from cholera, and 18 from other causes. (The figures do not agree with those in Dr. Chevers' table, below.)

In 1861, the strength of the jail-guard was as follows:—One *havildar*, one *naik*, and eight sepoys of the 4th Bengal Military Police Battalion as reserve guard; and two *jamadars*, two *dafadars*, and 44 *barkandazes* of the ordinary jail guard. Besides these, there were four *barkandazes* at each of the lock-ups, Jahanabad and Serampur.

Convict overseers were first introduced from 1st May 1860. In May 1861 Hughli is mentioned as the first self-supporting jail. In 1861 no female prisoners were confined in the Hughli Jail; all females convicted were at once despatched to the Central Female Jail at Russa. This jail was closed on 1st January 1884, and its inmates, who were then 81 in number, transferred to Alipur.

In 1862 the then Civil Surgeon, Dr. J. W. R. Amesbury, asserted that the very high mortality of Hughli Jail was due to the prisoners being overworked, Dr. Norman Chevers, who was then officiating as Inspector-General of Jails, came to Hughli, and made a special enquiry into this charge, which he found to be quite without foundation. In his report, which is dated 28th March 1862, Dr. Chevers states that large jails are usually less healthy than small ones, (quite the reverse is the case nowadays), and intramural employment less healthy than extramural. As regards mortality, in 1854 the death-rate of all the Bengal jails was 6·78 per cent., in 1860 it was 13·29. In Hughli in particular, in 1854 the average strength was 494, much below the capacity of the jail, and the nett profits of manufactures little over Rs. 2,000; the death-rate, 12·55, was higher than in 1859, when the jail held a daily average strength of 922,107 above its capacity, and the nett profits were nearly Rs. 19,000. (The ten years' table shows the death-rate of 1859 to be 13·14, a little higher than that of 1854, which was 12·55.) When inspecting Hughli Jail, on 10th December 1861, Dr. Chevers saw every prisoner twice, once at work and once on parade. Many complained about sentences, appeals, &c., but not a single man complained of being overworked—

"There was nothing whatever in the condition of the prisoners, mental or bodily, which, in my opinion, confirmed the idea that they were overworked."

Dr. Chevers gives a table, showing the death-rates of manufacturing and non-manufacturing prisoners separately, for six years, 1856 to 1861, which shows a very much higher death-rate among the latter than the former. It is not explained, however, what was the difference between the two classes. Presumably, with the exception of prisoners under trial, and those sentenced to simple imprisonment, all prisoners in the jail would be labouring prisoners, and might be employed on manufactures or on other work, according to the state of their health, and the discretion of the Superintendent. I give Dr. Chevers' table below. The figures for ratio per cent. of total deaths were not in the original table. I have added them from the ten years' table of vital statistics, which shows also a slight difference in the total mortality of two years, giving 72 deaths instead of 74 in 1856, and 106 instead of 105 in 1861:—

Year.	Capacity of jail.	Manufacturing Prisoners.			Non-Manufacturing Prisoners.			Total.		
		Daily average strength.	Deaths.	Ratio per cent., deaths to strength.	Daily average strength.	Deaths.	Ratio per cent., deaths to strength.	Daily average strength.	Deaths.	Ratio per cent. deaths to strength.
1856 ...	746	239	20	8·36	253	54	21·34	492	74	14·82
1857 ...	815	331	21	6·34	336	130	38·69	667	151	22·40
1858 ...	„	322	35	10·87	492	97	19·71	751	132	16·30
1859 ...	„	459	36	7·84	335	66	18·59	814	102	13·14
1860 ...	„	514	85	16·54	189	76	40·21	703	161	23·99
1861 ...	„	518	69	13·32	78	36	46·15	596	105	13·98

From 1864 onwards these notes are almost entirely taken from the annual reports of the Inspector-General of Jails. As the personal equation enters so largely into all human affairs, and specially into all matters of opinion, I give a list of the various officers who held this post, and compiled the reports, from 1864 to 1900:—

1856—69 ... ... Surgeon-Major F. J. Mouat, I.M.S.
1861-62 ... ... Surgeon N. Chevers, I.M.S. (officiating).
1870—73 ... ... W. L. Heeley, B.C.S.
1874 ... ... Major G. M. Bowie, B.S.C.
1875-76 ... ... H. Beverley, B.C.S.
1877—82 ... ... Surgeon-Major A. S. Lethbridge, I.M.S.
1883-84 ... ... E. V. Westmacott, B.C.S. (officiating).
1885—91 ... ... Surgeon-Major A. S. Lethbridge, I.M.S.
1892—97 ... ... „ D. W. D. Comins, I.M.S.
1898—1900 ... ... Lieutenant-Colonel E. Mair, I.M.S.

Number and measurement of wards, Hughli Jail, 1864.

Designation of wards.	Superficial area.	Cubical contents.	Accommodation at 64 square feet and 648 cubic feet per head.
Labouring No. 1 ...	1,920	23,040	35
„ „ 2 ...	1,600	19,200	29
„ „ 3 ...	1,600	19,200	29
„ „ 4 ...	1,600	19,200	29
„ „ 5 ...	1,600	19,200	29
„ „ 6 ...	1,600	19,200	29
„ „ 7 ...	1,282	14,784	22
„ „ 8 ...	1,700	20,400	31
„ „ 9 ...	1,700	20,400	31
„ „ 10 ...	1,700	20,400	31
„ „ 11 ...	1,700	20,400	31
„ „ 12 ...	1,248	14,976	23
Female „ 13 ...	406	4,872	7
Under-trial „ 14 ...	720	8,640	13
Hospital „ 15 ...	1,045	12,540	19
„ „ 16 ...	1,670	20,040	30
„ „ 17 ...	420	5,040	7
Cells „ 18 ...	80	1,020	1
Total ...	23,541	282,552	426

In 1864 Dr. F. J. Mouat, Inspector-General of Jails, inspected Hughli Jail in November, and writes as follows :—

"Inspected on the 8th and 9th of November 1864. It was in excellent order throughout, the conservancy arrangements particularly good, the books brought up to date, the industrial department in a satisfactory state, and the prisoners healthier in appearance than usual. . . . A large and gratifying diminution of sickness and mortality to less than half the decennial rate, a result that I attribute chiefly to the excellent arrangements and constant personal attention of the present Civil Surgeon, and to great improvements in the conservancy of the jail from the introduction of the dry-earth system. . . . In the Hughli Jail, where the bulk of the convicts are likewise employed in gunny-weaving, all singing and talking in the wards at night has entirely ceased. The stillness and silence of sleep prevail, the prisoners are too thoroughly tired even for the gossip which is so dear to every Bengali in his normal state."

In this year the jail privies were remodelled, the dry-earth conservancy system introduced, as mentioned above, and eight work-sheds nearly completed. Five *bighas* of ground adjoining the jail were leased as a garden.

Howrah Jail is again mentioned. Since its reduction to a lock-up in 1855, the daily average strength of this jail had gradually risen again from 12 in 1856 and 24 in 1857 to 80 in 1858, 130 in 1862, 127 in 1864. Howrah Jail was again, and this time finally, reduced to a lock-up in 1871.

This year's report gives tables of vital statistics for all jails in the province for ten years, 1854 to 1863, showing the number of admissions from all the chief causes, the death-rate, sick-rate, &c. I have extracted this table, as also a similar table from the report for 1856, giving the same information for the ten years 1846 to 1855. The two tables overlap, 1854 and 1855 being included in both of them. The classification of diseases differs so much from that in use at the present day, that they cannot well be compared with present figures. It is, however, interesting to compare the two together. The death-rate of the second period, average 15·44, is much higher than that of the first, average 10·62. Especially, the number of cases of cholera admitted in the second period, 867, is more than double that of the first, 367. The death-rate from cholera of the second period, average 30·21 per cent. of cases, seems low, as the general experience, I think, is that about fifty per cent. of cholera cases die. The jail seems, to our modern ideas, greatly overcrowded. The accommodation of the jail was the same as it is now, in superficial and cubic space, number of wards, &c.; but the capacity of the jail now is only 430, whereas the same buildings were then expected to hold 815 prisoners, nearly double the number, according to Dr. Norman Chevers' tables. Only three years in the first period, and one in the second, show a daily average strength of less than 430. The figures for diseases of the liver are very curious. The first ten years show 15 admissions to hospital under this heading, the second ten years show 672! And of these 672 admissions, no less than 634 were in 1862, while there were none in either 1861 or 1863. In 1862, also, the number of admissions for diseases of the stomach and bowels, 132, is very small, this

being the only year out of the whole 18 in which the admissions under the in 1862 entered all cases of bowel-complaint as diseases of the liver, or else

Hughli Jail, Vital Statistics,

Year.	Fevers.	Eruptive fevers.	Diseases of lungs.	Diseases of liver.	Diseases of stomach and bowels.	Epidemic cholera.	Diseases of brain.	Dropsies.	Rheumatic affections.	Venereal affections.	Abscesses and ulcers.	Wounds and injuries.	Diseases of the eyes.	Diseases of the skin.
1846 ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1847 ...	213	1	69	...	266	59	19	5	54	9	65	11	12	7
1848 ...	202	...	53	...	226	13	19	2	37	10	41	14	8	4
1849 ...	211	1	87	3	392	38	24	...	50	12	77	8	15	5
1850 ...	171	5	75	...	272	12	28	4	32	11	59	17	24	5
1851 ...	189	2	49	2	198	22	34	6	33	3	49	16	8	6
1852 ...	134	5	94	...	188	79	60	9	56	10	78	19	11	8
1853 ...	164	2	56	3	262	54	39	...	56	10	57	11	7	8
1854 ...	190	2	49	6	406	60	26	...	85	18	39	5	21	9
1855 ...	189	...	50	1	293	30	7	5	101	6	64	13	10	12
Total ...	1,663	18	582	15	2,503	367	256	31	504	89	529	114	116	64

Hughli Jail, Vital Statistics,

1854 ...	190	2	49	6	406	60	26	...	85	18	39	5	21	9
1855 ...	189	...	50	1	293	30	7	5	101	6	64	13	10	12
1856 ...	256	2	60	2	461	19	5	1	76	15	63	13	13	17
1857 ...	530	1	146	9	871	35	17	5	103	27	64	...	18	30
1858 ...	529	7	230	15	935	116	14	12	91	24	75	32	12	14
1859 ...	488	6	156	4	809	54	6	7	32	24	58	17	8	45
1860 ...	417	...	35	1	755	206	12	2	28	18	47	14	12	28
1861 ...	267	...	16	...	553	106	37	7	32	33	64	25	11	43
1862 ...	353	...	23	634	132	137	10	11	36	26	95	17	12	75
1863 ...	408	...	16	...	531	105	3	27	34	91	71	59	12	33
Total ...	3,627	18	790	672	5,746	867	137	79	618	272	640	195	128	306
1864 ...	985	3	54	2	429	34	6	10	104	10	82	15	5	23

head are less than those from fever. It appears that either the Medical Officer there must be a misprint in the figures:—

ten years, 1846–55.

Other diseases.	Treatment after punishment.	Total admissions in each year.	Deaths.			Average strength of prisoners.	Ratios per cent.						
							Sick to strength.	Deaths to strength.			Deaths to treated.		
			Ordinary diseases.	Cholera.	Total.			Ordinary diseases.	Cholera.	Total.	Ordinary diseases.	Cholera.	Total.
...	...	1,510	32	36	68	483	312·63	6·63	7·45	14·08	...	...	4·50
11	...	801	25	12	37	385	208·05	6·49	3·12	9·61	3·37	20·34	4·62
1	...	630	17	6	23	427	147·54	3·98	1·41	5·39	2·76	46·15	3·65
22	...	945	33	12	45	596	158·56	5·54	2·01	7·55	3·64	31·58	4·76
9	...	724	36	5	41	519	139·50	6·94	0·96	7·90	5·06	41·66	5·66
5	...	622	39	8	47	494	125·91	7·89	1·62	9·51	6·50	36·36	7·56
4	...	755	32	38	70	489	154·40	6·54	7·77	14·31	4·73	48·10	9·27
30	...	759	50	29	79	483	175·14	10·35	6·00	16·35	7·09	53·70	10·41
21	...	937	35	27	62	494	189·68	7·09	5·47	12·56	3·99	45·00	6·62
8	5	794	22	15	37	421	188·59	5·22	3·56	8·78	2·88	50·00	4·66
111	5	8,477	321	188	509	4,791	176·94	6·70	3·92	10·62	3·96	51·23*	6·00

* Should be 41·65.

ten years, 1854–63.

21	...	937	35	27	62	494	189·68	7·08	5·47	12·55	3·99	45·00	6·62
8	5	794	22	15	37	421	188·60	5·23	3·56	8·79	2·88	50·00	4·66
26	1	1,039	60	12	72	486	213·79	12·35	2·47	14·82	5·18	63·16	6·93
25	1	1,882	139	12	151	674	279·23	20·62	1·78	22·40	7·53	34·29	8·02
58	1	2,165	97	35	132	810	267·28	11·98	4·32	16·30	4·73	30·17	6·09
147	...	1,861	86	16	102	776	239·82	11·08	2·06	13·14	4·76	29·63	5·48
40	2	1,617	77	84	161	671	240·98	11·47	12·52	23·99	5·27	53·84	9·95
7	...	1,191	92	14	106	758	157·12	12·14	1·84	13·98	8·48	13·20	8·90
29	...	1,590	56	19	75	687	231·15	8·15	2·76	10·91	3·85	13·87	4·71
16	...	1,406	65	28	93	639	220·03	10·17	4·38	14·55	4·99	26·66	6·61
377	10	14,482	729	262	991	6,416	225·71	11·36	4·08	15·44	5·35	30·21	6·84
14	...	1,776	33	7	40	503	353·08	6·56	1·39	7·95	1·89	20·58	2·25

In 1867 the Civil Surgeon, Dr. R. F. Thompson, submitted a report on cholera in the jail for ten years past. The report was submitted on 22nd November 1867, up to which date the figures are carried. He gives the number of admissions and deaths from cholera each month for ten years, in a table which, I think, is of sufficient interest to reproduce in full. The total number of admissions in ten years is 821, of deaths 238—a mortality of only 28·98 per cent. of deaths to cases. I have already remarked, in the preceding paragraph, on what seems to me the extraordinarily low death-rate of cholera in this jail, in the ten years 1854 to 1863. Of course the ten years 1858 to 1867 overlap more than half of the former period. My own experience would put the mortality of cholera at fully fifty per cent. One-half of the cases attacked die. This, I think, is the general experience in Bengal. Norman Chevers, who spent most of his service in Lower Bengal, and who was for many years Principal of the Medical College, Calcutta, Professor of Medicine, and first Physician to the College Hospital, writes ("Diseases of India," p. 313):—

"If we treat our cases steadily upon a system proved by long experience to be rational, we shall probably find that, at the end of an outbreak, at least some 40 per cent. of our cases have recovered."

Maclean, whose experience was chiefly gained at Haidarabad, writes (Tropical Diseases," p. 261):—

"At least a half of the cases even in a bad epidemic recover under various forms of treatment."

No wonder that a mortality of 28·98 per cent., not in one casual outbreak, but extending over a period of ten years, in which at least a dozen serious outbreaks occurred; and this, too, in a jail, where, of all places, the patient's previous history, as well as the time of illness, has been under constant and careful supervision, seems remarkably small. But some of the individual outbreaks of cholera give a very much smaller death-rate than the average of the whole period, *e.g.*, April 1861, 32 cases and 7 deaths; September 1861, 14 cases and no deaths; October 1861, 12 cases and one death; March 1862, 28 cases and 3 deaths; April 1862, 36 cases and 7 deaths. No doubt the first thing that will occur to any one who may ever read this will be that a great many of the cases recorded as cholera were not cholera at all, but simply severe diarrhœa. That was exactly my own idea. But in May 1901 cholera broke out in the Hughli Jail, eleven cases occurred (including a warder), and only three died. The first case died on the day of attack, having showed no signs of improvement. The two next lingered for four and three days respectively, and one of them showed distinct signs of improvement, though he afterwards relapsed and died. The other eight, much to my surprise, all recovered, the two last attacked being the two first to recover, and improve so far as to be out of danger. Of course the same argument may be applied to me, as I had previously applied to my predecessors, and it may be said that the disease from

which these patients suffered was not true cholera at all. To this I can only reply that the first three were all typical cases of cholera, the first of the rapidly fatal form, the other two of the less virulent form, with gradual death from exhaustion; and as regards the eight who recovered, all suffered from rice-water vomiting and purging, from collapse, and from suppression of urine, from 36 up to 60 hours, in different cases; and four of the eight also suffered from cramps. According to this table, the worst month for cholera in the jail is October, followed by April. The figures for the district as a whole are very different; certainly April is usually one of the chief cholera months, but as a rule the cholera season, after the diminution of the disease in the rains, has hardly begun again in October, November being the first month in which the cholera mortality appreciably rises:—

HUGHLI JAIL.

Admissions and deaths from cholera for ten years, 1858—67 (22nd November 1867).

Month.	1858.		1859.		1860.		1861.		1862.		1863.		1864.		1865.		1866.		1867.		Total.	
	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.
January	32	11	4	...	...	...	...	...	2	...	3	2	1	...	3	1	...	...	...	...	45	14
February	5	...	5	...	36	13	...	...	3	...	18	2	17	6	...	...	...	...	...	...	84	21
March	6	1	3	...	8	2	4	3	28	3	7	1	2	...	...	...	10	3	...	...	68	13
April ...	4	...	4	...	20	8	32	7	36	7	5	2	5	...	6	4	...	...	10	4	122	32
May ...	1	...	...	...	...	...	20	...	2	...	3	...	3	...	1	...	2	2	...	...	32	2
June ...	1	...	1	...	...	...	4	...	3	...	7	2	...	...	...	...	1	...	...	...	17	2
July ...	17	7	1	...	...	...	4	4	13	4	3	...	1	...	1	...	4	2	...	...	44	17
August ...	23	10	2	...	7	3	6	4	19	4	...	...	4	1	2	...	...	...	...	...	63	22
September	18	2	...	...	8	1	14	...	3	...	...	...	...	...	1	...	6	4	...	...	50	7
October ...	8	4	33	16	81	31	12	1	11	1	1	...	1	...	2	1	...	...	...	...	149	54
November	...	...	1	...	13	8	6	...	7	...	39	19	...	...	...	...	...	...	1	...	67	27
December	1	...	...	...	53	21	4	...	2	...	...	...	...	...	1	...	19	6	...	...	80	27
Total ...	116	35	54	16	226	87	106	19	129	19	86	28	34	7	17	6	42	17	11	4	821	238

Mortality per 1,000 ... 28·98

In connection with this cholera table may be noted a report, also by Dr. R. F. Thompson, on an outbreak of cholera in the jail in September 1870.

The disease first appeared on the 2nd, the last case was attacked on the 9th November: in this period 38 cases and 19 deaths occurred; there were also 20 admissions for choleraic diarrhœa during these eight days. Wards Nos. 1 to 11 each contributed one or more cases, the largest numbers being seven from ward 9 and five each from wards Nos. 7 and 10; wards Nos. 6 and 11 only had one case each. Of the 38 cases, 26 were on gunny-work, 5 on spinning, the rest on miscellaneous labour, not more than one case on any kind of labour. It is not stated how many of the total prisoners in jail were on gunny-work. The outbreak was attributed to the emanations from a quantity of decayed wheat stored in a godown near the jail.

In 1868 the Magistrate, on the 26th February, asked that 120 long-term prisoners might be sent to Hughli Jail, there being only 473 prisoners in the jail, as compared to 593 on 25th February 1867. He also states that prisoners give more realized profits per head in this jail than in any other in the province, except Alipur; and that the cost of feeding them is less than in any other jail in the Division; while at this time there were only 14 in hospital out of 473 prisoners in jail.

The annual report for 1868 states that, at Hughli Jail, the mortality was 0·54 per cent.; the sick rate, which was 144·33 per cent. of mean population, was 20·94 per cent. more than in the preceding year. The prevailing diseases were fever, diarrhœa, and dysentery. There were six cases of cholera with two deaths, the total mortality being 3·89 per cent. One prisoner died from rupture of spleen, caused by a fall. There was no overcrowding, the sanitary arrangements were excellent, and the jail maintained a high standard of health. "At Hooghly, cholera is endemic, and raged with great severity in nearly every year until 1864, when the dry-earth conservancy system was introduced. Since that time it has diminished gradually and remarkably in severity."

The annual report for this year contains a special report on castes and crimes, district by district (Vol. II, pp. 164–70). There is much interesting information on this subject as regards some districts, but nothing of interest in the notes on Hughli.

In 1869 the executive charge of jails, except those at Murshidabad, Malda, and Dakka, was transferred from Magistrates to Civil Surgeons, from 1st January. Jails were divided into four classes—(1) over 500 prisoners, allowance Rs. 150 per month; (2) 300 to 500 prisoners, allowance Rs. 100; (3) 150 to 300 prisoners, allowance Rs. 75; (4) under 150 prisoners, allowance Rs. 50. Hughli fell in the first class. In 1869 also penal diet was first introduced. In November 1869 the Superintendent complained of thefts from the jail garden. This is a complaint which may still be made at the present day, the garden being separated from a low quarter of the town only by a wall

some three feet high. In 1869-70 a Wahabi state prisoner, Maulvi Amirudin by name, was confined in Hughli Jail.

The report for 1870 states that Hughli Jail was very unhealthy in both 1869 and 1870, although sanitary arrangements were carefully carried out. At this time the jail guard consisted entirely of police. The strength and pay of this police guard was as follows, and may be compared with the strength, given above, for 1856 and 1861, and that for the present day, given below :—

		Monthly rate.	Yearly rate.
		Rs.	Rs.
1 Third grade Head-constable on Rs. 15	...	15	180
1 Fourth „ „ on „ 10	...	10	120
3 Second grade constables on „ 8 each	...	24	288
12 Third „ „ on „ 7 „	...	84	1,008
13 Fourth „ „ on „ 6 „	...	78	936
Total	...	211	2,532

In the report for 1871 the subject of epidemic fever is referred to. The Bardwan jail was the greatest sufferer in this respect :—

"The Hooghly Jail, in spite of excellent arrangements, suffered also from the prevailing epidemic fever, which raged especially in the Jahanabad subdivision. The prisoners received from this subdivision were all anæmic and weakly. When cholera prevails in the town, it is impossible to keep it out of the jail; there were eight fatal cases out of 13 attacked in the month of October. The Howrah Jail is now a mere lock-up, for short-term and under-trial prisoners."

About escapes, Mr. W. L. Heeley, B.C.S., the Inspector-General, says :—

"At Hooghly men are taken to bathe in the river, and run away. At Serampur, a prisoner is last seen sweeping the Treasury guard-room, and slips away into French territory."

About labour he says :—

"At Hooghly there is no penal employment, except the oil-pressing, and there are more men than can work them. A tread-mill will be provided in this jail."

This tread-mill was not finally set up till three years later, in 1874. The Inspector-General's views on corporal punishment are also interesting, in these less robust days, when the infliction of flogging as a punishment is discouraged, and reserved for the most serious offences, for fear that the professional thief, the *dakait*, the murderer, the forger, or the fraudulent embezzler of other people's money, may be brutalized by the application of the cane. From my own experience of fifteen years' jail work, I completely agree with Mr. Heeley as to the advisability of corporal punishment. Its chief defect is that thirty stripes, the maximum number allowed, is not sufficient to affect the hardened professional criminal, who has undergone this punishment before. I quote the Inspector-General's remarks on the subject in full :—

"The number of corporal punishments [2,214 in 1871] has largely increased since the previous year, when it was 1,324 [and in 1,869, 1,204]. I do not think that any punishment is more effectual, and I have taken every opportunity of encouraging it. In the case of free men, the punishment conveys a sense of degradation, which renders it often disproportioned to the offence, but in the case of prisoners, such considerations are out of place, and it is well to impress

on them that the real degradation consists, not in the treatment they undergo in jail, but in the circumstances which have brought them there."

In 1900 corporal punishment was inflicted only 278 times in all the jails in Bengal.

The report for 1872 describes Hughli Jail as follows. A good and commodious jail, but situation, in a thickly populated part of town, is against it :—

"Cleanliness has been carefully attended to, and the sanitation is excellent. Professional visitors always praise the jail, yet the mortality this year has been very considerable, 9·03 per cent. Hughli jail has never been healthy, the average death-rate of eleven years back was 11 per cent. higher than any jail in the Bardwan and Presidency Divisions, but in all the worst years there seems to have been considerable overcrowding. The most fatal disease was not the Hughli fever, but dysentery, which is pre-eminently a jail disease . . . . The amount of fatal dysentery at Hughli is very remarkable, as that jail is a model of careful conservancy. There were three deaths in the unhealthy subdivision of Jahanabad" [*i.e.*, presumably in the Jahanabad lock-up].

A list of occasions on which jail death-rates have exceeded twenty per cent. during the last fifteen years is given in the report. Hughli appears in the list once, with 21·57 per cent. in 1857. (The ten-years' table, 1854 to 1863, gives the death-rate of Hughli Jail in 1857 as 22·40, and that of 1860 as 23·99.) In all there are 33 entries; the highest being the very small jails of the Khasia hills (Shillong), 87·50 in 1863, and of Sinhbhum, 75·00 in 1866. Of the larger jails, the highest ratio is shown by Monghyr, 45·11 in 1863.

Dengue was prevalent in Hughli, and indeed throughout Bengal, in 1872. The jail report does not mention it, but the Sanitary Commissioner's report for 1872 states that, between May and October 1872, there were 102 cases in the jail, but no deaths.

The admissions for fever in 1872 and 1873 show a curious contrast. In 1872 there were 344 admissions to hospital, but no deaths, from "intermittent fever;" two admissions and one death from "remittent and continued fever." In 1873 the conditions are just reversed; 309 admissions and one death from "remittent and continued fever;" no admission nor death from "intermittent fever." As the same Superintendent was in charge during both years, the personal equation will not account for the difference.

In 1873 Mr. Heeley remarks that in some of the larger district jails, *e.g.*, Hughli, it will sooner or later be necessary to appoint gazetted officers as Superintendents, as a sole and separate charge. He also states that a new lock-up is badly required at Jahanabad. In this year the cells of Hughli jail were built, at a cost of Rs. 6,090, and the mark system was introduced. Hughli made a profit on manufactures of Rs. 13,678, or Rs. 41-10 per prisoner, the chief industry being sewing and weaving gunny bags. The Inspector-General remarks that Hughli prisoners confined in the jail of their own district suffered more in health than either Hughli prisoners removed elsewhere, or prisoners transferred from other jails to Hughli. This, I think, is still the case, at least provided that the prisoners transferred either to or from Hughli were in fairly good health at the time of transfer. At this time no

Civil or female prisoners were kept in the Hughli Jail, all such prisoners being transferred to Serampur, and kept in the lock-up there.

In 1873 the Mohant of Tarakeswar was an inmate of the Hughli Jail for a time. He was charged with adultery with a woman named Elokasi, whose husband, Nobin Chunder Banerjee by name, murdered her on that account, and was also in Hughli Jail at the same time as the Mohant. The two men were confined in such a way that they never saw each other in jail. By order of the Inspector-General the Mohant was transferred to the Presidency Jail.

In 1874 the Inspector-General remarks that Hughli is the largest jail in the Bardwan Division, and always contains a number of very bad characters. This is still the case, the Calcutta professional criminal if convicted at Howrah being drafted off to Hughli as a matter of course. For the benefit of such prisoners the tread-mill, ordered in 1871, was set up in 1874. When this form of punishment or of labour disappeared I cannot say; it is no longer in use here. In November 1874 warders were substituted for police as a jail guard, 2 head warders, and 22 warders being allowed to Hughli.

Manufactures were again very profitable this year. Hughli stands third in the province in this respect, the two best being Alipur and the European penitentiary at Hazaribagh. At Hughli the total profit was Rs. 14,487, the average profit per prisoner Rs. 34-11-6. In 1874 Hughli showed the highest death-rate of any jail in the province, 5·82 per cent. from cholera alone, from which 26 deaths occurred, and a total death-rate of 11·32 per cent.

In 1875 the result of manufactures at Hughli was very unsatisfactory, owing to gunny-bag sewing being stopped, through depression in the gunny market. The average profit per head of prisoners employed on manufactures was only seven annas one pie.

It is noted that the detention of prisoners in the lock-up at Serampur was the longest in the province, the average detention at Serampur being 48·09 days, the average of the province 8·05 days. In spite of this, Serampur made a loss of Rs. 37 on manufacture during the year. Only nine lock-ups made an actual loss, and that at Serampur is the greatest.

In 1876 the Inspector-General, Mr. H. Beverley, B.C.S., says of Hughli Jail:—

"Satisfactory, except that the gate is nearly always open, and the prisoners go in and out too frequently."

He suggests that a double gateway should be made, and that a well should be dug inside the jail. He further says that Hughli is one of the best jails in point of discipline and general management.

As regards manufactures, the Inspector-General says:—

"The balance of stock in hand from 1875, valued at Rs. 24,515, was sold for only Rs. 12,664. The value of this material was calculated at old rates, and this estimated value was not realized in the sales. The jail actually lost nothing in these sales, as the money realized covered.

the cost of the raw material and part of the labour expended. It follows, however, that the Hughli Jail has been taking credit in past years for larger profits than were actually realized."

Dr. Gregg, the Superintendent, writes that there were many cases of spongy gums among the prisoners, especially among those newly admitted to jail.

In 1877 occurred an *emeute* among the prisoners, in which no less than 22 escaped for the time being, the largest scale on which escape from this jail has ever taken place. Dr. Lethbridge, the Inspector-General, describes this outbreak as follows:—

"The proportion [of escapes] in Bengal was, however, unduly raised by the escape of 22 prisoners from the Hughli Jail on the occurrence of an outbreak, which happened on the 7th January, and but for this our ratio would have been only 2·70 per mille. Much discontent was caused by the special release of prisoners on the 1st January, on the occasion of the declaration of the Empire, amongst the prisoners who were not so favoured, and under the impression that it was intended that the clemency of the Crown should have been extended to them as well as to their fellows who were released, and that the jail authorities were responsible for their detention. But as far as could be gathered, the outbreak was not a generally preconcerted one, and was suggested by the opportunity offered at the time, although the idea of a combined escape had been suggested amongst some of the prisoners. It took place on a Sunday at 2 P. M., whilst prisoners were assembled without work in the manufactory yard; a few had been engaged in airing some gunny bags, and were about to be taken back to their places when a file of *mehtars* was being passed out of a back gateway with nightsoil. Some of these prisoners, seeing the opportunity, seized bamboos from the *machan* on which the gunny had been laid out and ran to the gateway; a general rush followed, and 22 succeeded in pushing through before the warders, of whom there were five outside, some of whom were knocked over, recovered from their surprise. These, however, speedily rallied, and with the aid of the *mehtars*, and some convict overseers, who came to their assistance from inside, succeeded in closing and locking the gate. As many warders and police as could be spared were immediately sent in pursuit of the runaways, and recaptured 16 the same day; two also were caught a few days after. The use of the side gateway has since been discontinued; the congregation of prisoners in the work-yard on Sundays has been prohibited; and the prisoners who assisted in quelling the outbreak were suitably rewarded by the grant of special marks."

In 1877 the Hughli Jail again showed a large profit on manufactures, Rs. 14,815, or Rs. 46-1 per head, the next best result to Alipur. This was due partly to Rs. 8,700 being credited to the jail by Government for bags supplied in the famine of 1874, but even without this large sum, the jail made a profit of Rs. 26 per head, or Rs. 2 per head better than the next jail on the list, Russa.

In this year also the Howrah prisoners, who since 1871 had been transferred to the Presidency Jail, were all transferred to Hughli—a system still in force.

In 1878 the profits of manufacture fell to Rs. 2,838. Coir manufacture was introduced, but proved a failure. A Civil ward was provided for the jail, to keep the Civil prisoners of the district, who had hitherto been kept at Serampur. Large transfers took place of old, convalescent, and non-effective prisoners, from the Alipur and the Presidency Jails, to Hughli, Barasat, and Burdwan.

In 1879 Hughli Jail took a large contract for sewing bags, the task fixed was high, and punishments for offences relating to work rose from 1,868 in 1878 to 2,629 in 1879. Three under-trial prisoners escaped from the jail.

In 1880 the manufactures of Hughli are highly praised:—

"There is one district jail in the province that deserves to be separately mentioned for its great success in employing prisoners on remunerative labour. The Hughli Jail has employed, on the average, 318 prisoners daily on gunny-bag sewing for the neighbouring jute mills. With only Rs. 2,507 drawn from the Treasury, it has been able to make a profit of Rs. 10,417, or Rs. 21 per prisoner sentenced to labour, against Rs. 9,207, or Rs. 19-3 per prisoner in 1879. The tasks exacted are high, and the prisoners dislike the work on account of the continuous and irksome labour it imposes on them."

On the other hand, it is stated that Hughli is one of the worst managed jails as regards guarding arrangements, it is very expensively managed, and the warders are very backward in drill.

There were three escapes in all during the year. One convict escaped owing to defective working of the double-gate system. In the other case an under-trial prisoner threatened to commit suicide. The Jailor placed him in a cell, with another prisoner to look after him; during the night both esceped through the ventilator in the roof of the cell. The water-supply works for the jail were nearly finished during the year. It is noted that the cost per prisoner was very high both at Serampur and Jahanabad.

In 1881 again the manufactures receive high praise, while the general management of the jail had greatly improved:—

"The industry in this jail has again made wonderful progress. The average earning per prisoner was Rs. 21 in 1880, but by very careful management the handsome profit of Rs. 18,997, or Rs. 35-8 per prisoner, has been made in 1881. As the total cost of this jail, including establishment, police guards, and every other item, was Rs. 19,209, the jail may be considered self-supporting. This is the first instance in which a district jail has been shown to have arrived at this very satisfactory result. To Dr. Gregg is due the credit of having started and maintained a new and extremely remunerative industry, which affords excellent labour for the prisoners. The discipline and general management of this jail are all that can be desired."

[It may be remembered that as far back as May 1861, the Hughli Jail was said to be self-supporting. Possibly only the actual cost of feeding the prisoners was then considered.]

It is also noted that the expenditure of the jail had greatly decreased, and the long detention of under-trial prisoners is pointed out, the average being 32·57 days.

Nothing special is noted about Hughli Jail in 1882, but in 1883 the manufactures are again praised:—

"This jail has again done extremely well. With an average of 426·28 labouring prisoners, 316·37 were employed daily on the only industries in the jail—bag-sewing and oil-pressing. The profit realized is Rs. 18,698, a considerable increase on that of last year, which was Rs. 16,333 from 306 prisoners. This result reflects great credit on the jail administration."

Hughli is also mentioned as one of the jails in which reduced diet was most largely used as a punishment, 129 cases being thus punished. The warder guard is said to be indifferent; and the long detention of under-trial

prisoners is again remarked, 25·11 days in 1882, 27·19 days in 1883, only Dakka and Bardwan showing a longer detention. This, of course, is a matter with which the Jail Department has nothing to do. One convict and two under-trial prisoners escaped from Serampur sub-jail by climbing over the enclosure wall.

In 1884 Hughli is mentioned as one of the jails "in an especially satisfactory condition." As regards manufactures, it is said:—

"Hughli jail, being entirely dependant on the neighbouring jute mills for work, has, as a matter of course, shared in the general depression. However, a profit of Rs. 11,486-10 has been earned by 278 prisoners on manufactures, out of a daily average of 393, as compared with Rs. 18,698 earned last year with 316·3 out of an average of 426·2 sentenced to labour."

It is also mentioned that more cells are required at Hughli. They have not been supplied to this day, and are very much required indeed. Another note says that the Judge never paid a single official visit to the jail during the year. The report for 1885 makes no special remark about Hughli. In 1886 it is stated that the number of offences relating to work was large, and that the number of floggings at Hughli Jail (12) was the the highest of any district jail in the province. A note by the Superintendent, Surgeon-Major E. G. Russell, in the jail copy of the annual report, states:—

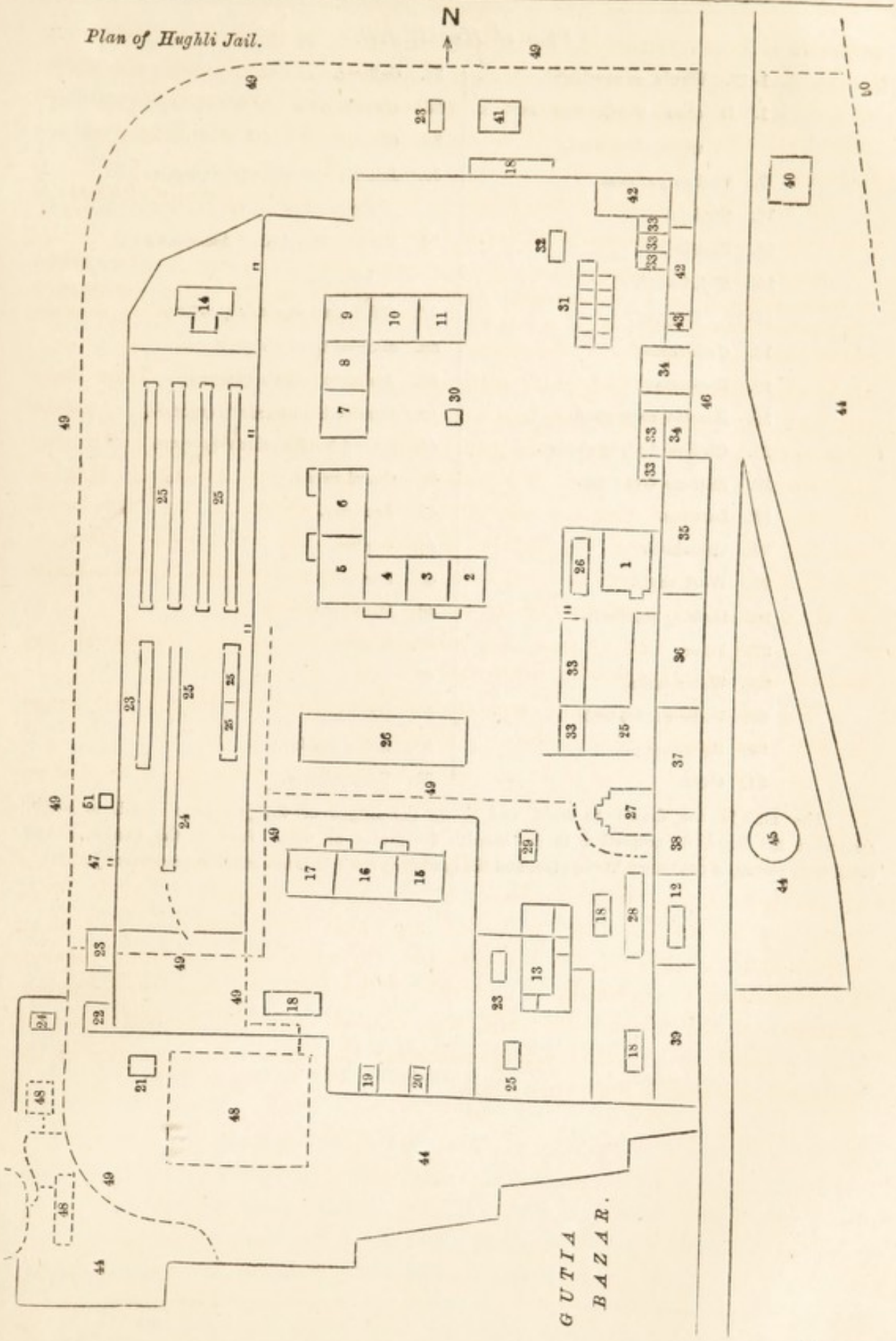
"About 300 men from Presidency Jail transferred here for labour on bridge-works—very insubordinate, assaulting and disobeying convict warders."

The next year in which any special note about the Hughli Jail occurs is 1889, when manufactures are again praised:—

"Hooghly district jail has earned the sum of Rs, 10,332-10, or an average of Rs. 28-10 per prisoner, from bag-sewing for the neighbouring jute mills; 64·38 per cent. of the daily average population were so employed."

In this year also a very important change was made in the accommodation of the jail, on the recommendation of the Jail Commission of 1888. This being one of the unhealthy jails, one in which there were no upper story wards, and one in which the prisoners slept in more than two rows between the ventilating arrangements at each side of the ward, the capacity of the jail, exclusive of the hospital and cells, was reduced from 774 to 382 prisoners, *i.e.*, by about one-half, the buildings remaining the same. A rough plan of the jail, as it now stands, is shown overleaf.

Plan of Hughli Jail.



Plan of Hughli Jail.

1–17. Wards, so numbered.
1. B class ward, now used as segregation ward.
7. Used as *godown*.
12. Civil jail.
13. Female jail.
14. *Hajat* ward.
15–17. Hospital.
18. Cook-sheds.
19. Dispensary.
20. Hospital store-room.
21. Cholera shed, in garden.
22. *Post-mortem* room.
23. Latrines.
24. Cow-sheds.
25. Work-sheds.
26. Bathing platform.
27. Filter.
28. Water tanks.
29. Pasteur filter tank.
30. Rain-gauge.
31. Cells.
32. Gallows.
33. *Godowns*.
34. Office.
35. Jailor's courtyard (quarters above office).
36. Civil Hospital Assistant's quarters.
37. Chief head warder's quarters.
38. Married warder's quarters.
39. Assistant jailor's quarters.
40. Reserve head warder's quarters.
41. Second head warder's quarters.
42. Guard rooms.
43. Armoury.
44. Garden.
45. Pump.
46. Main gate.
47. Ejector.
48. Tanks.
49. Drains.
50. River Hughli.
51. Sentry tower.

[The plan is not drawn to scale, and shows the length of the jail from north to south, somewhat too large, in proportion to its breadth from east to west. Part of the garden, at the south-west corner, is not shown in the plan, and the garden as a whole is too small in proportion.]

It is also noted in 1889 that the health of the warder guard was bad. This note might have been made almost yearly since. Hughli was the only jail in the province the female ward of which was overcrowded. Two under-trial prisoners escaped from Serampur sub-jail.

The next note about Hughli, in 1891, merely says that penal diet was extensively used here, in 43 cases. In 1893 occurs the following amusing note :—

"It seems fallacious to include among deaths persons released on medical grounds, for out of 33 moribunds set at liberty in 1893, ten were still alive in 1894; and there is also an instance on record of a prisoner, who was discharged from the Hughly Jail in 1892 in order that he might die quietly and peacefully among his home friends and relatives, appearing again in jail in 1893 with seven years' sentence against him for house-breaking."

In 1895 a matron, or female warder, was sanctioned and appointed to Hughli Jail; and Rs. 941 was spent in setting up a boiler for drinking-water. In 1896 the jail garden was extended, at a cost of Rs. 5,444. Out of ten prisoners who died in this jail, only one was admitted in good health.

In 1897 Hughli Jail was manufacturing wire-netting for cubicles for the Alipur Jail. Such cubicles would be very useful in Hughli Jail itself but none have yet been allowed.* *Sic vos non vobis.* "The water-works were completed, and now consist of pump, settling tanks, filter beds, boiler, cooling tanks, pipe connections, and hydrants." The pump has been working for many years, is a very old one, and is constantly getting out of order. The cooling tanks are also somewhat objectionable, on account of the difficulty of cleaning them. The rest of the water-works are satisfactory.

In 1899 it is mentioned that Hughli Jail is largely used for the reception of gangs of prisoners from overcrowded jails in Eastern Bengal, but the high mortality cannot be attributed to this, nearly all the deaths during the past year having been among prisoners convicted in the Hughli district, (including Howrah). In 1900 the capacity of the jail was reduced from 462 to 428, by the exclusion of ward No. 7, a small ward which had been for a long time past used as a godown only. This capacity is inclusive of hospital and cells. Exclusive of these, the capacity was reduced from 387 to 353. As mentioned above, the capacity was reduced to 382 in 1889, under the rules drawn up by the Jail Commission of 1888, for calculation of capacity. In the following year it was again raised from 382 to 387.

During the present year, 1901, a Pasteur filter has been put up, and was completed and worked in December. The drain, which forms the boundary of the jail land for some distance on the north and west, was made *pakka*, partly between January and April 1901, partly in January 1902. A Larymore cooking range was supplied to the jail kitchen in March 1902.

* Six wire-netting cubicles for the jail hospital were put up in April 1902.

It may be of interest to give the present strength and cost of the jail establishment, in 1901, for comparison with the figures for 1820, 1856, 1861, and 1870, given above. It is now as follows:—

	Per Month. Rs.
1 Jailor on grade pay (Rs. 75-350)	110
1 Assistant Jailor on grade pay (Rs. 40-50) ...	45
1 Civil Hospital Assistant on grade pay (Rs. 20–55).	25
1 Chief head warder (Rs. 15-20)	15
1 Reserve „ „ on Rs. 12	12
1 Second „ „ (Rs. 12-15)	15
5 First grade warders on Rs. 9 each... ...	45
10 Second „ „ on „ 8 „	80
10 Third „ „ on „ 7 „	70
1 Female warder „ on „ 8 „	8
Total ...	425

In addition to the above, four sub-jails are affiliated to the Hughli Jail, one for each of the subdivisions in Hughli district, Serampur, and Arambagh, and one for each of the subdivisions in Howrah district, Howrah, and Ulubaria, that district having no jail of its own. For each of these sub-jails a staff of one second grade head warder on Rs. 12 to 15, and four third grade warders on Rs. 7, is allowed, except Howrah, which has six warders. Though only third grade warders are sanctioned for the sub-jails, in practice warders of any grade may be posted to them, so long as the scale sanctioned for the district jail with its affiliated sub-jails is not exceeded.

Admissions to hospital from chief causes, Hughli Jail, 1870–1900.—Convicts only

[Jail Report Statement No. XV (From 1883 to 1894 Statement No. XVI.)]

Year.	Cholera	Dysentery.	Malarial fever.	Tubercle.	Anæmia and debility.	Other general diseases.	Pneumonia.	Other respiratory diseases.	Diarrhœa.	Abscess, &c.	All other diseases.	Total.	Ratio per 1,000.
1870 ...	42	174	515	40	26	...	...	20	197	47	419	1,480	2,730
1871 ...	13	295	372	43	3	...	...	18	192	23	223	1,192	2,400
1872 ...	2	200	346	18	...	...	...	10	160	30	229	995	2,458·9
1873 ...	7	127	309	23	1	...	...	12	164	42	288	973	2,079·5
1874 ...	84	...	281	12	7	...	...	8	397	45	422	1,256	2,735·6
1875 ...	6	...	282	11	39	...	...	36	220	46	313	953	1,880·3
1876 ...	33	...	356	6	26	...	...	52	243	79	299	1,094	1,861·6
1877 ...	20	...	60	3	14	...	...	5	120	9	42	273	865·0
1878 ...	7	...	155	2	19	...	...	6	238	3	34	474	1,283·5
1879 ...	21	...	185	...	9	...	...	2	212	...	118	447	923·7
1880 ...	7	...	128	...	17	...	...	4	102	5	41	304	604·3
1881 ...	...	...	82	3	12	...	...	13	98	3	24	185	348·6
1882 ...	1	...	36	2	5	...	...	6	83	5	46	184	405·8
1883 ...	...	...	27	...	10	...	...	5	97	3	180	322	748·6
1884 ...	1	...	37	2	17	...	...	11	75	4	53	200	503·5
1885 ...	...	...	52	2	7	...	...	4	77	4	65	211	744·3
1886 ...	1	...	81	...	16	...	...	6	124	5	80	313	948·5
1887 ...	...	...	58	1	12	...	...	8	82	4	34	199	1,159·7
1888 ...	...	...	150	...	14	...	...	8	110	11	90	383	1,213·9
1889 ...	2	...	173	...	16	...	...	26	224	12	150	603	1,636·6
1890 ...	2	...	87	...	7	...	...	32	117	10	158	413	1,296·9
1891 ...	...	...	168	...	1	...	...	13	218	23	67	499	1,629·0
1892 ...	...	...	88	...	2	...	...	24	129	8	114	365	1,083·0
1893 ...	...	...	72	...	3	...	...	35	92	1	24	227	664·5
1894 ...	...	...	76	...	...	...	...	21	141	2	23	263	684·0
1895 ...	...	...	37	...	9	...	...	10	123	3	85	267	802·0
1896 ...	2	96	82	1	1	22	5	4	103	5	19	340	975·4
1897 ...	...	164	66	1	1	19	7	4	170	2	18	452	1,227·1
1898 ...	...	159	49	2	3	65	14	7	92	7	10	408	1,140·5
1899 ...	2	209	80	5	6	25	2	9	92	9	12	451	1,305·4
1900 ...	4	303	230	8	6	27	14	22	228	15	40	897	2,477·8

Deaths from chief causes, Hughli Jail, 1870—1900—Convicts only.

[Jail Report Statement No. XV (From 1883 to 1894 Statement No. XVI).]

YEAR.	Cholera.	Dysentery.	Malarial fever.	Tubercle.	Anæmia and debility.	Other general diseases.	Pneumonia.	Other respiratory diseases.	Diarrhœa.	Abscess, &c.	All other diseases.	Total.	Ratio per 1,000.
1870 ...	19	7	1	4	...	...	...	...	1	...	5	37	68·2
1871 ...	8	25	2	2	...	...	...	1	...	...	2	40	80·4
1872 ...	2	28	1	3	...	...	...	1	...	...	2	37	91·4
1873 ...	2	17	1	7	...	...	...	...	...	...	3	30	63·9
1874 ...	26	...	2	6	...	...	...	...	15	...	3	52	113·2
1875 ...	3	...	4	5	3	...	...	1	8	2	...	26	51·4
1876 ...	10	...	6	3	1	...	...	4	5	...	2	31	52·7
1877 ...	6	...	1	2	7	...	...	...	6	...	5	27	85·5
1878 ...	4	...	1	2	7	...	...	3	30	...	9	56	151·6
1879 ...	11	...	6	...	5	...	...	...	16	...	2	40	82·6
1880 ...	5	...	3	...	3	...	...	1	9	...	2	22	43·7
1881 ...	...	...	9	3	3	...	...	6	19	...	1	41	76·60
1882 ...	...	...	3	...	1	...	...	2	11	...	2	19	41·90
1883 ...	...	...	1	...	1	...	...	...	8	...	1	11	25·50
1884 ...	1	...	1	...	3	...	...	...	5	...	4	14	35·20
1885 ...	...	...	...	1	...	...	...	2	8	...	1	12	42·30
1886 ...	1	...	...	...	...	...	...	...	7	...	2	10	30·30
1887 ...	...	...	1	1	2	...	...	2	3	...	2	11	69·60
1888 ...	...	...	2	...	...	...	...	...	3	...	1	6	19·00
1889 ...	2	...	2	...	...	...	...	3	9	...	...	16	43·40
1890 ...	1	...	1	...	...	...	...	4	2	...	2	10	31·40
1891 ...	...	...	2	...	...	...	...	3	5	...	1	11	35·90
1892 ...	...	...	2	...	...	...	...	7	5	...	2	16	47·40
1893 ...	...	...	2	...	...	...	...	8	1	...	2	13	38·20
1894 ...	...	...	...	...	...	...	...	4	6	...	1	11	28·60
1895 ...	...	...	1	...	1	...	...	...	3	...	2	7	21·40
1896 ...	...	4	3	1	...	...	2	...	...	...	...	10	28·60
1897 ...	...	2	1	...	...	...	1	...	...	1	1	6	16·90
1898 ...	...	1	...	1	1	1	5	2	1	...	1	13	36·30
1899 ...	1	6	...	3	2	2	...	2	...	...	3	19	54·90
1900 ...	3	4	5	6	...	...	4	...	1	...	3	26	71·80

Strength, Sickness, and Mortality, Hughli Jail, 1870-1900.—Convicts only.

[Jail Report Statement No. XIV (From 1883 to 1894 Statement No. XV).]

Year.	Daily average strength.	Maximum.	Total number of admissions to hospital.	Daily average sick.	Deaths.	Ratio per 1,000.			Accommodation (exclusive of cells and hospital).
						Admissions.	Daily average sick.	Deaths.	
1870 ...	542	.....	1,480	29·16	37	2,730·0	53·8	68·2	605
1871 ...	497	.....	1,192	24·06	40	2,400·0	48·4	80·4	605
1872 ...	404·65	.....	995	32·35	37	2,458·9	79·9	91·4	557
1873 ...	469·84	.....	973	28·17	30	2,079·5	59·9	63·9	557
1874 ...	459·13	652	1,256	30·88	52	2,735·6	67·2	113·2	557
1875 ...	506·60	581	953	32·32	26	1,880·3	63·7	51·4	617
1876 ...	587·65	680	1,094	31·22	31	1,861·6	53·1	52·7	569
1877 ...	315·60	392	273	9·57	27	865·0	30·3	85·5	569
1878 ...	369·30	454	474	18·04	56	1,283·5	48·8	151·6	518
1879 ...	483·89	589	447	10·64	40	923·7	21·9	82·6	676
1880 ...	503·07	612	304	11·85	22	604·3	23·5	43·7	676
1881 ...	534·88	617	185	12·00	41	348·6	22·4	76·6	551
1882 ...	453·38	550	184	10·30	19	405·8	22·7	41·9	551
1883 ...	429·96	495	322	11·49	11	748·6	26·7	25·5	550
1884 ...	397·15	485	200	9·57	14	503·5	24·3	35·2	550
1885 ...	283·47	364	211	10·11	12	744·3	35·6	42·3	550
1886 ...	329·98	468	313	12·74	10	948·5	38·6	30·3	774
1887 ...	157·97	280	199	8·34	11	1,259·7	52·7	69·6	774
1888 ...	315·49	491	383	14·21	6	1,213·9	45·0	19·0	774
1889 ...	368·43	446	603	27·0	16	1,636·6	73·2	43·4	382
1890 ...	318·44	423	413	16·73	10	1,296·9	52·5	31·4	387
1891 ...	306·32	451	499	14·35	11	1,629·0	46·8	35·9	387
1892 ...	337·02	418	365	12·33	16	1,083·0	36·5	47·4	387
1893 ...	346·61	405	227	7·53	13	664·5	21·7	38·2	387
1894 ...	384·12	426	263	8·12	11	684·0	21·1	28·6	387
1895 ...	332·91	419	267	9·73	7	802·0	29·2	21·4	387
1896 ...	348·55	405	340	9·27	10	975·4	26·5	28·6	387
1897 ...	353·90	427	452	12·32	6	1,277·1	34·8	16·9	387
1898 ...	357·72	419	408	9·85	13	1,140·5	27·5	36·3	387
1899 ...	345·47	408	451	11·60	19	1,305·4	33·5	54·9	387
1900 ...	362·61	419	897	22·33	26	2,477·8	61·6	7·18	353

Above are inserted three tables of vital statistics of Hughli Jail for the past thirty years, 1870 to 1900, which I have compiled from the tables in the Annual Jail Reports. The first is extracted from jail statement No. XIV (from 1883 to 1894 No. XV), and gives the strength, sickness, and mortality of the jail, year by year. The second table is taken from jail statement No. XV (from 1883 to 1894 No. XVI), and gives the number of admissions and deaths under each of the chief heads, year by year. Both tables refer to convicts only. As regards the table of admissions and deaths, it must be noted that a considerable change in the classification of diseases was made in 1896, in accordance with the newly issued edition of the "Nomenclature of Diseases," by the Royal College of Physicians, London. The following are the chief changes made in 1896, the old classification being in force up to the end of 1895. I have headed each column with the name given in the new classification, filling up the spaces for the years previous to 1896 with the nearest heading given in the old classification, as follows:—

(*a*) Small-pox shown in a separate column up to 1895. I have included it under other causes.

(*b*) Dysentery and diarrhœa combined up to 1895. I have shown both, it being impossible to separate them for the whole period, under the head of diarrhœa.

(*c*) Tubercle entered as phthisis and scrofula up to 1895.

(*d*) Jaundice has a separate column up to 1895. I have included it under other causes.

(*e*) No separate columns for other general diseases and pneumonia up to 1895; the former included under other causes, the latter under respiratory diseases.

(*f*) Ulcers and boils, up to 1895, correspond to abscess in subsequent years.

(*g*) Up to 1895, fevers are shown under two heads—first, intermittent fever; second, remittent and continued fever. The two are combined throughout in my tables.

After this preliminary explanation the different diseases may be considered separately:—

(*i*) *Cholera* has already been considered above at some length. It has been mentioned that cholera had greatly diminished in frequency and severity after the introduction of the dry-earth system in 1864. The table as a whole bears out this statement fairly well, for the thirty-two years subsequent to 1868, the year in which Dr. Mouat made the assertion. I have not got the figures for 1869, but it will be seen that only five years subsequent to 1869 show any marked epidemic of cholera, 1874, with 84 cases and 26 deaths, being far the worst. In 1879 there were 21 cases and 11 deaths, since when

the number of either cases or deaths has never run into double figures up to 1901, when there were 10 cases and 2 deaths. Twelve years show no cases of cholera at all, and fourteen show no deaths.

(*ii*) *Dysentery* is shown separately from diarrhœa only in the four years 1870—73 and the five years 1896–1900. For the twenty-two intervening years dysentery and diarrhœa are shown together in the tables, and must therefore be considered together here. I do not think that anything is lost by this arrangement, as in my opinion the fatal dysentery and diarrhœa of jails are one and the same disease. For many years past, practically in all cases dying in jail the body has been examined after death, and I have seen, both in cases which I have myself examined, and in the reports of my predecessors which I have read, that whether death is returned as due to dysentery or to diarrhœa the main lesion is almost always the same, viz., ulceration of some part or other of the large intestine. The ulcers may be confined to one part of the large gut or they may affect the whole bowel from cæcum to anus ; they may be healed or healing, the patient dying from exhaustion, or they may be in a gangrenous condition, or even have caused perforation ; still, somewhere or other in the large intestine, and in one condition or other, whether the disease be called diarrhœa or dysentery, there the ulcers are. Of course ordinary diarrhœa is common in jails, as everywhere else ; probably the individual who has not suffered from diarrhœa does not exist, and most people suffer from it often in a slight degree. But this is not a fatal disease. A few doses of medicine, or even care in diet for a few days, is usually sufficient to cure this affection in a short time, even without rest. On the other hand, a pure diarrhœa may cause so violent an attack as to be practically almost indistinguishable from cholera ; but even such severe cases usually recover, and probably are called sporadic cholera. There is also a mild form of dysentery, which affects the rectum only, and that only superficially; this disease also readily yields to treatment. There are several forms of treatment which will cure this affection in a few days—(*a*) castor oil and opium; (*b*) ipecacuanha; (*c*) sulphate of magnesia ; (*d*) cannabis Indica and hyoscyamus ; (*e*) bismuth and Dover's powder ; and probably it might usually be cured just as easily by simple attention to diet, without any drugs at all. But both this mild dysentery, or proctitis, and ordinary diarrhœa, are, I believe, quite different from the bowel-complaint which is often such a scourge to jails, even the best managed ; and which, I may say, is also well known to most Civil Surgeons as, at certain times of the year, filling the pauper wards of their hospitals. This bowel-complaint, call it dysentery or call it diarrhœa, is, I believe, primarily not a disease of the bowels at all, though it is on the bowel that its chief stress falls. It is a disease of the whole system, or rather a break-up of the whole system; the patient dies because his vital powers are exhausted ; the machine is worn out, the works have run down, and dysentery or diarrhœa or

bowel-complaint, or whatever you like to call it, is not the cause, but only the manner of death. In support of this view I may say that I have several times seen cases, two at least within the last year, in which this chronic bowel-complaint has been cured so far that the patient has been passing healthy stools, and has been to all outward appearance well, and then has died suddenly from heart-failure. I do not mean to deny that a patient may die of acute dysentery; most of us have seen deaths from this cause, but they are comparatively uncommon; it is the chronic form which is the usual cause of death. I can believe that acute dysentery may occur in the form of an epidemic, but I have certainly never seen it do so.

The table shows that dysentery and diarrhœa together account for a very large proportion of the deaths which take place in Hughli Jail. The extracts quoted from old reports show sufficiently what a scourge bowel-complaints had been to this jail prior to 1870. Since 1870, also, some years show a very high proportion of deaths from this cause, *e.g.*, 25 deaths out of 40 in 1871, 28 out of 37 in 1872, 17 out of 30 in 1873, 30 out of 56 in 1878, 11 out of 19 in 1882. After that year the total figures diminish a good deal, but we still see such entries as 8 deaths out of 11 in 1893, 8 out of 12 in 1885, 7 out of 10 in 1886, 6 out of 11 in 1894. And 1901 will show the highest actual number of deaths from dysentery and diarrhœa for the past twenty years; the number for the year will certainly not be under twenty, and may be a good deal higher. The number of admissions has also been very high every year, except in 1884, 1885, and 1887, and even in these years it has been high proportionately to the total number of admissions from all causes.

(*iii*) *Malarial fevers* show a very high admission rate in some of the earlier years in the table. In the first year, 1870, they caused 515 admissions out of 1,480, or over one-third of the total. This is much the highest number in the whole series of 31 years. But the number of admissions remained high up to 1880, and again rose high in 1888, 1889, 1891, and 1900. In fact 1900, with 230 admissions for fevers, and 5 deaths, is the worst year for fevers since 1881. In the first nine months of 1901, on the contrary, out of nearly 800 admissions to hospital, only 51, a little over one-sixteenth, were for fevers, and no death occurred, nor even any very serious case. In this respect the jail showed a strange contrast to the Military Police, stationed at Bandel, only two miles off. In September 1901, there were at one time no less than 35, out of a strength of 80 present in the Military Police, in hospital, and 33 of these were cases of malarial fever, 1 of bowel-complaint. In the jail, on the contrary, out of a strength of 400, there were 80 admissions to hospital in September 1901, out of which 40, with 2 deaths, were for dysentery, 21 for diarrhœa, and only 5 for fevers.

The number of deaths from fevers in Hughli Jail has never been very large; 1881, with 9 deaths from fevers, out of 41 deaths, shows by far the highest total; the next highest being 6 in 1876 and 1879, and 5 in 1900.

(*iv*) *Tubercle* up to 1895 is shown as phthisis and scrofula, which is probably the reason why, in the earlier years in the table, the number of admissions is so high, compared to the number of deaths. The twenty years, 1879 to 1898 inclusive, however, show only 14 admissions and 7 deaths under this head. Of course a certain number of cases of tubercle are diagnosed in short-term prisoners, who remain in hospital until the expiration of their sentences, and are then discharged "otherwise." It also occasionally happens that a case which has been diagnosed as tubercle, makes a good recovery, and is discharged cured. When this has happened to myself, I have always considered that my original diagnosis was mistaken. On the other hand, some cases die with symptoms of tubercle, which do not appear in the returns, as they have been admitted for other diseases, usually dysentery, and are shown as proving fatal under the head of the original disease. During the twelve months I have been in charge of the Hughli Jail, four cases have been admitted to hospital for, and have died from, tubercle of the lung, but four other cases, admitted for dysentery, and returned among the deaths under that head, had tubercle of the lung also. If these cases had been returned as deaths from tubercle they would have exactly doubled the death-rate under that head, while at the same time, of course, diminishing the death-rate from dysentery.

(*v*) *Anæmia and debility* show a large number of admissions from 1875 to 1889, and figure prominently in the death-rate from 1875 to 1884. Certainly cases do occur which may best be returned under the head of anæmia, and such cases die sometimes. But debility is hardly admissible as a cause of death, unless we were to argue that the large number of cases, mostly returned as bowel-complaint, which die from a general break-up of the system, might better be returned as due to debility than to any special cause. This is a tenable proposition, but I do not think it has ever been put into practice; and, if it were, it would probably soon be stopped.

(*vi*) *Other general diseases* is too widespread a heading to need discussion. This column only appears in the returns in 1896 and subsequent years. During these five years it accounts for 158 admissions and 3 deaths.

(*vii*) *Pneumonia* also only forms a separate heading since 1896, and in five years has caused 42 admissions and 12 deaths. In the first eight months of 1901 there has been no admission for pneumonia. In September 1900 there were three admissions, two of which proved fatal, for this disease, which I considered directly attributable to the thorough wetting all the prisoners got in the great rainfall of September 1900, when every roof in Hughli leaked like a sieve.

(*viii*) *Other respiratory diseases*, a new heading in 1896, has in five years caused 46 admissions and 4 deaths. Up to 1895 all diseases of the lungs, including pneumonia, were classed under this head, and the rate of admission, sometimes that of death also, was occasionally high. The highest years are 1876 (52 admissions and 4 deaths), 1875 (36 and 1), 1893 (35 and 8), 1890 (32 and 4), 1889 (26 and 3), and 1892 (24 and 7).

(*ix*). The heading *Abscesses* includes ulcers up to 1895, and shows a high admission rate in some of the earlier years in the table, *e.g.*, 79 in 1876; while in 1879 there were no admissions under this head, and in 1893 only one. Three deaths have been returned under this heading in 31 years—2 in 1875 and 1 in 1897.

(*x*) *Diseases of the liver* are not shown separately in the table. Only one case has been returned as dying of liver abscess in the past ten years. A case which died of dysentry in January 1901, however, had also a small abscess of the liver. This is the only occasion on which I have ever seen a liver abscess in jail. Two cases in January 1901 died of cirrhosis of liver, a disease which, I think, is not uncommon among the classes who chiefly form the population of a jail. In one of these cases, an elderly Musalman of 60, the spleen was found to be only about one cubic inch in size.

For more than half a century the disease which has been specially prevalent and specially fatal, in the Hughli Jail, has been dysentery, or at least bowel-complaint. Why should this have always been and still be the case? I confess that I am unable to give any satisfactory answer to this question. It is true that dysentery, as stated in the account of that disease in Chapter XII, has always been prevalent and fatal in Hughli district, and especially in the towns of the district, where a large population has always lived crowded together under insanitary conditions. Dysentery is always a disease of crowded towns, rather than of the open country, and it is one specially liable to attack those who are underfed, or weakened in any other way. But dysentery has never prevailed in the most insanitary or overcrowded *basti* in the towns to anything like the extent to which it has attained in the jail. And in the jail the prisoners most emphatically do not live under insanitary conditions; on the contrary, the sanitary conditions under which they pass their period of imprisonment are infinitely superior to those under which the best off of them live as free men. Their water-supply is the best available, Hughli water, filtered and afterwards boiled; this same water is used by all the European residents, and by a few native gentlemen, all of whom purchase it from the jail. Their food is of good quality, free from deleterious ingredients, and, on the whole, fairly well cooked; quite as well, I should think, as what they consume in their own homes. They are not overcrowded, and certainly have not been so for the past twelve years, at least. The conservancy arrangements of the jail are excellent, the trenching of night-soil is carefully carried out in the

jail garden; while the stools of all patients suffering from bowel-complaint are burned in an incinerator; so that, allowing that the stools may propagate infection, they get no chance of doing so.

It is, and has for long been, my belief that a great deal of this disease in jails is self-produced and self-maintained. That this is at least sometimes the case must be within the experience of every Jail Superintendent. So long ago as 1885 a case is related in the Annual Jail Report, in which two prisoners in the Midnapur Jail died from eating oleander seeds, taken with a view to induce bowel-complaint, and so get into hospital. In 1894, Surgeon Lieutenant-Colonel Comins, then Inspector-General of Jails, writes in the Jail Report for that year as follows, on this subject:—

"The position of a prisoner in hospital, or in the weakly and convalescent gangs, is one of great comfort and peace. He has very superior and varied food of a quality which would be unattainable to him outside, animal food and milk at frequent intervals; he has prolonged rest, or only the lightest forms of exercise for short periods; he attends no parades, has no task to perform; his clothing and bedding are ample; oil is given to rub himself with; in fact the prisoner must look forward with great eagerness to the possibility of obtaining admission to the medical gangs, and it is not to be wondered at that he should endeavour to hasten this result. The artifices by which he tries to gain his end are many, and unfortunately all tend to injure his health and lessen his weight and strength. A handful of unhusked rice surreptitiously obtained from the paddy heaps awaiting husking may be sufficient to give him diarrhœa and admittance to hospital, but the older jailbirds know of many substances by which disease, or the appearance of disease, may be induced. Among them may be named *sajimati* (impure carbonate of soda) used for washing clothes but which, if eaten, produces intestinal irritation. To prevent this the *sajimati* has to be mixed in solution, and the clothes steeped in it. Ornamental plants are found in many jails, among them the croton. Crotons are violent purgatives, and have been used to produce diarrhœa. They have had to be removed from many jails. There are many other plants and trees which have been used to produce bowel disorder. In Hazaribagh gravel was used for this purpose; at other places lime, ground glass and *surkhi*, oil, ground castor-seed.

"Other prisoners, knowing the care taken of prisoners gradually losing weight, go to great trouble to produce this effect. With an increased solicitude for the comfort of weakly or sickly prisoners there have been greater efforts made by the prisoners, principally habituals, to render themselves fit objects for it. The suppression of these practices has been one of great difficulty to Superintendents and Medical Officers."

The only thing in the above remarks with which I do not thoroughly agree is that the prisoner prefers the hospital food. For prisoners suffering from bowel-complaints the staple of food is sago, not a very appetising article at the best of times; and I think that in most cases the prisoner much prefers the coarse rice given as labouring diet to the food which he gets in hospital, apart from such extra tit-bits as fish or other animal food, or milk. The prisoner who schemes to get into hospital does not wish to die there; he wishes to produce and maintain a looseness of the bowels just sufficient to prevent his being discharged from hospital. Sometimes he overdoes it, and the disease he has induced proves fatal; but this is accidental, not intentional. A prisoner who is not seriously ill has, from his point of view, an almost perfect time of it in hospital; the loss of liberty and of female society is all he has to complain of;

he has nothing to do but lounge in idleness and chat with his fellows all day long, and I think that he considers the consumption of hospital diet as the price he pays for these advantages, rather than as an additional advantage in itself.

The number of means adopted to get into hospital are endless, but it is only exceptionally that the deliberate inducement of illness can be proved against a prisoner, even though the Medical Officer may have no doubt upon the subject in his own mind. Take for instance, the following case. No prisoner suffering from bowel-complaint is ever discharged from hospital until he has passed healthy stools, after getting full diet for at least 24 hours. And yet I have known, not once but often, men who had gradually recovered from dysentery and had fulfilled the above conditions, return to hospital suffering from bowel-complaint within 24 hours of their discharge. Nay, more, I have known the same thing happen twice running with the same individual. Now it is absurd to suppose that a few hours of light labour could reinduce bowel-complaint of itself, in an individual who had already shown his ability to consume full diet without harm. It is not even a full day's work, for the patient discharged from hospital in the morning will not as a rule reach the labouring gangs till after the midday rest, and certainly a full day's task will not be exacted from him that day. The conclusion is irresistible that, in such cases, the prisoner has deliberately caused the reappearance of disease by swallowing some irritant, in order to get back into hospital.

The commonest article swallowed to cause bowel-complaint is paddy, or unhusked rice, in jails where this article is attainable, that is, where the processes of paddy boiling and drying are going on. *Sajimati* is also frequently used for the purpose, and another very common practice is for a prisoner who is at work on the *dhenki*, or pounding machine, deliberately to put his hand under the pestle of the machine, to get a finger crushed, and be sent to hospital for treatment. This, however, has two disadvantages in the prisoner's eyes—it involves some pain at the time, and a patient in hospital for a crushed finger has no hope of any extras in the way of diet. Bowel-complaint is a simpler and safer way of entering the paradise of the jail hospital.

In 1896, when Civil Surgeon of Monghyr, I made the following remarks upon this subject, which are reproduced by the Inspector-General in the Annual Jail Report for that year:—

"I wish to remark upon one result of the minute attention paid to the health of prisoners in Bengal jails during recent years, and that is, the great inducement to prisoners to try to get admission to hospital, and the necessity of doing something to make the life of a prisoner in the jail hospital less pleasant to him."

These views I still hold, and subsequent experience of two more jails has given me no reason to alter them. During the past fifteen years I have

had medical charge of four central jails, Alipur, the Presidency, Midnapur and Hazaribagh; and have been Superintendent and Medical Officer of seven district jails, Maimansing, Bakirganj, Motihari, Purnea, Chupra, Monghyr, and Hughli; so I have had a fairly varied experience. But, holding these views, the next question naturally is, how is the life of a prisoner in hospital to be made less pleasant to him, while retaining him as a patient in hospital under medical treatment? My answer is, by combining medical treatment with solitary confinement.

I do not mean to say that jail hospitals should be abolished altogether. Cases of severe sickness or injury may better be treated in open wards, as at present. It would be cruel to keep a man in solitary confinement who is dangerously ill; it would also interfere with the treatment of the disease. But three-fourths, or sometimes nine-tenths, of the patients in jail hospitals, are not seriously ill. Where there is now hospital accommodation for sixty sick, it would, in my opinion, be sufficient to provide accomomdation in wards for ten, and for fifty in solitary cells.

As regards all but the severest cases of bowel-complaint, such a course would have the additional advantage of securing that the stools which are seen, or at least should be seen, by the Medical Officer every morning, really were passed by the patient to whom they are assigned. I have often had reason to suspect that this is not always the case, and that a patient who is really well and fit for discharge, manages sometimes to pass off as his own the stool of some patient in a worse condition.

Confinement in cells would also be the best treatment for all cases of slight, often self-inflicted, injuries, cases of skin disease, of abscesses, ulcers, &c., and, above all, cases of venereal disease. I am not one of the fanatics who consider that the seventh is the only commandment in the decalogue, but one must draw the line somewhere. And I fail to see why a prisoner who comes into jail with a short sentence, suffering from venereal disease at the time, should be rewarded for his vices by having a sentence of rigorous imprisonment diluted into one of simple confinement on the easiest and pleasantest of terms; which is what, as a matter of fact, often happens under present circumstances. With long-term prisoners it does not so much matter, as they go on to hard labour after their recovery. But a man sentenced for only a few weeks, and suffering from venereal disease on his admission, may easily remain in hospital till his release, and not do a stroke of work throughout his sentence.

The great objection to a system of solitary confinement for patients in hospital will, of course, be the expense of building the required cells. Cubicles of wire-netting would not be sufficient; in order to make the prisoner's stay in hospital thoroughly uncomfortable to him, and to give him an interest in

keeping out of hospital, he must be able neither to see nor to speak to his fellow-patients.

It has always been the great misfortune of the Hughli Jail that it was built immensely too large for the requirements of the district. Had Hughli been a healthy place this would not so much have mattered; but district, town, and jail, are alike unhealthy in the extreme. Used as we have seen, practically as a large central jail, long before the central jail system was introduced, the buildings are here, and even though their capacity was reduced fifty per cent. twelve years ago, they are still much too large for the needs of Hughli. Therefore, when other jails are overcrowded, naturally their surplus prisoners are sent to Hughli, as long as there is room for them here, and the Hughli Jail is kept pretty well filled. Hughli is a small district, and one with little crime, and for the requirements of Hughli district a small third-class district jail, with accommodation for 150 prisoners, would be amply sufficient. Even then, probably half the prisoners, if not two-thirds, of those convicted in Hughli district, would be either up-country immigrants, or professionals from Calcutta. Howrah district having no jail of its own, and Hughli Jail, only 26 miles off, having far more than enough room for its own criminals, all prisoners convicted at Howrah are sent to Hughli. This is natural and reasonable enough, but has one great drawback. The professional Calcutta criminal, if convicted in Calcutta, is sent to the Presidency Jail, and thence perhaps transferred to Midnapur; but if convicted at Howrah he is passed on to the Hughli District Jail, and, with the present crowding of the central jails, there he very probably has to remain, instead of being subjected to the more rigorous discipline of Alipur or the Presidency Jail. But even allowing for all the Howrah prisoners, still the Hughli Jail is much too large. Accommodation for 300 prisoners would amply suffice for the Hughli and Howrah districts together. But this jail will hold over 400 prisoners, so it has to be filled up by transfers from other jails. To show to what an extent the population of Hughli Jail is provided from other districts, and how few comparatively of the prisoners in the jail were local men, I had a census taken on the 25th December 1900, of all convicts then in the jail, to ascertain the districts in which they were convicted. This census gave the following results. The figures for 25th December 1901 are also given for comparison:—

Hughli—

	1900.	1901.
Sadr	43	46
Serampur	86	57
Arambagh	23	15
Total ...	152	118

Howrah—	1900.	1901.
Sadr	99	93
Ulubaria	22	34
Total ...	121	127
Bardwan	1	...
24-Parganas	10	3
Nadiya	26	5
Bakirganj	14	1
Maimansinh	61	5
Chittagong	1	1
Jessore	1	35
Burma	2	1
Tippera	...	68
Faridpur	...	5
Monghyr	...	1
Noakhali	...	1
Rajshahi	...	1
Total ...	389	372

In 1873 Mr. Heeley, then Inspector-General of Jails, remarked that Hughli prisoners, confined in their own district jail at Hughli, suffered more than either Hughli prisoners transferred elsewhere, or prisoners transferred to Hughli from other districts. This, I expect, would be due in great measure to the state of health of the prisoners transferred. The remark, I think, might still be made at the present day. During the past twelve months gangs of prisoners have been received from Nadiya, Jessore, Faridpur, and Tippera, gangs have been despatched to Alipur, Bankura, and Suri. Whether the prisoners transferred from Hughli to other jails have suffered much in health I cannot say; I have not received any complaints on the subject. But it must be remembered that the prisoners transferred do not fairly represent the average state of health of the local prisoners convicted. On the contrary, they are the pick of the long-term prisoners locally convicted, no prisoner being transferred especially to Alipur, unless he is in fairly good health at the time of transfer. As regards the prisoners transferred to Hughli, those from Nadiya were a poor lot in physique and health, while not one of those transferred from Faridpur was in good health. Those transferred from Tippera and Jessore, on the contrary, were nearly all in good health. The result is much what might have been expected. The prisoners from Tippera and Jessore have, on the whole, kept decidedly better health than the local prisoners, those from Nadiya and Faridpur have suffered quite as much as the local prisoners. But even prisoners received in good health from other jails seemingly have to undergo a process of seasoning, soon after admission to Hughli Jail, and frequently are attacked with dysentery very early in their

stay here. After their first attack, they appear to get used to the new conditions, and get on fairly well.

During 1900 28 deaths took place in Hughli Jail. Out of the 28, Howrah contributed 11, Hughli 11, Maimansinh 3, Nadiya, Bakirganj, and Burma, one each. One of these deaths took place the day after admission from Serampur, and was charged against that sub-jail; a second was in an under-trial prisoner, and consequently these two do not appear in the tables of mortality, which include convicts only. In 1901 also no less than 30 deaths have taken place, of which Hughli contributed 14, Howrah 8, Maimansinh 3, and Bakirganj, Nadiya, Khulna, Faridpur, and the 24-Parganas, one each. In 1900 6 of the fatal cases were admitted in good, 12 in indifferent, and 10 in bad health; in 1901 8 in good, 12 in indifferent, and 10 in bad health. Of the six from other districts who died in 1900, only two were admitted in good health, one died from cholera, and the other from pneumonia; of the eight from other districts who have died in 1901, three only were admitted in good health, one died from cholera, and two from dysentery.

Some one has remarked that the prisoners in any jail may be divided into two classes, those who should never have been in jail at all, and those who should never be let out. No doubt the remark is greatly exaggerated, but there is an element of truth in it all the same. The first class consists of first offenders, who have committed the crime for which they are convicted more or less accidentally, and without premeditation; the second class consists of the professional criminal, who lives by theft or robbery because he finds it the easiest and pleasantest way of making a living, greatly superior to honesty and hard work. Reformation in such cases is hopeless, the only thing to do with the professional criminal of the great cities is to remove him permanently from the scenes of his career. This can be conveniently done in India by transporting him for life to the Andamans. Such cases are not uncommon in the Hughli Jail. The professional criminal from Calcutta, if convicted in Howrah, comes to Hughli Jail as a matter of course. But it is not only in Howrah that this class come into the hands of the police, the Calcutta criminal carries his depredations further afield, and carries on his avocations with comfort in Hughli and other neighbouring districts, coming out by train to the place he has marked as suitable for his purpose, and returning by train to his home in the city when he has carried out the little business on which he is bound. Crime also, as well as disease, radiates out from Calcutta to the surrounding districts.

The above remarks are borne out by the opinions of the Superintendent of Police on *dakaiti*, which I have quoted further on in this chapter. But I may say that, when I wrote the above remarks, I had not had the advantage of seeing the report by the District Superintendent of Police.

Medico-legal.—The records of *post-mortem* examinations for a period of twenty years past are in existence, and I have tabulated the results in the table overleaf. The total number of bodies examined in twenty years has been 742, or an average of 37 yearly, a very small number compared with some of the eastern districts of the province. In Maimansinh and Bakirganj, during the years I was stationed in these districts, bodies used to be sent in to the station for *post-mortem* examination at the rate of nearly 200 a year, if I recollect rightly. I have a note to the effect that from 1st January to 30th September 1889, no less than 166 bodies had been sent in for *post-mortem* examination to Barisal; and I have a vivid recollection of once there having seven bodies, all killed by the same individual, sent in for examination on the same day. The murderer had "run amok," killing every one he could come across, and before he was secured he had killed outright seven persons, and severely wounded two others, one of whom died in hospital. The murderer was sentenced to death, and in due course hanged. In Bakirganj, however, there were three outlying subdivisions, all of which were then in charge of Civil Hospital Assistants, not qualified to make *post-mortem* examinations, so all bodies which required examination, from the whole district, were sent for the purpose to the *sadr* station. Here there has always been a separate Medical Officer in charge of the Serampur subdivision, and bodies which required examination in that subdivision have always been sent to Serampur, not to Hughli. Making allowance for this fact, however, the number of bodies examined at Hughli is not large. I think, moreover, that bodies are not sent in anywhere in such numbers nowadays as they were ten or twelve years ago; cases of unnatural death not necessarily being sent for examination now, if the cause of death, drowning or such like, is clear, and no suspicion rests upon any one.

In 26 cases out of the whole 742 the cause of death is not stated on the office copy of the report form. These are mostly cases in which opinion was reserved, pending the receipt of the results of chemical examination of the viscera. In 58 cases (7·95 per cent.), the body was too decomposed to give any opinion as to the cause of death. Many of these were probably due to natural causes, as wounds of sufficient severity to cause death would probably be visible on a body not almost reduced to a skeleton, and fractures of the skull would easily be ascertainable in a body, however decomposed, No less than 93, or 12·53 per cent., were due to natural causes of various kinds—fever, spleen, anæmia, tubercle, diseases of the lungs, &c. One such case, in 1898, was due to plague. Many of these cases were probably due to false charges. It is an easy way of paying off a grudge, for a man, who wishes to injure his neighbour, if a death occurs in the neighbour's family, to lay information at the police-station that foul play is suspected. The body is then sent for examination, death is pronounced to be due to natural

Medico-legal post-mortems, Hughli District, 1881–1900.

.....	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.	1889.	1890.	1891.	1892.	1893.	1894.	1895.	1896.	1897.	1898.	1899.	1900.	Total.
General injuries (railway accidents)	...	1	...	4	...	1	...	2	2	1	1	...	...	3	...	5	5	1	...	...	26
Fracture of skull ...	...	...	1	1	2	4	3	2	3	4	6	2	3	2	2	2	2	3	5	5	52
Do. of spine ...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	1	1	...	...	4
Rupture of spleen ...	1	4	3	5	2	5	3	2	4	4	2	...	1	4	2	4	2	2	2	1	53
Do. of bladder	...	...	...	1	...	...	...	...	...	...	...	..	...	...	...	1	...	...	...	...	2
Do. of intestine	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	1	...	...	...	...	2
Do. of liver ...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	1
Pounding & pressure	...	2	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3
Other contused wounds.	1	1	1	2	4	1	2	1	1	...	1	...	1	3	1	2	...	2	2	4	30
Cut-throat, murder	...	1	...	2	...	...	2	...	2	1	...	...	...	1	...	...	...	1	...	...	10
Ditto, suicide...	...	...	1	...	...	...	...	...	2	...	...	...	...	...	1	1	...	...	...	...	5
Other incised wounds	2	3	1	...	1	1	2	...	...	...	1	1	5	5	2	3	2	1	2	1	33
Punctured wounds...	...	...	...	...	...	...	...	...	...	...	1	...	...	1	...	...	...	1	...	...	3
Gun-shot wounds ...	...	...	...	1	...	...	...	1	...	...	1	...	...	...	1	1	...	...	1	...	6
Tetanus from wounds	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Septicæmia from wounds.	...	...	...	...	...	...	...	...	...	...	1	1	...	...	1	...	...	...	...	...	3
Burns (murder) ...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1
Lightning ...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Injuries to genital organs by sexual intercourse (child.)	...	...	1	...	...	1	...	2	1	...	...	...	...	...	...	...	...	...	1	1	7
Abortion ...	5	7	4	6	2	1	...	...	1	1	1	...	...	...	...	1	1	...	1	1	32
Hanging ...	10	23	27	17	12	8	9	7	4	5	8	4	8	4	3	8	9	4	6	3	179
Drowning ...	3	...	3	1	5	4	3	...	2	...	3	...	...	1	1	1	1	2	1	1	32
Strangling ...	...	...	1	1	2	...	...	1	...	...	...	1	...	...	...	...	...	...	2	1	9
Throttling ...	...	1	...	...	...	...	...	...	...	1	...	1	...	...	...	2	...	...	...	1	6
Suffocation ...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Poisons—Opium ...	3	4	5	6	5	...	...	2	1	1	3	1	4	1	1	...	3	2	3	2	47
Do. Oleander ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	1	2
Do. Strychnine	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1
Do. Arsenic ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	1
Do. Hydrocyanic acid.	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1
Do. Alcohol ...	...	...	1	2	1	1	1	...	...	...	...	...	...	1	...	...	...	1	...	...	8
Do. Carbon monoxide.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	2
Do. Snake-bite	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Natural causes ...	9	8	12	9	4	4	4	5	1	1	5	5	5	5	2	5	4	2	1	2	93
Too decomposed ...	...	7	2	6	3	3	3	3	5	5	2	5	2	4	1	1	2	3	...	1	58
Not stated ...	...	...	...	...	...	...	...	2	1	6	3	1	1	...	2	2	...	5	2	1	26
Total ...	34	63	65	64	43	35	38	30	31	32	39	22	32	36	21	40	34	31	31	26	742

causes, and the case drops; but the accuser has gained his purpose, which is to subject his enemy to the trouble of bringing the body to the *sadr* station, possibly a long distance, and to the disgrace, as it is usually considered, of having the body examined. The accuser is, of course, ready with a plausible story to account for his suspicions of foul play, and escapes scatheless and triumphant.

The largest number of cases are those of *hanging*, in every case suicidal, 179 cases, or 24·12, almost exactly one-fourth of the whole number. Other forms of asphyxia are *drowning* 32 (a very small proportion of the number of deaths actually due to this cause), *strangling* nine, *throttling* six, and *suffocation* one. The cases of drowning and suffocation are accidental, those of strangling and throttling homicidal. The two cases of poisoning by carbon monoxide, accidental suffocation, might also have been included under asphyxia instead of under poisoning.

Injuries of various kinds account for 243 cases in all, or 32·74 per cent. of the total number. The varieties of injuries which proved most frequently fatal were *rupture of the spleen*, in 53 cases, and *fracture of the skull*, in 52 cases, each giving 7·14 per cent. of the total. Besides these, there were four cases of *fracture of the spine*, two of *rupture of the bladder*, two of *rupture of the intestine*, and one of *rupture of the liver*, alone, though this organ was also ruptured in a few of the cases entered as rupture of the spleen. The 26 cases returned as due to *general injuries* usually showed both fracture of the skull and other large bones, and also rupture of some, sometimes of almost all of the large viscera. These cases were mostly due to railway accident; and such cases are now not often sent for examination, if the accident has been seen by trustworthy witnesses. When a man has been seen to fall under a train in motion, and a number of heavy railway wagons or carriages have passed over the body, it is hardly necessary to send the fragments for *post-mortem* examination to ascertain the cause of death, though I have known this done. *Pounding and pressure* account for only three cases, a very small number. This does not seem to be a common way of causing death in this district, though it is not uncommon in some parts. Its disadvantage is that it requires several persons to perpetrate a murder in this way, though it has the advantage of leaving hardly any mark on the body. Four or five men hold the victim down, while one or two vigorously knead the whole body with their hands, feet, knees, and elbows, or with a blunt club, or place a bamboo across the chest or abdomen, and, one sitting on each end of the bamboo, see-saw it up and down over the whole body. Fractures of the ribs and rupture of the liver and spleen are easily caused in this way, and death may also result simply from the general extensive injuries to the subcutaneous cellular tissues. Though easily

detected on *post-mortem* examination, very little, sometimes no, outward sign of injury may be visible on the body. *Other contused wounds*, not causing fracture of the skull or rupture of viscera, account for 30 deaths, some homicidal, but many of them accidental, due to falls, &c. *Cut-throat* caused 15 deaths, of which ten were homicidal, and five suicidal; *other incised wounds*, almost all homicidal, caused 33 deaths. *Punctured wounds*, or stabs, were the cause of death in only three cases, and *gun-shot wounds* of six, a very small number, considering that there are about 5,000 gun-licenses in the district. But gun-shot has never been a common form of murder in this district, as it is in Eastern Bengal, where it prevailed to such an extent that a few years ago special measures had to be taken for the disarmament of Bakirganj district. Even out of these six cases of death by gun-shot wound, some were accidental. *Burns* caused one death, homicidal, a very uncommon way of committing murder. *Tetanus* after wounds was fatal in one case, *septicæmia* after wounds in three cases, while one death was due to *lightning*. Seven cases were examined in which death was due to *injuries of the genital organs* of female children, by sexual intercourse. These were not cases of rape, but cases in which immature children were killed by forcible sexual intercourse on the part of adult husbands, who had married mere children. These are not cases of deliberate murder, the perpetrator has no intention of causing death, and probably regrets that he has done so; they are, however, quite sufficient to justify the passing of the "Age of Consent" Act; though two of the seven have occurred in recent years, long after the passing of the Act. It will be remembered how bitterly a large section of the educated Bengali community resented the passing of this Act, claiming that the determination of Government to protect immature children from the consequences of early marriage was an unjustifiable interference with their religion, which required not only the celebration, but the consummation of marriage in girls of tender age.

Abortion accounts for 32 cases, mostly criminal, but in many it was impossible to state whether the abortion was criminal or accidental.

Poisoning was the cause of death in only 63 cases, including the two cases of accidental suffocation by *carbon monoxide*. Out of the 63 cases, no less than 47 were due to opium, almost all suicidal. The next most frequent poison was *alcohol*, in eight cases, all accidental, in the sense that they were neither homicidal nor suicidal. *Oleander* was used in two cases homicidally; a third case of homicidal poisoning by this plant occurred in 1901. *Hydrocyanic acid*, *arsenic*, and *strychnine* account for one case each; and only one case of *snake-bite* has been examined in the twenty years. No doubt poison was also used in many of the 26 cases in which opinion was reserved till the result of the Chemical Examiner's analysis was known; but I have not been able to find out the results in these cases.

During the last twelve months two cases have been examined which were of rather more interest than the common run of medico-legal *post-mortem* examinations. In the first case, an elderly man who was the *gomasta* or manager of a native estate, lived in a large two-story *pakka* house at Bansbaria with two servants, who were up-country men, and strangers in the town. During the cold weather of 1900-1901, all three men disappeared. It was noticed that none of them had been seen for some time; the house, which was shut up, was broken open, but no trace was then found of any of the three. It was known that the old man had some money, belonging to the estate, in his possession; and it was supposed that the two servants had robbed and murdered their master, and absconded, after throwing the body into the Hughli, which was separated from the house only by the breadth of the road. In April 1901 the owner of the house sent word to the police that the body of the missing man was found. I accompanied the police to the spot on the afternoon of 8th April 1901. The house was a large two-story one, one large solid door opened into an inner quadrangle, round which the house was built. A veranda supported on pillars ran round all four sides of this quadrangle. In the south-west angle of this veranda was a heap of sand, about five feet cube. The owner had begun to remove this sand, and, finding some bones in it, stopped, and sent word to the police. Out of this heap of sand I saw dug a complete skeleton, with the exception of a few of the smaller bones, which were missing, or rather could not be found. There was no flesh on any of the bones, except a few shreds adhering to the long bones of the limbs, and a little greasy filth adherent to the bones of the body and skull. None of the bones showed any signs of injury. The pelvic bones were of the male type; there were no teeth in either jaw, in fact the alveolar processes of both upper and lower jaws were absorbed. The above facts showed that the skeleton was that of an old man. In the absence of soft parts it was not possible to say how death had occurred (very likely by strangulation); but there could be no doubt that the skeleton found was that of the missing *gomasta*, nor that his servants had murdered him, and absconded. Obviously it had not occurred to any one at the time to search the heap of sand in the veranda for the body.

In the second case, which came from Pandua, a young Hindu of 25 was murdered on the 10th May 1901, by cutting off his head, which was severed from the body, the dividing cut passing just over the top of the larynx, and between the third and the fourth cervical vertebræ. There were also four wounds on the left shoulder and two on the left side of the face, showing that the head was not cut off by one below, but hacked off by repeated strokes of a sharp, heavy weapon, such as a *dhao* or a sword. Presumably the murderer caught him asleep, lying on his right side, and disabled him by the first blow; or possibly several men were concerned in the murder, and the others held him down, while one man cut off his head. This, however, is less

probable. A reward of Rs. 500 was offered in this case, but without effect, no trace of the murderer being found up to date, a year after.

The Persians have a proverb to the effect that all crime and trouble are due to one of three causes—*zan*, *zar*, *zamin*; woman, gold, and land. This second case was evidently due to the first cause, no robbery was committed, and there was no land dispute in question. Murders, in fact, are most commonly due to this first cause, woman, though the Bansbaria case related above was due to the second; which is the cause of the special endemic crime of the Hughli district, *dakaiti*. Land disputes generally issue in rioting, with or without loss of life.

Police.—The Bengal Police, in its present form, dates only from the year 1863. Up to the year 1853, there was one Superintendent of Police for the whole Lower Provinces, an officer who corresponded, more or less, to the present Inspector-General. After 1853, the mofussil police were entirely under the Commissioners of Divisions, in each district the Magistrate being the head of the local police, as indeed he still is now, but in those days he had no officer under him in charge of the district police. There was also a special Dacoity Commissioner, whose head-quarters were at Hughli, in the old Circuit House at Bandel. The first officer to hold this appointment was Mr. S. Wauchope, who was promoted to it from Magistrate of Hughli, and from Dacoity Commissioner became later on Commissioner of Police in Calcutta. From the nature of his office, and from his detective abilities, he was generally known by the name of "Sam Watchup." The reorganisation of the Bengal Police was a subject of frequent discussion in the years 1855 to 1860. In 1856 a body of military police was raised at Lahore, and marched down to Bengal. They were stationed at Suri, where they were completing their training under their Commandant, Captain Rattray, when the mutiny broke out. They volunteered for service against the mutineers, served with much distinction in the mutiny, in the district of Shahabad and elsewhere; the fifty Sikhs who took part in the defence of Arrah belonged to this battalion. They are now Rattray's Sikhs, the 45th Regiment of Panjab Infantry. In 1858 a military police corps was sanctioned, with ten battalions of 900 men each, for service in Bengal, Major Rattray as Inspector commanding the whole force, but not more than 700 men per battalion were actually enlisted. Finally, in 1863, the Bengal Civil Police was constituted in its present form, the military police battalions were gradually disbanded, and at the same time the Dacoity Commissionership was abolished.

Sir George Campbell, in his work "Modern India" (quoted in Buckland's "Bengal under the Lieutenant-Governors," Vol. I, p. 23), wrote thus of the Bengal Police in 1852:—

"In Bengal proper, on the contrary, both the police and people are effeminate, and the former has attained an unfortunate notoriety as being more active for evil than good. The

misdeeds of the Bengal Police may be a good deal exaggerated, but they are doubtless inefficient and apt to be corrupt. The chance of efficiency seems to be much lessened by the precaution which it is necessary to take against extortion and malversation on their part. A Bengal Inspector, instead of being an active, soldierlike man, mounted on a pony, is generally an obese individual, clad in fine linen, who can hardly walk, and would think it death to get on horseback, who is carried about in a palanquin on men's shoulders, and affects rather a judicial than a thief-catching character. When a serious crime occurs, he first writes an elaborate report, and perhaps intimates his intention of proceeding *next day* to investigate the case; and, when he does go he takes up his quarters in the village, and summoning all and sundry to appear before him, holds his court. This is just the man to suit a prosecutor who gets up his own case at his own discretion and produces his own witnesses, but little is gained by an unfortunate, stripped by dacoits, who finds the Inspector quartered upon him, taking useless depositions. But, after all, the great cause of crime in Bengal is the effeminacy of the people, who do not defend themselves against either *dacoits* or police. It is certain that, at this moment, in many districts of Bengal the inhabitants are not only in danger of secret thieves but of open robbers; that gang-robberies are frequent, and any man's house may be invaded in the night by armed force."

From the same source I quote an extract from Sir George Campbell's Administration Report for 1871-72:—

"It has been said that in Bengal the rich and powerful have been less restrained and the poor less protected than in other provinces, and up to that time [the mutiny] this was so in the most liberal sense of the word. There was in the interior of Bengal a lawlessness and highhanded defiance of authority by people who took the law into their own hands by open violence, which would not have been tolerated for a moment in any other part of India. It required all the energies of the first Lieutenant-Governor to deal with these and other patent evils."

Buckland also quotes from the Bengal Administration Report of 1859-60 an account of *dakaiti*, which is to this day the most prevalent crime of Hughli district:—

"But the dacoits in Bengal have nothing in common with these savage mountaineers. They differ little from the common thief. Armed with clubs, swords, and torches, they attack a defenceless family or waylay some unguarded boat; but they are arrant cowards, and seldom persist in their attempt if the slightest show of resistance is made. Still the very existence of gang-robbery in any shape, however modified, must, if not checked, reflect discredit upon the Government. But in this country crime is difficult to reach, more difficult still to eradicate. We have to deal with a people who are too apathetic to exert themselves individually for the suppression of crime, and with land-owners, who too often are more interested in sheltering the criminal than in giving him up to justice. But in spite of all these disadvantages much has been done. The Commission for the suppression of *dacoity* has during the last year greatly extended its operations, and it has now its ramifications in nearly every district of Bengal. Great, too, has been the success of its exertions. In many districts the crime may be said to be almost extinct."

Forty years have elapsed since the above was written, but *dakaiti* is even now far from extinct in Hughli, once the head-quarters of the Dacoity Commissioner. The chief reason is, as Sir George Campbell wrote in 1852 the fact that the people are unable and afraid to do anything for their own protection. It is impossible to provide watch and ward for every village, with a police force which numbers one constable to every 1,290 inhabitants. This is the proportion in Hughli district, and probably the average for the whole province is not very different. God helps those who help themselves, says the proverb; the *dakaits* act up to the maxim, the general population do not.

Consequently a gang of ten to twenty *dakaits* will "stick up" with impunity a village containing a hundred or more able-bodied inhabitants. The local residents seldom make any resistance, each is fully occupied in looking after number one, and providing for his own safety. The *dakaits*, therefore, are able to carry out their purpose with little resistance, if any. They are usually professional criminals from a distance, who have come for the purpose of plundering some particular village or house, often coming considerable distance by rail with this object. Local guidance they do no doubt get from confederates among the local bad characters, but the latter take care to keep in the background, and the strangers run little risk of identification. Their object attained, and the plunder secured, there is little difficulty in being far enough away by daylight to catch a train ten miles from the scene of the raid, and the criminals with their plunder may be safely hidden in the slums of Calcutta almost before the news of the *dakaiti* has reached the nearest police-station. Small wonder, therefore, if a conviction is not easily got. The robbers cannot be identified; the victims either cannot recognize any one present, or if they do profess their ability to identify any of the raiders, are usually ready to swear to whomever they may think most likely to have been on the spot, generally some of the local bad characters, who may have been in the background after guiding the professional criminals to the scene, or may not have been near the place. If the former, it is doubtful whether the identification will hold good in a Court of law, under cross-examination; if the latter, an *alibi* is easily proved, and the whole case breaks down.

During the year 1900, 25 *dakaitis* were reported in the Hughli district. In only six did the police obtain sufficient evidence to send any one up for trial; two of these cases broke down in the lower Courts, and never got the length of the Sessions; the other four were committed to Sessions, and three were there convicted. In all these three cases, in which a conviction was obtained, the *dakaits* were foreigners, men from other districts. In one case, in which the *dakaits* were resisted, they decamped without having got anything. In fact the *dakaits*, like the devil, when resisted, flee.

On the subject of *dakaiti* in the Hughli district, I quote the remarks made by the late District Superintendent of Police, Mr. W. B. Stuart, in the Annual Crime Report for 1900:—

"There were only six *dacoities* which were sent up in A Form.* Out of these, three were not committed to the Sessions. The other three were committed to the Sessions, one was convicted in the year under report, one in 1901, and one is still pending;† but for the purpose of determining the character and caste of the dacoits I have cited all the cases actually sent up. The most successful case was that of Nutongram, Dhaniakhali police-station. This *dacoity* was committed by a gang of

* A case sent up in A Form is one in which there is definite evidence against some individual, who is sent up for trial.

† The accused were subsequently convicted. It will be seen below that four case were sent up to Sessions for trial, three convicted, and one discharged; while two were discharged in lower Courts

up-country Bhors, residents of Calcutta. They came from Howrah by an evening train to Tarakeswar and from there walked to the house of complainant. This gang consisted of fifteen members, eight of whom were eventually arrested; all these eight were convicted (two had previous convictions). All the accused were Bhors from Benares; they had been living round about Calcutta in different mills, brick-fields, and as *gariwalas* and so on for months. I believe this gang and others are responsible for nine-tenths of the *dacoities* committed in this and other neighbouring districts.

"The second successful case was also from Dhaniakhali police-station. These men were Sonthals of Midnapore district. Some of them were residing in Dhaniakhali jurisdiction; there were no previous convictions proved against them. I do not think that these men were systematic *dacoits*, but rather took advantage of some local knowledge to commit the offence. They were convicted.

"The third successful case was that of Konnagar, Serampur town. These *dacoits* were all Tutia Mahomedans residing in Calcutta, two of them were caught by the police while the gang were returning with their *loot* to the railway station; the rest of the gang are still at large in Calcutta, but I hope to arrest them soon. The Tutia Mahomedans are almost as criminal a class as the Benares Bhors. There is a large colony of them at Midnapur, in that portion of the district which borders on Badanganj outpost, Arambagh subdivision of this district. Some of these men have removed from Midnapur to Badanganj, two of the accused actually reside at Badanganj, one of them, Nilu Bhanji, was arrested and is now under trial, the other is still at large. Most of these men have been sent up in *dacoity* cases in Midnapur, after discharge they bolted to Calcutta, and there in perfect safety commit raids round-about, making Calcutta their head-quarters.

"As regards the other cases, in case No. 1 of Kristonagar the men were undoubtedly local men, they first tried to make a hole in the wall, but finding this difficult eventually broke down the door, the complainant made some kind of defence, and the *dacoits* at last decamped minus property. This leads me to believe the men were local, and feared identification if they remained too long. Up-country men would have had no such fear, and would also have been in such numbers as to overawe any feeble resistance that might have been attempted; nor would they have troubled to effect a hole in the wall, when they could burst the door. Two men were sent up on the identification of the complainant only; they were committed to the Sessions but discharged.

"In the other two cases sent up the men were local bad characters; they were discharged by the lower Court before getting as far as Sessions. I doubt even if they were the correct men, there was nothing in the original complaints to connect them with the cases. They were supposed to have been identified by the complainants, but the identification was extremely weak. The *dacoits* were said to have spoken Hindi, and as these bad characters do not speak Hindi, I do not see how the identification was likely to be believed. The police produce certain well-known bad characters; it is not proved that they were absent from their homes that night, the complainant says he thinks he can identify them, he is pressed to be more positive, and at last says he is quite sure of it; and on this evidence the forms are sent up. I think as a rule it can generally be taken for granted that when the right men are arrested they usually confess in detail. The argument that Bengalis speak Hindi to make it appear they are up-country men I do not place much reliance on; it is only a theory, and if correct an up-country man should use Bengali to put suspicion on to local men, but he does not.

"In another *dacoity* case at Tarakeswar, the *dacoits* were evidently up-country men, and had certainly come from a distance; for they said in Hindi to the complainant, 'Now be quick and produce your property, we have been here for the last three days, and have not as yet got our railway fares.' And yet in this case the police arrested some local bad characters, whom the complainant promptly identified in the usual absurd manner; nothing of course came of it. These *dacoits* were, I believe, Bhors or Tutias.

"The case that occurred at Chatra, Serampur town, was another of this sort. The local police suspected the Borah gang, and fetched several of the bad characters down; the complainant identified

three of them, but in the usual flimsy way, nothing came of it. This case again I think was committed by Tutias or Bhors from Calcutta.

"The facts amount to this therefore, that out of the three cases ending in conviction all the accused were foreigners; in one case, Sonthals; in one Bhors of Benares from Calcutta; in one Tutia Mahomedans of Calcutta.

"There were 25 cases of *dacoity*, but in no case were the local bad characters convicted. There is no doubt that the Borah gang * is a bad one, but it is believed that they commit *dacoity* not here but in other districts. They may or may not be mixed up in the local cases, but nothing has been proved. Personally, I do think the local bad characters assist these other gangs, but to what extent it is impossible to say. The Tutia Mahomedans are residents of Bengal, and are much more likely to obtain assistance from the local bad characters than the Bhors are.

"I do not mean to infer that the local *daghis* † do not commit *dacoity*; but I think the majority of cases in this district have been committed by foreign gangs located in Calcutta and Howrah. Mr. Samuells, District Superintendent of Police, Howrah, lately caught a large number of Bhors at Bali, on the borders of Hughli district, going out at night to commit *dacoity*; they were, I believe, convicted. This proves my theory to a certain extent.

"There was another case of *dacoity* at Pandua (undetected), not far from the railway station. There was a gang of Bhors working on the line, and I fully believe that these men were responsible for the occurrence; Hindi was spoken, and the men were described as up-country men. Various other thefts and burglaries occurred in the neighbourhood, but as soon as the gang shifted up the line all these cases stopped.

"Registration of all these Benares Bhors, and proper supervision on the part of the Calcutta Police would, I think, to a large extent stop *dacoities* in the Burdwan division.

On Mr. Stuart's remarks, Mr. Inglis, I.C.S., the District Magistrate, makes the following comment:—

"I agree with the District Superintendent of Police. The difficulty of detection lies in the rapidity of movement possible here, the timidity of the residents, and their failure to give the police any clue. Large numbers of foreigners pass though this district in search of work, *dacoits* are not suspected."

A form of crime which also seems to me to be more common here than in any other district in which I have served is that of kidnapping or abduction of young girls, usually married girls. A large number of girls have been sent to me for examination, during the past twelve months, as to whether they were over or under sixteen. My opinion in most cases has been that they were under that age. Possibly the reason why I have not seen so many cases of this sort elsewhere is not that they do not occur, but that they have not been sent to the Civil Surgeon for examination in other districts. Most of the cases I have seen have been in 1901. The total number of cases of this offence in 1900 was eight, of which two were declared false, while the accused persons were convicted in three and acquitted in three cases. There were three cases of rape in 1900, in which the accused in one case was convicted, in a second acquitted, while the third was pending at the end of the year.

* Borah gang: a wandering gang of men from Gorakhpur, quite different from the Benares Bhors.

† *Daghi*, literally stained; marked, a registered criminal

For police purposes, Hughli district is divided into thirteen *thanas*, or police-stations; under which are six regular outposts, thirteen town outposts, and four beat-houses, or non-investigating outposts, as follows :—

Subdivision.	Thanas.	Outposts.	Town outposts.	Beat-houses.
Hughli or Sadr.	Hughli	.....	Shahganj	Bansbaria.
			Pipalpati	Magra.
			Kharua-Bazar.	
			British Chandarnagar.	
	Polba.			
	Pandua.			
	Dhaniakhali ...	Dadpur.		
	Balagarh.			
Serampur.	Serampur ...	Bhadreswar ...	Bhadreswar.	
		Uttarpara ...	Baidyabati.	
			Sheorafuli.	
			Chatra.	
			Tantipara.	
			Mohesh.	
			Konnagar.	
			Kotrang.	
			Uttarpara.	
	Singur	.....	.....	Bora.
	Chanditola.			
	Haripal	Tarakeswar ...	.....	Chapadanga.
	Kristonagar.			
Arambagh.	Arambagh ...	Pursura.		
	Khanakul.			
	Goghat	Badanganj.		

The total strength of the police force sanctioned for employment in the district is 813, inclusive of the European officers at one extreme, and of the town *chaukidars* at the other, but exclusive of one head constable and 20 constables specially employed as plague police. The number actually in the force on 31st December 1900 was 801. The sanctioned strength of 813, *plus* the 21 plague police, makes 834, or one to every 1,290 individuals in the total population of 1,076,710, according to the census of 1891. The

number of officers and men of the various ranks, was as follows on 31st December 1900 :—

	Sanctioned.	Employed.
Superintendent	1	1
Assistant Superintendent	1	1
Inspectors	3	3
Sub-Inspectors	42	43
Head Constables	67	66
Constables	561	549
Town *Chaukidars*	138	138
Total ...	813	801

The Assistant Superintendent was only nominally attached to the District Police, being actually employed as Commandant of "D" Company, Military Police.

The number of police employed in the eight Municipalities in the district is shown in the following table :—

Town.	Sub-Inspectors.	Head Constables.	Constables.	Town *Chaukidars.*	Total.
Hughli-Chinsura ...	1	4	16	100	121
Bansbaria	...	...	3	18	21
Serampur	1	8	70	...	79
Bhadreswar	...	2	14	...	16
Baidyabati	1	4	28	...	33
Kotrang	...	2	8	...	10
Uttarpara	...	1	11	...	12
Arambagh	...	1	2	20	23
Total ...	3	22	152	138	315

During the year 1900 there was a slight increase of crime in the district, perhaps owing to high prices. The number of cases of crime cognisable by the police rose from 1,705 in 1899 to 1,973 in 1900; while the number of non-cognisable cases was 3,230. Among the more important heads of crime during the year, were seven cases of murder, two of which ended in conviction, one being hanged; one of being in possession of false coin; 25 of dacoity, as mentioned above; 91 of rioting, in two of which loss of life occurred; 84 of these cases were land disputes, riots between tenant and tenant, and seven were due to other causes; 504 cases of house-breaking, chiefly in Serampur town; and 795 cases of ordinary theft. There were also 61 prosecutions for vagrancy and bad character; 35 cases under the opium laws, chiefly of smuggling from Chandarnagar; 84 cases

under the excise laws; and 44 cases under the Arms Act, chiefly for delay in renewing gun-licenses. There are over 5,000 gun-licenses in the district, a very large number for so small an area.

The subordinate officers of the district police are chiefly natives of the province, Bengalis. The rank and file are for the most part men from Bihar and from the eastern districts of the North-Western Provinces and Oudh; not more than ten per cent. being natives of Bengal. These up-country men suffer greatly in health here, being as much foreigners as are Europeans, and the percentage of wastage every year by death and resignation is very high. I should say that fully one-half of the rank and file of the police are in a state of health for which, if they were Europeans, any medical board would readily pass them for a year's leave to Europe on medical certificate. Slight enlargement of the spleen is common, great enlargement not uncommon. The work of the police necessitates much exposure to weather, accommodation in rural police-stations is usually indifferent, many of these stations are at considerable distances from the nearest dispensary or hospital; the men are not well paid, and, as most of them are trying to save money either to send home or to take home when they can get leave, they are inclined to stint their food. Add to this that the men are not the best specimens of their class when originally enlisted, for naturally no up-country man would enlist in the police of a Bengal district if he could get a place in that of his own district, and draw the same pay for service in his own country and near his own home; and the fact that, owing to the great wastage, it is difficult for a man to get the leave he has earned when he is entitled to it, and it will easily be seen that "the policeman's lot is not a happy one."

It will be advisable here to give some statistics as to the admissions to hospital and deaths in the force for the past few years, in proof of the above assertions. But first I must point out that the number of admissions to and deaths in the Police Hospital at Hughli by no means represents the actual amount of sickness and mortality in the police force of the whole district. From the district reserve, and other portions of the force accommodated in the barracks at Hughli, from the Hughli *thana*, and the four town outposts in the town, every case of illness, slight or severe, presumably comes into the police hospital. The same, in a somewhat less degree, applies to the *thanas* and town outposts situated along the railway line, from Uttarpara to Pandua. But from the more remote *thanas* in the interior, only a comparatively few cases come sick to Hughli. From the three *thanas* in Arambagh subdivision it is always a long, and in the rains a very difficult journey to get to Hughli. As regards those slightly sick, it is not worth while to send them so far; while as for those seriously ill, when sent to any hospital, they would go to the Arambagh dispensary. Every year some deaths take place among the police at rural *thanas;* and every year men die at their own homes, some of

whom have been sent home on sick leave, some have gone on leave on private affairs. The table given above, showing the numbers of the district police of various ranks, shows 138 men as town *chaukidars*. These men are not sent into the Police Hospital when ill, but to the Imambarah Hospital, the public charitable dispensary.

The year 1898 showed 365 admissions to the Police Hospital, and 3 deaths in hospital. Fevers and spleen accounted for 204 admissions and 1 death; dysentery 53 admissions and 1 death; respiratory diseases 11 admissions and 1 death; diarrhœa 17 admissions, and venereal diseases 20. The number sent on sick leave was 55.

In 1899 there were 374 admissions, and 3 deaths in hospital. Fevers (238) and spleen (22) give 260 admissions and 2 deaths; dysentery 37 admissions and 1 death, diarrhœa 14, venereal diseases 10, and respiratory diseases 7 admissions. The number sent on sick leave was 58.

In 1900 the number of admissions to hospital fell to 269, while the number of deaths increased to 12. Fevers (139) and spleen (24) caused 163 admissions and 6 deaths; dysentery, 25 admissions and 2 deaths; respiratory diseases, 7 admissions and 2 deaths (from pneumonia); cholera, 3 admissions and 2 deaths; diarrhœa, 13, and venereal, diseases 11 admissions. The number sent on sick leave was 33.

In contrast to the numbers who died in hospital, may be stated the actual numbers of the force who died, during the past three years. The numbers dying in hospital were three each in 1898 and 1899, twelve in 1900. In 1898, two head constables and sixteen constables died; in 1899, one head constable, 25 constables, and 12 town *chaukidars;* in 1900, 31 constables and 10 town *chaukidars*. The last named, as mentioned above, do not come into the Police Hospital, therefore naturally their mortality does not appear in the hospital statistics.

The following table shows the wastage of the force for 1900, also less fully for the two preceding years:—

Causes of casualties.	Head Constables.	Constables.	Town *Chaukidars*.	Total 1900.	Total 1899.	Total 1898.
Deaths ...	...	31	10	41	38	18
Dismissals ...	...	15	8	23	20	9
Resignation ...	...	39	11	50	73	31
Desertion ...	...	1	...	1	4	5
Pension ...	1	6	...	7	9	3
Other causes ...	...	14	11	25	60	22
Total ...	1	106	40	147	204	88

It will be seen that, taking the number of police in the district roughly as 800 (on 31st December 1900 there were 801), in 1898 11 per cent., in 1899 over 25 per cent., and in 1900 over 18 per cent. disappeared in a year These numbers speak volumes for the unpopularity of the force, and show the difficulty there is in keeping the strength up to the mark.

In 1901 there were 355 admissions to hospital and 7 deaths ensued During this time the largest number of admissions has been for fever 151 with no death, and spleen, 34 admissions and 1 death. Diarrhœa has caused 27 admissions; dysentery 28 admissions and 2 deaths; venereal diseases, 16; and respiratory diseases 15 admissions; cholera 4 admissions and 3 deaths, while one case of hepatitis proved fatal. In 1901, the number sent on sick leave has been 52; the daily average sick were lowest in July (5·13) and highest in November (29·33); that for the whole year being 15·33.

I have no statistics of the Police Hospital older than a few years back; but I came across a letter in the office, from the Civil Surgeon to the District Superintendent of Police, written in 1888, in which it was stated that the average number of sick in the Police Hospital in the unhealthy months of the year was about fifty. Now in over twelve months' experience of Hughli, the largest numbers which have ever been in hospital on any one day were 29 on 14th and 15th October 1901, and 27 on a few days in November and December 1900.

It is, and has long been, the fashion to abuse the police, as corrupt and inefficient. Not only does this view appear in the unmitigated license of the native press, but not unfrequently it is also heard in the unbiassed deliverance of a judicial statement. In neither case can the much-abused policeman answer back, nor defend himself. *Cucullus non facit monachum*, says the proverb, but the uniform does make the policeman. Whether subordinate officer or humble member of the rank and file, he is a man of like passions and infirmities with the rest of his own class who have not donned the blue coat and red *pagri*, no worse, and unfortunately no better. Why the earning of a small salary by hard work should be expected to make him superior to his brothers and cousins and uncles outside the police force, is not easy to understand; but to read the diatribes often launched on the unfortunate force, one would think that there ought to be some saving grace in the mere fact of entering the police, which should render the recruit superior to his relations in private life. If, or when, the general tone of the class from which the constable is drawn, ever rises superior to its present level, then also will the policeman improve. The same applies to the subordinate officers, who after all, suffer not much more abuse than a somewhat similar class, as respects income and standing, the *amla* of our public offices. Nor is it the mere fact of being in Government service which lowers a man's moral tone; the *amla* or clerks and the *chaprasis* or peons of *zamindari* offices are not usually held to be exempt from the failings of their fellows in Government service. The panacea

recommended by the native press for the improvement of the police is to replace the present superior officers of the force, who are mostly Europeans, by natives. Whether the class who now get so much abuse, whether they deserve it or not from their fellow-countrymen, who are said to be so corrupt and inefficient as subordinates, would necessarily develop a higher tone of morality if they suddenly took the place of their European superior officers, is, to say the least of it, doubtful.

As regards the supposed inefficiency of the police, a police force, as a whole, has two very different functions to perform, the necessary qualifications for which are seldom to be found in the same individual, perhaps hardly in the same class. The first is the maintenance of order, the second the detection of crime. It is obvious that the qualities necessary to prevent or suppress a riot, and those required to investigate a case of poisoning, are different, if not antagonistic. In Bengal, moreover, in neither case will any help be got from the people who have to be protected; it is much if they do not actually aid the criminal against the law, and more than the policeman will expect.

There are, therefore, two widely different forms of police force and of police work, and the same men are expected to fill both capacities, and to fulfil both functions. If, on the one hand, a sound military police force is wanted, composed of members of the less effeminate races of India, with a stiffening of European subordinate officers, such a force would, in all probability, admirably fulfil the function of keeping the peace. On the other hand, composed of foreigners,—for the native of Bihar or the North-Western Provinces is a foreigner in Bengal, ignorant of the language and of the customs of the country,—it would be of little use for the detection of crime, and would be quite out of touch with the people; while a force composed of natives of Bengal would be in touch with the people, would probably possess more aptitude for detection, but would be of little use for keeping the peace. At present, the great bulk of the rank and file belong to the former class, most of the subordinate officers to the latter class.

I shall conclude this chapter with a short mention of some of the more important cases which have, from time to time, been tried in Hughli. By far the most sensational case which has ever been tried in the Hughli Courts, was that of the Bardwan *Raj* claimant, which, in many of its features, bears a great resemblance to the celebrated Tichborne claimant case, more than thirty years later. Protap Chand, son of Raja Tej Chandra, of Bardwan, died in 1820, during his father's lifetime, and was burned at Kalna. Fifteen years later, in 1835, a *Sanyasi*, or religious mendicant, appeared in the Bankura district, and gave out that he was Raja Protap Chand. He stated that, under a religious vow, he disguised himself as a *fakir*, and escaped from the funeral pyre at Kalna, with the help of the family priests of the *Raj*, who substituted another body for his, while he swam off to a boat which was

waiting for him in the river, and so disappeared. His vow being now fulfilled, he returned to claim his title and estates. He was arrested, and was tried at Hughli in 1836. It was proved that he was one Kirti Lal Pauri, of Gewari, in the Nadiya district; and he was sentenced to six months' rigorous imprisonment, and to enter into a bond for Rs. 40,000, to keep the peace for one year. He did his six months, and was released in February 1837. The year for which he was bound down to keep the peace having expired, he appeared again at Kalna on 20th April 1838, at the head of a fleet of boats and a band of armed men, seized the Raja's palace there, ordered the *zamindars* subordinate to the *Raj* to acknowledge and to aid him, and promised liberal remissions of rent to the tenants. The Magistrate declared that if he had promptly marched on Bardwan, the result would have been "the sack of that opulent city and the massacre of all those who were supposed to be inimical to his pretensions." The Magistrate of Bardwan, Mr. Ogilvy, arrested him at once, with an attorney named Shaw, who was assisting him, and the bulk of his followers. Of the latter, 146 were released as being menials, and only the armed men detained for trial. A preliminary enquiry was held by the Magistrate of Hughli, Mr. E. A. Samuells, who committed him for trial on the following charges:—

"(1) For fraud and imposture in assuming the name and title of the late Maharaja Dheraj Protab Chand Bahadur, and personating the said Maharaja for the purposes of extortion and with a view of obtaining fraudulent possession of the Bardwan *zamindary*.

"(2) Assembling a body of armed men and setting at defence the constituted authorities in aid and furtherance of the said fraudulent purposes."

The trial in the Court of Session began on 20th September 1838, before the Judge, Mr. Curtis, assisted by a Musalman *Kazi*. The claimant was fined Rs. 1,000, and in default sentenced to six months' rigorous imprisonment. After his release the claimant brought a civil suit, which the High Court, who had confirmed the sentence passed upon him, refused to try, on the ground that he had been proved to be an impostor. He lived in Calcutta for several years afterwards, went to Chandarnagar in 1845, then removed to Serampur, and finally settled in Baranagar, in 1851 or 1852, and died there a year later.

The above account is taken partly from Toynbee, pp. 150–52, partly from a series of articles called "Hughli, Past and Present," by Babu Shambhu-Chandar Dey, which appeared in the *Calcutta Review* for 1892-93. The latter also mentions two other cases of interest. On 11th July 1848 a *zamindari* affray took place, on a question of rival markets, between the followers of Raja Radha Kanta Deva, and of Babu Baikantha Nath Munshi of Taki. The Raja was tried by a Special Commissioner, Mr. Robert Torrens, B.C.S.; the trial lasting for 37 days, from 19th October 1848 to 26th November, and

ending in the acquittal of the Raja. In December 1854 Babu Madhab Chandar Datta, a *zamindar* of Chinsura, was murdered near Jiban Pal's garden. His son, Gurudas, was suspected at the time of having instigated the murder. In 1857 two up-country men tried to blackmail Gurudas, asserting that his *jamadar*, Gonesh Singh, had hired them to kill his father. Gurudas made them over to the police. The *jamadar*, Gonesh Singh, could not be found; Gurudas was tried and acquitted, the two self-confessed murderers were hanged.

CHAPTER XI.

FOOD AND FAMINE.

THE district of Hughli has been fortunate in never having been severely affected by famine for at least a century past, though it appears to have suffered, in common with the rest of Bengal, twice, during the latter half of the seventeenth century.

The writer of the articles on "Hughli, Past and Present," in the *Calcutta Review* for 1892-93, Babu Shambhu Chander Dey, states that the famine of 1770 swept away one-third of the inhabitants of Bengal. Stavorinus, who visited Bengal at this time, describes the distress at Chinsura (Vol. I, pp. 151-52). He states that famine was very bad at Patna in 1769, and also at Chinsura in the same year. "The banks of the river were covered with dying people." A starving man was killed and eaten by jackals in the street one night. "Whole families perished miserably." He also describes (Vol. I, pp. 117-18) what may be called a local famine. The Dutch settlement was invested by the forces of the Nawab of Bengal from 3rd to 15th October 1769, and as there was no stock of provisions in the place, many people died of starvation.

Another great famine devasted the province in 1788. The *Calcutta Gazette* of 10th July 1788 states that 4,000 persons were in daily receipt of relief in Calcutta, and a public subscription was being raised to meet the expense. The same paper mentions, on 17th July, that Rs. 15,000 had been collected; and on the 21st August states that the famine was at an end, and 70,000 persons were supposed to have perished in Eastern Bengal. The numbers refer to one section of the province only, and are probably under- rather than over-stated. Organized famine relief, at the expense of the State, had not then been dreamed of. But the records show that Calcutta, with the public spirit and charity which have always distinguished her citizens, had done her best to meet and succour the prevailing distress.

Toynbee (pp. 143-44) refers very briefly to this topic. He writes :—

"The great famines of 1770 and of 1783 [1788 ?] do not appear to have left any permanent trace on this district, nor do I find any mention of them in the local records. The droughts which followed the floods of 1833 and 1845 have been already alluded to under that head. By far the most serious drought occurred in 1837, when the rains failed early in September; tanks and *jheels* ran completely dry, and the price of food-grains rose 50 per cent., in spite of large importations from Purnea, Dinagepore, and the Upper Provinces. There was a good deal of distress among the lower orders, and crime and *dacoities* increased, but no relief measures of a special nature were considered to be necessary, and the district appears to have passed through the crisis without any severe suffering."

This district barely felt the effects of the great Orissa famine of 1866, being on the extreme edge of the affected area. The chief stress of the famine fell, as is well known, on Orissa; next to that province the district of Midnapur was the greatest sufferer. The western subdivision of this district, Jahanabad, which then included Ghatal, was more affected than Hughli proper, east of the Damudar. And though probably Hughli suffered more in this famine than in any other for a century past; compared with Orissa and even with Midnapur, the distress in Hughli was a mere trifle. The following account is condensed from Hunter ("Statistical Account," pp. 362–66), who in turn condensed his account from the district narrative in the report of the Famine Commissioners.

Hughli district does not appear to have suffered from the drought of 1865 to a very extensive degree; but so much of the soil is devoted to fruits and valuable products, such as jute, sugarcane, plantains, potatoes, &c., that a considerable proportion of coarse rice, required to feed the population, is always imported from other districts, and these supplies having been curtailed by the failure in the adjoining country, the price of rice was greatly enhanced. Scarcity and distress were severest in the west of the district, where the failure of the crops was most general, and where there was a large non-agricultural population of the weaver class, who underwent great suffering. This distressed area comprised *thanas* Jahanabad, Chandrakona, and Ghatal. Some, though less, distress was also felt in the parts of the district east of the Damudar; but the prosperity of the *raiyats* of this part of the district enabled them to tide over the famine without coming to actual starvation, as was the case in Midnapur. In the middle of June 1866 severe distress prevailed in Jahanabad: and in the middle of July the Subdivisional Officer reported that 2,235 individuals, men and women, in the subdivision, were destitute and unable to work, while 3,750 were able to work, but destitute for want of employment. Local distress was increased by a flood, and destitute persons from the districts to the west were pouring into the subdivision, *en route* for Calcutta. The Deputy Magistrate was directed to raise local subscriptions for the relief of the destitute, and to push on work on certain roads for which funds were available. Late in July, the Collector asked

for a Government grant, but up to that time the Commissioner thought the local means sufficient. Meanwhile, local relief Committees had been formed in the distressed tracts and some considerable sums collected.

In August, relief centres were opened at seven places in Jahanabad subdivision, besides one at Ghatal, which the merchants of that town maintained at their own cost until November, when relief operations were brought to a close. On the 8th August, the Board of Revenue made a grant of Rs. 5,000 for the purpose of relieving the helpless; while another special allotment of Rs. 6,000 was made in order to employ the able-bodied. On 13th August, the Deputy Magistrate was relieved of his ordinary duties, and employed wholly on relief operations. Cooked food was distributed and employment offered. The villages in which weavers were numerous were the chief centres of distress, but great difficulty was experienced in getting the weavers to do road-work. The cultivators did not seek relief. On 21st August, the Board of Revenue recorded its opinion that the relief measures taken had been insufficient; that the necessity should have been sooner reported, and relief given on a more extensive scale.

In addition to the relief centres in Jahanabad, two were opened in September at Pandua and Mahnad. In November, 150 persons were being fed daily at Pandua, and 280, chiefly strangers and resident weavers, at Mahnad. In Chinsura a Committee of native gentlemen raised subscriptions of Rs. 6,000, and daily fed all paupers seeking relief, from 14th July to 16th October. The aggregate daily totals of the paupers thus fed is said to have exceeded 100,000. Two relief stations were established, one at Hughli and one at Chinsura. A relief hospital was opened in July at Jiban Pal's garden, near the railway station; in August it was moved to the premises of the Imambarah Hospital, and was closed on 31st December. The funds of the Committee were exhausted by the middle of October, and were supplemented by a grant of Rs. 1,000 from the Board of Revenue. At Uttarpara and Serampur, also, measures were organized for supplying food, clothing, and medical assistance, to the indigent, by native gentlemen, without assistance from Government. At Uttarpara a temporary pauper hospital was opened on the dispensary premises.

No means exist of ascertaining the total mortality due to famine in the district. In Jahanabad subdivision, where the mortality was great, a native gentleman owning large estates estimated the mortality from all causes during July and August at 10,000, or about two per cent. of the population. It is impossible to test the correctness of this estimate, which was merely a rough guess. The mortality was not due to actual starvation, but mostly to bowel-complaints and other diseases brought on by insufficient and unsuitable food.

The total daily average number of persons relieved daily in each month in Hughli, including Jahanabad, Chandrakona, and Ghatal, is returned by the Famine Commissioners as follows:—July, 645; August, 3,242; September, 5,700; October, 6,000; November, 4,900. The total amount placed at the disposal of the Hughli Relief Committee was Rs. 37,410; of which Rs. 6,000 was contributed by the Board of Revenue, Rs. 16,500 by the Central Relief Committee in Calcutta, and Rs. 14,970 raised by local subscriptions.

Hughli district depends mainly upon the *aman* or winter rice. A good *aus* or autumn rice crop could not make up for a total loss of the *aman* crop; but a good *aus* crop throughout the whole district would be sufficient to save the people from famine, even if the whole *aman* crop were lost.

In the event of the total loss of the crops, the means of transit at the disposal of the district are sufficient to prevent the extremity of famine, by importation from other districts; nor is there any danger of the isolation of any particular tract, as the roads and rivers afford means of access to all parts.

How little Hughli, however, was affected by famine, in comparison with the country to the south-west of the district, is shown by the fact that the famine in Hughli district is barely mentioned, both in the Sanitary Commissioner's report for 1866, and in Buckland's "Bengal under the Lieutenant-Governors." The former merely says:—

"In Hooghly the suffering was chiefly confined to the west of the district adjoining Midnapore. From this district, and from others to the westward of Calcutta, many found their way to that city."

The latter writes (p. 352):—

"The weavers class in the west of the Hughli district were severely afflicted, and flocked into Calcutta."

The famine of 1874 can hardly be said to have affected Hughli at all. In this famine the very distressed tract lay entirely on the north of the Ganges; the partly distressed tract contained, among other districts, parts of Bardwan, Birbhum, and Bankura. (Buckland, Vol. II, p. 584.) So this famine, if it did not actually affect Hughli, came pretty near the district.

Since 1874 there has been nothing worse than local partial failure of the crops, with some local scarcity, and that only in the Arambagh subdivision. The Sanitary Commissioner's report for 1883 notes that the high price of food-grains, in this subdivision, told upon the poorer classes. The same report for 1885 mentions that that year was the first since 1880 in which Jahanabad subdivision had had a good rice crop. In 1896-97 the rice crop was only a six-anna one (six-sixteenths of normal), and again there was some distress in parts of this subdivision.

Table of Health and Mortality of the Hughli District contrasted with the prices of food-grains and the rainfall.

[Supplied by Office of Inspector-General of Civil Hospitals.]

Year.	Prices of grain (seers per rupee).			Comparative rates.	Sickness.	Mortality.	Rainfall, inches.
	Rice.	Wheat.	Gram.				
1879	11·02	11·20	10·60	Very dear	Healthy ...	Lowest ...	41·53
1880	16·10	14·23	15·37	Cheap ...	Ditto ...	Very low ...	54·87
1881	20·37	15·83	20·83	Very cheap	Very healthy	Low ...	62·77
1882	19·54	16·25	20·37	Ditto	Ditto	Do. ...	56·90
1883	17·00	14·02	17·44	Ditto	Ditto	Very low ...	56·26
1884	13·30	15·77	17·02	Cheap ...	Ditto	Ditto ...	46·52
1885	12·75	15·96	16·17	Do. ...	Ditto	Ditto ...	72·79
1886	15·08	15·87	17·06	Very cheap	Ditto	Low ...	59·89
1887	17·48	14·04	19·98	Ditto	Healthy ...	Very low ...	48·60
1888	16·21	13·83	17·46	Ditto	Very healthy	Low ...	72·47
1889	12·34	13·00	15·29	Dear ...	Ditto	Average ...	40·27
1890	13·17	13·00	16·00	Average ...	Ditto	Ditto ...	54·07
1891	13·48	13·00	16·00	Ditto ...	Healthy ...	High ...	45·85
1892	10·84	12·40	14·83	Dear ...	Ditto ...	Very high	41·31
1893	10·11	12·34	13·48	Very dear	Much sickness.	High ...	69·47
1894	11·28	13·89	15·36	Dear ...	Very much sickness.	Very high	43·82
1895	13·59	13·21	15·46	Average ...	Ditto	Ditto	43·18
1896	10·94	10·81	13·21	Very dear	Ditto	Highest ...	43·61
1897	8·38	9·64	8·35	Ditto	Ditto	High ...	68·82
1898	10·97	10·69	12·96	Ditto	Ditto	Do. ...	52·87
Total ...	273·95	268·88	313·24				1,075·84
Average ...	13·69	13·44	15·66				53·79

The above table gives the average prices of the three chief cereals and the rainfall for twenty years, with a rough estimate of the comparative sickness and mortality. These comparative estimates must necessarily be only a rough approximation to the truth. We do not know the number of deaths which actually occur, we only know the number which are registered, and

the registration of vital statistics, though still far from perfect, certainly improves gradually as time goes on. There may not be much difference from one year to another, but each decade has a tendency to show a slowly but steadily increasing mortality, not because more deaths occur, but because fewer escape registration. This upward tendency is checked from time to time by the occurrence of exceptionally healthy years, in which mortality falls; but on the whole the upward tendency is marked, so that the healthy years of one decade will show nearly as many deaths as the unhealthy years of the preceding decade. As regards sickness, our means of ascertaining the truth are smaller than they are with respect to deaths. The only sickness returns which we have are those of the patients attending the public dispensaries. And, as there is a constant and steady increase in the number of these institutions, so there is also a constant increase in the number of cases of sickness treated and shown in the returns. It may be granted that a well-conducted dispensary, under a popular medical officer, will show a much higher return of attendance than one in which these conditions are reversed. Also the returns of every dispensary, whether popular or unpopular, will increase in an unhealthy and diminish in a healthy season. But the increase or decrease due to these causes is not so great as to equal the difference made by the opening of new or the closing of old dispensaries. Naturally ten dispensaries will show a larger attendance than five. In this particular district, however, there has been no great change in the number of dispensaries during the last twenty years. Old ones have been closed, and new ones have been opened. The actual number at work in 1879 was twelve, in 1888 ten, in 1898, and still in 1901, thirteen.

The material condition of the people of Hughli district, especially of all those who are in any way connected with the land, is, and always has been very good. As already related, no serious famine has affected the district for well over a century. Crops are not always good, but India not being, like England, dependent on foreign countries for her food-supply, short crops mean high prices. The one great calamity which has affected the district the endemic fever of 1857 to 1877, described in Chapter VI, did not affect the fertility of the soil. If land then went out of cultivation, it was not from any want of fertility in the soil, but from want of sufficient hands to till it.

Toynbee makes some remarks on this subject. He writes (p. 61):—

"The material prosperity of the people of the Hooghly district seems to have been as notorious in former years as it is now. Labour was not to be had, except at exorbitant rates, for work on roads and embankments. The Superintendents of these works were constant and loud in their complaints on this score, and were somewhat indignant with the district authorities for not forcing people to work for them at their own fixed rates. The numerous private silk and indigo factories which were erected all over the district in 1838, after the close of the East India Company's Commercial Residencies, gave more congenial and remunerative employment and nearer to the people's own homes.

During his tour in the above year, the Magistrate remarked that he had not met with a single patch of uncultivated land. He adds—'The number of brick buildings in every village, the comfortable appearance of the dwellings, and the many articles of foreign manufacture which the inhabitants possess, are sufficient evidence of their being a prosperous and industrious race.' The brightness of this picture was afterwards considerably obscured by the ruin of the silk and indigo factories, and by the wave of epidemic fever which devastated the district."

Again, while discussing natural calamities, such as floods and droughts, on pp. 142-43, Toynbee writes that after the great floods of 1845—

"Strange to say that in spite of the preceding year the Collector is able to report hat 'the appearance of the *ryots* exhibits no marks of poverty, and the *pargana* in other respects is in a flourishing condition' . . . . . Distress and increase of crime were anticipated in the cold weather of 1846. People had already begun to flock to Calcutta and Serampore for work. Rupees 500 each was advanced to the Subdivisional Magistrates of Dwarhatta and Jahanabad for the relief of any urgent cases of distress, but I do not find any account of relief measures beyond this. Nothing could show better than the above narratives the wounderful recuperative powers of the soil and people of this district, and that the damage done by floods, however severe, is only temporary, has many compensations, and is never followed by the dire consequences of a prolonged drought. They show also that even fifty years ago the people of this district enjoyed an amount of material prosperity which placed them then, as now, above the consequences of any merely temporary losses."

That the condition of the people has not deteriorated in any way since the date when Toynbee wrote, in 1885, will, I think, be evident from the following facts, mentioned in the census report of the district for 1901. Between 1891 and 1901 there was an increase of revenue from excise and income-tax, an increase in the transactions of the Post Office Savings Banks, and of the Treasury in Government promissory notes, showing a general increase in prsoperity.

To this general prosperity of all connected with the land, there are two notable exceptions, in classes not so connected. The first is the class, a very large class in the urban strip along the Hughli, of more or less educated men whose incomes are fixed. A very large proportion of the inhabitants of the towns are clerks, either in offices of various sorts in the district, or in Calcutta offices, both Government and mercantile, going to and returning from their business as daily passengers by train. The more poorly paid members of this class, and they of course form the large majority, have not gained but suffered by the general prosperity. Their incomes remain on the same level as twenty years before, while prices all round have considerably risen during that period. And they get no benefit, as do landholders and cultivators, from this rise of prices of produce; to them it is all dead loss. The second class is that of landless labourers. For those who live and make their homes in the rural villages, wages have probably increased in about the same proportion as prices, and while they are able to work they maintain themselves as well as before; in fact their standard of living has somewhat risen on the whole, like that of other clasess. But when, from sickness, old age, or any other cause, they are no longer able to work, life becomes a hard struggle. Living being more expensive, the same amount of charity does not go so far now as it did fifty or twenty

years ago. Especially to be pitied are those who drop by the way out of the enormous numbers of temporary immigrants. Men and families who come from other districts to this for temporary work, in the mills, on the roads, the railways, or in the fields, usually get good wages while working, and are able to send or take away with them large sums (for them) when they return home, provided that are able to keep at work all the time of their stay. But if they break down they find much difficulty in maintaining their existence. The charity of the Hindu is boundless, to his own relatives, to the farthest possible tie of blood connection, to his own caste, indeed to his own fellow-villagers, without distinction of caste or creed. Every village maintains several poor incapables, the aged, the blind, or the crippled, out of its charity. But towards the stranger and foreigner little pity is shown. Indeed, considering the comparatively large proportion of temporary immigrants who come for work of various kinds, and adding to them the numbers of pilgrims who come through the district, visiting Mohesh, or Tribeni, or Tarakeswar, on their way from the Upper Provinces to Puri, the great majority of whom must necessarily maintain themselves by begging on their way, it can hardly be expected that public charity would find enough food to keep them all in existence. Yet, somehow or other, it does do so. It is true that it is such poor wretches who fill the pauper wards of our hospitals, in many cases admitted only to die there. But in most cases they are suffering, not so much from actual want of food, as from unsuitable food. The parched rice or gram which may form a satisfying and sufficient diet for a man in good health, will only aggravate the disease in one suffering from bowel-complaint.

But if the district, as a whole, is rich and prosperous, it is a prosperity which is purchased with human lives. The inhabitants are essentially, like the conies, a feeble folk. The fat and fertile soil, which grows great crops of rice in abundance, is not the kind of country which breeds a race of strong men.* In Chapter VI, I have told the terrible story of the endemic fever of thirty and forty years ago, as gleaned from old reports. The ravages of fever are now mild, compared with what they were then; but still fever is almost universal. The fertile rice lands grow not rice alone, but breed malaria with equal success. Granted that malaria is due to the anopheles mosquito, there are suitable breeding-grounds for it here in sufficient quantity to stock the world. Add to this the utter indifference to sanitation, to conservancy, and in fact to simple cleanliness, and it can hardly be wondered at that the people of the district are of poor physique, unhealthy, and seldom long-lived. The death-rate is considerably higher than the birth-rate, and if it were not for the constant stream of immigration of a more sturdy population from more healthy tracts elsewhere, the inhabitants would, in course of time, gradually die out.

* "Tis the hard grey weather breeds hard Englishmen."—*Kingsley.*

CHAPTER XII.

DISEASES.

THE subjects of climate and general mortality, as well as the prevalence of fever and malarial disease, have been treated at length in Chapter VI—Climate, above. A few more general remarks on the subject may, however, be made here.

The climate of Bengal has always been considered unhealthy, and inimical to the constitution of foreign residents. This fact was as obvious to the Musulman conquerors of Bengal, who came from Upper India, as to the European immigrants. The writer of an article on the "Reoccupation of Negrais," in the *Calcutta Review* for 1849, founded upon a memoir by Dr. (afterwards Sir) James Ranald Martin, recommending the reoccupation of Negrais Island, off the coast of Burma, as a sanitarium for Bengal, makes the following remarks on this subject:—

"Whatever may be the real claim of Calcutta to the flattering title of a City of Palaces, there can be little doubt that it has long possessed, and unfortunately still possesses, a very clear right to the appellation of the City of Sepulchres. Long before, among us Englishmen, the 'Ditcher' class had risen, our Musalman predecessors had discovered that Bengal was a place fitly adapted as a residence for criminals, whom it was desirable to kill off without the aid of the rope or the sword. The climate of Bengal, says a Persian writer, quoted by Mr. Martin, on account of the inclemency of the air and water, was deemed inimical to the constitution of Moguls and other foreigners, and only those officers who laboured under the royal displeasure were stationed there; and this fertile soil, which enjoys a perpetual spring, was considered a strong prison, as the land of spectres, the seat of disease, and the mansion of death. Another native writer, with reference to the same subject, observes:—'The Musulman invaders of the west of Hindustan, who afterwards established themselves on the throne of Delhi, considered this country, Bengal, to be *Dozakh*, or an infernal region; and whenever any *Ameers* or courtiers were found guilty of capital crimes, and the rank of the individual did not permit their being beheaded, while policy at the same time rendered their removal necessary, they were banished to Bengal. The air and water of Bengal were considered so bad as to lead to the certain death of the criminal.'"

The above view of the case is considerably exaggerated. During the sway of the dynasty of Babur, two princes of the House of Timur, Shah Shuja and Azimusshan, spent considerable periods as Viceroys of Bengal. Murshid Kuli Khan was Viceroy of the province for fifteen years, from 1710 to his death in 1725; his son-in-law and successor, Shuja Khan, for fourteen years, till his

death in 1739; and Shuja Khan's brother, Ali Vardi Khan, fourteen years from 1742 till his death in 1756. The latter, moreover, had spent several years in the province before his accession to the Viceregal throne. It is true that the Viceroys did not live in Bengal proper, except for a short while when the capital was at Dakka, but had their seat of government first at Rajmahal, afterwards at Murshidabad. But the appointment of *Faujdar* or Governor of Hughli seems to have usually been sought after. No doubt the Mogul prince or officer would have preferred rule or office, as the case might be, at Delhi or Agra, to an equivalent position in Bengal; just as most Europeans would prefer an equivalent appointment at home to one in India. But with the Moguls, as with the Europeans, the perils, such as they might be, of climate, do not seem to have weighed much against the chance of bettering their position or their income by coming to Bengal. The fact is that, however bad the climate may be for the new-comer, it is much worse for the indigenous inhabitant, and the superior physique of the former would do more for him than the acclimatization of the latter, accompanied as it was by the inertia and weakness of constitution inherited from generations of ancestors settled on the spot. There can be no doubt that the climate of Lower Bengal is intensely relaxing, and, though individuals may, and often do, stand it for many years without much visible deterioration of health, it is not suited for breeding a healthy progeny to immigrants from other places. To most Europeans who have not spent all their lives, since first they came to India, in Bengal, the damp, relaxing heat, with a thermometer not very high, is more disagreeable and less suitable than the fiery heat of Upper India, relieved by a much longer and a more invigorating cold weather than that of Bengal.

Two extracts will show the effect that the climate of Lower Bengal, aided by the general manner of living in the first case, by the exposure and hardships of war in the second, had upon Europeans in the province, in the beginning and middle of the seventeenth century respectively. The first is from Hamilton's "East Indies" (p. 6), and refers to Calcutta about 1706 or 1707:—

"One year I was there, and there were reckoned in August about 1,200 English, some military, some servants of the Company, some private merchants residing in the town, and some seamen belonging to shipping lying at the Town, and before the beginning of January there were 460 burials registered in the Clerk's Book of Mortality."

This shows a mortality of over one-third in five months, or nearly cent. per cent. per annum, though it must be remembered that the months in question include the most unhealthy time of the year. Incidentally this extract also shows how rapidly the number of Europeans had risen from the dozen or so of officials stationed at Hughli twenty years earlier. Hamilton also remarks, (p. 9) 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."

This hospital was the predecessor of the Presidency European General Hospital, which is now being rebuilt at great expense, and is now probably the finest hospital in India. Fortunately Hamilton's description would not now be applicable. The second extract is from Ives' "Voyage" (p. 180), where it is stated that Major Kilpatrick, who came from Madras, after the capture of Calcutta, in August 1756, in command of 250 soldiers, died fourteen months later, in October 1757; and of the 250 men under his command only *five* survived him! This gallant little band had, in the meantime, however, been through the captures of Calcutta, Hughli, and Chandarnagar, the battle of Plassey, and the pursuit of M. Law and his party of French to the limits of Bihar. It is true that neither of these extracts specially refers to Hughli, but the climate of Hughli and of Calcutta, only 25 miles apart, is exactly the same.

I. *Cholera.*—The table on p.p. (472-3), giving the mortality from cholera, month by month, for the 20 years 1879 to 1898, arranged in two decennial periods, for the Hughli district, was supplied from the office of the Inspector-General of Civil Hospitals. The first decennium gives a total number of 12,528 deaths from cholera, the second of 18,796—an increase of almost exactly fifty per cent. I believe, however, that the higher figures of the second decennium are due, to a large extent, to improvement of registration, which was in its infancy in the first period.

The monthly average mortality may be best shown by a short table, contrasting the two periods.

1879–88.		1889–98.	
(1) April	218·60	(1) April	430·10
(2) December	181·30	(2) March	334·20
(3) March	159·10	(3) May	195·10
(4) November	145·80	(4) December	181·10
(5) January	122·70	(5) February	154·50
(6) May	97·10	(6) January	127·60
(7) February	92·50	(7) November	99·30
(8) October	71·70	(8) July	96·80
(9) September	66·70	(9) June	90·60
(10) August	37·50	(10) October	74·20
(11) July	31·30	(11) August	57·80
(12) June	28·50	(12) September	38·30

Two years have elapsed since this table was compiled, the first, 1899, a year of very little cholera; the second, 1900, a year in which cholera was both prevalent and fatal, though less so than in 1892 and 1896. The

Mortality table, Cholera, from 1879

Month.	First Decennium.											
	1879.	1880.	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.	Total.	Average.
January ...	107	41	112	106	322	53	46	105	206	129	1,227	*122·70*
February ...	31	41	155	107	94	76	126	71	118	106	925	*92·50*
March ...	57	135	86	110	194	232	372	63	99	243	1,591	*159·10*
April ...	29	229	214	74	226	429	282	109	235	359	2,186	*218·60*
May ...	77	111	69	106	107	137	151	8	32	173	971	*97·10*
June ...	54	10	9	104	27	24	27	4	4	22	285	*28·50*
July ...	33	3	21	78	53	33	32	14	31	15	313	*31·30*
August ...	5	5	71	72	36	41	79	22	19	25	375	*37·50*
September ...	8	7	72	65	44	19	369	14	27	42	667	*66·70*
October ...	7	8	130	74	78	21	140	155	31	73	717	*71·70*
November ...	13	38	284	141	68	187	30	364	53	280	1,458	*145·80*
December ...	38	126	193	436	103	128	84	474	78	153	1,813	*181·30*
Total ...	459	754	1,416	1,473	1,352	1,380	1,738	1,403	933	1,620	12,528	*1,252·80*

monthly mortality for 1899 and 1900 is given below, for the sake of comparison :—

1899.

(1) May	...	152
(2) April	...	43
(3) August	...	37
(4) March	...	33
(5) December	...	31
(6) October	...	28
(7) September	...	24
(8) July	...	22
(9) November	...	19
(10) June	...	19
(11) February	...	16
(12) January	...	11
Total	...	435

1900.

(1) April	...	560
(2) May	...	254
(3) December	...	221
(4) March	...	202
(5) February	...	162
(6) July	...	154
(7) November	...	124
(8) June	...	108
(9) August	...	88
(10) October	...	86
(11) September	...	38
(12) January	...	29
Total	...	2,026

The tables for both decennial periods bring out well the fact that the cholera season in the Hughli district, as in Lower Bengal in general, lasts from November to May, the mortality from the disease being at its lowest

to 1898, in the district of Hughli.

Second Decennium.												20 years' period.	
1889.	1890.	1891.	1892.	1893.	1894.	1895.	1896.	1897.	1898.	Total.	Average.	Total.	Average.
81	145	125	48	68	150	350	189	102	18	1,276	*127·60*	2,503	*125·15*
67	94	290	90	36	338	184	268	125	53	1,545	*154·50*	2,470	*123·50*
64	79	408	439	32	261	196	1,350	429	84	3,342	*334·20*	4,933	*246·65*
128	174	241	1,121	30	163	627	1,327	388	102	4,301	*430·10*	6,487	*324·35*
46	49	34	715	79	70	133	651	105	69	1,951	*195·10*	2,922	*146·10*
57	12	31	260	44	59	25	326	76	16	906	*90·60*	1,191	*59·55*
83	32	23	310	31	167	103	138	38	43	968	*96·80*	1,281	*64·05*
55	11	23	124	28	184	49	43	24	37	578	*57·80*	953	*47·65*
56	6	52	16	44	74	88	28	11	8	383	*38·30*	1,050	*50*
96	4	235	31	189	37	95	13	41	1	742	*74·20*	1,459	*72·95*
199	8	202	102	173	83	103	6	117	...	993	*99·30*	2,451	*122·55*
314	151	232	159	182	273	339	37	117	7	1,811	*181·10*	3,624	*181·20*
1,246	765	1,896	3,415	936	1,859	2,292	4,376	1,573	438	18,796	*1,879·60*	31,324	*1,566·20*

during the rains, from June to October. After the close of the rains, usually in November, but sometimes in October, the disease begins to increase in virulence. In the beginning of the year there is generally a decrease, sometimes in January, sometimes in February, after which cholera again increases, to reach its maximum in March, April, or May, after which it rapidly falls. If the maximum comes in March, usually the epidemic will be over by the end of April, and May will not record many cholera deaths. If, on the other hand, the maximum is not reached till May, then the epidemic will probably extend well into June. The figures for 1900 support this statement fairly well also. It must be admitted that those for 1899 do not, but in that year there was so little cholera, except in May, when the maximum (a very low maximum for the year) was attained, that the figures would hardly count for anything in a period of ten years. It is a curious fact, however, that in both 1899 and 1900 the minimum occurred in January, a thing which had not happened once during the last twenty years; while in 1901 the death-rate for January will probably be nearer the maximum than the minimum.

During the period of twenty years, 1879 to 1898, the maximum has been reached seven times in April, four times each in December and March,

twice in January, once each in February, October and November. The minimum has occurred seven times in June, thrice each in September and October, twice each in August, July, and November, once in May. In November 1898 no cholera deaths were registered, the only month in which such a thing happened in the whole twenty years, and in October 1898 only one. Of course a maximum in December in one year may easily be followed by a maximum for the next in January, as occurred in 1882-83, by a continuance of the same epidemic. October shows the maximum number of deaths in 1893, the minimum in 1894. In 1892 the annual epidemic continued well into the rains, till August, and in 1896 up to July, while in 1894 there was a recrudescence in July and August.

As regards the history of cholera in the Hughli district, I can give little of date earlier than the Sanitary Commissioner's reports, from which I have taken all the facts subsequent to 1870. Cholera is and always has been endemic in the district, but seldom causes such widespread epidemics or such high mortality as I have seen in some other districts, Bakirganj, Monghyr, and especially Purnea. Dr. Lind mentions that "in the great sickness of 1762 in which 30,000 blacks and 800 Europeans died in the province of Bengal, it was remarked that a constant vomiting of a tough white pellucid phlegm accompanied by a continual diarrhœa was deemed the most mortal symptom." This was evidently cholera, effecting the whole of Lower Bengal, including Hughli; and is, of course, of a date long anterior to the historic epidemic, said to have originated in Jessore, in 1817. It is curious that both cholera, and the epidemic fever of the third quarter of the nineteenth century, should be popularly supposed to have originated in Jessore.

Dr. Ross, then Civil Surgeon, writes about cholera as follows, in a report dated 28th April 1853:—

"Cholera has raged fearfully in Hooghly every year during the five years I have been at the station, and although these dire epidemic visitations have not been entirely caused by the imperfect sanitary condition of the station, yet there can be no doubt but that the disease is rendered more virulent and extensive by the evils complained of."

I have no further information about cholera in Hughli district or town prior to the publication of the Sanitary Commissioner's reports; but a good deal of information about the prevalence of this disease in Hughli Jail between 1850 and 1870 will be found in Chapter X.

The first reference to cholera in Hughli which I have found in the Sanitary Commissioner's reports is in 1872, when 649 deaths were registered, as compared to 621 in 1871; the areas most affected being Chanditola *thana* with 163 deaths, Serampur town with 97, and Hughli *thana* with 59 deaths, a ratio per 1,000 of 1·7, 2·5, and 1·79 respectively. In 1873 only 454 cholera deaths were registered, an outbreak occurred among the coolies employed in the Dhankuni drainage scheme, in February. In 1874 the areas

most affected were Hughli-Chinsura town, 4·89 per 1,000, Bansbaria *thana*, 3·53, and Hughli *thana*, 3·26. In 1875 no special note is made of the incidence of the disease, but in 1876 it was most fatal in Bansbaria *thana* (7·14), Serampur town, where it first appeared in Rishra (6·01), Hughli town (5·66), Hughli *thana* (4·69), Baidyabati town (4·35), and Serampur *thana* (2·35). In 1877 Hughli town suffered most severely, with a mortality of 5·46, and it is noted that parts of Hughli town had suffered from scarcity of water for four years, since 1873, rainfall having been deficient, and water having to be carried long distances, so that the poorer classes often drank very impure water, A bad system of trenching was also blamed for causing cholera in the Dharmpur quarter of Hughli. There was a smart outbreak of cholera in the Konnagar ward of Serampur, which, it was believed, was imported from Panihati, on the other side of the river. Nothing special is said about cholera in 1878.

With 1879 we enter the first of the decennial periods shown in the tables attached. Serampur town and *thana* and Uttarpara town suffered most; in February and March there was an outbreak among the coolies employed in the Calcutta municipal brick-works at Kotrang; but as a whole there was little cholera, only 459 deaths being registered during the year, the maximum, 107, being in January, the minimum, five, in August. In 1880 only 754 deaths were registered, April with 229 deaths, March with 135, and December with 126, being the months of highest mortality; the minimum was three deaths in July. A few cases occurred at the Tarakeswar *melas*. In 1881 cholera was more prevalent and more fatal, the total deaths for the year being 1,416, the worst months being October (130 deaths), (November 284), and December (126), as well as January (112), February (155), March (86) and April (214). The epidemics of this year in fact, lasted from December 1880 to May 1881, and again from August 1881 to June 1882. The areas most affected were Serampur town (7·24); Serampur *thana* (6·02); Uttarpara, town (3·64); and Baidyabati town (3·60). In 1882 the mortality was again high, 1,473 deaths, and the disease prevalent almost throughout the year, December, with 436 deaths, showing the highest mortality. The areas most affected were Serampur town (10·83), a very fatal epidemic having occurred among the coolies in the Rishra *bastis;* Uttarpara town (7·25), and Baidyabati town (6·31). As regards the latter, the passage describing the epidemic here is worth quoting:—

"In the village of Champdani, which was crowded with coolies from the neighbouring jute mills, the disease prevailed epidemically. Here no sanitary precautions of any kind seem to have existed. The *basti* was in an extreme state of filthiness, and possessed a latrine, from which the night-soil had never been removed. The Magistrate had this latrine burnt down, and the site strewed with ashes; and compelled the owners to clean their filthy lands, after which no fresh cases occurred. This *basti* was inspected by two medical officers, and a report suggesting needed improvements has been submitted to Government. The Magistrate considers the sanitary condition

of the villages in the district to be, with few exceptions, bad in the extreme. Amongst this the densest population existing in any portion of the globe, there are, as a rule, neither privies nor latrines."

In 1883 cholera was severe from January to May, with a recrudescence in December, the highest month being January, with 322 deaths, the lowest June, with 27. The areas most affected were all urban, the towns of Uttarpara, with a mortality of 8·53 per 1,000, Baidyabati (6·52), Serampur (4·90), and Hughli (3·77). The total deaths were 1,352, almost the same as the total, 1,380, registered in 1884. The same four towns suffered most again in 1884, headed by Serampur (8·30), where a very bad epidemic occurred among the mill coolies in the Mohesh and Rishra *bastis;* Uttarpara (6·53), Hughli (2·58), and Baidyabati (2·58). Of Uttarpara the Sanitary Commissioner remarks:—

"The sanitary condition of this town is very bad, and there is great need for a better water-supply than that afforded by the tanks, which are very foul."

In 1884 cholera was epidemic from March to May, April, with 429 deaths, showing the highest mortality, and again in November and December. September, with 19 deaths, showed the lowest mortality. In 1885 the total number of cholera deaths rose to 1,783, the epidemic of the end of 1884 continuing up to May 1885, with a decided fall in January; and again breaking out in September and October. The highest months were March, with 372 deaths, and September, with 369, the lowest June, with 27. The areas most affected were Hughli *thana* (6·08), Uttarpara town (4·17), Hughli town (3·87), Khanakul *thana* (3·79), Balagarh *thana* (3·23), Serampur town (3·01), and Baidyabati town (2·98). In 1886 the areas chiefly affected were Serampur town (7·62), Hughli *thana* (7·24), and Hughli town (5·13). The months of greatest mortality were November, with 364 deaths, and December, with 474; chiefly due to another bad epidemic in the Mohesh and Rishra *bastis*. It is noted that in 1886, cholera was altogether absent from the Champdani *basti* in Baidyabati, the insanitary condition of which had been described in such strong language four years before, owing to a supply of filtered water to the *basti*, and the construction of new latrines. The month of least mortality was June, with only four deaths. Uttarpara, which had been described two years before, in 1884, as in very bad sanitary condition, is this year called "a model municipality," by the same Sanitary Commissioner, Dr. Lidderdale. It does not appear what, if any, improvements had been made in the meantime in Uttarpara, and the cholera death-rate had remained high in 1885, though low in 1886. The epidemic of the end of 1886 went on till April 1887, that month, with 235 deaths, showing the highest total for 1887; June, with only four, the lowest; the total number of deaths from cholera in the district was only 933, and no registering circle showed any very high death-rate. But in 1888 the number of cholera deaths rose again to 1,620; the disease being epidemic from January to May, and again in November and December; the

highest monthly total was 359 deaths in April, the lowest 15 in July. The areas most affected were three towns, Serampur (9·73), Uttarpara, the "model municipality" of the preceding year (7·25), and Hughli town (6·43). It is specially remarked in the Sanitary Commissioner's report, quoting from a report by Dr. Barker, Civil Medical Officer of Serampur, that the densely crowded *bastis* of Mohesh and Rishra, overcrowded with mill coolies, and in every *other* way as insanitary as they had always been, had been almost free from cholera, since they had been supplied with pure water from the mills. The freedom of these *bastis* from cholera had also been remarked upon in 1887, but that was a year of very little cholera. In previous years these *bastis* had been scourged with cholera, while the rest of Serampur was comparatively free; in 1888 the town of Serampur returned by far the highest cholera mortality of any area in the district, and these *bastis* had hardly any cases.

With 1889 begins the second decennium of the cholera table. The mortality of this year was not very great, 1,246 deaths, of which 128 occurred in April, 199 in November, and 314 in December, the highest month; May, with 46 deaths, being the lowest month. In 1889 again four towns head the mortality from cholera, Serampur (8·03) again being first, followed by the model Uttarpara (6·89), Baidyabati (3·23), and Hughli (3·12). Again it is noted that the Mohesh and Rishra *bastis* were almost free from cholera, having only eleven cases. In 1890 only 765 deaths from cholera occurred, less than in any of the nine previous years. The disease was more or less prevalent from January to April, which gave the highest mortality, 174 deaths, and again in December; the lowest monthly total was four deaths in October. This year six towns head the list, but with death-rates much below those of previous years, and Serampur stands only third of the six. They are Uttarpara (5·44), Hughli (4·48), Serampur (3·39), Kotrang (3·30), Bhadreswar (3·02), and Baidyabati (2·71). In 1891 cholera was again epidemic, from January to April, and from October to December. The month of highest mortality was March, with 408 deaths, the lowest July and August, with 23 deaths each. The total number of deaths registered during the year was 1,896. This was the year of the great *Ardhodoyo Jôg*, a bathing festival which occurs only once in thirty years, and which was celebrated on the 8th February 1891. Surgeon-Major B. B. Gupta, who was then Civil Surgeon of Hughli, attributed the increased cholera to this festival, the pilgrims returning from bathing in the Hughli spreading it over the district. If this were so, the Hughli district was fortunate in escaping with so small a mortality. I was myself then in Purnea, the district which suffered more severely than any other in the province, the number of deaths registered being more than five times that of the Hughli district. I hope that, during my service, I may never again see an epidemic like that in Purnea in 1891, yet even that, as I have remarked in Chapter VI, fades into insignificance

compared with the accounts of the *fever* epidemic in Bardwan and Hughli, generally known as the "Bardwan fever." This, however, is a digression from the point, which is cholera in Hughli in 1891. It may, however, be interesting to compare the death-rate of Hughli with that of some other districts which really suffered severely in this epidemic. Only three districts in the province really escaped this epidemic; their figures are also given for the sake of contrast. Annual Form No. VII of the Sanitary Commissioner's report for 1891 gives the following statistics. Out of the 44 districts the figures of which are given in the table, I quote those of the seven highest, of Hughli, which stands 30th, and of the three lowest:—

Place.	Name of District.	Number of cholera deaths registered.	Death-rate from cholera per 1,000.
1	Purnea	21,559	11·08
2	Jalpaiguri	6,772	9·93
3	Rangpur	19,344	9·36
4	Nadiya	14,561	8·85
5	Shahabad	14,208	6·95
6	Gaya	9,780	4·57
7	Dinajpur	6,491	4·17
30	Hughli	1,896	1·76
...	[Serampur subdivision ...	906	2·26]
42	Noakhali	667	0·66
43	Chittagong	526	0·40
44	Singhbhum	64	0·11
	Total of province ...	229,575	3·26

In 1891 also it is noted that, while Serampur suffered severely from cholera, the Mohesh and Rishra *bastis* were almost free from the disease. Seven towns again head the list as returning the highest cholera death-rates in Hughli district, viz., Serampur (8·67), Bhadreswar (7·57), Uttarpara (5·85), Baidyabati (5·44), Hughli (5·28), Bansbaria (4·57), and Kotrang (3·48).

In 1892 cholera was slightly worse in Bengal as a whole than it had been in 1891, owing to a great epidemic in Orissa, which had hardly been affected by the *Ardhodoyo Jôg*. In Hughli the number of cholera deaths was 3,415, nearly double the total of 1891. The disease was epidemic practically throughout the year, except September and October, when only 16 and 31 deaths respectively were registered, the month of highest mortality being April, with 1,121 deaths

the first time the cholera mortality of the district for one month had topped the thousand. Indeed, 474 deaths in December 1886 was the highest total previously registered in one month. In May 1892 there were 715 deaths from cholera in the district, and in March 439, or 2,275 in three months. The registering circles which showed the highest mortality were the following, four towns again heading the list:—Bansbaria (10·02), Serampur (7·89), Hughli town (7·47), Bhadreswar (6·95), Polba *thana* (5·59), Baidyabati (5·05), Jahanabad town (4·92), Haripal *thana* (4·43), Dhaniakhali *thana* (4·33), Singur *thana* (4·17), Pandua *thana* (3·70), Uttarpara (3·54). In 1893 the total number of deaths from cholera was 936, little more than one-fourth of that of 1892, The disease was epidemic only from October, which had the highest monthly total, 189, to December; the lowest monthly total was 28 in August. The only areas which showed at all a high cholera death-rate were seven towns—Hughli (5·29), Uttarpara (4·62), Serampur (4·47), Bhadreswar (4·04), Kotrang (3·09), Baidyabati (2·77), and Bansbaria (2·06). In 1894 cholera caused a total of 1,859 deaths, nearly double the total of 1893; the disease was prevalent from January to April, again in July and August, and in December. The highest monthly total was 338 in February, the lowest 31 in July. Again seven out of the eight towns in the district head the list, while one rural area surpasses the eighth town, as follows:—Kotrang (7·55), Bhadreswar (6·95), Hughli (6·80), Bansbaria (6·19), Serampur (5·72), Jahanabad town (5·64), Uttarpara (4·31), Balagarh *thana* (3·29), and Baidyabati (2·23). In 1895 cholera showed a further increase, causing 2,292 deaths; it was epidemic throughout the year, except in June. The highest monthly mortality was 627 in April, the lowest 25 in June. The areas which suffered most were the seven towns along the Hughli. Kotrang heads the list with the very high cholera death-rate of 16·07, followed by Bhadreswar (9·23), Serampur (8·59), Uttarpara (6·62), Baidyabati (5·82), Bansbaria (4·71), and Hughli (4·38).

The year 1896 shows the highest cholera mortality yet recorded in this district, viz., 4,376 deaths. Cholera was epidemic from November 1895 to July 1896. In March 1896, 1,350 deaths from cholera were recorded, and in April 1,327, these being the two highest monthly totals yet registered. The last five months of the year only account for 127 deaths between the five, being less than the total of any one of the preceding months; the minimum was only six, in November. Again the same seven towns head the list, in a slightly different order, Kotrang again being first, with the even higher mortality of 16·65, followed by Uttarpara (14·02), Serampur (13·01), Baidyabati (10·71), Bhadreswar (10·58), Bansbaria (7·22), Hughli (6·47), followed by Balagarh *thana* (6·14); the lowest cholera mortality registered being 1·99 in Khanakul. In 1897 cholera diminished to about one-third of the mortality of 1896, the total number of deaths registered being 1,573; the disease was prevalent from January to May, and again in November and December. The highest monthly total was 429

deaths in March, the lowest eleven in September. Kotrang again heads the list with a mortality of 12·00 per 1,000, followed by four other towns—Uttarpara (6·31), Hughli (6·23), Serampur (5·61), and Bhadreswar (3·73); then come Balagarh *thana* (3·44), and Baidyabati (3·15).

1898, the last year of the second decennium in the table, shows the lowest cholera mortality of the whole series of twenty years; only 438 deaths being registered as due to this disease. The highest monthly mortality was 102 in April, while in November no cholera deaths were registered, and in October only one. The registering areas which show the highest mortality were two towns—Uttarpara (3·69) and Bansbaria (2·80).

Two years have elapsed since the completion of the second decennium to which these tables refer. The first, 1899, showed a cholera mortality even lower than that of 1898, with 435 deaths. The highest monthly total was 152, in May; the lowest eleven, in January. The worst areas were three towns—Bhadreswar (4·56), Serampur (3·56), and Baidyabati (2·01). In 1900 the cholera mortality was again high, with 2,026 deaths, over four times that of 1899, but still less than half that of 1896. The highest monthly mortality was 560 in April, the lowest 29 in January. The areas returning the highest mortality are, as usual, the seven towns along the Hughli—Kotrang (9·10), Hughli (8·43), Bhadreswar (7·88), Baidyabati, (7·34), Bansbaria (5·45), Serampur (5·03), Uttarpara (4·00). In Hughli town 218 deaths occurred in April and May; again 160 deaths from cholera occurred in Hughli town between 1st April and 30th June 1901, the town having suffered from a severe epidemic two years running, though the total cholera mortality of the district in 1901 will probably not be very high.

The most noticeable fact about cholera in this district is that it has always been a disease of the towns, especially of the seven towns along the bank of the Hughli; the eighth town, the small semi-urban town of Jahanabad or Arambagh, far in the west, seldom showing a high mortality. Usually one or other of these seven towns shows the highest mortality from cholera of any registering area in the district, and not uncommonly the seven form a solid block at the top. *Per contra*, fever shows a far higher mortality in the rural areas than in the towns, though dysentery and diarrhœa, like cholera, affect the towns more than the country. I regret that there are no statistics available for Chandarnagar, as that city is subject to exactly the same influences as Hughli to the north and Bhadreswar to the south, and its statistics of mortality would probably be similar to those of the English towns.

Hughli-Chinsura Municipality has suffered from a very severe and fatal epidemic of cholera in both 1900 and 1901, affecting chiefly the large wholly urban blocks of the town, Chaumatha and Gutia Bazar. The subject has been further referred to in Chapter VII, under the description of this Municipality. Until the sanitary condition of the town, as therein set forth, is improved, I am

afraid that similar epidemics are likely to occur with frequency. It may be of interest to give below the deaths registered in the town during the epidemic months of these two years:—

Deaths from Cholera in Hughli-Chinsura Municipality.

	March.	April.	May.	June.	Total of year.
1900 ...	14	148	70	7	279
1901 ...	15	34	97	29	243

2. *Small-pox.*—A table (overleaf) showing the mortality from small-pox for two decennial periods, 1879 to 1888, and 1889 to 1898, similar to that for cholera, has been compiled by myself from the Sanitary Commissioner's reports. Small-pox is a disease which, even in its worst epidemics, has little effect on the total mortality. The highest yearly total mortality registered in the twenty years was 400, in 1895, a very high mortality indeed for small-pox, but yet only 0·38 per 1,000 on the population of the district, and only one per cent. of the total mortality of the district during the year.

The monthly average mortality may be best shown by a short table contrasting the two decennial periods, with the figures for 1900 also given for the sake of comparison. Those for 1899, when only 31 deaths occurred, 22 of which were in the first three months of the year, are too small to be worth giving at length:—

1879-88.		1889-98.		1900.	
(1) April	9·3	March	25·2	July	37
(2) March	9·1	April	21·8	December	36
(3) May	5·5	May	13·2	April	27
(4) February	4·8	February	9·0	May	25
(5) June	4·1	July	8·8	June	24
(6) January	3·7	June	8·7	March	16
(7) July	2·8	January	7·5	October	10
(8) August	2·2	August	5·1	August	9
(9) November	1·5	December	4·7	November	7
(10) December	1·2	November	3·5	September	6
(11) September	1·0	October	2·4	February	5
(12) October	0·5	September	0·2	January	4

The average annual death-rate of the first decennium, 45·7, is less than half that of the second, 111·9; but I think that a good deal of the increase may be ascribed to better registration during the second period. The order of the monthly mortality of the two periods does not vary much. The only months which actually hold the same place in both periods are May third, February fourth, and August eighth; but in both March and April are the two months of highest mortality, followed by May and February, while September and October are the two last, with November and December next above them. The figures for 1900 are widely different, the month of highest

Mortality Table, Small-pox, from 1879

Month.	First Decennium.											
	1879.	1880.	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.	Total.	Average.
January ...	17	11	1	1	...	6	...	...	1	...	37	3·7
February	8	22	5	...	1	5	5	2	...	...	48	4·8
March ...	27	35	1	...	1	19	6	...	...	2	91	9·1
April ...	28	28	7	...	3	20	2	...	...	5	93	9·3
May ...	9	7	2	1	3	28	4	1	...	...	55	5·5
June ...	17	1	5	1	1	8	7	...	...	1	41	4·1
July ...	9	...	8	2	...	5	4	...	...	...	28	2·8
August ...	6	1	1	4	1	5	2	1	1	...	22	2·2
September	3	3	...	...	1	2	1	...	...	...	10	1·0
October ...	1	...	...	...	1	3	...	...	...	...	5	0·5
November	9	1	2	...	...	1	...	2	...	...	15	1·5
December	5	1	...	...	1	...	1	1	...	3	12	1·2
Total ...	139	110	32	9	13	102	32	7	2	11	457	45·7
Ratio per 1,000.	0·12	0·10	0·03	0·008	0·01	0·10	0·03	0·006	0·001	0·01	...	0·04

mortality being July, the lowest January; in contrast to which January was highest in 1899, while no deaths from small-pox occurred in July 1899.

In six years out of the twenty the total mortality of the year from small-pox was over 100; in these six the highest monthly mortality occurred four times in March, once each in April and May. Twice, in March and April 1895, over one hundred deaths from small-pox were registered in one month. These figures support the usual opinion as to the seasonal prevalence of the disease, viz., that it is at its minimum during the rains, gradually increases after the cessation of the rains, and reaches its maximum in the early hot-weather months, diminishing again with the first heavy falls of rain.

Stavorinus, in 1769, tells us that small-pox was very prevalent in Hughl He writes:—

"The small-pox is equally a distemper that prevails here; it began to rage violently before I left the Ganges. Inoculation is much practised by the natives, but they convert the contagious matter into powder, which they give internally, mixed with some liquid. A few of them, however, inoculate by incision. The first mode has generally a very fortunate issue; they prepare the body for the infection by laxatives and ablutions. A fever is felt the day after the inoculation, which is soon followed by the eruption; and in three weeks the cure is completed." [Stavorinus, "Voyages," pp. 45-52.]

to 1898, in the District of Hughli.

Second Decennium.											
1889.	1890.	1891.	1892.	1893.	1894.	1895.	1896.	1897.	1898.	Total.	Average.
...	5	12	1	1	2	7	22	13	12	75	7·5
...	10	7	1	1	5	25	9	26	6	90	9·0
3	47	9	10	...	8	107	7	56	5	252	25·2
5	38	6	5	5	6	103	7	31	12	218	21·8
3	17	4	3	2	9	56	7	22	9	132	13·2
6	12	4	4	...	3	27	7	20	4	87	8·7
2	15	3	3	...	9	33	6	13	4	88	8·8
3	6	1	6	...	10	7	4	13	1	51	5·1
...	4	...	1	...	7	3	1	4	...	20	2·0
1	2	...	1	...	1	3	1	12	3	24	2·4
...	2	1	...	...	...	11	1	19	1	35	3·5
7	...	2	...	...	3	18	9	5	3	47	4·7
30	158	49	35	9	63	400	81	234	60	1,119	111·9
0·02	0·15	0·04	0·03	0·008	0·06	0·38	0·07	0·22	0·05	...	0·10

On pages 151-52, he also speaks of small-pox as being very bad at Chinsura, and states that the Dutch Director F——(the full name is not given) died of small-pox in May 1770.

In the *Calcutta Gazette* of 8th January 1789, it is stated that small-pox had raged with great violence in Calcutta and different parts of Bengal, and had been attended with unusual mortality. The same publication mentions that inoculation was introduced with great success into the schools of the Orphan Society, in Calcutta, in May 1786; the issue of 15th March 1788 states that Government had erected a hospital for inoculation at Dumdum.

I have not come across anything else of interest about small-pox prior to the first reports of the Sanitary Commissioner. The report for 1872 mentions that only seven deaths from small-pox were registered in the Hughli district during the year; in 1873 only 19 deaths were registered; but at that time registration was in its infancy. The report for 1875 states that small-pox is endemic in the Hughli district, and during the year was epidemic in Hughli town and Hughli *thana*, in which it caused a mortality of 0·66 and 1·37 per 1,000 respectively. In 1876 Serampur *thana* had a mortality of 1·28 per 1,000, and Hughli town of 1·03, from small-pox. In 1878 Serampur town

had a mortality of 1·51 per 1,000, the disease being almost confined to Brahmans, who had a strong prejudice against vaccination.

In 1879 begins the first decennium of the small-pox table attached. The total mortality of the year was high, 139 deaths, of which 27 and 28 occurred in March and April respectively, only one in October. The worst area was Uttarpara, with a mortality of 2·10 per 1,000. In 1880 again small-pox was prevalent, causing 110 deaths, of which January furnished 11, February 22, March 35, and April 28; July and October showed a clean sheet. No registering area showed a specially high mortality. In 1881 only 32 deaths from small-pox were registered, the highest monthly total being 7 in April. No area showed a high mortality. A student of the Calcutta Madrasa, who caught small-pox in Calcutta, returning to his home in Baidyabati, caused an outbreak there; the people of the locality were bigoted Musalmans who were opposed to vaccination. In 1882 only nine deaths from small-pox were registered in the district, in 1883 only thirteen. In 1884 the number of small-pox deaths rose to 102, the highest monthly total being 28 in May; in December no deaths occurred. No single area showed a high mortality: but it is noted that a virulent outbreak of the disease occurred in Serampur town, which was traced to importation from Benares. The next four years show a very low small-pox mortality; 32 deaths in 1885, seven in 1886, only two in 1887, the lowest number in the whole series of twenty years, and eleven in 1888.

In 1889 again there were few deaths from small-pox, only 30 in all, the largest number in any one month being seven in December. But in 1890 the figures went up with a bound to 158, March with 47 deaths, and April with 38, showing the highest mortality, and the disease being prevalent from February till July, after which it diminished, and in December no small-pox deaths were registered. In 1891 the number of deaths from this disease fell again to 49, the largest monthly total being twelve in January; in 1892 there were only 35 deaths, March being first with ten; and in 1893 only nine deaths, the lowest yearly total of the second decennium; five of the nine deaths occurred in April. In 1894 the number of deaths rose to 63, of which ten occurred in August, a time at which small-pox is usually at its lowest.

In 1895 a great epidemic of small-pox occurred in Calcutta, where the mortality registered from the disease was as high as 3·25, with a total of 2,220 deaths. From Calcutta the disease was carried all over the province. I was then at Monghyr, and well remember that there were many cases of importation of small-pox that year, though Monghyr is 303 miles distant from Calcutta by rail. Naturally the districts round about and near to Calcutta suffered most, as access to most of them is only a matter of a few hours; in the case of the 24-Parganas, Howrah, and Hughli, much less. No *mofussil* district,

however, suffered to anything like the extent which Calcutta did. The highest mortality occurred in Faridpur, 0·72 per 1,000, not much over one-fifth of that of Calcutta, the actual number of deaths registered being 1,315. Then came Cuttack, 1,298 deaths (0·66); Howrah, 482 (0·63); Midnapur, 1,534 (0·58); and Hughli fifth, with 400 deaths (0·38). This is by far the largest number of deaths from small-pox registered in any one year up to the close of the nineteenth century, but will be outstripped by the figures for 1901. The areas of the district which showed the highest mortality were three towns, Bansbaria (1·62); Bhadreswar (1·45); and Hughli (1·36). The total number of deaths from small-pox in the whole province in 1895 was 13,020, or 0·18 per 1,000. The district of Sinhbhum returned no deaths from small-pox during the year. In Hughli, out of the 400 deaths registered, 19 took place in children under one year, and 66 in children under twelve years. The months which showed the highest mortality were March, with 107 deaths, and April, with 103, by far the highest monthly figures for the whole period of twenty years. No month was without small-pox deaths, but September and October showed only three each.

In 1896 the number of deaths from small-pox in the district went down to 81, January, with 22, being the highest month, though no month showed an entirely clean sheet. In 1897 the number of deaths rose again to 234, the highest month being March, with 56 deaths, though the disease was prevalent throughout the year, September with four deaths, and December with five, being the only months in which the mortality did not run into double figures. The worst areas were Bhadreswar (3·00), Serampur (2·36), and Kotrang (1·16). In this year small-pox was again widely spread throughout Bengal. Hughli, with 234 deaths (0·22 per 1000), stood only sixteenth in mortality among the districts of the province, including Calcutta, which was fifteenth (0·23). In 1898, the last year of the second decennium, the number of deaths in the district fell to 60, the highest monthly numbers being 12 in January and April, while September showed a clean sheet, a thing which had not happened in any month for close upon four years.

Two years have passed since 1898, completing the nineteenth century. The first of these years, 1899, was one in which there was little small-pox, only 31 deaths being registered. The highest month was January, with eleven deaths, and four months showed none. In 1900, on the contrary, small-pox was again rife, and the number of deaths rose again to 206, July with 37 and December with 36 deaths, showing the highest totals, while the minimum was four in January. It is worthy of remark that again the maximum occurred during the rains. Hughli *thana*, with eight deaths (0·48), Balagarh *thana*, with 18 (0·38), and Hughli town, with 12 deaths (0·36), show a high mortality. Again small-pox was widely spread throughout the province, Hughli district, with 206 deaths (0·19 per 1,000), standing seventeenth among the

districts of the province. The three highest districts were Cuttack, 6,954 deaths (3·58); Puri, 2,328, (2·46); and Calcutta, 1,010 (1·48).

Writing in October 1901, I am unable to say much with any approach to accuracy, as to what the mortality from small-pox for 1901 will turn out to be in the end. But I can state with confidence that the small-pox deaths registered in this district will certainly be the highest ever recorded, and I shall be much surprised if the same is not the case for all the districts round Calcutta, as well as probably for the province as a whole. Again there has been a great small-pox epidemic in Calcutta, from which small-pox, as well as plague, regularly is exported to all the surrounding districts. In Hughli town there were no deaths from small-pox in December 1900, and only one death had occurred in the three preceding months. In the beginning of January 1901, several cases imported the disease from Calcutta (I personally saw three such cases on 5th January), and the disease spread rapidly through the town. The other areas badly affected in 1901 have been Polba *thana*, and the whole of Arambagh subdivision.

It may be inferred, from the above remarks, that I consider that a system of quarantine might prevent the access of patients suffering or about to suffer from small-pox, to places hitherto unaffected. By no means. In the case of a disease which has an incubation period of ten or twelve days, any such system would be utterly impossible, and even if it were practicable, it would not be worth while to impose any such system in the case of a disease from which any individual can throughly protect himself, if he chooses to do so, by vaccination.

Natives, indeed, often do not know that they have imported small-pox into a place. In Balagarh *thana* eleven deaths from small-pox occurred in December 1900. In 1901 in the first eight months, only seven deaths from small-pox have occurred there. I invited the place in December 1900, and again in February 1901, when a considerable proportion of the educated classes had been vaccinated or revaccinated. There is a large community of well-educated families at this place, many of the male adults among whom serve as clerks in Calcutta. One such man told me that his brother had just died of small-pox, and complained to me that small-pox was proving very fatal in Balagarh, though I could not hear of a single case in Balagarh then, in February 1901, suffering from the disease. On asking the history of the case, this man told me that his brother had got fever in Calcutta, he came from Calcutta to Balagarh, about ten hours' journey by the daily river steamer, suffering from high fever, he got small-pox the very day after he reached Balagarh, and died a few days later. On further enquiry I found that the patient had become covered with a copious crop of pustules the day after he reached Balagarh. Of course this man had got small-pox in Calcutta, had travelled to Balagarh during the fever stage, and his attack had certainly

not been contracted at Balagarh ; but I could see that my informant did not believe me when I told him this. The eruption had come out there, and had come out the very day after his arrival, therefore he had contracted the disease there, and its having showed itself so soon was a proof of the virulence of the infection in the place.

The history of vaccination in the district is given in Chapter IX.

(3) *Chicken-pox* is a very common disease. It is frequently returned as small-pox, thereby increasing the number of cases of that disease reported, though not the number of deaths, as it very rarely proves fatal. The sanitary report for 1873 notes that chicken-pox had been epidemic towards the close of the year in Shahganj and in the jail, but no deaths occurred. During the last ten years three cases have occurred in Hughli Jail, one each in 1897, 1898, and 1899; and in 1901 there was a case among "D" Company, Military Police; all recovered.

(4) *Mumps* is also common, and very rarely proves fatal. During the last ten years twenty cases have occurred in Hughli Jail; one each in 1892 and 1900, and 18 in 1897. One case died in 1897, the rest all recovered. A few cases have occurred among the police in 1901.

(5) *Measles* is fairly common. Cases of this disease also are sometimes returned as small-pox, but, as it rarely proves fatal, increase the number of cases only, not the number of deaths. During the last ten years four cases of measles have occurred in Hughli Jail, one each in 1892 and 1895, and two in 1899; all four recovered.

(6) *Enteric fever* is, I believe, not uncommon among natives, especially children. I have seen a case in a young male adult at Hughli which I believed to be one of enteric fever, in 1901. As *post-mortems* are seldom done in native practice, positive proof of the existence of this disease is seldom forthcoming, under ordinary circumstances. But I have certainly seen the enteric lesions of the small intestine in native patients dying in the Medical College Hospital, when I was Resident Physician there in 1884, and had to conduct the *post-mortems*. The fact, if it is a fact, that native children frequently suffer from this disease in early childhood, would account for its being comparatively much less common among young native than among young European adults. Certainly the surroundings of most native households, even those of the fairly well-to-do, would appear to be in every way conducive to the spread of enteric fever, if it once gets a footing.

(7) *Cerebro-spinal fever* has been well known in Calcutta for the last twenty years, affecting especially the great Central Jails, Alipur and the Presidency, and the Colonial Emigration depôts in Garden Reach. It has also broken out on several occasions in the Bhagalpur Central Jail. During the period of a year and a half, June 1898 to December 1899, that I held charge of the office of Civil Surgeon of the 24-Parganas, I do not remember

any cases occurring in the emigration depôts, but there were a few cases in Alipur Jail. No case of cerebro-spinal fever has been diagnosed in Hughli Jail during the last ten years; I am positive that no case has occurred during the last year. But I saw a case in the town, in March 1901, which I thought at the time was cerebro-spinal fever. The case was first reported to me as suspected of being plague, but, though it proved fatal in three days, it was certainly not plague. The Sanitary Commissioner's report for 1886 states (p. 37) about fever in Hughli that "cases of very fatal cerebro-spinal fever were also met with." This is the only positive reference to the occurrence of the disease in Hughli which I have come across.*

(8) *Influenza* is a somewhat vague term. Epidemics of a disease to which this title is given have occurred at frequent intervals in England during the past two and-a-half centuries. Sydenham describes an epidemic of the disease in 1675, and it has been prevalent in England on at least twenty subsequent occasions. The only references I have seen to its early occurrence in India are that Warren Hastings, in a private letter dated 1780, speaks of having recently had influenza, and that the *Calcutta Gazette* of 3rd September 1789 states that "an influenza has for some time past been general among the European inhabitants of Calcutta."

Influenza, after an absence of many years, was again imported into India in 1890, and has since then been more or less prevalent in Bengal, in different times and at different places. I remember that, while I was at Monghyr, in 1896, the disease was widespread and fatal in that district from February to April. Many of the Europeans were affected, I was myself the only one out of four living in my own house who was not attacked, but no Europeans died. And, though there were a good many cases in the Jail, most of them in old and weakly prisoners, curiously, none of them died. During the time the epidemic lasted, some 2,000 deaths more than the average number for these months were registered as due to fevers, and this, I take it, was the mortality due to influenza. While on tour in the district I saw a great deal of the disease; in one dispensary, Khargpur, I found every member of the staff suffering from it; the District Inspector of vaccination and one of the best vaccinators died of it; the former was a strong, healthy man, whom I had seen in good health three days before his death.

I have not seen a case during the year I have been in Hughli, and the only statistics on the subject are those of the jail. During the last ten years there have been 196 admissions to the jail hospital for influenza, with two deaths. The cases took place in the following years:—43 in 1892, 44 in 1895, 22 in 1896, 62 in 1898, 18 in 1899, and 7 in 1900; one death each in 1898 and 1899.

* A case, which I diagnosed as cerebro-spinal fever, was brought from Chandarnagar to the Imambarah Hospital, Hughli, in May 1902, and, contrary to my expectation, recovered.

(9) *Dengue* occasionally appears in the form of widespread epidemics throughout the province. The first of which any record exists occurred in 1824-25. An account of this epidemic, in Calcutta, will be found in the "Wanderings of a Pilgrim," by Mrs. Fanny Parkes. Epidemics of less severity occurred in 1844 and in 1853. Dr. Charles, late Professor of Midwifery in the Calcutta Medical College, during the last great epidemic of dengue in 1872, published an article describing previous epidemics, and dealing with the outbreak of that year, in which he stated that the disease was never absent from Calcutta, and that he saw cases of it every year. It has not, however, prevailed in epidemic form since 1872, and during seventeen years' service in Bengal, including nearly four years in Calcutta, I have not myself seen a case. Some, however, considered that the influenza which appeared in India in 1890 was identical with the dengue of 1872. The following account of this epidemic, as it affected the Hughli district, is taken from the annual report for 1872 of the Sanitary Commissioner, Dr. C. J. Jackson. The reports for different districts are given in a tabulated form in that report.

The first case occurred in Calcutta in September 1871, in November dengue was prevalent in Howrah, and in December cases occurred at Hughli and Serampur. In both the disease died out in 1872. As regards Hughli, it is said to have spread widely through the district, sparing no class, community, age, or condition. It was prevalent in the Jail from May to October 1872, during which time 102 cases occurred, but no deaths. Men of active habits are said to have been attacked in the latter stage of prevalence, and in some cases to have continued in an asthenic state, with swelling of joints, for six months. The disease was introduced from Calcutta by native clerks, who daily attended their offices in that city, caught dengue there, and communicated it to their families, from whom it spread to others. Mild cases hardly required treatment. Laxatives and stimulants, cold drinks and ice, with extract of belladonna and Indian hemp, were given internally, anodyne liniments externally.

In Serampur the European and Eurasian population were first attacked, and among them the epidemic was at its height in April 1872, among the natives in June and July. The crowds who attended the *Rath* festival in July carried it from Serampur all over the district. It was prevalent in the sub-jail from May to August 1872. Among the Christians 124 cases occurred. There was no record as to its prevalence among natives, except that 55 cases were treated at the dispensary. Three relapses occurred, all in cases in which the first attack was very mild. It never proved fatal, except when the patient was suffering from other intercurrent diseases. The Medical Officer writes:—

"I heard several natives had black spots on the body and enlargement of the glands ending rapidly in death. I never saw such a case, though I was on the watch; yet exaggerated reports prevailed, and were believed, that the dengue had assumed very fatal type, or that black fever had set in. This report caused the greatest alarm, and spread so far that I was called upon by the Magistrate of

Hooghly officially to report whether there was any truth in the current rumour. Upon minute personal inquiry I could not trace a single case of black fever."

The contagion was introduced into Serampur by families who had been to Calcutta and returned with the fever. Their servants caught the infection from them and spread it through the station. Treatment was by cooling drinks, and lotions, belladonna, tonics, friction with turpentine. Purgatives were avoided, as in some cases diarrhœa set in and caused great prostration. In those who underwent treatment, fever never lasted beyond 26 hours, while in those who refused medicines it lasted fully 72 hours, and the suffering was greater.

(10) *Plague*.—Although so near to Calcutta, fortunately plague has not yet become epidemic in the Hughli district, although its absence has not been for want of opportunity. Plague has now been epidemic in Calcutta in the spring months yearly for the past five years, if we count 1898, in which the numbers were small compared to those of the next three years. I believe that no cases occurred in this district in 1898, but in each of the three following years numerous cases have been imported, persons not only incubating, but actually suffering from plague, having come in numbers to their homes in the Hughli district. The actual number of deaths from plague recorded in the district has been 34 in 1899, 67 in 1900, and 58 in the first five months of 1901, after which no more cases occurred.

In 1900 plague was imported from Calcutta into the town of Hughli, the first case occurring on 13th February, and cases kept on occurring up to the 24th April. During this time there were 41 cases with 27 deaths. After the 24th April no more local cases occurred, but four more fatal cases were registered in the town in May 1900, each of these four being imported from Calcutta. There was also an outbreak of the disease in Kristopur village, in *thana* Arambagh, due to importation from Calcutta of the first case on 9th April. Twelve cases in all were attacked, including the first case, with 11 deaths, and one recovery. The other deaths which occurred in the district in 1900 were all due to importation. All these cases died, but did not cause any infection locally of others.

In 1901 no less than fourteen cases of plague occurred in Hughli town from February to May, due in every single case to importation, and in no case was any other person infected. Thirteen died, and only one, and that a doubtful case, recovered. There were also four other cases of importation of plague into the *sadr* subdivision, viz., three in Pandua *thana*, and one at Tribeni; and one in Arambagh *thana*. One of the cases in Pandua *thana*, a typical case of plague, recovered: the others died, and in no single case was any other person infected. There were, however, a number of local cases in Serampur town, originating from cases imported from Calcutta.

The method of disinfection employed was the spraying of the walls, ceiling, floor, and furniture of the infected house with perchloride of mercury and strong hydrochloric acid solution; and burning of the clothes and bedding used by the deceased.

A local outbreak of plague occurred at Bhadreswar in the first four months of 1902, and was supposed to have been imported from Bihar, either by rats travelling in bags of grain, or by the grain itself. The first case occurred on 20th January, the last on 21st April, the outbreak thus lasted exactly three months, during which 36 cases occurred, with 27 deaths. From February to May 1902, also, there were numerous cases of importation of plague into the district from Calcutta, none of which, fortunately, infected others, or spread the disease locally.

Toynbee mentions (p. 24) a panic due to a rumour that plague had broken out at Chandarnagar in November 1832. Dr. T. A. Wise, the then Civil Surgeon of Hughli, inquired into the epidemic, and reported that "the deadly malady which at present rages" was malarial fever.

(11) *Tubercle*, especially tubercle of the lungs, is common, though it does not prevail here to the same extent as it does in Calcutta, where it is a veritable scourge, both among the lower classes of Eurasians, and among the immigrant working population. Tubercle is also often seen attacking the lymphatic glands, especially those of the cervical region. The dispensary figures for 1900, however, give only 112 cases of tubercle out of 75,485 cases, the largest individual numbers being 34, out of 7,064, at Serampur; and 32, out of 9,619, at Bainchi. More exact figures as to the comparative prevalence of tubercle among adult males may be got from the jail reports. Unfortunately in these reports the term tubercle has only been used since 1896; prior to that date cases of this disease were entered under the heading "Scrofula and phthisis," which probably came to much the same thing. During the 26 years from 1870 to 1895, inclusive, 606 deaths took place among convicts in the Hughli Jail, and of these, 39, or about 6½ per cent., were registered as due to scrofula and phthisis. During the five years 1896 to 1900, inclusive, 74 deaths took place, and of these, 11 were returned as due to tubercle more than double the ratio of the previous quarter century, nearly 15 per cent. Even this, however, does not show the full number of cases of tubercle which are diagnosed in jail, as a certain number survive their sentence, and though no doubt they die before long, do not swell the jail mortality. The last five years, which show 11 deaths from tubercle, give 17 admissions. Moreover, tubercle of the lung is sometimes found, on *post-mortem* examination, in cases which have died from other diseases. During the last twelve months four cases have been returned as dying in the jail from tubercle of the lung; but in four other cases, which were admitted to the jail hospital suffering from dysentery, and died of that disease, tubercle of the

lung was found at the *post-mortem* examination. Nearly half a century ago Dr. Baillie, the then Civil Surgeon, remarked upon the prevalence of phthisis among the prisoners. The greater frequency of tubercle in the returns of late years is probably due to increased accuracy of diagnosis, as practically all prisoners dying in jail are examined after death, no case of tubercle can possibly escape notice. It certainly is not due to overcrowding. In 1889 the capacity of the jail was reduced by one-half, *i.e.*, the number of buildings and actual superficial and cubic area remaining the same, the number of prisoners to be accommodated in these buildings was reduced by one-half, and in the twelve years which have since elapsed the jail has never been overcrowded seriously or for any length of time, though of course the maximum

Mortality Table, Dysentery and Diarrhœa

Month.	First Decennium.											
	1879.	1880.	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.	Total.	Average.
January ...	343	164	300	267	256	196	295	286	331	271	2,709	270·9
February	208	159	254	190	218	169	226	223	233	236	2,116	211·6
March ...	168	157	144	188	162	191	234	214	185	213	1,856	185·6
April ...	83	138	179	146	169	158	194	152	154	178	1,551	155·1
May ...	93	103	145	130	102	124	149	128	116	157	1,247	124·7
June ...	105	57	80	131	116	94	146	105	101	126	1,061	106·1
July ...	103	101	118	153	144	109	164	131	113	117	1,253	125·3
August ...	133	153	151	180	153	117	242	151	170	144	1,594	159·4
September	131	151	153	173	167	147	361	161	160	208	1,812	181·2
October ...	128	226	212	235	149	206	321	209	211	224	2,121	212·1
November	115	214	215	278	199	262	322	240	196	232	2,273	227·3
December	169	271	234	272	225	311	344	347	271	304	2,748	274·8
Total ...	1,779	1,894	2,185	2,343	2,060	2,084	2,998	2,347	2,241	2,410	22,341	2,234·1
Ratio per 1,000.	1·75	1·86	2·15	2·21	2·03	2·05	2·95	2·31	2·20	2·37	...	2·20

The monthly average mortality may be best shown, as in the case of the other diseases, by a separate short table, giving the months in the order of their mortality. The figures for 1899 and 1900 are also given for the sake of comparison. The table shows that the most fatal months are those of the

numbers confined on any one night of the year have sometimes exceeded the available accommodation.

(12) *Dysentery and Diarrhœa.*—These diseases being always shown together under one head, in the mortality tables, must be discussed together. They have always caused a comparatively high mortality in this district. I have constructed a table for the two decennial periods, 1879–88, and 1889–98, similar to those of cholera and small-pox, from the Sanitary Commissioner's annual reports, for the sake of comparing at a glance the monthly and yearly mortality from these diseases. Bowel-complaints do not, like cholera and small-pox, come in irregular epidemics, but take a steady toll of life month by month and year by year:—

from 1879 to 1898, in the District of Hughli.

Second Decennium.											
1889.	1890.	1891.	1892.	1893.	1894.	1895.	1896.	1897.	1898.	Total.	Average.
305	296	328	314	253	410	320	262	175	186	2,649	284·9
197	293	247	249	170	271	212	197	175	140	2,151	215·1
174	210	212	182	134	203	144	227	184	128	1,798	179·8
136	170	191	191	96	138	162	184	177	72	1,517	151·7
113	127	102	133	113	117	149	156	157	87	1,254	125·4
135	136	117	128	97	97	109	164	98	61	1,142	114·2
208	165	99	144	143	155	167	189	113	80	1,463	146·3
246	186	163	174	178	218	223	169	160	120	1,837	183·7
289	203	183	134	218	235	242	168	168	163	2,003	200·3
307	192	235	130	338	292	218	123	109	145	2,189	218·9
824	205	263	163	241	264	258	137	278	144	2,277	227·7
373	275	375	179	326	341	341	203	197	188	2,798	279·8
2,807	2,458	2,516	2,121	2,307	2,741	2,545	2,179	2,091	1,514	23,278	2,327·8
2·76	2·42	2·33	1·96	2·14	2·65	2·46	2·10	2·02	1·46	...	2·16

cold weather, next of the rains, while the mortality is at its lowest in the hot weather. The order of the months differs very little in the two decennial periods. There is somewhat more irregularity in 1899 and 1900. It would be interesting to know whether the temperature in these years showed any

difference from the normal; but, as no meteorological observations are made at Hughli, nothing can be said with certainty about this :—

	1879–88.		1889–98.		1899.		1900.	
(1)	December	... 274·8	January	... 284·9	January	... 213	December	... 219
(2)	January	... 270·9	December	... 279·8	September	... 173	November	... 200
(3)	November	... 227·3	November	... 227·7	October	... 172	January	... 193
(4)	October	... 212·1	October	... 218·9	February	... 171	August	... 171
(5)	February	... 211·6	February	... 215·1	December	... 157	October	... 162
(6)	March	... 185·6	September	... 200·3	August	... 154	July	... 155
(7)	September	... 181·2	August	... 183·7	November	... 138	February	... 148
(8)	August	... 159·4	March	... 179·8	May	... 132	September	... 131
(9)	April	... 155·1	April	... 151·7	March	... 116	March	... 130
(10)	July	... 125·3	July	... 146·3	July	... 90	May	... 129
(11)	May	... 124·7	May	... 125·4	April	... 89	April	... 123
(12)	June	... 106·1	June	... 114·2	June	... 78	June	... 83

The second decennial period shows a mortality very slightly higher than that of the first; 1899 was a year of low, 1900 of fairly average mortality.

Stavorinus ("Voyages" p. 451) mentions dysentery as a very common disease at Hughli, in 1769 :—

"The disease which is the most prevalent here is the dysentery, which is occasioned by the flatulency and insipidness of their articles of food."

For at least half a century past dysentery has been the scourge of the Hughli Jail, and its ravages there have been discussed in Chapter X. But for the history of the disease in the district I am dependent, as in the case of the other diseases, on the annual reports of the Sanitary Commissioner, and these only go back for thirty years.

In 1876 the Sanitary Commissioner, Dr. Coates, mentions Hughli as one of the districts returning a high mortality from bowel-complaint, and states that the same districts have suffered in the highest proportion for four years consecutively. The same remark is made in 1877 and 1878; in the latter year it is stated that the highest death-rates from bowel-complaints in the district occurred in the three towns of Serampur (11·83), Baidyabati (4·24), and Bansbaria (4·35).

The first decennial period shown in the table begins with 1879. In this year very high death-rates are shown by four towns—Uttarpara (14·80), the highest in the province except Puri, Serampur (9·41), Hughli (6·64), and Baidyabati (5·32), and by four *thanas*, Serampur (4·35), Baidyabati (3·24),

Hughli (3·02), and Polba (3·02). In this year the number of deaths from bowel-complaints in Uttarpara (65) was actually higher than the number from fevers (62). In 1880 the highest mortalities were Uttarpara (9·56), Serampur (7·24), Baidyabati (5·70), and Hughli (4·68). In 1881 the same four towns again occur in the list of high mortality from bowel-complaint, Uttarpara (10·02), Serampur (7·81), Hughli (7·19), and Baidyabati (5·55). In 1882 Hughli district stood fourth in the province, with a mortality of 2·34 per 1,000; the highest circles being the towns of Serampur (8·30) and Hughli (6·14). In 1883 the district stands fifth (2·08), but the death-rate of only the eleven highest areas in the province is given; none of these were in this district. In 1884 Hughli was seventh (1·79), and Serampur (5·77) and Hughli (5·73) towns showed a high mortality. In 1885 Hughli stood fourth (2·95), and three towns show a high death-rate, standing respectively second, fourth, and seventh, among all the towns in the province—Serampur (8·60), Hughli (8·10), and Uttarpara (7·44). In 1886 Hughli (1·96) is fifth; and among the towns in the province Serampur (8·18) stands second, Hughli (6·76) fifth, and Uttarpara (5·08) sixteenth. In 1887 Hughli (1·83) is the eighth district; and Serampur (8·64), Hughli (6·71), and Uttarpara (5·80), stand third, sixth and eighth respectively among the towns. In 1888 Hughli district (2·09) stands seventh; the areas of highest mortality being the towns of Serampur (7·92), Uttarpara (7·25), and Hughli (6·34).

With 1889 the second decennium begins. Hughli district (2·34) stands sixth, Serampur (10·07), Utterpara (9·80), and Hughli (7·35) showing the highest death-rates. In 1890 Hughli district is again sixth (2·05), and the towns of Serampur (8·68), Uttarpara (8·52), Bansbaria (5·40), Hughli (4·60), and Bhadreswar (4·32) show the largest rates. In 1891 Hughli still stands sixth, with 1·69; and the highest areas are the towns of Serampur (10·56), Bhadreswar (7·88), Hughli (7·61), and Uttarpara (5·85). In 1892 Hughli (1·44) has fallen to seventh; the same areas head the list, the towns of Uttarpara (9·70), Serampur (7·34), Bhadreswar (6·74), Baidyabati (5·93), Hughli (5·83). In 1893 the figures are, Hughli district, again seventh (1·35); and the towns of Bhadreswar (11·72), Serampur (11·68) Kotrang (11·42), Uttarpara (9·55), Hughli, (6·17), Baidyabati (5·76). In 1894 Hughli stands eighth, with 1·65; nearly every district in the provinces showed an increased mortality from dysentery and diarrhœa this year. Every town except Jahanabad returned a very high death-rate; Bhadreswar (16·18), Serampur (13·10), Baidyabati (10·28), Uttarpara (8·93), Hughli (8·19), Bansbaria (7·51), Kotrang (5·61), Jahanabad (1·44). In 1895 Hughli (1·63) stands eighth; and the highest areas are Bhadreswar (11·61), Serampur (11·48), Hughli (8·01), Baidyabati (7·12), Kotrang (6·97), Uttarpara (6·01). In 1896 Hughli (1·52) is sixth; Bhadreswar town, with 12·76, shows the highest mortality, followed by Serampur (7·48) and Hughli

(6·01). In 1897 Hughli district stands seventh, with 1·17; the death-rate was again very high in all the towns, except Jahanabad, as follows:—Kotrang (13·74), Uttarpara (12·32), Serampur (11·84), Bhadreswar (7·98), Baidyabati (6·69), Hughli (6·41), Bansbaria (4·12), Jahanabad (0·72). The Civil Surgeon of Hughli (Surgeon-Lieutenant-Colonel R. L. Dutt) is quoted as one of a large number of Civil Surgeons who state that, in their opinion, the death-rate from these complaints is really much higher than the registered figures. In 1898 Hughli district stands eighth, with a mortality of only 0·76, a lower ratio than had been shown for many years past; the town death-rates are also lower, Uttarpara (10·01), Serampur (8·51), Baidyabati (7·18), and Hughli (6·26).

For the two years which have elapsed since the completion of the second decennial period shown in the table, the figures are as follows:—In 1899 Hughli (0·81) stands ninth; but the mortality of the towns is again higher, Bhadreswar (13·48), Uttarpara (11·86), Serampur (10·73), Kotrang (8·52), Hughli (6·17). In 1900 Hughli (1·09) has fallen to tenth; and the highest town death-rates are Uttarpara (14·48), Bhadreswar (12·55), Serampur (10·48), Bansbaria (5·01), Kotrang (4·26), Hughli (3·87).

The above figures of death-rates have been taken from table No. VI of the Sanitary Commissioner's annual reports. The figures given for the district throughout are those of the rural areas, exclusive of towns. The very high mortality from bowel-complaints in Hughli district is well brought out by the fact that, after excluding the enormous death-rates of the towns, the district stands so high in the comparative mortality, from these diseases, of the province.

The same districts always head the list of mortality, their order varying somewhat among themselves. And it is curious that these districts which always head the mortality of the province from bowel-complaints comprise specimens of all the varying physical conditions of the province. What districts could be more physically unlike than Darjiling in the hills, Lohardaga on the Chutia Nagpur plateau, Patna in Bihar, Hughli in Bengal proper, and Puri in Orissa? Yet these five districts reappear regularly for twenty years among those which show a high mortality from dysentery and diarrhœa. Several of them are very thickly populated; but Lohardaga is not. It is by no means evident what common factor can bring together districts presenting such physical disparities. There is no reason, either, to suppose that registration is better carried out in these than in other districts.

The first ten districts, in mortality from bowel-complaints, are those which along with Calcutta, head the list year after year. Their relative order and death-rate for the year 1900 are as follows:—(1) Darjiling, 6·33; (2) Calcutta, 6·05; (3) Patna, 5·90; (4) Howrah, 4·96; (5) Puri, 4·85; (6) Cuttack, 3·18; (7) Balasore 2·27; (8) Saran, 1·92; (9) Hughli, 1·78; (10) Lohardaga, 1·76; (11) Dakka, 1·74. These figures give the mortality for the whole district, including towns. It will be seen that the inclusion of the towns, with their

relatively small population, not much over one-tenth of that of the district, raises the district mortality, in the case of Hughli, from 1·09 to 1·76.

Dysentery is usually a disease of towns rather than of rural areas. For this several reasons may be brought forward, with more or less truth. In the first place, it is a disease which springs up and flourishes in overcrowded communities, and such communities are found in towns, not in the country. Secondly, those who fall by the way in the struggle for life, who from weakness, illness, or other causes become unable to earn a living, naturally gravitate to the towns, where may be found the best hospitals for those who are willing to enter them, and where, also, charity may be expected to be more abundant, and those who trust to alms for their support may naturally expect the best returns. Thirdly, in towns may usually be found numbers of medical practitioners, and such diseases as dysentery and diarrhœa stand some chance of being diagnosed, and appearing in the mortality returns under their proper heading, instead of under the all embracing head of fever. In *sadr* stations, the chief towns of districts, the influence of the district jail and of the hospital may be most distinctly felt in raising the death-rate from bowel-complaints. Hughli jail has suffered severely from dysentery for at least half a century; while the hospitals receive numbers of poor creatures, in the last stage of disease, who are mostly picked up in a moribund condition in the streets by the police, and brought to hospital only to die, though a few such cases do recover. Numerous pilgrims seek temporary shelter, too, in the Imambarah Hospital at Hughli, on their way to or from Jagannath. Hughli is not on the direct route from Upper India to Puri, but many pilgrims come round this way in order to visit Tribeni and Mohesh. None of the other towns in the district contain a jail, except the two small sub-jails at Serampur and Arambagh, but the hospitals both at Serampur and Uttarpara receive a large number of destitute paupers suffering from bowel-complaints.

Overpopulation has, I believe, a good deal to do with the causation of bowel-complaints, and in this district it is just the crowded riverine strip, along the west bank of the Hughli, which suffers so severely from these diseases. The eighth town, Arambagh, in the far west, has no great mortality from this cause.

In 1900, 341 cases of dysentery, and 289 of diarrhœa, were treated at the Imambarah Hospital, out of a total of 7,649 patients, the thirteen dispensaries in the district, with a total of 75,485 patients, treated 2,224 cases of dysentery, and 2,596 of diarrhœa.

A large proportion of the mortality in the police hospital also, as set forth in Chapter XX, is due to dysentery.

(13) *Venereal diseases* are very common here, as everywhere in the province. A note in the census report for 1891, contributed by the then Civil Surgeon, the late Surgeon-Major B. B. Gupta, himself a native of the province, states that "probably syphilis is more widely spread and deeper

in the constitutions of the people in Bengal than in most parts of the world." Without going so far as that, I believe that syphilis is exceedingly common everywhere in Bengal. It has certainly been so in every district in which I have served, and Hughli forms no exception to the rule. I have seen it in very young persons too: a boy was treated for primary syphilis at the Imambarah Hospital this year, whose age did not appear to be more than twelve years.

In 1900, 139 cases of venereal disease were treated at the Imambarah Hospital out of 7,649 in and out patients. The only other dispensary in the district which returned a larger number was Serampur, 194 out of 7,064. The whole thirteen dispensaries in the district treated 1,009 cases of venereal disease, out of a total of 75,485 patients.

(14) *Malarial cachexia* is the most common of all affections in the district—enlargement of the spleen, anæmia, anasarca, are all exceedingly frequent as a result of repeated attacks of malarial fever. An analysis of the records of medico-legal *post-mortem* examinations, for fourteen years, 1887 to 1900, gives the following results as regards the condition of the spleen in the bodies examined:—Greatly enlarged, 41; enlarged, 166; not enlarged 130; decomposed, 55; not stated, 46; total 438. Excluding the last two heads, of the rest 12·17 per cent. were greatly enlarged, and 49·25 per cent. more, or a total of 61·42 per cent., were enlarged. Twice, within the last year, at a *post-mortem* examination, I have seen a small supplementary spleen present. The incidence of malarial fever in Hughli district has been considered, at great length, in Chapter VI.

(15) *Elephantiasis* is not uncommon. The prevalence of this disease struck Stavorinus in 1769. He writes (p. 451):—

"They are likewise much affected with swelled legs, and I saw some who had them bloated to the thickness of a man's waist. A gangrene is the usual consequence, and this disease generally terminates in the death of the patient. They have no surgeons who are capable of opposing the progress of the evil, or of amputating a limb; and many unhappy wretches die in pain and misery for want of skilful practitioners.

"A sort of sickness, or fever, likewise prevails in Bengal, which is called the *jounibaad*, and which generally sweeps away those who are attacked by it, in the space of three days. Those who recover, often retain a deafness, a blindness, or a consumption, and sometimes a general paralysis, the dreadful consequences of this scourge.

"This disease is better cured by the native practitioners, than by European physicians, for its symptoms are not dubious, and it is a disorder peculiar to the country."

What may be the disease which Stavorinus refers to as "*jounibaad*" I do not know, nor have I been able to find any explanation of the term.

Nearly a century later, the then Civil Surgeon, Assistant Surgeon W. H. B. Ross, remarked, in a report, dated 28th April 1853, on the prevalence of elephantiasis in Hughli. He states:—

"A great many of the native people in this station suffer from elephantiasis; the disease is common in Bengal, but it does not, I believe, prevail to the same extent in any other station as in Hughli."

All I could now say about the prevalence of this disease is that it is not uncommon. During the last twelve months six cases of elephantiasis scroti have been operated upon in the Imambarah Hospital, and I have seen about as many who, for various reasons, have declined operation. An attendance of one a month cannot be called large. Elephantiasis of the scrotum does not attract attention, unless it has attained an exceptional size, and the tumours nowadays are usually removed by operation before they get very large. But a well-marked case of elephantiasis of the leg attracts at once the attention of any passer-by; and I only know of one such case whom I see going about the streets. I have certainly seen a dozen cases of greatly swollen legs due to malarial cachexia and general anasarca, for one that I have seen due to elephantiasis.

(16) *Goitre* is very uncommon. I do not remember having seen a case. In 1900, out of 75,485 cases treated in the thirteen dispensaries in the district, here was only one case of goitre, at Mandalai.

(17) *Leprosy* is not very common. Seventeen cases of leprosy were treated at the dispensaries in 1900. Of course the relative prevalence of leprosy is much greater than this, for cases of the disease comparatively seldom apply for treatment, but I do not think leprosy could be considered common here. The table of infirmities, given in Chapter III—Population, shows only 750 lepers out of a population of a million, at the census of 1891, less than one per thousand. In the past twelve months three lepers have been admitted to jail, out of about one thousand prisoners admitted. Leprous beggars are not very common here.

(18) *Rheumatism* is less common than I should have expected, considering the very damp character of the district. In 1900, 250 cases of this disease were treated at the Imambarah Hospital, out of a total of 7,649 cases; and the thirteen dispensaries in the district show 1,401 cases out of 75,485 patients.

(19) *Malignant tumours* are not common. During the past twelve months I have twice excised the breast for scirrhus; and have operated on a good many cases of epithelioma of various parts, besides having seen some inoperable cases. I have only seen one case of sarcoma, an enormous tumour of the thigh. I have seen two cases of *mycetoma* in 1902, both on the heel; both were successfully excised. In one the femoral glands were greatly enlarged, and were excised; they were found to be very soft, and quite black, like bloodclot.

(20) *Diseases of the eye* are, of course, common enough, but not so common here as in the drier and more dusty climate of Upper India, where two of the great causes of affections of the eyes, dust and glare, are far more prevalent than in the moist, damp climate of Lower Bengal. Cataract is of frequent occurrence, but, like eye diseases in general, I should say less frequent here than in Bihar. The dispensary statistics for 1900 show 2,041 cases of

eye disease out of 75,485 cases; the largest number in any one dispensary being 346, out of 7,649, at the Imambarah Hospital.

(21) *Diseases of the liver* are, I should think, commoner than the dispensary statistics show. These give only 1,599 cases out of 75,485; the dispensary which shows the highest figures being the Hughli Female Hospital with 314 cases out of 5,443. One case of abscess of liver has been treated (successfully) in the Imambarah Hospital within the last twelve months. I have also seen one abscess of the liver at a *post-mortem* examination; but I have found cirrhosis of the liver comparatively common in *post-mortem* cases, both medico-legal and in the jail. Malarial enlargement of the liver is also common, but is usually accompanied by an even greater enlargement of the spleen, and thus is returned under the latter head.

(22) *Dyspepsia* is also far more common than would appear from the dispensary figures, 1,990 cases out of 75,485. The dispensary which shows the highest number of cases is Bhadreswar, with 356 out of 5,174. Both the educated and the working classes suffer greatly from this affection.

(23) *Diabetes* is very common here, as throughout Bengal, among middle-aged and elderly men of the educated classes. The disease is not, however, by any means a common one among the classes who seek treatment at a dispensary. A moderate amount of sugar in the urine, however, is not incompatible with a fair expectation of life, and a fair amount of work of not too laborious a character.

(24) *Diseases of the circulatory system* are by no means common. In the dispensary statistics for 1900 they only show 106 cases out of 75,485. The dispensary which returns the largest number of cases is the Hughli Female Hospital, with 29 out of 5,443. I have seen a few cases, chiefly of mitral regurgitation, among elderly patients at the hospitals; and two young men, candidates for enlistment in the police, have been rejected for the same cause.

(25) *Scurvy* is, I should say, very uncommon. The dispensary returns for 1900 show twelve cases, ten at Bainchi, and two at Mandalai, dispensaries only a few miles apart. I have not myself seen a case during the last twelve months, not even among the anæmic and weakly in jail. Even the ulcer, behind the molar teeth, often called the scorbutic ulcer, is by no means common. There have been a few admissions to the jail hospital for such ulcers of the gums, but very few in proportion to the numbers of weakly and sickly prisoners.

(26) *Ulcers* of all kinds are extremely common; the damp, moist climate not being favourable to the kindly healing of skin lesions. In some cases they take on a very malignant action. There was a case in jail in 1901, who slightly injured the skin over one of the shins by a fall, and though no specific infection of any kind of the abrasion seemed probable, nearly lost

his life from sloughing cellulitis of the tissues of the calf. The man was strong and in good health prior to the accident. Fortunately he recovered; but it was two months before the resulting ulcers had completely healed. The dispensary figures for 1900 show 2,708 ulcers among 75,485 cases; the highest figures being at Bainchi, 378 out of 9,619.

(27) *Stone in the bladder* is very uncommon in the Hughli district, no case having been operated on at the Imambarah Hospital for several years past. In 1901 a case of stone came to the Female Hospital, a girl, in whom a small stone was extracted from the bladder by dilatation of the urethra.

(28) *Skin diseases* are very common here, as throughout the province as might be inferred from the fact that the Bengalis have a special god of skin diseases, *Ghanta Karna* by name. The worship of this god, who is most appropriately represented by a lump of cowdung, is described under folk-lore, in the History. The most common skin diseases, I should say, are itch, ringworm, and boils, but I have also seen various forms of lichen, intertrigo, and acne, and one case of sycosis. Leucoderma is also fairly common. The dispensary statistics for 1900 show 3,153 cases out of 75,485; the largest number being 474, out of 7,649, at the Imambarah hospital.

(29) *Intestinal parasites* are, of course, not uncommon, though not nearly so common here as in Bihar. When in charge of the Chapra Jail, in 1892, it was my custom to give a dose of santonine to every prisoner admitted to hospital, and the treatment seldom failed to produce a plentiful crop of round-worms. Here also round-worms are the most common parasite, while I have seen a few cases of tape-worms, but neither occurs in such relative frequency as I have seen elsewhere. The dispensary figures for 1900 show 871 cases of worms out of 75,485 cases. And of these, 389 cases, not much less than one-half, are returned by Rishra, the smallest dispensary in the district, out of 3,785 cases treated there. Of the larger dispensaries, the Imambarah Hospital returns only 49, Hughli Female Hospital 60, Serampur 78, and Bainchi 71.

(30) *Abscesses* of all kinds are very common, from tiny collections of pus up to extensive sloughing of the subcutaneous cellular tissue. I have seen cases in which this sloughing has affected an area so extensive as to cause death by exhaustion, without any sign of a line of demarcation forming between diseased and healthy tissue. Spreading moist *gangrene* is also very common at Hughli.

Surgical operations have never been very extensively performed in Hughli. The chief operations performed have been amputations, for accidents on the railway and in the mills; excisions of tumours, either malignant, as epithelioma, or non-malignant, as elephantiasis scroti, cysts, fibrous or fatty tumours; for hydrocele, for necrosis of various bones, and a certain number of operations for cataract. One reason for this is that access to Calcutta is as easy as to Hughli from almost all parts of the district, from many much easier;

while the Medical College in Calcutta is nearer to Howrah station than the Imambarah Hospital to Hughli station.

Anæsthesia.—I have never used any general anæsthetic, other than chloroform, here or elsewhere. In the course of twenty years' experience, I have never seen a fatal case due to chloroform, and only once (in the Medical College Hospital, Calcutta) seen any dangerous symptoms from the administration of chloroform. For cataract and other eye operations, local anæsthesia by cocaine is always employed.

Recruiting can hardly be said to exist in this district. It is hardly necessary to say that natives of this district would not be accepted as recruits for the native army. However, this is no loss to them, as no people under the sun could be less military in their tastes, and it is most improbable that any native of Hughli ever wished to enlist. Equally, they would not be taken on in the local company of Military Police. The Civil Police are all recruited locally, in so far that recruits are actually enlisted in the force at Hughli; but the great majority of these recruits are men from up-country, from Bihar and the eastern districts of the North-West Provinces and Oudh, who come down to Bengal specially for the purpose of enlisting. Most of the subordinate officers, and a small proportion of the men, specially of the writer-constables, of the Civil Police, are natives of Bengal; but even among the Bengali members of the police force a number are from other districts of Bengal. The *chaukidars* are, of course, local men; the caste most largely represented among them is that of the Bagdis.

Emigration does not exist, in the usual sense of the word. The indigenous inhabitants of Hughli district do not wish to emigrate to the Colonies, and would not be accepted by the Emigration Agents if they did. Neither do they ever emigrate to Burma, nor to Assam for work in the tea gardens. There is a good deal of temporary emigration, in the form of men going to Calcutta in search of work, and remaining there for years perhaps; but such men usually leave their wives and families in their native village, under the protection of the head of the household, and always intend to return and settle in their birthplace.

On the other hand, there is a very large immigration into the district. The men who work in the large jute and cotton mills are chiefly immigrants, Biharis and Urias, who may settle here for years, but seldom intend to make their permanent homes in Bengal. Biharis also take service in large numbers in the police, as railway servants, and as *darwans*, while Urias work in the towns as bearers and water-carriers. These may all be called semi-permanent immigrants; all these classes often settle down in the district for years; and though they probably never deliberately intend to make a permanent home here, individuals and families do, for various reasons, sometimes settle in the district for good. There is also a very large temporary

immigration into the district of labourers from the Santhal Parganas, Bankura, Midnapur, and Chutia Nagpur, to work as coolies on the railways, roads, and brick-fields, at tank-excavating, and also as labourers in the fields. These men usually enter the district after the rains, remain for eight or nine months, and return home before the rains of the succeeding year.

I do not think that these immigrants have any evil influence on the district through the introduction of disease. Immigrant coolies, often living crowded together in very insanitary conditions, and living on very little food, in their desire to save money to take home with them, offer a favourable field for the attack of epidemic disease like cholera, from epidemics of which they often suffer severely. But in such cases the immigrants are the victims of endemic disease, attacking them locally, not the agents who introduce disease from elsewhere. On the other hand, the emigrants, paradoxical as it may sound, do very frequently act as the agents who import disease into the district from outside, and especially from Calcutta. This has happened particularly within the last five years; in the small-pox epidemics of 1895 and 1901, and the plague epidemics of 1898 to 1902. These emigrants finding themselves attacked by, or perhaps only fearing an attack of, the prevailing epidemic in Calcutta, fly to their homes, like rabbits bolting for their holes, and carry with them the infection they have received. Fortunately plague is a disease which seems to have great difficulty in getting hold, or "catching on" in any new place, otherwise Hughli district, into which the disease has been imported literally dozens of times, would ere now have suffered from a severe epidemic.

As regards the effects of trade on the propagation of disease, the only subject which it is necessary to mention is that of jute-steeping. This practice has by some been blamed as the cause of a great rise in fever mortality, but I have never myself seen any reason to believe that it has any influence in this direction. Jute is very largely grown in this district, and of course the growth of jute involves the steeping of jute. No doubt water in which jute has been steeped would, if drunk, be injurious to health, but I do not believe that even the Bengali *raiyat* could swallow jute-water. And I do not think the mere proximity of such water need be injurious to health. Its smell is abominable, but a nasty smell is not necessarily prejudicial to health, and indeed is often one of the danger-signals set up by nature to warn off trespassers. If it were not for its filthy smell (and probably taste also, if any one has ever been courageous enough to taste it), the cultivators would no doubt drink it, and not to their advantage. I do not think that the practice of steeping jute in small tanks, pits, and hollows, can be considered injurious to health, as the water of the hollows thus used is utterly undrinkable. The case may be different where, as sometimes in Eastern Bengal, jute is steeped along the banks of large rivers.

These rivers necessarily form the water-supply of all who live along their banks, and the great dilution renders it possible to use the water, which may nevertheless be injurious to health.

The influence of religion on health is not marked, except in so far as the treatment of disease by charms, incantations, and prayers is substituted for a more rational form of treatment. Such methods of dealing with disease seldom do positive harm. The more nutritious qualities of the food consumed by Musalmans, containing, as it does, a certain quantity of meat when they can afford it, tends to give them more stamina and more resisting power against disease than is possessed by Hindus. But in Lower Bengal almost all Hindus consume fish, which is one form of animal food.

I do not think that disease, such as trichinosis, characterized by the presence of worms in meat, is common, if it exists, in this district. Pig-meat is used only a few low-caste Hindus; Musalmans of course will not touch the flesh of the unclean animal. I have not seen a case of lathyrism, nor heard of its occurrence. Lathyrus sativus, or *khesari dal*, is grown in this district, but not in any great quantity. Nor, as far as I know, is it used as a staple food, but rather as a condiment, and in quantities insufficient to do much practical harm.

CHAPTER XIII.

LAWS.

The Hughli district, like other districts, is for the most part governed under the ordinary laws of the province and of the country. There are, however, a few special laws and regulations in force in this district, which are not of general application. They are mentioned below.

Of the general laws, the most important are the following:—

The Indian Penal Code.

The Criminal Procedure Code.

The Civil Procedure Code.

The *Chaukidari* Act [Act VI (B.C.) of 1870].*

The Road Cess Acts [Act X (B.C.) of 1871 and Act IX (B.C.) of 1880].

The Local Self-Government Act [Act III (B.C.) of 1885], under which District Boards were constituted.

The Municipal Acts; successively Act VI (B.C.) of 1868; Act II (B.C.) of 1873; Act III (B.C.) of 1884; and Act IV (B.C.) of 1894; the last being that at present in force.

The Salt Act and the Puri Lodging-houses Act are not in force in this district.

Various Acts which refer specially to medical subjects are—

The Act prohibiting inoculation for small-pox [Act IV (B.C.) of 1865], which was extended to the whole of the Metropolitan Circle of Vaccination, including Hughli district, on 11th October 1871.

The Compulsory Vaccination Act [Act V (B.C.) of 1880]. This Act was put in force in the Hughli-Chinsura Municipality in 1881; on 1st April 1873 in Serampur, Baidyabati, Bhadreswar, Bansbaria, Uttarpara, and Kotrang; and on 11th February 1889 in Arambagh. It is not in force in the rural areas of this district.

The Act for the Compulsory Registration of Births and Deaths [Act IV (B.C.) of 1873] was put in force from 1st September 1874 in Hughli, Serampur, and Uttarpara; in Baidyabati from 1st December 1876; and in Arambagh from 1st October 1888.

* (B.C.) means Bengal Council.

The subjects on which there are laws special to the Hughli district, either alone, or in common with other parts of the province the circumstances of which are similar, are Drainage, Irrigation, and Embankments. As the Howrah district in all revenue matters is merely a subdivision of the Hughli district, all laws on these subjects which have been extended to the Hughli district are in force also in Howrah.

Drainage.—The first Drainage Act [Act V (B.C.) of 1871] was put in force in the Hughli district only. Under this Act the Dhankuni drainage scheme, in Serampur subdivision, was carried out.

Act VI (B.C.) of 1880 was also applicable to the Hughli district, including Howrah, only. This Act is still in force. Under it have been carried out the Howrah drainage project, and the Rajapur drainage project, both in Howrah.

Act II (B.C.) of 1882 is another Drainage Act, which has been put in force in the 24-Parganas, and utilized in the Charial *khal* and the Bali *bhil* drainage projects.

Act VIII (B.C.) of 1895, the Sanitary Drainage Act, for rural areas outside municipalities, may be put in force in any part of the province, but has not yet been utilized in this district.

Irrigation.—The Act in force under this head is Act III (B.C.) of 1876. Under this Act canals are divided into two great classes—"Major irrigation works" and "Minor works and navigation." Under the head of "Major irrigation works" come four canals—the Orissa project, the Midnapore project, the Hijli tidal canal project, and the Sone canals. None of these are in this district. "Minor works and navigation" are again divided into three sub-heads:—

(*i*) Canals, the capital expenditure of which has been charged against revenue; the Saran canals, the Calcutta and Eastern canals, and the Orissa Coast canals. None of these are in this district.

(*ii*) Canals, as in the former class, of which revenue accounts are kept; the Nadiya Rivers, the Gaighata *khal*, and the Baksi *khal*. The Gaighata *khal* is in the Howrah district. The Baksi *khal* is also in Howrah. It joins the Damudar and Rupnarayan rivers.

(*iii*) Canals, as in class (*i*), of which neither capital no revenue accounts are kept; the Madhubani canal, the Orissa tidal creeks, and the Eden canal. The last mentioned is chiefly in the Bardwan district, but extends into Hughli. Its water flushes some of the "dead" rivers in the Bardwan and Hughli districts with water from the Damudar, the object with which it was constructed being the improvement of the water-supply of the villages along

the banks of these rivers. The Eden canal has been described in Chapter I.

Embankments.—These have been regulated by several successive Acts, Act VI (B.C.) of 1873, and Act II (B.C.) of 1882, the latter being that now in force. This Act is not special to the Hughli district, but is also in force in several other districts, as the 24-Parganas and Midnapur, where rivers are embanked to save the land behind the embankment from floods. The following rivers in this district are embanked under this Act :—

The Dwarkeswar and the Sankra, the latter being the name of one of the two branches of the Dwarkeswar in the lowest part of its course, before it joins the Rupnarayan.

The Rupnarayan.

The Damudar.

The (Damudar) Kana Nadi.

The Kana Damudar.

The Saraswati.

CHAPTER XIV.

OFFICERS.

In this chapter I have endeavoured to give as complete a list as possible of the various civil officers who have served at Hughli in different capacities, with a mere mention of the most distinguished officers and others who have visited the place at various times, on duty or pleasure.

The early history of the Hughli settlement, as set forth in the History, is practically identical with that of Bengal, from 1650 to 1690, when, on the foundation of Calcutta, Hughli sank into insignificance.

Wilson, in the "Early Annals of the English in Bengal," gives a list of the successive Governors or Chiefs in Bengal from 1640 to 1690, as follows:—

Chiefs in Orixa and Bengall since the Company getting there, viz$^{t.}$:—

Orixa. Mr. Cartwright, Mr. Joyce, Mr. Yard } at Ballasore.

Bengall. Captain John Brukehaven (1650).

Mr. James Bridgman (1650–1653).

Mr. Powle Walgrave (Waldegrave) (1653).

Mr. Gawding (George Gawton) (1658) and Mr. Billingsley.

Agent Jonathan Trevisa or Trevesa (1658–1663).

Mr. William Blake (1663–1669).

Mr. Shem Bridges (1669–1670), subordinate to the Fort.

Mr. Walter Clavell (1670–1677), (died at Balasore 3rd August 1677).

Mr. Matthias Vincent (1677–1682).

Agent William Hedges (1682–1684). Directly from the Company (Joined 24th July 1682, superseded 30th August 1684).

Agent John Beard, subordinate to the Fort. (Died 23rd August 1685).

Mr. Francis Ellis (August 1685–April 1686; acting pending Charnock's arrival from Murshidabad).

Job Charnock (April 1686. Founded Calcutta 24th August 1690. Died in Calcutta 10th January 1693).

In a letter from Court, dated 7th December 1669, Henry Powell was appointed to succeed Shem Bridges, but apparently never succeeded. The Fort to which Hughli was usually subordinate was Fort St. George (Madras).

Of other officers stationed at Hughli during the seventeenth century, the following may be mentioned. In 1650 James Bridgman was sent from Balasore to Hughli as Chief, with Edward Stephens as second, and two assistants, William Blake and Tayler. Yule gives lists of officers stationed at Hughli in 1652 and 1658 (Hedges' "Diary," Vol. III, pp. 189 and 196).

In 1652 Powle Waldegrave was Chief, with two assistants, Edward Stephens and William Pitts. The latter married the widow of Gabriel Boughton. In 1658 George Gawton was Agent, with £100 a year; the second place with £40 was vacant, but subsequently was filled by Jonathan Trevisa, with Matthias Halstead third on £30, William Ragdale fourth, and Thomas Davies fifth, on £20 each.

A consultation held at Fort St. George on 7th August 1678 gives a list of 31 officers then serving in Bengal. The first sixteen formed the Chiefs and Councils of Hugly, Ballasore, Cassumbazar, Pattana, and Decca. Of these were stationed at Hughli, (1) Matthias Vincent, "Chief of the Bay and at Hugly," (3) Edward Reade, second, (4) Edward Bugden, third, and (8) George Peacock, fourth, at Hughli. Among the others, the best known names are those of Job Charnock, second in the whole list, then Chief at Patna; Edward Littleton, then Chief at Casimbazar; and Allen Catchpole, then third at Patna. The first sixteen are all factors. The fifteen juniors were "writers, to be disposed of to the severall ffactorys as the Chief and Councell shall judge convenient." One man, the 26th on the whole list, Robert Shermar, has "Hugly" opposite his name.

A consultation held at Hughli, on Friday, 12th December 1679, gives a much fuller list of all the officers at that time stationed in the Bay; and also gives at length the rules drawn up for the government of the various factories in Bengal. A public table was kept at each factory, and every officer, whatever his rank, was bound to dine at the public table, unless he were married, in which case he received diet money. "Noe dyett mony shall be allowed to single Persons, only to those that are maryed, and doe desire to dyett apart." So apparently a married man could, if he chose, live at the public table with his wife. The public table was in charge of one of the junior officers at Hughli, of the third in Council at the other factories. Various fines were imposed for breaches of discipline, as follows:—

(1) Absence all night, or after 9 P.M., when the gates were shut, a fine of ten rupees, or one day in the stocks.

(2) Swearing, a fine of one shilling, or three hours in the stocks, for each oath.

(3) Lying, a fine of one shilling for each offence.

(4) Drunkenness, a fine of five shillings, or six hours in the stocks.

(5) Absence from public prayers, morning or evening, on week days, a fine of one shilling for each offence.

(6) For adultery, fornication, uncleanness, any crime disturbing the peace of the factory, for constant quarrelling or habitual indulgence in any of the offences under the first five rules, the offender was to be sent to Fort St. George, there to receive "condigne punishment."

The list of officers in the Bay includes 28 names, tabulated as follows. I have given the names only of those stationed at Hughli. Allen Catchpole was now second at Casimbazar. Robert Douglas is the only medical officer in the list:—

List of officers stationed at Hughli, December 1679.

	Arrivall in India.	Present Degree.	Present Salary.
			£
(1) Matthias Vincent, Chief of the Bay at Hugly, came out a ffactor at 20 l per annum, his salary made 35 l per annum 1668.	August 1st, 1662 ...	Senior Marchant, 1670.	40
(2) Mr. Job Charnock, Second at Hugly, arrived in India 1656. Entertained in ye Company's Service 30th September 1658 at 20 l per annum.	September 30th, 1658	Senior Marchant, 1666.	40
(8) Mr. John Evance, Chaplaine, came out for the Bay.	June 23rd, 1678 ...	Chaplaine ...	100
(9) Mr. John Thomas, third, at Hugly, came out an apprentice at 5 l per annum.	September 10th, 1668	Marchant, 1679 ...	30
(10) Mr. Francis Ellis, fourth, at Hugly, came out a writer at 10 l per annum.	June 23rd, 1672 ...	Factor, 1679 ...	20
(11) Mr. Robert Dowglass, Chyrurgeon, came out in the *Eagle* and changed place for the Bay.	December 16th, 1676	Chyrurgeon ...	36
(23) Mathew Sheppard, Secretary, at Hugly, arived.	June 28th, 1675 ...	Writer ...	10
(24) Robert Shermar, Steward, at Hugly, arived.	June 23rd, 1678 ...	Writer ...	10
(25) James Sowden, at Hugly in the office, arived.	July 2nd, 1678 ...	Writer ...	10
(26) Charles Cross, at Hugly, under the Second, arived.	July 2nd, 1678 ...	Writer ...	10
(28) William Talland, at Hugly, in ye office, arived.	July 2nd, 1678 ...	Writer ...	10

Robert Douglas was "Chyrurgeon" to the settlement at Hughli from 676 to 1684. He was both preceded and succeeded by Ralph Harwar,

who was at home in the intervening period. A letter from Court, dated London, 26th November 1684, contains the following appointment:—

"Mr. Henry Watson is likewise entertained to serve as a Chyrurgeon's Mate at Hughly or Cassumbazar (where there is most need of him) for five years at 25rp a month for the first two years and 30rs a month for the three last years."

Whether Watson ever came out, or where he was posted, if he did come out, I cannot say. Curiously, his salary as "Chyrurgeon's Mate," small as it appears to us nowadays (the pay of a third grade Civil Hospital Assistant), was higher than that of the "Chyrurgeon" himself. For, with the rupee at half a crown, eight to the pound, which was then its value, £36 a year is only Rs. 288 a year.

When the New Company, under Sir Edward Littleton (mentioned above as Chief at Casimbazar, but subsequently dismissed by the Old Company), occupied the abandoned settlement at Hughli in 1699, among the servants of the New Company who sailed from England in the *Antelope* was Thomas Pendleton, "our designed Chyrurgeon in the Bay." He died on the voyage out, in December 1699.

During the eighteenth century there was practically no English settlement or civil station at Hughli, until the formation of Hughli district in 1795. The Company had Commercial Residencies at Haripal, Khirpai, and Golagore (Magra); but the only Commercial Resident's name which I have come across at this period is that of Thomas Hewit, Resident at Keerpoy and Hurripaul, in October 1765. A list of officers serving as Commercial Residents and Residency Surgeons in the early part of the nineteenth century is given in Chapter II.

Since Chapter II was in type a search through the files of the *Calcutta Gazette* in the Record Office, Calcutta, from 1786 to 1812, has given a little additional information, as follows. Yner Burges was appointed Commercial Resident at Golagore on 26th April 1798, on 2nd May 1799 he was appointed Collector of Bardwan and Hughli. John Forsyth was appointed Commercial Resident at Haripal on 19th April 1804; on 12th March 1807 he was transferred to Golagore, and was succeeded at Haripal by Robert Richardson. G. Monckton was appointed Assistant to the Resident at Haripal on 20th December 1798. Assistant Surgeon William Noyes was posted to Haripal Residency on 15th January 1807. He was appointed an Assistant Surgeon, having formerly been medical officer of an Indiaman, on 8th March 1806, and died at Radnagore (Radhanagar in Midnapur, one of the outposts of the Haripal Agency) on 18th November 1807.

As mentioned in the History, in 1787 R. Holme was in charge of Hughli, apparently as a subdistrict, which in March 1787 was combined with Nadiya, under Mr. T. Redfearn. The jurisdiction of these officers was that of Revenue Collector rather than of Magistrate.

The district of Hughli was established as a separate magisterial charge in 1795, but did not become a separate Collectorate until 1822. The first Magistrates appear to have performed the duties of Judge also. It was not until 1828 that three officers appear in the lists as holding the three offices of Judge, Magistrate, and Collector. In those days the Magistrate was junior to the Collector, and promotion ran from Magistrate to Collector, from Collector to Judge, from Judge to Commissioner. From 1859 the appointments of Magistrate and Collector were combined.

The sources of information from which I have got the names of the various officers serving at Hughli are, from the East India Registers from 1813 up to 1860, from the Bengal Civil Lists after 1860. These lists, of course, do not give the exact dates of appointment, and in all cases the exact dates of appointment of various officers are earlier, in the case of the East India Registers considerably earlier, than the dates at which their names first appear in the lists. I have been able to obtain exact information as to dates of appointment from office records from the following dates:— Judges and Magistrates from 1870; Civil Surgeons from 1848; and Divisional Commissioners and Superintendents of Police from the original dates when these appointments were first made, in 1854 and 1863, respectively.

List of officers holding the appointment of Judge and Magistrate of Hughli, 1795–1826.

Hon'ble C. A. Bruce	...	1795—1799.*
Thomas Brooke	...	1799— ? [Up to 1802, at least.]
—— Ernest	...	—— 1809.
David Campbell	...	1812—1814.
William Brodie	...	1814—1816.
Henry Oakeley	...	1816—1826.

In the East India Registers of 1813 to 1830 appear the names of officers holding the appointment of "Register" (Registrar) of Zillah Hoogly. As this appointment disappears about the same time that that of Magistrate and Deputy Collector appears, probably the functions and duties of the two offices were somewhat similar. The officers holding this appointment were as follows:—

List of "Registers" of Hughli, 1813–29.

G. Ravenscroft	...	... 20th October 1803.
J. Hayes	...	... 16th May 1805.
George Thornton Bayley	...	... 1813—1815.
William Forrester	...	... 1815—1817.
David C. Smyth	...	... 1817—1820.
Robert Creighton	...	... 1821—1822.
Robert Barlow	...	... 1822—1826.
Hugh Vans Hathorn	...	... 1826—1829.

* Mr. C. A. Bruce died at Penang, while holding the post of Governor of that settlement, on 27th December 1810. H. Cornish appears as Assistant Judge on 10th May 1804.

List of Judges of Hughli, 1827–1902.

David C. Smyth	1827—1836.
Charles Ray Martin	1837.
James Curtis	1838.
Robert Barlow	1839—1841.
F. Whitworth Russell	1842—1851.
Thomas Bruce	1852.
Henry Stainforth	1853.
James Hardwicke Patton	1854—1855.
George Gordon Mackintosh	1856.
Henry Vincent Bayley	1857—1858.
Henry Craigie Halkett	1859.
John Warrender Dalrymple	1860.
Charles Thomas Buckland	1861.
Arthur Pigou	1862—1863.
John Edward Sutherland Lillie ...	1863.
Alexander Hope	1863.
Arthur Pigou	1864—1866.
John Mangles Lowis	1866.
Arthur Pigou	1866—1867.
George Bright	1867—1869.
Rowland Vyner Cockerell	1869.
George Bright	1869—1870.
Sir William James Herschel, BART. ...	1870.
George Bright	1870—2nd December 1871.
Henry Thoby Prinsep	2nd December 1871—19th March 1875.
William Cornell	20th March 1875—5th April 1875.
William Erskine Ward	6th April 1875—12th December 1875.
Henry Baring Lawford	13th December 1875—19th June 1876.
Thomas Durant Beighton	20th June 1876—21st July 1876.
Henry Thoby Prinsep	22nd July 1876—14th April 1877.
John Peter Grant	15th April 1877—6th August 1878.
Alfred Corbyn Brett	7th August 1878—22nd November 1878.
John Peter Grant	23rd November 1878—22nd March 1882.
Charles Bazett Garrett	3rd April 1882—20th September 1882.
Francis William Badcock	21st September 1882—11th November 1882.
John Peter Grant	12th November 1882—10th May 1885.
Henry Gillon	11th May 1885—17th December 1885.
John Peter Grant	18th December 1885—27th February 1886.
Robert Fulton Rampini	8th March 1886—20th September 1886.
John Peter Grant	21st September 1886—3rd September 1887.
Robert Fulton Rampini	9th September 1887—2nd October 1887.
James Kelleher	3rd October 1887—4th March 1889.
Frederic Hubert McLaughlin	5th March 1889—28th March 1890.
Robert Hildebrand Anderson	29th March 1890—14th May 1890.
James Crawfurd	15th May 1890—2nd June 1891.
Richard Rodney Pope	3rd June 1891—2nd September 1891.
James Crawfurd	3rd September 1891—21st April 1893.
John Knox Wight	22nd April 1893—13th March 1894.
Kedar Nath Roy	14th March 1894—17th May 1894.
Bernard George Geidt	18th May 1894—30th October 1894.
Ahsanudin Ahmad	31st October 1894—31st December 1894.

List of Judges of Hughli, 1827–1902—concld.

Cecil Michael Wilford Brett	1st January 1895—2nd March 1895.
James Francis Bradbury	3rd March 1895—27th September 1897.
Alfred Evelyn Staley	30th September 1897—5th July 1898.
Bihari Lal Gupta	6th July 1898—1st August 1898.
Brojendra Coomar Seal	2nd August 1898—28th November 1898.
Bihari Lall Gupta	29nd November 1898—2nd July 1899.
James Herbert Temple	3rd July 1899—19th November 1899.
Henry Reynell Holled Coxe	20th November 1899—21st May 1900.
Alfred Edgar Harward	22nd May 1900—6th November 1900.
Duncan Cameron	7th November 1900—10th March 1902.
Kumar Gopendra Krishna Deb	11th March 1902.

The first name on the list, David Smyth, was Judge of Hughli for ten years, 1827 to 1836; and also had been Registrar for four years before, 1817–20. Mr. Barlow also appears in the list of "Registers" prior to his appointment as Judge. In later years, Mr. J. P. Grant spent ten years, off and on, with many breaks, as Judge of Hughli.

Many of the Judges of Hughli have risen to the High Court Bench. Mr. Barlow became a Baronet, and figures as Sir Robert Barlow, BART., Judge of the *Sadr Adalat*, from 1854 to 1856. Subsequent Judges who have risen to the High Court are J. H. Patton (High Court, 1854–60); H. V. Bayley (1856 and 1860–73); R. F. Rampini (1888 to date); C. M. W. Brett (1900 to date); and B. G. Geidt (1902). Mr. W. E. Ward subsequently became Chief Commissioner of Assam, and Mr. C. T. Buckland a Member of the Board of Revenue (1870 and 1877–81).

The following is a list of Collectors of Hughli from 1822 to 1859, when the office was combined with that of Magistrate. Mr. W. H. Belli appears to have held the office for nearly twenty years, but the lists in the East India Registers are not very accurate, and were not well up to date when published. Anyhow Mr. Belli as Collector and Mr. Smyth as Judge between them presided over the district for a long term of years. Twenty years later we find another Mr. Belli as Magistrate and Collector:—

List of Collectors of Hughli, 1822–59.

William H. Belli	1822—1841.
James Armstrong (acting)	1828.
James Balfour Ogilvy	1842.
Edward Stirling	1843—1845.
Alexander Reid	1845—1851.
Charles Steer	1851—1852.
Villiers Thomas Tayler	1852—1854.
Robert Francis Hodgson	1854—1859.

List of Magistrates of Hughli, 1829–59.

Frederick James Halliday	1829.
Henry Benjamin Brownlow	1830—1834.
Edward Alexander Samuells	1835—1841.
George Percival Leycester	1842—1844.
Henry Vincent Bayley	1844—1846.
Adam Smith Annand	1846—1847.
Samuel Wauchope	1848—1852.
Charles Thomas Buckland	1853.
Charles Scott Belli	1854—1857.
Augustus John Elliott	1858—1859.

Of these officers, by far the most famous is Sir Frederick Halliday, K.C.B., the first Lieutenant-Governor of Bengal, 1854–59, and the only officer in these lists who has risen to that position. He died so recently as 22nd October 1901, in his ninety-fifth year. Mr. E. A. Samuells was afterwards a judge of the High Court (1856, and 1859 to 1861), as was Mr. H. V. Bayley as previously mentioned. Mr. C. T. Buckland, who had been Magistrate, Judge, and Commissioner of Hughli, became a Member of the Board of Revenue. Mr. S. Wauchope became Dacoity Commissioner, and at the time of the Mutiny was Commissioner of Police in Calcutta. I believe that the date of his tenure of the Magistracy of Hughli was considerably earlier than that shown in the East India Registers.

List of Magistrate-Collectors of Hughli, 1861–1902.

Charles Scott Belli	1861.
Archdale Villiers Palmer	1862—1866.
David James McNeile	1866—1867.
George Stewart Park	1867.
Edward Henry Whinfield	1867—1868.
Rowland Vyner Cockerell	1868.
Edward Dowdeswell Lockwood	1868.
Ebenezer Johnstone Barton	28th July 1868—26th December 1868.
R. V. Cockerell	27th December 1868—1869.
Villiers Thomas Taylor	1869.
R. V. Cockerell	1869—1870.
Fleetwood Hugo Pellew	15th February 1870—12th July 1873.
William Erskine Ward	13th July 1873—20th October 1873.
F. H. Pellew	21st October 1873—11th February 1875.
Arthur Weekes	12th February 1875—9th November 1875.
Sir William James Herschel, BART. ...	10th November 1875—7th August 1876.
Henry James Newbery...	8th August 1876—14th November 1876.
F. H. Pellew	15th November 1876—21st March 1877.
Sir W. J. Herschel, BART.	22nd March 1877—9th November 1877.
F. H. Pellew	10th November 1877—28th May 1878.
Robert Douglas Hime	19th May 1878—28th April 1879.
Robert Cornish	29th April 1879—4th February 1880.
John Beames	5th February 1880—19th July 1880.
R. Cornish	20th July 1880—19th October 1880.

List of Magistrate-Collectors of Hughli, 1861–1902—concld.

J. Beames	20th October 1880—16th December 1880.
R. Cornish	17th December 1880—4th March 1881.
Henry John Stedman Cotton	5th March 1881—13th May 1881.
R. Cornish	14th May 1881—15th April 1882.
Frederick Wyer	16th April 1882—12th November 1883.
George Toynbee	13th November 1883—2nd August 1886.
Brojendranath De	3rd August 1886—27th August 1886.
Alfred Wallis Paul	28th August 1886—7th November 1886.
G. Toynbee	8th November 1886—2nd September 1887.
Charles Peter Caspersz	3rd September 1887—3rd November 1887.
G. Toynbee	4th November 1887—12th January 1889.
Henry Giraud Cooke	14th January 1889—1st September 1891.
Frank Sumner Hamilton	2nd September 1891—2nd December 1891.
H. G. Cooke	3rd December 1891—19th June 1892.
Frederick William Duke	20th June 1892—8th December 1892.
George Eldon Manisty	9th December 1892—16th February 1893.
F. W. Duke	17th February 1893—15th August 1893.
Havilland LeMesurier	16th August 1893—22nd September 1893.
Francis Norton Fischer	23rd September 1893—15th November 1893.
F. W. Duke	16th November 1893—23rd September 1894.
Elliot George Drake-Brockman ...	24th September 1894—22nd October 1894.
F. W. Duke	23rd October 1894—16th April 1895.
Romesh Chunder Dutt	17th April 1895—31st May 1895.
Edwin Max Konstam	1st June 1895—14th July 1895.
R. C. Dutt	15th July 1895—22nd September 1895.
Edward Geake	23rd September 1895—31st March 1896.
John Lang	1st April 1896—1st October 1896.
David Bird Allen	2nd October 1896—25th February 1898.
Francis Cooper French	26th February 1898—21st March 1898.
D. B. Allen	22nd March 1898—19th April 1898.
F. C. French	20th April 1898—12th March 1899.
Thomas Inglis	13th March 1899—20th May 1900.
Bernard Allen	21st May 1900—4th September. 1900.
Herbert Philip Duval	5th September 1900—6th December 1900.
T. Inglis	7th December 1900—21st March 1901.
H. P. Duval	22nd March 1901—26th May 1901.
T. Inglis	27th May 1901—17th March 1902.
Robert Clifford Hamilton	18th March 1902.

Of the above officers, Messrs. W. E. Ward and H. J. S. Cotton afterwards became Chief Commissioners of Assam. Messrs. Beames (1887–89) and Toynbee (1896–1900) became Members of the Board of Revenue. Sir William Herschel was a grandson of the great astronomer. He was in one way considerably in advance of his time, for he introduced the use of finger-prints into India, as a safeguard against personation, but failed to convince the Government of the importance of the method, and after his departure it was abandoned.

The head-quarters of the Bardwan Commissionership, established in 1854, as mentioned in the History, have been fixed at Hughli from

1871 to 1875, from 1879 to 1884, and from 1896 to date. The following is a list of officers who have held the appointments :—

List of Commissioners, Bardwan Division, 1854–1901.

James Henry Crawford	January 1854—31st May 1854.
William Henry Elliot	1st June 1854—February 1856.
James Henry Young	February 1856—17th August 1857.
Edward Harbord Lushington	18th August 1857—December 1857.
W. H. Elliot	December 1857—1st June 1859.
J. H. Young	2nd June 1859—February 1861.
Sulivan Francis Davis	February 1861—31st March 1861.
George Augustus Chicheley Plowden ...	1st April 1861—June 1863.
Charles Francis Montresor	June 1863—August 1866.
Richard Palmer Jenkins	September 1866—December 1866.
C. F. Montresor	December 1866—January 1868.
Sir William James Herschel, BART. ...	February 1868—June 1868.
Charles Hallyburton Campbell ...	July 1868—August 1868.
Horace Abel Cockerell	August 1868—27th December 1868.
Charles Thomas Buckland	28th December 1868—19th July 1875.
Sir W. J. Herschel, BART.	20th July 1875—1st October 1875.
C. T. Buckland	19th October 1875—2nd March 1876.
Horace Abel Cockerell	30th March 1876—8th August 1877.
Alexander Smith	9th August 1877—11th January 1878.
William Sutherland Wells	12th January 1878—29th May 1878.
Fleetwood Hugo Pellew	30th May 1878—20th December 1878.
Thomas Edward Ravenshaw	21st December 1878—16th December 1880.
John Beames	17th December 1880—16th March 1883.
Frederick Wyer	17th March 1883—27th March 1883.
John Beames	28th March 1883—10th August 1884.
Robert Henry Wilson	11th August 1884—31st October 1884.
John Beames	1st November 1884—31st March 1885.
Edmond Elliot Lowis	1st April 1885—25th September 1886.
Thomas Edward Coxhead	26th September 1886—19th October 1886.
John Beames	20th October 1886—3rd April 1887.
R. H. Wilson	4th April 1887—4th May 1887.
Edward Vesey Westmacott	5th May 1887—16th June 1887.
R. H. Wilson	17th June 1887—25th August 1887.
E. V. Westmacott	26th August 1887—18th October 1887.
Nathaniel Stuart Alexander	19th October 1887—24th April 1888.
E. V. Westmacott	25th April 1888—1st November 1888.
N. S. Alexander	2nd November 1888—15th April 1889.
Arthur Lloyd Clay	16th April 1889—17th December 1889.
N. S. Alexander	18th December 1889—3rd March 1890.
Charles Edward Buckland	4th March 1890—10th March 1890.
George Toynbee	11th March 1890—2nd April 1891.
John Charles Veasey	3rd April 1891—2nd November 1891.
Ambrose William Bushe Power	3rd November 1891—31st August 1893.
Richard Maunsell Waller	1st September 1893—31st October 1893.
A. W. B. Power	1st November 1893—4th April 1894.
Romesh Chunder Dutt	5th April 1894—3rd April 1895.
James Austin Bourdillon	4th April 1895—16th March 1896.

List of Commissioners, Bardwan Division, 1854-1901—contd.

C. E. Buckland	17th March 1896—15th July 1896.
George Stevenson	16th July 1896—6th October 1896.
C. E. Buckland	7th October 1896—3rd March 1897.
G. Stevenson	4th March 1897—4th December 1897.
C. E. Buckland	5th December 1897—8th January 1898.
G. Stevenson	9th January 1898—21st April 1898.
David Bird Allen	22nd April 1898—25th May 1898.
Joseph Kennedy	28th May 1898—7th November 1898.
William Benjamin Oldham	8th November 1898—24th November 1898.
Henry Clissold Williams	25th November 1898—12th April 1899.
J. Kennedy	13th April 1899—6th November 1899.
Charles James O'Donnell	7th November 1899.
J. Kennedy	8th November 1899—21st February 1900.
Cecil Joseph Salkeld Faulder	22nd February 1900—14th May 1901.
Robert Carstairs	15th May 1901.

Of the above officers, the following have risen to be Members of the Board of Revenue:—C. H. Campbell (1868-69), C. T. Buckland (1870 and 1877–81), H. A. Cockerell (1882–87), T. E. Ravenshaw (1877), A. Smith (1891), J. Beames (1887–89), E. V. Westmacott (1894), G. Toynbee (1896–1900), W. B. Oldham (1898–1900), J. A. Bourdillon (1901). Messrs. Bourdillon and C. E. Buckland have been successively Chief Secretaries to the Government of Bengal. Mr. C. T. Buckland has held the Commissionership much longer (1868–75) than any other officer.

List of District Superintendents of Police, Hughli, 1863–1901.

Lieutenant George McHardy Bowie ...	20th March 1863—1st February 1864.
Hugh Gilmore Wilkins	2nd February 1864—16th February 1864.
Charles Baker, V. C.	17th February 1864—21st July 1864.
H. B. Sanderson	22nd July 1864—13th April 1866.
Lieutenant Herbert Maynard Ramsay ...	14th April 1866—18th March 1867.
S. A. King	19th March 1867—2nd April 1867.
William Dering Pratt	3rd April 1867—10th February 1868.
M. B. Rochfort	11th February 1868—26th September 1869.
Alexander Douglas Larymore	27th September 1869—10th March 1873.
William Dering Pratt	11th March 1873—13th July 1877.
Victor William Bertelsen	14th July 1877—13th December 1877.
William Parry Davis	14th December 1877—14th November 1881.
Arthur Hutton James	15th November 1881—21st March 1884.
William Robert Green	22nd March 1884—3rd March 1887.
Francis Edwin Kemp	4th March 1887—23rd March 1887.
Frank Harrington Tucker	24th March 1887—2nd October 1887.
Victor William Bertelsen	3rd October 1887—26th August 1888.
Rowland Constantine Castle	27th August 1888—26th October 1888.
Victor William Bertelsen	27th October 1888—7th November 1889.
William Dering Pratt	8th November 1889—30th March 1891.
Frederick Arthur Fullerton	31st March 1891—9th April 1891.
Bertram Rattray	10th April 1891—15th March 1894.
Frederick Loch Halliday	16th March 1894—28th August 1894.

List of District Superintendents of Police, Hughli, 1863-1901—contd.

Girindra Chandra Mukerji	29th August 1894—1st October 1894.
Edward Charles Ryland	2nd October 1894—29th October 1894.
Henry Neville Harris	30th October 1894—15th February 1895.
Frederick Loch Halliday	16th February 1895—1st June 1895.
Girindra Chandra Mukerji	2nd June 1895—3rd November 1895.
Henry Charles Loftus Bamber	4th November 1895—9th February 1897.
John Masters	10th February 1897—23rd March 1897.
Augustus Bryan Cautley Comber ...	24th March 1897—20th March 1899.
St. Quintin Byrne	21st March 1899—28th October 1900.
William Berlton Stuart	29th October 1900—22nd February 1901.
Rowland Constantine Castle	23rd February 1901—

The above list gives the District Superintendents of Hughli from the first formation of the Bengal Civil Police to date. Of the officers mentioned, Charles Baker won the Victoria Cross in the Mutiny. Lieutenant (then Major) G. M. Bowie, became Inspector-General of Jails in 1874, and died while holding that post. Mr. A. D. Larymore also entered the Jail Department; he was for fifteen years (1884–99) Superintendent of Alipur Central Jail, and on several occasions officiated as Inspector-General. Messrs. Masters, Pratt, and Harris became Deputy Inspector-Generals of Police, and Mr. A. H. James, Commissioner of Police, in Calcutta.

The names of two medical officers stationed at Hughli in the latter part of the seventeenth century have been preserved. Ralph Harwar is mentioned as resigning in 1676, and being succeeded by Robert Douglas. Yule (Hedges, "Diary," Vol. II, p. 125) quotes from Streynsham Masters' diary as follows :—

"Dec. 15th, 1676. RALPH HARWAR Chirurgeon of this factory (BALASORE) desiring to return home for England by these ships, and Mr. ROBERT DOUGLAS, the Chirurgeon of the *Eagle* being willing to accept of this employment, and Captain BONNILL his Commander Consenting that they should change births" (*sic*) "the Councell did also approve thereof."

Hedges mentions Harwar as being again in Bengal, in Hughli, in his diary, on 27th August 1784, and again mentions him on 25th and 27th November 1784. Apparently, after a spell at home, he came out again, and in turn succeeded Douglas, his former relief.

Robert Douglas came out as Surgeon to the *Eagle*, in which Streynsham Masters came to Bengal in 1676, and, as stated, succeeded Ralph Harwar as Surgeon of Hughli and Balasore. He went in largely for private trade. Hedges frequently mentions him as an habitual trafficker with interlopers, an offence for which he was in the end dismissed in 1684. He joined Hedges in chartering the *Recovery* for the Persian Gulf, and left in her with Hedges at Christmas 1684, going home overland from the Persian Gulf *viâ* Baghdad. Douglas appears subsequently in 1699 as supercargo of the *Macclesfield* galley, sent by the New (English) Company to China. His wife was a sister of the wife of Thomas Pitt, the famous interloper, Governor of Madras, from

1697 to 1709, importer of the Pitt Diamond, and grandfather of William Pitt, Earl of Chatham.

Hedges in his diary mentions two other Surgeons of ships during his term of Governorship. On 16th June 1683 he writes :—

"In ye evening, Mr. Perks, Supracargoe of ye *William* and *John*, Captain Read Commander, and ye Chyrurgion, Mr. Waldo, arrived in Hughly— Interlopers."

And on 10th January 1685 he mentions having letters delivered to him by Mr. Archibald "Chirurgeon of ye *Ann*," a ship which they met at Balasore on their way to sea.

The next medical officer stationed at Hughli, of whom I can tell anything, was William Forth. He was Surgeon to Kasimbazar Factory when it was taken by Siraj-ul-daulat in 1756, and escaped to Hughli, where he was placed on special duty as a sort of Political Agent. The Consultations of 31st August 1756, on board the schooner *Phœnix* at Fulta, contain the following order:—

"Agreed that Mr. William Forth be appointed also to procure intelligence among the Dutch and French, and that Mr. Warren Hastings at Cossimbazar be directed to remain there in order to observe their motions at Muxadavad."

Forth left the service and went home in the end of 1759 or beginning of 1760.

List of Civil Surgeons of Hughli, 1813–1900.

Henry Stuart, Surgeon to the Collector of Hughli, was transferred in 1787. Entered the service 2nd May 1783, died at Dinapur, 25th July 1792.

Adam Mitchell, —— to 1806. Entered 30th August 1791, died in Bundlecund, January 1809.

John Balfour, 30th January 1806—1809. Entered 24th June 1797, relieved Dr. Mitchell at Hughli, 30th January 1806, died at Ludhiana, 20th May 1819.

Thomas B. Shaw, 1809-14. Entered the service on 18th September 1808 ; died on 29th October 1814 in Major Bradshaw's camp, on the Nipalese frontier, during the war with Nipal.

Alexander Halliday, M.D., 1814—1817. Entered on 20th September 1806; retired 31st January 1844; died 11th November 1851.

William Hogg, 1817—1820. Entered 14th November 1809 ; was Surgeon to the Haripal Commercial Residency from 1813—1817; died at Hughli, 30th September 1820.

Thomas Shutter, 1820-1826. Entered 9th June 1819; retired 4th June 1828; died 25th June 1868.

George Craigie, 1826-1829. Entered 16th September 1824; died in Calcutta, 16th January 1853.

Thomas Alexander Wise, M.D., F.R.C.S., 1829—1839. Entered 13th August 1827; retired 11th May 1851 ; died 23rd July 1889. Dr. Wise was the founder of the Imambarah Hospital at Hughli, and also took a large share in the foundation of Hughli College, of which he was the first Principal, from 1836 to 1839, in addition to his duties as Civil Surgeon. In 1839 he became Secretary to the Committee of Public Education, and afterwards Principal of Dakka College. He was a voluminous writer on medical subjects. His chief works are "A commentary on the Hindu System of Medicine," Calcutta, 1845; "Treatise on the Diseases of the Eye, as they appear in Hindustan," Calcutta, 1847; "Cholera, its symptoms, causes, and remedies," Cork, 1864; "Review of the History of Medicine," two volumes, London, 1867; and "A treatise on the Barah Bheyas of Eastern Bengal."

James Esdaile, M.D., 1839—1848. Entered 10th February 1831. Succeeded Wise as Principal of Hughli College, an appointment he held up to 1842, as well as in the office of Civil Surgeons; appointed a Presidency Surgeon in Calcutta in the beginning of 1848. Retired 11th October 1853. Died 10th January 1859. Dr. Esdaile was famous in his time for his operations under mesmeric anæsthesia, before the discovery of chloroform. His experiments in this direction have been described in the history of the Imambarah Hospital in Chapter VIII.

Charles Palmer, M.D., 1848. Entered 20th February 1846, was for many years a Surgeon to the Presidency General Hospital, and a Presidency Surgeon in Calcutta, retired 31st March 1879, and died in London so recently as 22nd September 1901. He was at Hughli for only a very short time.

[For the entries subsequent to Dr. Palmer the exact dates can be given from office records.]

William Hamilton Brown Ross, April 1848—4th November 1853. Entered 13th July 1839; retired 25th September 1859; died 19th July 1871.

Badan Chander Chaudhri, Assistant Surgeon in charge, 4th November 1853—22nd November 1853. Was appointed as Assistant Surgeon to the Imambarah Hospital in 1842, being the first to hold that appointment. Retired in 1857, and is still (May 1902) living in Hughli.

Herbert Baillie, M.D., F.R.C.S., 22nd November 1853—15th April 1857. Entered 20th April 1846, was afterwards Civil Surgeon of the 24-Parganas, retired 1st September 1870, and died at Cheltenham, 25th December 1890.

Edward Courtenay Thorp, M.D., 15th April 1857—14th September 1858. Entered 20th January 1847, became Deputy Surgeon-General 20th April 1874, retired 20th October 1879, and died at Folkstone, 9th April 1892.

Parmesar Das, Assistant Surgeon in charge, 14th September 1858—1st October 1858.

Major Ainger, F.R.C.S., 1st October 1858—20th December 1859. Entered 15th May 1846; served in the Crimea while on furlough in 1855-56; died in London, 10th February 1861.

Joseph Walter Raleigh Amesbury, 20th December 1859—2nd May 1862. Entered 11th January 1851; served with distinction in the Mutiny, for which he received a brevet, died at Masuri on 6th October 1881.

John Elliot, M.D, 2nd May 1862—5th January 1863. Entered 20th February 1854; died in Calcutta, 7th July 1878.

John Squire, 5th January 1863—15th June 1863. Entered 30th April 1845; retired 28th December 1871; served at Hughli during Dr. Elliot's deputation on special duty of enquiry into the epidemic fever then devastating Bengal (related in Chapter VI).

John Elliot, M.D., 15th June 1863—23rd April 1864.

Robert Frederick Thompson, M.D., 24th April 1864—June 1876. Dr. Thompson was a very distinguished member of the Subordinate Medical Department, which he entered on 6th August 1839, becoming apothecary on 24th November 1853, and Honorary Surgeon on 13th May 1860, for his services in the Mutiny. He served in the Sutlej Campaign of 1845-46, and was present at Firozshahr and Sobraon, and in the Punjab Campaign of 1848-49, after which he was appointed Medical Officer of the Peshawar Residency, and subsequently of a battalion of Oudh Local Infantry, being present in Lucknow throughout the siege. He retired in 1876, and subsequently died at Chandarnagar.

William Beatson, June 1876—4th September 1876. Entered 31st March 1875; died at Gaya, 15th October 1891.

Francis Cobham Nicholson., 4th September 1876—7th February 1877. Entered 1st October 1869, retired 2nd April 1896, and died in London, 24th December 1896.

William Henry Gregg, M.B., 7th February 1877—15th May 1881. Entered 1st October 1869 was Sanitary Commissioner of Bengal from 1888 to 1895; retired 4th December 1899.

Purno Chandra Banerjee, Assistant Surgeon in charge, 15th May 1881—14th June 1881.

W. H. Gregg, 15th June 1881—28th June 1886.

Umesh Chander Banerjee, Assistant Surgeon in charge, 29th June 1886—7th July 1886.

Edgar Geer Russell, M.B, 8th July 1886—22nd October 1886. Entered 30th March 1872, afterwards Professor of Materia Medica in Calcutta, 1896—1900, retired 27th August 1900.

Brojo Nath Chaudhri, Assistant Surgeon in charge, 22nd October 1886—23rd November 1886.

Robert Cobb, M.D., 23rd November 1886—8th December 1886. Entered 31st March 1876; still serving.

Alexander Crombie, M.D, 9th December 1886—14th December 1886. Entered first of his year on 30th March 1872, having previously served in the Army Medical Department; was Surgeon-Superintendent of the Presidency General Hospital, 1889—1898; retired, 7th April 1898.

Charles Henry Joubert, M.B., F.R.C.S., 15th December 1886—26th March 1887. Entered 30th March 1872; afterwards Professor of Midwifery in Calcutta, 1891—1900; became Colonel on 31st March 1900; still serving.

E. G. Russell, 26th March 1887—14th July 1887.

Purno Chander Singh, Assistant Surgeon (officiating), 15th July 1887—7th November 1887.

W. H. Gregg, 8th November 1887—23rd April 1888.

Nidhu Lall Haldar, Assistant Surgeon in charge, 24th April 1888—29th April 1888.

Joseph Johnstone Monteath, M.D., 30th April 1888—1st September 1888. Entered 1st April 1868; died at Hughli, 1st September 1888.

N. L. Haldar, Assistant Surgeon in charge, 2nd September 1888—26th September 1888.

R. Cobb, 27th September 1888—14th April 1889.

N. L. Haldar Assistant Surgeon in charge, 15th April 1889—4th July 1889.

Joseph Wilson, M.D., 5th July 1889—19th November 1889. Entered 30th March 1872, retired 24 November 1894, and died at Southsea, 13th December 1897.

R. Cobb, 20th November 1889—7th May 1890.

Odent Ulla, Assistant Surgeon in charge, 8th May 1890—15th May 1890.

Banka Behari Gupta, M.B., 16th May 1890—18th March 1892. Entered 30th March 1872; died at Hughli, 18th March 1892.

Odent Ulla, Assistant Surgeon in charge, 19th March 1892—14th June 1892.

Arthur Holbrook Nott, M.B., 15th June 1892—11th July 1892. Entered 1st October 1887; still serving.

Odent Ulla, Assistant Surgeon in charge, 12th July 1892—4th November 1892.

Russick Lall Dutt, M.D., 5th November 1892—14th March 1893. Entered 30th March 1862; retired 30th October 1899.

Kali Pado Gupta, F.R.C.S., 15th March 1893—28th October 1894. Entered 1st April 1889; retired 27th June 1898.

R. L. Dutt, 29th October 1894—4th March 1895.

Thomas Grainger, M.D., 5th March 1895—27th August 1895. Entered 1st April 1885; specially promoted to Lieutenant-Colonel for service in the Tirah Campaign, 20th May 1898; still serving.

W. H. Gregg, 27th August 1895—1st February 1896.

R. L. Dutt, 2nd February 1896—31st October 1899.

Ambika Charn Dutt, Assistant Surgeon in charge—1st November 1899—7th November 1899.

Arthur Gwyther, M.B., 8th November 1899—2nd September 1900. Entered 29th January 1895; still serving.

Alexander William Reid, M.B., 3rd September 1900—22nd September 1900. Entered August 1900 as a temporary Medical Officer; still serving.

Dirom Grey Crawford, M.B., 22nd September 1900, to 3rd June 1902. Entered 1st October 1881; still serving.

Hubert Innes, 4th June 1902. Entered 28th January 1899; still serving.

Of the above long list of names of Civil Surgeons of Hughli for nearly a century past, those which are best remembered are the names of Wise and Esdaile, both of whom spent many years in the station, and the former, especially, did a great deal for Hughli. Only two Civil Surgeons of Hughli, E C. Thorp and C. H. Joubert, have risen to the administrative grade.

Two officers of the Bengal Medical Service who afterwards rose to positions of considerable eminence were stationed at Chinsura in their early days of military duty, Sir John Login in 1837, and Sir Joseph Fayrer in the end of 1850. Neither remained here long. Sir Joseph Fayrer's career is too well known to be more than referred to here. John Spencer Login was an Orkney man, who entered the service on 5th March 1832. He was with D'Arcy Todd at Herat in 1839–41, and afterwards Residency Surgeon at Lucknow. After serving through the Panjab Campaign 1848-49, he was appointed guardian and tutor to Dhulip Sinh, the young Maharaja of the Panjab. He was knighted in November 1854, retired on 15th April 1858, and died at Felixstowe on 18th October 1863.

I had intended to note in this chapter that three officers who served in Hughli in the first half of the nineteenth century were still living, Sir Frederick Halliday, Dr. Charles Palmer, and Assistant Surgeon Badan Chander Chaudhri. The two first, however, have both recently died, Dr. Palmer on 22nd September, and Sir Frederick Halliday on 22nd October 1901. The Assistant Surgeon is still (May 1902) alive, and resident in Hughli, but is now a very frail old man.

Several medical officers have died in the district, in addition to those who have actually been serving here, mostly men who had come from Calcutta for a change of air, before the days of steamers and railways. I can give the names of six :—

G. Gardiner, was serving in India before 1st January 1764, the date of the formation of the Bengal Medical Service. He was promoted to be Surgeon on 31st March 1767, and died at Serampur on 1st January 1795.

Thomas Birch, entered the service on 7th May 1771, and died at Chinsura in August 1775.

Robert Bruce, entered 12th August 1779, died at Serampur 31st May 1800.

Bartholomew Hartley, entered in 1779. He was a Presidency Surgeon in Calcutta, and died at Serampur on 13th March 1803.

Robert Wilson, entered on 15th May 1770. He gave up promotion in order to retain his Calcutta appointment, and died at Ghireti on 9th June 1813.

William Woolley, entered on 3rd September 1799. He was invalided on 1st June 1813, as unfit for further service on account of ill-health, settled at Serampur, and lived there *for half a century*, dying there on 6th November 1863. Fifty years' pension for fourteen years' work—decidedly a bad bargain for the State.

The pay of a Surgeon in the Company's service in Calcutta in 1700 was £36 per annum, paid half-yearly in the form of Rs. 144; the rupee being then worth half-a-crown, eight to the sovereign. The medical officers stationed at Hughli in the latter half of the seventeenth century were paid at this

rate. The next reference to pay which I have found was a pay-bill of Assistant Surgeon H. Baillie, Civil Assistant Surgeon of Hughli, in 1856. Dr. Baillie had then ten years' service. He was drawing Rs. 300 a month as pay, Rs. 30 as *palki* allowance, Rs. 20 for vaccination allowance, and Rs. 100 as College allowance, for attending the staff and students of Hughli College; total Rs. 450. The Civil Surgeon, half a century ago, often held various non-medical appointments in addition to his own duties, such as those of Postmaster or Registrar. We have seen how Wise and Esdaile combined the Principalship of Hughli College with the Civil Surgeoncy. Dr. W. H. B. Ross, in 1852, made an application for the appointment for Registrar, stating that he had previously held that office, while Civil Surgeon of Jessore. Whether he got it or not I cannot say. Dr. Thompson, in 1867, was drawing Rs. 580 per month, made up as follows: pay Rs. 350; College allowance Rs. 100; police Rs. 50, Lock Hospital Rs. 50, dispensary *palki* allowance Rs. 30. In 1863, Dr. Elliot, the then Civil Surgeon, was appointed Superintendent of Epidemic Dispensaries, in the Hughli, Bardwan 24-Parganas, and Nadiya districts, Hughli being the most convenient centre for the whole group. For this work an allowance of Rs. 200 per month was sanctioned in Government letter No. 3285, of 30th June 1863. This allowance was continued to Dr. Thompson, but had evidently been withdrawn before 1867. Government letter No. 1149, of 10th October 1863, sanctioned Rs. 50 per month for the medical charge of the district police. When this allowance was withdrawn I cannot say. The Lock Hospital was closed, and the allowance therefore naturally ceased, when the British troops were withdrawn. From 1st January 1869 Civil Surgeons were appointed Superintendents of District Jails, the allowance at Hughli being Rs. 100 per month; and this is the only allowance which the Civil Surgeon of Hughli now draws. The *palki* allowance was stopped so recently as 31st October 1899, the date of Lieutenant-Colonel R. L. Dutt's retirement, as mentioned in the history of the Imambarah Hospital in Chapter VIII. A lectureship on Botany in Hughli College was founded in July 1872, and was held by Babu Jadab Chandra Basu to January 1874, and by Dr. George Watt up to December 1878. This lectureship, with an allowance of Rs. 200 per month, was held by Dr. Gregg from January 1879 to June 1886, and afterwards by Dr. E. G. Russell in 1886-87, being abolished in June 1887. The allowance for medical charge of the College was reduced from 100 to 50 rupees per month, and transferred from the Civil Surgeon to the Assistant Surgeon, from 1st January 1890, by Bengal Government order No. 828, of 18th December 1889.

The Civil Surgeoncy of Serampur.—I have not succeeded in finding the authority for the original institution of this appointment. The Office of the Inspector-General of Civil Hospitals was unable to give any help in the matter. I cannot

therefore, positively, state how it came to pass that the Serampur town and subdivision have been in this respect treated differently from other subdivisions in the province. We know, however, that the Danish Government maintained a medical officer in charge of their settlement at Serampur up to the time of the cession of that place to England, in 1845. And it appears probable that the appointment was kept up by the British Government on account of the comparatively large number of European residents of the town. The first Civil Medical Officer of Serampur whose name I have been able to trace was Dr. T. Bray, who held that post at least as early as 1857, possibly earlier, and remained until June 1865, when he took two years' furlough to England, at the end of which he retired. The appointment has almost always been held by an uncovenanted Civil Medical Officer, so the old Army Lists and East India Registers give no help in tracing out its holders; what information I have been able to get has been derived from Bengal Civil Lists and the various editions of the "History of Services of Gazetted Officers." Dr. Bray was succeeded by Sub-Assistant Surgeon Dwarka Nath Chatterjee, who acted as Civil Medical Officer for nearly five years, and in January 1870 was succeeded by Dr. R. A. Barker. Hitherto the Civil Medical Officer of Serampur had been in medical charge of Serampur town only. All the work in connection with the epidemic fever in the district, between 1860 and 1870, was done by the Civil Surgeon of Hughli, except for the actual town of Serampur. On Dr. Barker's appointment in January 1870, an order of the Bengal Government, No. 284 of 20th January 1870, laid down clearly the terms on which the appointment should be held. When a Civil Medical Officer was in charge, he was to be independent of the Civil Surgeon of Hughli, and to hold charge, not of the town alone as previously, but of the whole subdivision; when a Sub-Assistant Surgeon was in charge, he was to be subordinate to the Civil Surgeon of Hughli. [Up to 30th June 1873 the junior officers of the Indian Medical Service held the rank of Assistant Surgeon, while the present Assistant Surgeons were known as Sub-Assistant Surgeons.] This order is of sufficient interest and importance to be quoted in full:—

"No. 284, Judicial Department, Medical.

"From—The Hon'ble A. Eden, Secretary to the Government of Bengal in the Judicial Department,

"To—The Officiating Commissioner of the Burdwan Division."

Fort William, the 20th January 1870.

"Sir,—I am directed to acknowledge the receipt of your letter No. 6, of the 8th instant with enclosures, reporting on the Charitable Hospital at Serampore.

"2. The Lieutenant-Governor regrets to observe that this valuable institution has been neglected apparently for years past, and in compliance with your recommendation, authorizes the transfer of the hospital to the Municipality in trust for the town of Serampore. His Honour has also been pleased to appoint the Municipal Commissioners for the time being a Committee for the management of the hospital.

"3. I am to remark that it seems almost incredible that the public subscription to the hospital should only be Rs. 35 a month, but His Honour trusts that with the energy which he is certain will now be infused into the administration of affairs, that the subscription will soon become sufficient not only to maintain the existing hospital without other aid, but also to provide an hospital such as will be more worthy of the place and its large respectable European and Native population.

"4. With reference to the last paragraph of your letter, I am to say that the present Civil Medical Officer of Serampore should exercise control over the charity hospitals throughout the subdivision. This arrangement will relieve the Civil Surgeon of Hooghly. When an officer in the position of Dr. Barker is in charge, the appointment is to be considered an independent charge, but when a Sub-Assistant Surgeon has charge, it may be considered as subordinate to the Civil Surgeon of Hooghly.

"I have, &c.,

"(Sd.) A. EDEN,

"*Secretary to the Government of Bengal.*"

List of Civil Medical Officers of Serampur, 1857–1900.

T. Bray	1857—June 1865.
Dwarka Nath Chatterjee	June 1865—3rd January 1870.
Robert Arnold Barker, M.D.	4th January 1870—28th March 1871.
J. A. Greene	29th March 1871—11th October 1875.
Gopal Chunder Roy, M.D., F.R.C.S. ...	12th October 1875—15th December 1875.
J. A. Greene	16th December 1875—26th April 1877.
Robert Cobb, M.D.	27th April 1877—17th May 1877.
J. A. Greene	18th May 1877—December 1878.
Udoy Chand Dutt	December 1878—8th April 1884.
Purno Chander Singh	9th April 1884—29th July 1884.
R. A. Barker...	30th July 1884—27th June 1885.
Brojo Nath Chaudhri	28th June 1885—20th August 1885.
R. A. Barker	21st August 1885—5th August 1887.
Bhola Nath Pal	6th August 1887—6th October 1887.
R. A. Barker	7th October 1887—21st May 1893.
John Lupton Hendley	22nd May 1893—6th September 1893.
Jogendro Nath Das Gupta	7th September 1893—14th September 1893.
Richard Hay Pulipaka, M.B.	14th September 1893—1st December 1893.
Reginald Stanislaus Ashe	2nd December 1893—29th October 1896.
Richard Hay Pulipaka, M.B.	30th October 1896—1st October 1899.
Michael Edmund Mungavin	2nd October 1899—12th November 1899.
Richard Hay Pulipaka, M.B.	13th November 1899.

A short space may be devoted here to the mention of various names, well known in Indian history, whose owners, though not actually stationed at Hughli, have at different times visited the station and district, on duty or on pleasure.

Clive, then a Colonel, subsequently Baron and General; Admiral Watson, and Coote, then only a Captain, were all among those who fought at the capture of Chandarnagar in March 1757; Colonel Forde was the victor at

the battle of Biderra in 1759. All these events have been described in the History. I will only mention here that Admiral Charles Watson died of fever in Calcutta, on 16th August 1757. Captain Coote subsequently became Sir Eyre Coote, Commander-in-Chief in India.

Warren Hastings was a frequent visitor to the district. His house at Rishra has been described in the account of Serampur in Chapter VII. Both he and his wife were in the habit of coming to Hughli itself to visit a Mr. Motte, a free merchant there, whose wife was a very intimate friend of Mrs. Hastings, and went home with her to England in 1684. Hastings also mentions that he and his wife used to visit Mr. Ross, the Dutch Governor of Chinsura.

Harry Verelst, who succeeded Clive as Governor of Bengal in 1767, and held that post till 1770, fought as a volunteer at the capture of Hughli and Chandarnagar in 1757. He was afterwards Supervisor of Burdwan and Midnapur; Hughli must have then formed a part of his charge.

Colonel Monson, who with Francis and Clavering formed the majority adverse to Hastings in Council, died at Hughli in September 1776, less than two years after his arrival in India on 19th October 1774.

Sir Robert Chambers, of the Calcutta Supreme Court, was appointed Judge of Chinsura and Chandarnagar in September 1781, when these places were held by the English.

The famous Madame Grand was married at Hughli, and lived here for some time. Noel Catherine Werlée, daughter of M. Werlée, Chevalier de Saint Louis and Capitaine du Port at Chandarnagar, was born at Tranquebar on 21st November 1762. On the 10th July 1777, when still under fifteen, she was married at "Hughli House," the residence of Mr. Motte, to George Francois Grand, a writer in the Company's service, and also in the church at Chandarnagar on the same day. The story is well known how, eighteen months later, Grand returning home late at night, caught Philip Francis in his house, on 8th December 1778. The trial of the case began in January 1779, and on 6th March 1779 judgment was given, Francis being mulcted in damages to the extent of Rs. 50,000. Madame Grand lived at Chandarnagar during the trial, and after the divorce at Hughli, under the protection of Francis, who, of course, was a frequent visitor. She subsequently became Princesse de Talleyrand.

Lord Wellesley, when Governor-General, visited Hughli on 12th April 1802, and stayed with the Judge, Mr. Brooke. On the 13th he was entertained at Chinsura by Mr. Birch, the Superintendent. I have no knowledge of Wellington's having ever visited Hughli, but it is very probable that Nelson did. He was on the East Indian station, in the *Seahorse*, in 1775-76, and himself writes "having, in the time I was in this ship, visited almost every part of the East Indies from Bengal to Bussorah." This obviously

implies that he had been at Calcutta, and it would appear probable that he may have made the short journey of 25 miles to Hughli, to see the scene of the fighting under Clive and Watson, less than twenty years before. This, however, is mere conjecture.

Dupleix's long tenure of the Governorship of Chandarnagar has been mentioned in the History. When the French settlement was captured by Clive and Watson in March 1757, there were serving as private soldiers in the French garrison two men who afterwards made some mark in Indian history. One was the infamous Walter Reinhard, better known as Sombre or Somru, who carried out the Patna massacre. He was a German by birth and a butcher by trade, who originally came to India in the British service, in a Swiss Company of Infantry under the command of Captain Ziegler, attached to the Bombay European regiment. With this corps he came to Madras, there deserted, and came round to Bengal in the French service. In 1762 he got the command of a brigade from Mir Kasim. At the battle of Gheria (2nd August 1763), he retreated with his brigade, when vigorous action on his part might have defeated the English. He was also present when Major Adams again defeated Mir Kasim's troops at Undwa Nala on 5th September 1763, and carried out the massacre of the Patna prisoners on 5th or 6th October 1763. He took part in the battles of Patna, 2nd May 1764, and Buxar, 23rd October 1764. From Mir Kasim's service he went to that of the Nawab Wazir of Oudh, and in August 1765 he joined the Jats. In 1775 he was at Barsana, where the Jats were defeated by Mirza Najaf Khan, the Commander-in-Chief of the Mogul army. In 1776 he went over to Najaf Khan, who gave him the fief of Sardhana near Meerut, where he died on 4th May 1778.

Madoc was a man of a very different type,—a gallant, reckless soldier of fortune. He served under Sombre at Gheria and Undwa Nala, joined the Nawab Wazir of Oudh in 1764, and fought well at Buxar. In 1775 he, joined the Jats, and subsequently served under Mirza Najaf Khan and the Rana of Gohad. In 1782 he returned to France, and soon afterwards was killed in a duel.

Another Frenchman, of more importance than Madoc or Sombre, Perron spent some time at Chinsura, as described in Chapter III.

As might be expected, a number of prominent members of the Bengali community have been natives of the Hughli district. *Babu Ram Gopal Ghose*, one of the first natives to start political agitation, a well known public speaker, and a successful merchant, was born at Tribeni in October 1815. He died in January 1868. Mr. Justice *Dwarka Nath Mitra* was born in Hughli in 1833, became a Judge of the High Court in 1867, at the very early age of 34; he died on 25th February 1874. *Raja Digambar Mitra*, C.S.I.

was born in 1817 at Konnagar, began life as a school-teacher, subsequently became Manager of the Kasimbazar Raj, and by purchasing land became a *zamindar* himself. In 1864, 1870, and 1872, he was appointed a Member of the Bengal Council, in December 1874 Sheriff of Calcutta, on 4th January 1876 he was invested with the C.S.I., and on 1st January 1877 with the personal title of Raja. For several years he was President of the British India Association, and in January 1864, when he was Secretary of that body, was nominated by it to a seat on the Epidemic Fever Commission. His views on that subject have been quoted at length in Chapter VI. He died on 20th April 1879. *Babu Bhudeb Mukerji*, C.I.E., was born at Naptipara, in *thana* Khanakul, on 25th March 1825. He entered the Education Department, was Head Master of the Hughli Normal School in 1856, became Assistant Inspector of Schools in 1862, and Inspector in 1863. He became a C.I.E. in 1877, was appointed to the Bengal Council in 1882, retired in July 1883, and settled at Chinsura, where he died on 16th May 1894. *Babu Jai Kishan Mukerji* was born in 1808. His father was *banian* to the 14th Foot, he became a regimental clerk in 1824 at the age of 16. Both father and son were present at the siege of Bhartpur in 1825, and obtained a share of the prize-money, which they invested in land in the Hughli district. He became a record-keeper in the Collector's office at Hughli in 1830, and held that office till 1836. Gradually he developed into one of the richest landholders in Hughli district, and did a great deal for his native town of Uttarpara, where he founded the College and Library. The dispensary also, as related in Chapter VIII, owes its existence to the very liberal endowment given by him and his brother, though nowadays the greater part of the cost falls on Government. He died in 1888. His son, *Raja Piari Mohan Mukerji*, was born on 17th September 1840. He was appointed a Member of the Bengal Legislative Council in 1879, and of the Viceroy's Legislative Council in 1884 and 1886. The title of Raja and the decoration of C.S.I. were bestowed upon him on 16th February 1887, in recognition of his own and his father's public services. *Rai Bankim Chandra Chatterji Bahadur*, C.I.E., the best known, indeed almost the only Bengali novelist, was not a native of this district, having been born at Kantalpara, in the 24-Parganas. He studied at Hughli College, was appointed a Deputy Magistrate in 1858, and served at Hughli in that capacity from 1876 to 1880. His first novel "Durges Nandini, or the Chieftain's Daughter," has its scene laid in the fort of Garh Mandaran, now in ruins, in Goghat *thana*. Among his other works are "Krishna Kanta's Will," "Bishabriksha or the Poison Tree," "Kapalkandala," "Mrinalini," "Krishna Charita," "Chandrasikhar," "Debi Chaudhurani," "Ananda Math," "Sita Ram," "Rajani," and "Raj Sinha," the two first being the best. Several of them have been dramatised, and placed on the Bengali stage with success. He retired in 1891, and died on 8th April

1894. The *Reverend Lal Behari De* is another author who is connected with Hughli, though not a native of the district, having been born at Patasi, near Bardwan, in 1826. He was converted to Christianity in 1843, and took orders in 1855, worked as a missionary at Kalna till 1860, and then received charge of a church in Calcutta. In 1867 he entered the Education Department, and was appointed Professor of English Literature and History in Hughli College on 1st January 1872, holding that post for seventeen years, till his retirement on 31st December 1888. He died soon afterwards. His best-known work is "Folk-tales of Bengal." He also wrote a novel, "Gobinda Samanta."

CHAPTER XV.

BIBLIOGRAPHY.

THE following list contains the names of all the works, with which I am acquainted, which refer, more or less, to the district of Hughli. Those which I have had the advantage of consulting in the compilation of this report are distinguished by an asterisk:—

* *Bower, A. G.*—"The Family History of the Bansberia Raj." Calcutta: W. Newman and Co., 1896.

* *Broome, Captain Arthur.*—"History of the Rise and Progress of the Bengal Army." By Captain Arthur Broome, Bengal Artillery. Volume the first. Calcutta, W. Thacker and Co., St. Andrew's Library; London, Smith Elder and Co., Cornhill, 1850. (This volume carries the history down to the "Officers' Mutiny" in 1766. No more volumes were ever published.)

* *Bruce, John.*—"Annals of the Honourable East India Company, from their establishment by the Charter of Queen Elizabeth, 1600, to the Union of the London and English East India Companies, 1707-8." By John Bruce, Esq., M.P. and F.R.S., Keeper of His Majesty's State Papers, and Historiographer to the Honourable East India Company. London. Printed by authority, of the Honourable Court of Directors, by Cox, Son, and Baylis, Great Queen Street, and published, by Black, Parry, and Kingsbury, Booksellers to the Honourable East Indian Company, Leadenhall Street, 1810.

Bruton, William.—"News from the East Indies of a Voyage to Bengalla," written by William Bruton, now resident in the Parish of St. Saviour's, Southwark, and now lately come home in the good ship called the Hopewel of London. Imprinted at London by I. Okes, 1638. (Reprinted in Vol. VIII of "A Collection of Voyages and Travels" by Osbourne in 1752, and also in Vol. V of the enlarged edition of "Hakluyt" in 1809–12).

* *Buckland, C. E.*—"Bengal under the Lieutenant-Governors, being a narrative of the principal events and public measures during their periods of office, from 1854 to 1898." Two volumes. Calcutta: S. K. Lahiri and Co., 1901.

* *Busteed, H. E.*—"Echoes from Old Calcutta, being chiefly reminiscences of the days of Warren Hastings, Francis, and Impey." By H. E. Busteed, M.D., C.I.E., late Assay Master, H. M.'s Mint, Calcutta. Calcutta: Thacker, Spink and Co., 1884. Second edition, considerably, enlarged and illustrated, 1888. Third edition, 1897. (Contains a good many references to Hughli and Chinsura in the latter half of the eighteenth century.)

* *Calcutta Review*, Articles in—.

Besides the articles enumerated below, which I have read, doubtless there are many others, which I do not know, which contain references to Hughli:—

(*i*) "Notes on the Left or Calcutta Bank of the Hooghly." No. 6, Vol. 3, 1845, Article No. VI.

(*ii*) "Notes on the Right Bank of the Hooghly." No. 8, Vol. 4, 1845, Article No. VII.

(*iii*) "The Portuguese in North India." No. 10, Vol. 5, 1846, Article No. I.

(*iv*) "The Banks of the Bhagirathi." No. 12, Vol. 6, 1846, Article No. IV.

(*v*) "Origin and progress of English connection with India." No. 13, Vol. 7, 1849, Article No. VI.

(*vi*) "Early Bengali Literature and Newspapers." No. 25, Vol. 13, 1850, Article No. V.

(*vii*) "Broome's History of the Bengal Army." No. 28, Vol. 14, 1850, Article No. VIII.

(*viii*) "The Gangetic Delta." No. 63, Vol. 32, 1859, Article No. I.

(*ix*) "Carey, Marshman, and Ward." No. 64, Vol. 32, 1859, Article No. VIII.

(*x*) "Governor Verelst." No. 69, Vol. 35, 1860, Article No. I.

(*xi*) "Calcutta in the Olden Time." No. 69, Vol. 35, 1860, Article No. VI.

(*xii*) "From Godeheu to Lally." No. 89, Vol. 45, 1867, Article No. I.

(*xiii*) "Hooghly, Past and Present." No. 190, Vol. 95, 1892, Article No. IV; No. 191, Vol. 96, 1893, Article No. III; No. 192, Vol. 96, 1893, Article No. IV; No. 193, Vol. 97, 1893, Article No. IV; and No. 194, Vol. 97, 1893, Article No. VIII.

* *Chatterjee, Bankim Chandra.*—"Durgesa Nandini, or the Chieftain's daughter a Bengali Romance." Translated into English prose by C. C. Mookerjee. Calcutta: the New Sanskrit Press 1890. (This novel is said to bear some resemblance to Ivanhoe, but one would not see the likeness without being told of it, nor would most people detect it, even then. The novel is by no means one of its author's best, and the translation is very poorly done. The scene is laid in the Fort, now in ruins, at Garh Mandaran, in Goghat *thana*).

* *Chunder, Bholanath.*—"The Travels of a Hindoo, in various parts of Bengal and Upper India." Two volumes. N. Trübner and Co., London, 1869.

* *Damudar Embankments,* Papers on—. "Selections from the Records of the Bengal Government," No. 12, 1853; No. 15, 1854; No. 29, 1858; No. 40, 1863. Calcutta. (*Vide* also Harrison.)

* *Davidson, Edward, Captain,* R.E.—"The Railways of India, with an account of their rise, progress, and construction, written with the aid of the records of the India Office." London: E. and F. Spon, 1868.

* *Danvers, F. C.*—"The Portuguese in India, being a History of the Rise and Decline of their Eastern Empire." London: W. H. Allen and Co., Ld., 1894. (Contains a few references to the early Portuguese settlements in Bengal.)

De Reus, G. L. Klek.—"De Vermesteering van Chinsurah en 1781 en 1795."

Di Barros.—"Decadas," 15 tomes, 12mo., Lesboa, 1777.

Dow, Alexander.—"The History of Hindustan from the earliest account of time to the death of Akbar; translated from the Persian of Mahummud Casim Ferishta of Delhi, together with a dissertation concerning the religion and philosophy of the Brahmins; with an appendix containing the history of the Mogul Empire from its decline in the reign of Mahummud Shaw to the present times." Two volumes, 4to., London, 1768.

Dubois.—"Lives of the Governor-Generals of the Dutch East India Company."

* *Elliot, H. M.*—"The History of India, as told by its own Historians: the Muhammadan Period." The posthumous papers of the late Sir H. M. Elliot, K.C.B. Edited and continued by Professor John Dowson, M.R.A.S., Staff College, Sandhurst. London: Trübner and Co., 57 and 59, Ludgate Hill. Eight volumes, 1867 to 1877. (Contains two accounts of the capture of the Portuguese Fort at Hughli by the Moguls in 1632.)

* *Epidemic Fever.*
Elliot, J.
French, J. G.
} See separate bibliography of the Epidemic Fever, or Bardwan Fever, in Chapter VI.

Fredericks, Cæsar.—"Agteen Jarige Reys, na en door Indien." Leyden, 1706.

Grand Pre, De.—"A voyage in the Indian Ocean and to Bengal, 1789-90."

Gregg, W. H.—"A Text-book of Botany for Indian Students." Calcutta: Thacker, Spink, and Co., 1883.

* *Grose, John Henry.*—"A voyage to the East Indies, containing authentic accounts of the Mogul Government in general, the Viceroyalties of the Deccan and Bengal, with their several subordinate dependencies, of Angria, the Morattoes, and Tanjoreans, of the Mahometan, Gentoo, and Parsee religions; of their customs and antiquities, with general reflections on the trade of India; of the European settlements, particularly those belonging to the English, their respective Factories, Governments, Trade, Fortifications, and Public Buildings; the History of the War with the French from 1754

to the conclusion of the general peace in 1763." By Mr. Grose, in two volumes. London. Printed for S. Hooper at No. 25, Ludgate Hill, MDCCLXXII.

* *Hamilton, Captain Alexander.*—"A new account of the East Indies." Two volumes. London: C. Hitch and A. Millar, 1744. (Contains accounts of Chinsura, Hughli, Chandarnagar, &c. Though not published till 1744, the period described is about 1706.)

* *Harrison, H. L.*—"The Bengal Embankment Manual, containing an account of the action of the Government in dealing with embankments and water-courses since the permanent settlement; a discussion of the principles of the Act of 1873, a reprint of the Act itself, with notes and appendices describing the present condition of embankments under State control in Bengal, and the chief controversies concerning them." Calcutta; Bengal Secretariat Press, 1875.

* *Hedges, William.*—"The Diary of William Hedges, Esq. (afterwards Sir William Hedges) during his Agency in Bengal; as well as his voyage out and return overland (1681-1687)." Transcribed for the Press with introductory notes, &c., by R. Barlow, Esq., and illustrated by copious extracts from unpublished records, &c., by Colonel Henry Yule, R.E., C.B., LL.D., President of the Hakluyt Society. Vol. I.—The Diary with Index. London. Printed for the Hakluyt Society, 4, Lincolns Inn Fields, W. C., 1887. Vol. II, 1888, and Vol. III, 1889.—Illustrative Documents. (Contains a great deal about Hughli in the latter half of the seventeenth century.)

* *Hunter, W. W.*—"A Statistical Account of Bengal." Vol. III. Districts of Midnapur and Hughli (including Howrah). London: Trübner and Co., 1876.

* *Hunter, W. W.*—"The Imperial Gazetteer of India." Fourteen volumes. London: Trübner and Co., 1885–1887. (Articles—Chinsura, Hughli, Serampur, &c.)

* *Hyde, Revd. H. B.*—"The Parish of Bengal, 1678–1788." Calcutta: Thacker, Spink, and Co., 1889. (Contains some notes on Chaplains stationed at Hughli in the seventeenth century.)

* *Ives, Edward.*—"A Voyage from England to India, in the year MDCCLIV, and an Historical Narrative of the Operations of the Squadron and Army in India, under the command of Vice-Admiral Watson and Colonel Clive, in the years 1755, 1756, 1757; including a correspondence between the Admiral and the Nabob Serajah Dowlah; interspersed with some interesting passages relating to the manners, customs, &c., of several nations in Indostan. Also a journey from Persia to England by an unusual route, with an appendix, containing an account of the Diseases Prevalent in Admiral Watson's Squadron; a description of most of the trees, plants and shrubs of India, with their real or supposed medicinal virtues; also a copy of a letter written by a late ingenious Physician, on the diseases incidental to Europeans at Gombroon in the Gulph of Persia." Illustrated with a chart, maps, and other copper-plates by Edward Ives, Esq., formerly Surgeon of Admiral Watson's ship, and of His Majesty's Hospital in the East Indies. London. Printed for Edward and Charles Dilly, MDCCLXXIII. (Contains a full account of the capture of Hughli in January and of Chandarnagar in March 1757, at which Ives himself was present.)

Joseph, Charles.—"Topographical Survey of the River Hooghly from Bandel to Garden Reach, exhibiting the Principal Buildings, Ghats, and Temples on both banks, executed in the year 1841."

* *Long, Revd. J.*—"Selections from unpublished records of Government for the years 1748 to 1767 inclusive, relating mainly to the social condition of Bengal, with a map of Calcutta in 1784." Published under the sanction of the Government of India. Calcutta: Office of Superintendent of Government Printing, 1869. Volume I. (No second volume was ever published. *Vide* also Seton Karr.)

* *Malleson, G. B.*—"The Decisive Battles of India, from 1746 to 1849 inclusive." London: W. H. Allen and Co., 1883. (Contains a full account of the battle of Biderra.)

* "*Malleson, G. B.*—"History of the French in India, from the founding of Pondicherry in 1674 to the capture of that place in 1761." London: Longmans, Green and Co., 1868.

* *Malleson, G. B.*—"Final French struggles in India, and on the Indian seas; including an account of the capture of the Isles of France and Bourbon, and Sketches of the most eminent Foreign adventurers in India up to the period of that Capture." London: W. H. Allen and Co., 1878.

Marshman, John Clark.—"The life and times of Carey, Marshman, and Ward, embracing the History of the Serampore Mission." Two volumes. London: Longman, Brown, Green, Longman and Roberts, 1859.

Mitter, Peary Chand.—(See Tek Chand Thakur.)

* *Monuments.*—"List of ancient monuments in Bengal, revised and corrected up to 31st August 1895." Calcutta: Bengal Secretariat Press, 1895.

Orme, R.—"A History of the Military Transactions of the British Nation in Indostan, from the year 1745, to which is prefixed a dissertation on the establishments made by Mahomedan conquerors in Indostan. Two volumes, 4to., London, 1775-1778.

Oswell, G. D.—(See Tek Chand Thakur.)

* *Seton Karr, W. S.*, C. S. } "Selections from Calcutta Gazettes, showing the Political and
* *Sandeman, H. B.*, C. S. } Social Condition of the English in India"—

Vol. I (Seton Karr), 1784–1788. Calcutta, Military Orphan Press, 1864.
„ II („), 1789-1797. Ditto, ditto, 1865.
„ III („), 1798–1805. Ditto, Office of Superintendent of Government Printing, 1868.
„ IV (Sandeman), 1806–1815. Ditto, Office of Superintendent of Government Printing, 1868.
„ V („), 1815–1823. Ditto, Calcutta Central Press Co., 1869.

* *Stavorinus, J. S.*—"Voyages to the East Indies, by the late John Splinter Stavorinus, Esq., Rear Admiral in the service of the States General. Translated from the original Dutch by Samuel Hull Wilcocke, with notes and additions by the Translator. The whole comprising a full and accurate account of all the present and late Possessions of the Dutch in India, and at the Cape of Good Hope." Illustrated with maps. In three volumes. London: G. G. and J. Robinson, Paternoster Row, 1798: (Contains a full account of Chinsura and Hughli in 1769-70.)

* *Stewart, Charles.*—"The History of Bengal, from the first Mohammedan invasion until the virtual conquest of that country by the English, A.D. 1757. London: Black, Parry and Co., Leadenhall Street, Booksellers to the Honourable East India Company; Watts, Printer, Broxbourne, 1813.

Tek Chand Thakur.—"Allalel Ghurer Dulal, or the Spoiled Child." Calcutta, 1858. (The first Bengali novel ever written. The scene is laid chiefly at Baidyabati. The author's real name is Peary Chand Mitter. A translation has been made by G. D. Oswell, M.A.)

The Rail and its Localities; or a Guide to places along the Railway Line from Howrah to Raneegunj, containing brief notices of Howrah, Bali, Serampore, Chandernagore, Hooghly, Pundooah, Burdwan, Raneegunj, their Historical Associations and Objects of Interest, with a coloured map, giving the distances of places along the Rail, the Boundaries, Chief Towns, and Rivers of the neighbouring Zillahs; and Pictorial Illustrations of the Howrah Terminus, Tower of Pundooah, Tumla Viaduct, Singarun and Mugra Bridges, Callipore Cutting and Bridge, and the Pachete, Chutna, and Baharinath Hills; also the Time-tables, Fares, and Rules." Sanders, Cones and Co., Calcutta, 1855.

* *Toynbee, George.*—"A sketch of the administration of the Hughli District, from 1795 to 1845, with some account of the English, Portuguese, Dutch, French, and Danish settlements." Calcutta Bengal Secretariat Press, 1888.

* *Voight, J. O.*—"Hortus Suburbanus Calcuttensis: a catalogue of the plants cultivated in the H. E. I. Co.'s. Botanical Garden, Calcutta, and in the Serampore Botanical Garden, from 1786 to 1841." Royal 8vo., 1845.

* *Wilson, C. R.*—"The Early Annals of the English in Bengal, being the Bengal Public Consultations for the first half of the eighteenth century; summarized, extracted, and edited with introductions and illustrative addenda." By C. R. Wilson, M.A., Bengal Educational Service. London: W. Thacker and Co. Vol. I, 1895; Vol. II, Part I, 1900. (Contains a great deal about Hughli in the seventeenth century.)

* *Wilson, C. R.*—"List of inscriptions on tombs or monuments in Bengal, possessing historical and archæological interest." Edited by C. R. Wilson, M.A., of the Bengal Education Service. Calcutta: Office of the Superintendent of Government Printing, India, 1896.

* *Wise, T. A.*—"A Commentary on the Hindu System of Medicine." Calcutta, Thacker and Co.; and Ostell, Lepage and Co., and Smith, Elder and Co., London; 1845.

Wise, T. A.—"Treatise on the Diseases of the Eye, as they appear in Hindustan." Calcutta, 1847.

Wise, T. A.—"Review of the History of Medicine." London, 1867.

Wise, T. A.—"Cholera; its symptoms, causes, and remedies." Cork, 1864.

Wise, T. A.—"The Barah Bheyas of Eastern Bengal."

Yule, Colonel Henry.—(*Vide* Hedges.)

GLOSSARY.

The months.

Musalman Calendar.		*Bengali Calendar.*		
1. Muharram	... ...	Baisākh	... ...	April—May.
2. Safar	... ...	Jaistha	... ...	May—June.
3. Rabi-al-āwwal	...	Asārh	... ...	June—July.
4. Rabi-al-ākhir	...	Srāvan	... ...	July—August.
5. Jumāda'l ula	...	Bhādra	... ...	August—September.
6. Jumāda'l ukhra	...	Aswin	... ...	September—October.
7. Rajab	... ...	Kārtik	... ...	October—November.
8. Shabān	... ...	Agrahāyan	...	November—December.
9. Ramzān	... ...	Pus or Paus	...	December—January.
10. Shawāl	... ...	Māgh	... ...	January—February.
11. Zu'l Qadah	... ...	Phāgun or Phālgun		February—March.
12. Zu'l Hijjah	... ...	Chaitra	... ...	March—April.

The months of the Musalman calendar are lunar, therefore thirteen years by that calendar are about equal to twelve by the Bengali or the European calendar; and each individual month begins yearly about a month earlier than it did the year before in the other calendars. The months of the Bengali calendar are solar; the 17th of *Pūs* always corresponds to the 1st of January. The Bengali year begins with the month of *Baisākh*, the first of which falls about the middle of April. The first of *Baisākh*, 1308, in the Bengali calendar, fell on the 14th April 1901.

The first of January 1901 fell on the following dates, by the various eras or calendars in use in India:—

Christian	1st January	1901.
Bengali	17th *Pūs*	1307.
Vilaiti	18th *Pūs*	1308.
Fasli	26th *Pūs*	1308.
Sambat or Hindi	11th *Pūs*	1957.
Hijri or Musalman	9th *Ramzan*	1318.

A.

Abu, father of.
Ada, ginger.
Adālat, court of justice.
Ahadis (plural of *hadīs*), traditions.
Aima, a grant of land.
Aimadar, holder of such a grant of land.
Ājlaf, the masses.
Ākh or *ukh*, sugarcane.
Ākhir, last; the end.
Al, the.
Allah, God.
Almira, wardrobe.
Alu, potato.
Alua, yam, or sweet potato.
Āman, winter rice.
Amin, inspector.
Amīr, a person of rank.
Amla, writers, clerks.
Anna, one-sixteenth of a rupee, worth one penuy.
Ansar, helpers.
Anulom, consecutive.
Arghyo, libation.
Arhar or *rahar*, pulse (Cajanus Indicus).
Arrack (*arak*), spirit, essence.
Asārh, the third Bengali month (June-July).
Ashāb (plural of *sahib*); the companions (of Muhamad).
Ashrāf, noble, the classes.
Astānah, threshold of a shrine.
Atrāf, the masses.
Aurang, weaving factory.
Aus, autumn rice.
Āwwal, first.

B.

Badshāh, king.
Bāgh, garden.
Baid, physician.
Baigan or *baingan*, egg-plant.
Baisakh, the first Bengali month (April-May).
Bājra, millet (Sorghum Roxburghii).
Bakshi (*Buxey*), paymaster.
Bālamboat, a kind of boat.
Balghak, revolt.
Band or *bund*, dam, embankment.
Bandāna, silk handkerchief.
Bandar, wharf.
Banyān, *bunnia*, trader, agent.
Bar, Banyan tree (Ficus Indica).
Barkandāz, literally lightningdarter, hence matchlockman, used to be the technical term for jail warders.
Beldār, pioneer, roadmaker.
Bhang, Indian hemp.
Bhāri, homestead.
Bhil, swamp, marsh.
Bhīta, *bīta*, wall, foundation.
Bhītar, inner.
Bhitargarh, the inner fort.
Bholio, a large pleasure boat.
Bhūta, Indian corn, maize.
Bhut, evil spirit.
Bida, bamboo rake.
Bīj, seed.
Bigha, a measure of land, usually about one-third of an acre. (In Bengal, 1,600 square yards).
Boro, spring rice.
Bongees, cowries.
Brinjal, egg-plant.
Budgerow, a large pleasure boat.
Būrhi, an old woman.

C.

Chābuk, whip.
Chādar or *chadar*, sheet.
Chaitro, the twelfth Bengali month (March-April).
Chandan, sandalwood.
Channa, or *chhola*, gram pulse (Cicer Arietinum).
Chaprāsi, the wearer of a *chaprās* or badge; a peon, orderly.
Char, low alluvial land, island.
Chauk, main street.
Chauki, a police or toll post.
Chaukidar, a village watchman.
Chhappar, mat or thatch roof or covering.

C.—*concluded.*

Chhola, gram, (vide *Channa*).
Chikan, embroidery.
Chilam, pipe, *hukka* or *hookah*.
Chittak, a measure of weight, about two ounces.
Chūna or *Chūnam*, lime, slaked lime; a kind of cement composed of lime.
Chūra, parched rice.
Cutcherry (*kachhari*), office, court of justice.
Cottah, one-twentieth part of a *bigha*. (vide *Kattha*).

D.

Dafadār, an officer or leader; technically a sergeant of native cavalry.
Dāghi, a criminal; literally stained or branded.
Dahāna, the mouth of a river.
Dakāit (dacoit), a gang-robber.
Dakhin, the south (Dekkan).
Dāl, pulse.
Dāna, seed, grain.
Dār, holder (a suffix).
Dargāh, shrine; literally royal court.
Darjāra, a kind of under-tenure.
Daroga, superintendent.
Darpatni, a kind of under-tenure.
Darpatnidār, the holder of an under-tenure.
Darwān, a door-keeper.
Darzi, a tailor.
Dao, a bill-hook.
Deodhan, a kind of millet (Sorghum).
Dhai, a wet-nurse, midwife.
Dhāk, a shrub, also called *palas*, (Butea Frondosa).
Dhāman, a large non-poisonous snake.
Dhānīcha, a fibre plant (Sesbania Aculeata).
Dhenki, a pounding machine.
Dhobi, a washerman.
Dhoti, a loin-cloth.
Dhania, coriander (Coriandrum Sativum).
Dinghi, a small boat.
Diwāni, premiership or treasurership; also civil as opposed to criminal.
Doba, a pit or hole.
Dol, a swing.
Dom, one of the lowest Hindu castes.
Dozakh, hell.
Dūb, a kind of fine soft grass (Cynodor Dactylon).
Dūli, a litter.
Dūnga, a dug-out, a boat made of the trunk of a tree.

F.

Fakīr, a Musalman religious beggar, hence any beggar.
Farangi or *feringi*, European.
Farmān, an order, a patent by deed.
Farz, duty or customs; literally divine command.
Fasli, belonging to the harvest, the harvest year, an era originated by Akbar.
Fateh, victory.
Fauj, army.
Faujdar, commander, governor.

G.

Ganda, a four, four cowries, equal to one-twentieth of an anna.
Ganj, treasury, store-house (a common suffix in place names).
Gāon, *gānw*, a village.
Gāri (*garry*), a cart, any wheeled vehicle (*tikka garry*, literally *thika gari*, a carriage for hire, a cab).
Gāriwālā, *gāriwān*, the driver of a *gāri*.
Garh, fort (a common suffix in place names).
Garhbāti, a fort.
Ghar, a house.
Ghara, a metal or earthen jar.
Gharāb (*grāb*), a three-masted vessel, used on the Malabar Coast in the seventeenth century.
Gharābi (*grābi*), a boatman.
Gharāmi, a thatcher.
Ghariāl, the long-nosed or fish-eating crocodile (Gavialis Gangeticus).
Ghāt, *ghaut*, steps, a pass, a wharf.
Ghī, clarified butter.
Godown, *gudām*, a warehouse, cellar.
Gola, a store-house, granary.
Golghāt, a whirlpool, eddy.

G.—*concluded.*

Gomāsta, gumāshta, an agent, steward, manager.

Gorstān, cemetery.

Grām, a village.

Guisāmp, iguana (Varanus Salvator).

Gūl, a small disc of metal, wood, or bone, used as a counter-irritant, to keep a sore open.

Gumla, gamla, an earthen basin.

H.

Hadīs, the traditional sayings and doings of Muhamad, having mostly the force of laws.

Hajj, the pilgrimage to Mekka.

Hāji, one who has made the pilgrimage to Mekka.

Hākim, a ruler, magistrate.

Hakim, a physician or sage.

Haldi, Halud, turmeric.

Hānā, a flood.

Hanumān, a monkey (Semnopithecus entellus), also called *langūr*.

Hāt, Hāth, a market or fair, held not daily, but on certain fixed days.

Havildār, a non-commissioned officer, a sergeant of native infantry. The word is a corruption of *hawāladār;* the holder of a position of trust; in East Bengal the name is applied to a sub-renter.

Hazrat, a title, "His-Honour" (literally "the presence".)

Hijra, the exodus, Muhamad's flight from Mekka to Medina, on 20th June 622A.D. From this date the Musalman era is reckoned.

Hogla, reeds.

Holi, a Hindu festival, held on the last ten days of Phālgun, the eleventh Bengali month (February-March). The *Doljātra* or swing festival of Bengal, is the same festival.

I.

Ibn, son of.

Id or *Eed*, a Musalman festival. There are two great Ids; first the greater, the *Idazzaha* or *Bakr Id*, held on the 9th and 10th days of the twelfth month, *Zu'l Hijjah*, when animals are sacrificed to commemorate Abraham's sacrifice of his son; second the lesser, or *Idal Fitr*, the festival of breaking the fast during the month of *Ramzān*.

Ijāra, a lease or tenure; literally profit.

Ikhsu, sugarcane.

Imām, religious leader.

Imāmbārah, a building for the celebration of the Muharram.

Istīfā, resignation of appointment.

J.

Jagir, grant of land.

Jalāha, a marsh.

Jaliya, a kind of boat.

Jalpān, water and *pan*, a light meal.

Jāma, total, aggregate (a revenue term).

Jamadār, a leader, supervisor.

Jang, war.

Jath, a festival.

Jātra, yātra, a pilgrimage, hence festival.

Jhīl, a swamp or marsh.

Jog, a conjunction of the stars.

Jot, tillage, cultivation, a holding of cultivated land.

Jowār, a kind of millet (Sorghum vulgare).

K.

Kachcha (*cutcha*), raw, unripe, hence unbaked (of bricks). A *kacha* house, one built of mud or unbaked bricks; a *kacha* road, one not macadamized. (Opposite of *pakka*.)

Kacha-pakka (*cutcha-pukka*), of a house, one built of baked bricks, joined only with mud, not with mortar.

Kadim, ancient; an old man.

Kalimah, the Musalman creed; literally "the word."

Kalisa, church.

Kāna, one-eyed, a term usually applied to a "dead" or silted-up river.

Kankar, coarse limestone.

Kārbāla, a Musalman cemetery, from Kerbela, near Baghdad, the sacred city of the Shiahs.

K.—*concluded.*

Kārtik, the seventh month of the Bengali year (October-November).

Kaste, a sickle.

Kattha (*cottah*), a measure of land, one-twentieth of a Bengal *bigha* of 1,600 square yeards, *i.e.*, 80 square yards.

Kāzi, a Musalman judge.

Khāl, a water channel.

Khalīfa, a lieutenant or deputy (of Muhamad).

Khalīfat, the office of a *khalifa*.

Khalisa, exchequer, revenue, lands paying revenue direct to the State.

Khana, a house (usually used as suffix).

Khārij, separated from.

Khatba, a public prayer offered up in a mosque, usually for the reigning sovereign.

Khesāri, a kind of pulse (Lathyrus Sativus).

Khondkar, a Musalman religious preceptor.

Kobirāj, a Hindu physician; literally "prince of poets."

Kodāli, a hoe.

Kora, a scourge.

Kos, two miles.

Krishan, a field-labourer, husbandman.

Kumbhīr, the snub-nosed or man-eating crocodile; also called *maggar* and *bocha* (Crocodilus palustris).

Kund, a tank.

Kuri, twenty, a score.

L.

Lākh (*lac*), one hundred thousand.

Lakhirāj, rent-free (of lands).

Langūr, the *Hanumān*, monkey (Semnopithecus entellus).

Lanka, a chili.

Lāthi, a club, usually of bamboo.

Lāthiāl, a clubman.

Līnga or *lingam*, the phallus or male organ.

Līp or *leep* (to), to plaster with mud and cowdung.

Lota, a brass pot.

Lūt (*Loot*), plunder.

M.

Māchān, a raised platform.

Mādrasa, a Musalman school.

Māgh, the tenth month of the Bengali year (January-February).

Mahā, *moho*, great (usually a prefix, as in Maharaja).

Mahāl, a district.

Mai, a harrow.

Māidān, a plain, or open field.

Māl, wealth, public revenue, public (land).

Māli, gardener.

Malmal, *mulmul*, muslin.

Mamlūk, a slave; literally possessed.

Man (Vide *Maund*).

Mantra, a prayer.

Marua, a kind of millet (Eleusina Coracane), also called *ragi*.

Māskalai, a kind of pulse (Phaseolus Roxburghii).

Matar, *muttar*, peas, pulse (Pisum Sativum).

Matwāli, a person endowed with authority; the trustee and manager of a Musalman religious foundation.

Maulvi, a learned man; literally a lord.

Maund, *man*, a measure of weight, in Bengal equals 40 seers or 82 pounds.

Maurūsi, hereditary.

Mazīna, the *muazzan's* tower ,minaret of a mosque.

Mehtār, *mihtar*, a sweeper; literally a prince.

Mela, a religious festival, a fair.

Mihrāb, the prayer niche in a mosque, it marks the direction of Mekka.

Mīnār, a tower, minaret.

Mīr, a chief or leader; a title of respect, usually confined to Saiyads.

Modi, a shopkeeper or contractor, a grocer or grain-dealer.

Mofussil, *mufasal*, country, as opposed to town; literally, separate, in detail.

Mohāna, great flood, the mouth or estuary of a river.

Mohant, an abbot, the head of a religious order, the head of a Hindu temple.

Molī, a radish.

Muazzan, the caller to prayer in a mosque.

Muharrir, a clerk, writer.

Mukarrari, fixed; as a revenue term, a tenure held at a fixed and permanent rate of rent or revenue.

Mukhtār, an agent, attorney.

Mulla, *mullah*, a learned man, a Musalman priest.

M.—*concluded.*

Mūm, wax.

Muni, a jewel.

Munshi, writer, secretary, a teacher of Hindustani.

Munsif, a subordinate Civil judge; literally just.

Murdafarāsh, a carrier of dead bodies, a sweeper.

N.

Nadī (*nuddy*), a river.

Nagar (*nugger, nagore*), a city (usually used as a suffix in place names).

Nāib, a deputy, lieutenant.

Nāla (*nulla*), a water-course, stream, ditch.

Nāma, a story (often used as a suffix as in Shahnāma), also a deed (also used as a suffix, as in *razīnama*, deed of assent).

Nangal, nangar, a plough.

Nāpit, a barber.

Nāth, nauth, a lord (often used as a suffix in place names).

Niāli, autumn rice.

Nīl, indigo.

Nirkh, nerikh, tariff, market rate.

Nishān, a mark, flag, seal, and hence a deed.

Nizāmat, government, adminstration.

Nizāmat-Adālat, chief criminal court.

P.

Paddy, rice cut but not husked.

Pagri (*puggery*), turban.

Pakka, (*pucka*), literally cooked, ripe, hence good in every sense (the opposite of *kacha*), thorough; of bricks, burned; of a building, masonry; of a road, macadamized.

Palās, a shrub, also called *dhāk* (Butea Frondosa).

Pālki, a litter, palankeen.

Pān, betel (Piper betle).

Panchāyat, a council of five, court of arbitration.

Pandit, a learned man (Hindu).

Pānse (*pansay*), a boat with bamboo and mat cabins aft; the most commonly seen boat on the Hughli.

Pārā, a village, a quarter of a village or town (often used as a suffix in place names).

Parda (*purdah*), a curtain.

Pardanishīn, a sitter behind the curtain; a respectable woman who observes the rules of seclusion.

Pāt, jute (Corchorus Olitorius).

Patni, an under-tenure.

Patnidār, the holder of a *patni*.

Peon (*pune*), an orderly.

Peshkash, offering, tax, tribute.

Phālgun, Phagun, the eleventh month of the Bengali year (February-March).

Phor, a reaping-hook, sickle.

Pīr, a Musalman saint, an elder.

Pīpal, a tree (Ficus religiosa).

Piyāj, an onion.

Pokhar, a tank.

Pous (vide *Pus*).

Prayaschitta, penance.

Puja, worship.

Purān, Hindu religious work.

Purnima, full moon.

Pūs, Push, Paus, the ninth month of the Bengali year (December-January).

R.

Rabi, spring, the spring crop.

Rabi-al-āwwal, the third month of the Musalman year.

Ragi, a kind of millet (Eleusina Coracane), also called *marua*.

Rahar, pulse (Cajanus Indicus), also called *arhar*.

Raiyat, (*ryot*), a peasant, cultivator.

Rāj, kingdom, principality.

Rājā a king, prince, a native title.

Rājbhāri palace; literally, *raja's* house.

Rās, enjoyment.

Rāsjātra, festival of enjoyment, held in honour of Krishna.

Rasun, garlic.

Rath, a car, chariot.

Rathjātra, the car festival, held in honour of Krishna.

Rawāna, a passport, price current.

Ryot, a peasant, cultivator (vide *raiyat*).

S.

Sadr (*sudder*), chief, head; *e.g.*, *sadr* station, the chief station of a district.

Saiyad, syad, a descendant of the Prophet Muhamad.

Saki, sakti, shakti, female, the female principle or organ.

Salāmi, complimentary, an offering.

Sāli, low (land).

Samāj, assembly.

Sambat, Samvat, a year, an era; usually applied to the era of Vikramaditya, which began in 57 B.C.

San, sun, hemp (Crotolaria juncea).

Sankrānti, the passage of the sun or of a planet from one sign of the Zodiac to another, the last day of the month.

Sanyāsi, a Hindu devotee, who has renounced all worldly possessions and affections, and lives by begging, usually a worshipper of Siva.

Sarāng, sarhang, a commander, usually used for the captain of a native boat.

Sardār, sirdār, a chief, officer.

Sāri, the dress of a Hindu female, a long cloth worn wrapped round the body and passed over the head.

Sarkār, Government, the State, a Superintendent.

ati (*suttee*), a virtuous wife, especially one who burns herself on her husband's funeral pile, hence widow-burning in the abstract.

Seer, sīr, a measure of weight, about two pounds.

Sem, a bean.

Sepatni, a sub-tenure or lease in the third degree.

Shahādah, evidence.

Shankha, a shell bracelet.

Shankhāri, a maker of shell bracelets.

Shāstra, the Hindu Scriptures.

Shikāri, a hunter.

Shusuk, the Gangetic porpoise.

Sicca, sikka, a coining die, stamp, signet.

Siddiq, truthful.

Simal, simul, the cottonwood tree (Bombax Malabaricum).

Siuni, an irrigating basket.

Snān, bathing.

Snānjātrā, bathing festival.

Srādh, shrādh, a funeral ceremony, in which food and water are offered to the manes of deceased ancestors.

Sūbha, a province, government.

Sūbhadār, a Governor, now used technically for a native captain of infantry.

Sūdra, the fourth or servile caste of Hindus.

Sūna, high (of land).

Supāri, betel-nut (Areca catechu).

Sūrjya, the sun.

Sūrkhi, pounded brick; literally redness.

Swāstika, invocation to Deity.

T.

Tamāk, tobacco.

Tāntras, a set of works inculcating mystical rites in honour of different forms of Siva and Durga.

Tārīkh, date, era, annals.

Tāshīr, public exposure.

Tassar (*tusser*), wild silk.

Tatti, a mat screen, a latrine.

Tāziah, a model of the tomb of Hasan and Husain, carried in procession by Shiahs at the Muharram.

Thāna, a police station or post.

Thīka, contract.

Thīka (tikka) gāri, a carriage for hire, a cab.

Til, sesamum seed (Sesamum Orientale).

Tīrth, a holy place, a pilgrimage.

Tōl, a Sanskrit school.

Tritīya, third.

Tūlya, cotton.

V.

Vaisnab, Vaishnav, Baisnab, a worshipper of Vishnu.

Y.

Yoni, the female principle.

Yunāni, Greek, usually used for the Musalman as opposed to the Hindu, system of medicine.

Z.

Zair, a pilgrim to Medina.
Zakāt, alms, charity, tithe.
Zamīn, land.
Zamīndār, landholder.
Zan, woman.
Zanāna, the female apartments.
Zar, gold.
Zikr, remembrance (of the name of God).
Zilla, a district.
Zu'l hijjah; the twelfth month of the Musalman calendar.

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